

2720

THE PROCEEDINGS
OF THE
LOUISIANA ENGINEERING SOCIETY

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Arthur M. Hill, Editor

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PROCEEDINGS

OF THE

LOUISIANA ENGINEERING SOCIETY

Vol. 40

MARCH, 1954

No. 1

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Our New President. Pictured on the opposite page is Frank W. Macdonald, President of the Society.

Frank is a native of our state, but has travelled widely, both on civilian and military missions. His most recent trip was sponsored by United Nations. He visited Brazil, Chile and Peru, inspecting both health and educational facilities. He has a degree in Civil Engineering and is also a Doctor of Public Health.

President Macdonald has been engaged in construction work in Honduras, and in the United States. He is Past President of the Louisiana Section of the American Society of Civil Engineers. He left the military service with the rank of Major. Professor Macdonald has been on the Civil Engineering Faculty at Tulane since 1945. He is Executive Secretary of the Louisiana State Board of Registration for Professional Engineers and Land Surveyors.

A Message From Our President. The Louisiana Engineering Society has long been recognized and respected as one of the leading professional organizations of our State. The members of the Society have made outstanding contributions in civic activities and engineering accomplishments of our communities. I am, therefore, profoundly conscious of the privilege and honor of serving this organization, and I accept this responsibility with humility and a sincere desire to exert every effort possible to achieve the objectives of the Society.

As one looks forward to the year ahead of us, we see several matters which may be a challenge to our organization. Legislative proposals may be made to improve the professional engineering registration law which may require the full support of our membership to have the amendments approved. It is felt by many that to raise the standards of registration of professional engineers in Louisiana to those used by other State Boards of Registration, several changes should be made in the existing law.

The rising costs within the last few years have presented a problem to the Society in endeavoring to maintain the activities of our organization in the face of inadequate income. It is felt by the Board of Direction that to meet this problem we may have to submit to the membership for consideration a request for a moderate increase in the annual dues. A study of the financial status of the Society is now being made by a committee appointed by our past President, Michael C. Abrahm.

It is gratifying to note that the membership of the Society is now over 1600, and six Sections have been formed and are functioning successfully in the State. As there are, however, over 3400 registered professional engineers in the State, it is apparent that there are many eminently qualified men who have not yet become members of the Society. I would like to suggest for your consideration the possibility of extending an invitation to those engineers who possess the qualifications for membership in our Society.

It is my sincere hope that I will have the pleasure during the year of attending a meeting of each of the State Sections and visiting with the membership. It is my plan also to work closely with the committees of the Society in endeavoring to maintain the high standards of activities our Society has enjoyed in the past. The demands on our organization cover such a wide field of interest that the Board of Direction will need much assistance from the members during the year to solve all the problems that will confront us. I would, therefore, sincerely appreciate any offers for assistance from the members who care to devote a little of their time for service on some of our committees.

FRANK W. MACDONALD

Third UPADI Convention. The Pan-American Federation of Engineering Associations (UPADI) will hold its Third Convention in São Paulo, Brazil, August 3 to 13, 1954. Western Hemisphere engineers chose São Paulo for the meeting in honor of the 400th anniversary of the founding of the city. The time was selected so that engineers might attend both the UPADI Convention and the World Power Conference.

UPADI was organized in 1951 in Havana, Cuba, after a preliminary meeting in Rio de Janeiro in 1949. The Second Convention in 1952 in New Orleans coincided with the 100th Anniversary of the American Society of Civil Engineers and permitted Latin delegates to participate in the observance.

At the São Paulo meeting the organization will continue its work on developing standards of practice and professional ethics. Through its Committee on Technical Studies, it will discuss methods of exchanging information on subjects of common interest. But its most important objective will be the establishment of good relations and understanding among engineers of the Americas.

Host for the convention will be the Brazilian Federation of Engineering Associations of which F. Saturnino de Brito, filho, is president. At the convention a new slate of officers will be elected to succeed President Luis Giannettassio of Uruguay who has so successfully guided UPADI in this initial period.

Opportunities will be provided for tours to sites of interest. Many engineers plan to make the complete swing around South America. A large delegation from the United States and Canada is expected to attend.

Your Society is represented in UPADI through Engineers Joint Council. As a member you may make use of UPADI services. Anyone interested in learning more about UPADI or the São Paulo Convention may secure information by filling out the coupon below and sending it to UPADI, Box 40, Midtown Station, New York 18, N. Y.

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OBITUARY — ERWIN HOGGE

On June 11, 1888, at Alverda, Texas, Mr. Erwin Hogge was born to Mr. E. Hogge and Sally Starkley Hogge. Mr. Erwin Hogge passed away on December 3, 1953 at the age of 65 years, 5 months, and 23 days. Surviving Mr. Hogge are his wife, Mrs. Annie Haynes Hogge, 320 Fifth Street, Alexandria, Louisiana, and one daughter, Mrs. Dorothy Derouen of Mooringsport, Louisiana. Interment was in Greenwood Memorial Park, Pineville, Louisiana on December 4, 1953. Two brothers preceded Mr. Hogge in death.

Prior to 1925 Mr. Hogge was engaged in the raising of cattle in Texas, was for awhile a mining engineer in Mexico, and did marine engineering. He also was for a period of time an installation engineer for manufacturers of industrial and power equipment. One of the companies for which he worked is the Fairbanks Morse and Company. His activities in these fields, during this period prior to 1925, are not too well known. He entered the public utility field in 1925 with the firm of Tooke and Reynolds of Shreveport, Louisiana as operating superintendent of electric and ice properties, which this company owned and operated. He became associated with the Central Louisiana Electric Company on December 1, 1935, and remained with that company until the date of his retirement on July 1, 1952. He began with the Central Louisiana Electric Company as District Manager of the Pineville District, and was promoted to Superintendent of electric, water and ice production on August 1, 1944. He held the latter position upon his retirement.

Mr. Hogge held membership and was an active participant in many civic organizations. He also held membership in various professional societies and associations pertaining to or associated with his work. He was very interested and active in the work of the Louisiana Engineering Society and was elected President of the Alexandria Section in January, 1953. He was President when he passed away on December 3, 1953.

New Members. We welcome the following new members into the Society:

For Member

WOODROW W. CHEW, Ruston; age 40. Endorsed: B. T. Bogard, L. M. Dyson, J. T. Folk. New Mexico A & M College, B. S. Ch. E. 1936. Oklahoma A & M, M.S.Ch.E., 1938. Member A.I.Ch.E., American Chemical Society, A.S.E.E. Registered Ch.E., 1949. La. Polytechnic Institute, Asst. Professor and Head of Chemical Eng. Dept., 1940-45. Monsanto Chemical Co., Ch.E., Mar.-Oct. 1945. Louisiana Polytechnic Institute, Associate Professor 1945-47; Professor and Head, Chemical Eng. Dept., 1947-date. Magnolia Petroleum Co., Dallas, Plant Engineer, June-Sept. 1952.

JAMES J. FARRELL, New Orleans; age 26. Endorsed: W. S. Leake, W. J. Steed, J. D. Taylor. University of Notre Dame, B.S.E.E. 1949. Associate Member A.I.E.E. General Electric Co., Test Engineer, Junior Proposition Engineer, Transformer Specialist, 1949 to date

ERNEST LEE LEVINGSTON, Lake Charles; age 31. Endorsed: W. M. Davis, C. A. Jackson, V. E. Sicks. McNeese State College, 1 semester 1939; Tulane University, C.E., 3 semesters 1944. International Correspondence Schools, diploma in Building Construction, ICS Structural Engineering course. Cities Service Refining Corp., Engineering Draftsman, Contract Engineer, 1947-date. Presently in charge of field contract engineering section handling plant expansion program.

PAUL S. NOBLE, New Orleans; age 30. Endorsed: D. L. Morris, W. S. Nelson, J. P. Fernandez. Tulane University, B.S.M.E., 1949. The Texas Company, Port Arthur, Refinery Engineer, Design Engineer, 1949-51. Freeport Sulphur Co., N. O., Mechanical Engineer, 1951-date.

LEONARD C. RAMON, JR., New Orleans; age 32. Endorsed W. K. Bankston, F. E. Johnson, W. J. Drawe. La. State University, B.S.E.E., 1942. Associate Member A.I.E.E. Member International Ass'n Electrical Inspectors. Registered E. E., La. N. O. Public Service Inc., 1946 to date, now General Foreman, Meter Section, Electrical Distribution Div.

JAMES BEVERLY SMITH, Alexandria; age 40. Endorsed: L. C. Landry, H. L'Heureux, H. R. Mason. Southwestern Louisiana Institute, B.S. Eng., 1934. Registered C.E., La. La. Geodetic Survey, Chief of Party, 1935-37. Southwestern La. Institute, Instructor in Engineering, 1937-38. La. Highway Commission, Instrumentman, 1938-39. Texas Company, Draftsman, 1939-41. Corps of Engineers, Camp Livingston, Asst. Engineer, 1941-4. U.S. Army, Active Duty, 1944-46. Self-employed, private practice and construction, 1946-52. Howard L'Heureux, and E. F. Harris, Consulting Engrs., 1952 to date.

WILLIAM S. SPANN, Baton Rouge; age 30. Endorsed: R. H. Bretz, F. B. Stirling, G. L. Yousko. La. State University, B.S.M.E., Aug. 1943. Harvard Business School, 1950-52, M.B.A. (Business Admin) Esso Standard Oil Co., Maintenance and cons. engineer, 1943-44. S.S. Navy, Ship Supt. of repair work, 1944-46. Esso Standard Oil Co., Inspector, Statistical Engr., Process Engr., 1946 to date.

LOUIS A. ST. GERMAIN, Baton Rouge; age 31. Endorsed: C. C. Barnard, J. S. Burk, J. D. Roberts. Southwestern La. Institute, 1939-42; LSU., 1942-43. B.S.C.E. U.S. Navy, Ensign, CEC, Road, Public Utilities Construction Officer, 1943-46. Barnard & Burk, charge of design, preparation of plans for natural gas systems, 1946-date. Registered C.E., La.

MANTZ C. SUSSKY, Baton Rouge; age 26. Endorsed: W. B. Gurney, F. A. Hannaman, Jr., H. L. Landry. Yale University, B.E.(Chem.), Feb. 5. 1949. Member Tau Beta Pi, Alpha Chi Sigma, Sigma Xi. Esso Standard Oil Co., Chemical Engineer, Feb. 1949 to date.

JAMES W. WOODRUFF, Biloxi, Miss.; age 56. Endorsed: C. L. Wood, Mayer Godchaux, Claiborne Perrilliat, J. S. Malahy, Jr., C. M. Hadra. Two year course in mechanical engineering. Mergenthaler Linotype Co., Brooklyn, N.Y., Time Study Engineer, 1922-27. U.S. Army Engineers, Camp Shelby, Mech. Engr. 1940-47; Keesler AFB, Construction Mech. Engr. in charge of air conditioning, 1949 to date. Former member Brooklyn Engrs. Club.

For Junior Member

SAMUEL L. BALENTINE, Alexandria; age 25. Endorsed: H. L'Heureux, S. L. Perry, W. D. Roland. Louisiana College, Pineville, 1948-50, pre-engineering. C. E. McMath, Surveyor, employed as Chairman, Rodman, June-Aug. 1948. Howard L'Heureux, Consulting Engr., employed as Supervisory Engineer, 1950 to date.

CHARLES P. BARNARD, Baton Rouge; age 25. Endorsed: J. S. Burk, S. J. Heliman, J. D. Roberts. Louisiana State University, B.S.C.E. 1950. Barnard & Burk, Design Draftsman, 1950-51. U.S. Army, 1st Lt. CEC, 1951-53. Barnard & Burk, Design Draftsman, Feb. 1953 to date. Registered C.E., La.

DANIEL F. BURKHALTER, JR., Monroe; age 30. Endorsed: B. T. Bogard, L. M. Dyson, M. R. Johnson, Jr. La. Polytechnic Institute, B.S.E.E. 1950. Associate Member A.I.E.E., 1950. Registered E.E., La. Collins Electric Co., Monroe, Sales Engineer, Aug. 1950 to date.

ISAAC M. GREGORIE, Baton Rouge; age 26. Endorsed: C. R. Draughon, R. W. Ammon, G. L. Yousko. Ga. Institute of Technology, B.I.E. (Industrial Eng.) 1950. Esso Standard Oil Co., Project Engineer, 1950-date.

CURTIS F. HAWLEY, New Orleans; age 30. Endorsed: B. P. Babin, G. W. Hill, M. G. Myers. La. Polytechnic Institute, B.S.E.E., 1951. Associate Member A.I.E.E. Westinghouse Electric Co., Sales Student, 1951-52; Asst Salseman, N. O. Branch, 1952-date.

FRANK STEWART, New Orleans; age 29. Endorsed: B. A. Grehan, B. M. Dornblatt, Ga. Institute of Technology, B.C.E., June 1949. Jr. Mbr. A.S.C.E. Farnsworth & Chambers Co., Marlin, Tex VA Hospital, Field Cost Engineer, Project Engineer, 1949-50. Robt. E. McKee Gen'l Contractor, Dallas, Field Engineer, 1950-51. U.S. Corps of Engrs., 2nd Lt., 2nd Armored Div., 1951-52. Farnsworth & Chambers, Office Mgr., N.O. Office, Aug. 1952 to date.

JEROLD E. STONER, Baton Rouge; age 25. Endorsed: R. W. Ammon, R. H. Hudson, G. L. Yousko. Iowa State College, B.S.C.E. June 1951. Esso Standard Oil Co., Project Engineer, July 1951-date.

REPORT OF VOCATIONAL GUIDANCE COMMITTEE

This report covers the activities of your statewide Vocational Guidance Committee during the 1952-53 school session. In view of the fact that the Committee's work is geared more directly to the "school year" than the calendar year, it appears appropriate to report on the former basis. If desired, we will be pleased to give a supplementary report in December covering the first portion of the 1953-54 session.

At a program planning meeting of the statewide committee on October 3, 1952, it was decided to follow the pattern established during the pervious session in carrying out the activities for the 1952-53 school year. However, agreement was reached to revamp some of the program material—both for the purpose of bringing it up to date and to facilitate its handling and use—and to investigate the possibilities of obtaining and using other types of program material. Subcommittees were appointed for this purpose and an outstanding job was performed by several of these. As a result of their efforts there was made available: a revised and improved speaker's outline; an effective group of illustrative charts (improved both as to content and portability); a new illustrated booklet to supplement the one published by the committee previously and scheduled for continued use; some large photographs of industrial projects and equipment. Messrs. B. F. Hatfield, Sydney Ellis and Ralph Elizardi functioned as chairmen of these subcommittees. They and their co-workers are to be commended for the results of their efforts.

Distribution was made to the vocational guidance chairman in each of the L.E.S. state sections of a supply of speaker's outlines, pamphlets and photographs or slides of the charts. These men were requested to activate their local committees and pursue the planned program of activities. Our speakers visited 15 high schools in the New Orleans, Shreveport and Baton Rouge areas, addressing approximately 1400 students. Messrs. C. P. Knost, F. C. Fromherz, H. J. Molaison, Robin M. Hood, and Frederick Broussard coordinated and directed this work. I take this opportunity of expressing my appreciation for their efforts and those of their co-workers.

College campus visitations by the high school students to witness engineering exhibits, laboratory equipment, etc. were carried out by Louisiana Polytechnic Institute (approximately 750 student visitors), Tulane University (approximately 250 student visitors), and S.L.I. at Lafayette (approximately 150 student visitors). Parents and other visitors also attended in some cases. Your committee cooperated with these institutions as faculty staff members, guest

speakers and/or judges, etc. The colleges deserve the thanks of the profession for accepting the burden of staging these visits and for the fine things thus accomplished.

Other types of activities included a panel discussion with high school principals and mathematics and science teachers at Ruston (arranged by Mr. J. L. Wantland); a radio talk on KRUS at Ruston by Mr. Wantland; collaboration with Engineers' Week by a radio interview on Station WNOE at New Orleans; a talk to a local Explorer Scout Post at their invitation; and a report on the guidance program to the annual Industry-Faculty Conference at L.S.U., followed by spirited discussion.

I trust you will pardon the length of this report. It is also intended to provide a source of information to the various state sections to aid them in planning activities for the 1953-54 school session which is about to open.

I wish to extend my grateful appreciation to all who participated in the committee's activities and list below the current statewide roster for your information. Local committees of the state sections are omitted on the assumption that their efforts will be recognized through the Sections' Presidents and their representatives on the statewide group.

L. J. CUCULLU

Chairman, Vocational Guidance Committee

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THE COMMERCIAL JET TRANSPORT ITS PROBLEMS AND ITS FUTURE*

I greatly appreciate the opportunity of participating in the Annual Meeting of the Louisiana Engineering Society to discuss commercial jet transports.

Efficient, fast, and convenient means of travel are vital links in the progressive development of any balanced and growing economy such as ours.

We celebrated last year the Fiftieth Anniversary of man's first controlled powered flight which took place on the morning of December 17, 1903. We, of Eastern Air Lines, also celebrated our Twenty-Fifth Anniversary of commercial air transportation.

It is, therefore, timely that we should today look forward toward another period of development and expansion which aeronautical science and aerodynamic research will make possible.

When compared with other forms of transportation, the airplane has been developed in a much shorter span of years than any of its predecessors, considering that the start of scheduled air transportation began just about the time Lindbergh made his famous New York-Paris non-stop flight in 1927.

Many small airlines operating four to six passenger aircraft, with shoestring financing, started at that time and to these pioneers we, in the air transport industry, owe much today. During this period the first transcontinental mail and passenger flights were claimed as revolutionary events.

In the late '20s Wall Street became interested in this performance and with its financial backing started the formation of many of our present-day large air transport systems, such as Eastern Air Lines.

This development created the manufacturing incentive which produced Fords, Fokkers, Condors, Boeings, and Stinsons, to establish the basic air transportation pattern of this country. When the economics of air transportation were injected into the picture in order to make it a business, the first workhorse of the industry came into its own — the Douglas DC-2 — which later was followed by the incomparable DC-3.

Just before the war, large four-engine transport aircraft were developed, such as the Douglas DC-4 and the Boeing Stratoliner, and began to span the airways.

The advances made since the end of World War II have been

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spectacular when it is considered that at the end of the war, the airlines had only DC-3's with a cruising speed of 175 m.p.h. Now this type of airplane has been retired by the major airlines and replaced by equipment having twice its capacity and cruising 50% faster, supplemented with fleets of 350 m.p.h., four-engine aircraft having seating capacities up to 88 seats.

This will be changed again in the future with the application of jet propulsion to new airframes to permit almost double the present flight speeds, and thus open new travel markets.

Jet propulsion has been under development for approximately twelve years and is beginning to approach commercial reliability standards.

The all-inclusiveness of the subject of jet transports defies its coverage in a single paper.

While turbine powered aircraft are relatively new, much research and development have been accomplished to date to permit the conception of a satisfactory jet transport aircraft for economical application to scheduled commercial air transportation.

But before we launch into a discussion of what jet aircraft ought to be, let's restate a few fundamentals.

While the products of our industry are changing rapidly, and will continue to do so, the philosophy of good business remains constant, and is as universally applicable as the Golden Rule. Whether you are producing tractors, automobiles, tooth paste, or selling air transportation, you have to give the people what they want and need, when they want it, make it the best way you know how, and be able to sell it at a price they are willing to pay.

To do this in air transportation means finding the answers to three questions which are:

1. What speeds can we justify economically for the types of service to be rendered?
2. How large must each type of aircraft be?
3. How can we lower our operating costs to effect fare reductions and increase our volume of business — and still make a profit?

All this resolves into the definition of what is air transportation? This appears to be a simple question but behind it lies a most complicated answer.

First of all, we must fully understand that an airline is basically an agency created to serve the traveling public by providing a distinct and needed public service. If it does not meet this qualification, it fails to accomplish its purpose.

Furthermore, it must do this safely, efficiently, and reliably.

An airline is, therefore, a service organization and this fact must always be paramount in the airline engineer's thinking when studying new aircraft for scheduled service.

There is only one basic commodity the airlines have to sell and that is speed — *safe speed* — *with courteous service and dependability of schedule*.

Eventually, we must consider overall speed, that is, from point of traffic origin to its ultimate destination. More on this later.

There are four principal factors which underline every transport aircraft design: Simplicity, Producibility, Reliability, and Serviceability.

In the past, many successful transport aircraft have been adaptations of basic military design but during the last few years it has become apparent, in military aviation, that the aircraft is but a means to an end.

Years ago our limited aeronautical knowledge required that military functions be subjugated to aircraft design. Today, the reverse is true, meaning that military aircraft characteristics, with the exception of speed, are different than those desired for transport aircraft.

Obviously, the expeditious handling of passengers and guided missile interception, for instance, certainly present widely different problems.

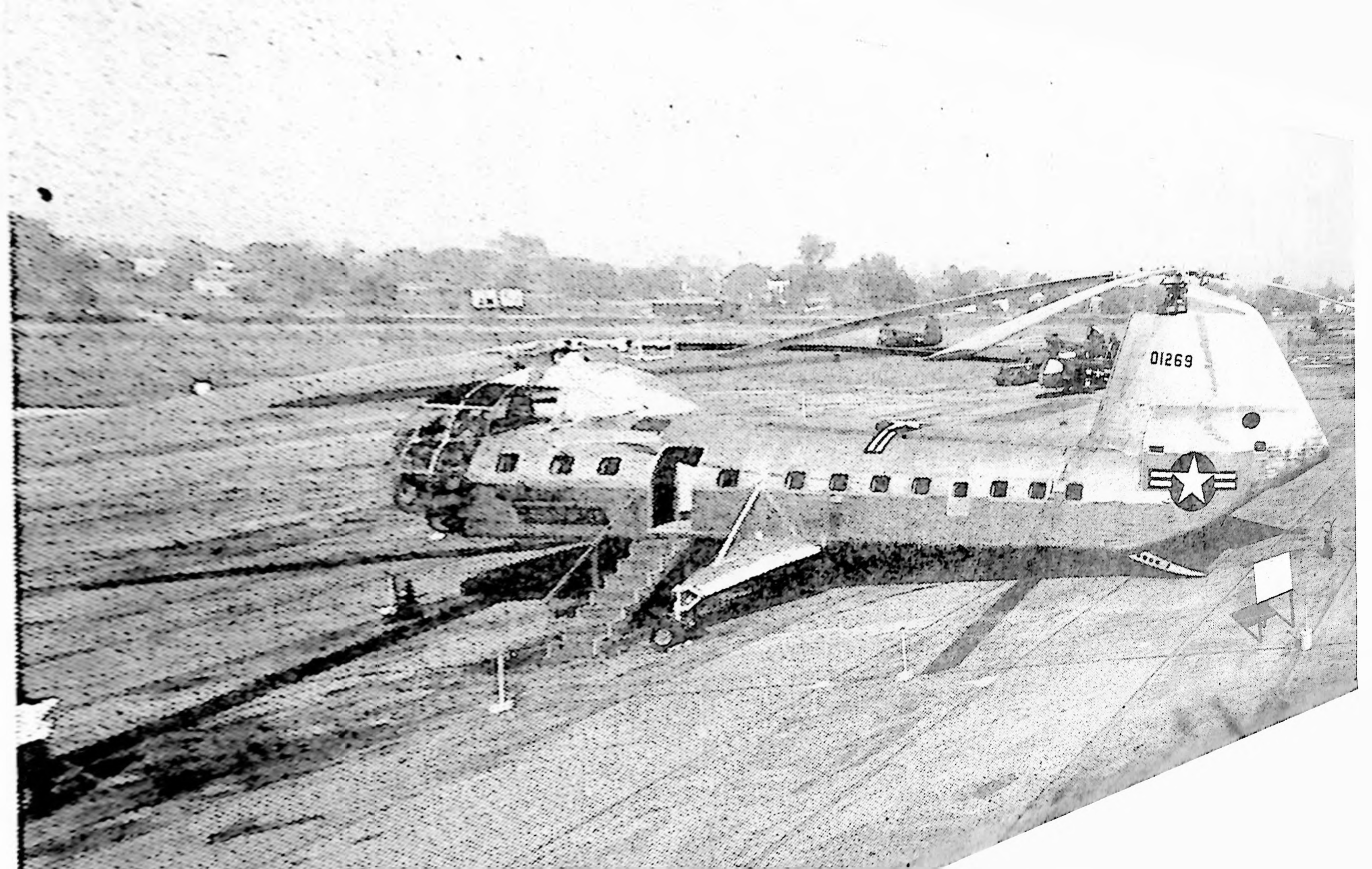
The conception and development of the jet aircraft engine by Sir Frank Whittle in England over twelve years ago started a virtual revolution in aircraft design which has so far carried us in the supersonic region, and before too long, hypersonically.

We should not, however, let our imagination run away with our common sense. Taking into consideration the present state of the art — and without crystal gazing, which is always a dangerous pastime for an engineer — we should be able to determine with a fair degree of prediction the shape of things to come in air transportation, at least for the next ten to fifteen years.

We must also take notice of improvements in surface transportation means and try to judge how they will affect the air transportation pattern in the future. For instance, the development of high speed highways to use the high speeds permissible with the modern automobile will, I believe, profoundly change the configuration of local schedule air transport operation.

As more super highways are constructed, the traveling public will recognize their value in time saving and convenience at the expense of local air transportation services, unless the air transport industry accepts this provoking challenge and does something about it.

What can it do? Two things that I can see: — Either improve the overall performance of local schedule operation by providing faster ground transportation and passenger transfer, also more efficient baggage handling, such as the wider use of carry-on baggage provision now on the twin-engine Martins and Convairs, or use



FAST TRAFFIC AND GROUND HANDLING TECHNIQUE
FOR LARGE INTERCITY PIASECKI H-16 HELICOPTER

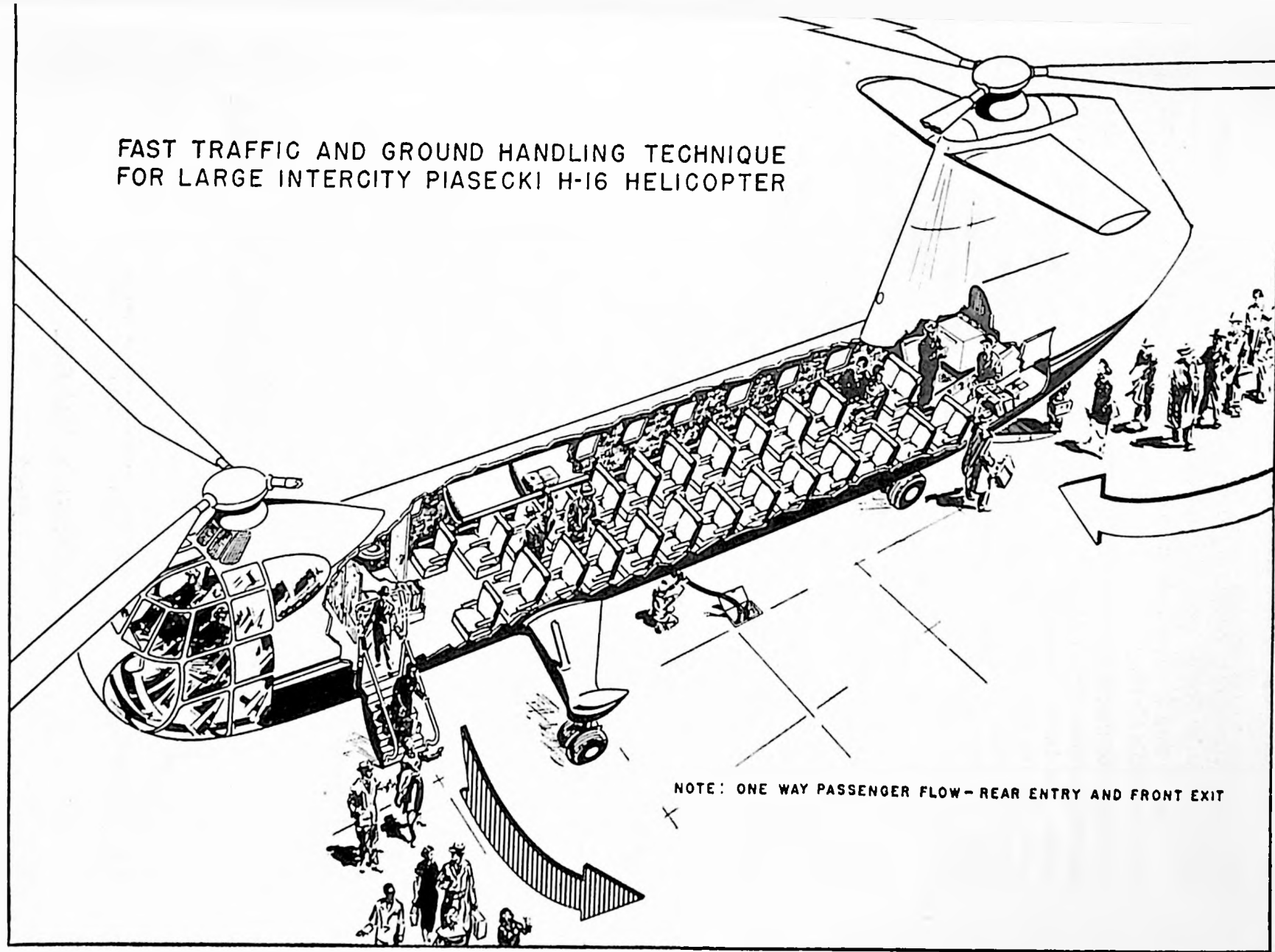


Fig. 2

helicopter transports operating from heliports which can be located much closer to traffic generating centers than airports can ever be.

Figs. 1 and 2 show a 44-passenger helicopter conceived around the Piasecki's H-16.

Block to block speed of typical transport aircraft and a present-day helicopter are quite different as the fixed wing aircraft are quite a bit faster, but when the overall speed is considered, that is, including the time taken to go to and from the airport, the helicopter becomes faster than the fixed wing aircraft, as shown by this graph (Fig. 3), showing the helicopter to be faster up to almost 400 miles when compared to an airplane having a cruising speed of 250 m.p.h.

It is one thing to talk about 300 to 400 miles per hour airplanes, but quite another to deliver that kind of service in local schedule operation with fixed wing aircraft. It is, therefore, conceivable that the helicopter, or perhaps the Convertiplane (which is a combination of fixed wing aircraft and helicopter), and when practical machines are developed, may eventually replace our present twin-engine aircraft in local schedule operation because:

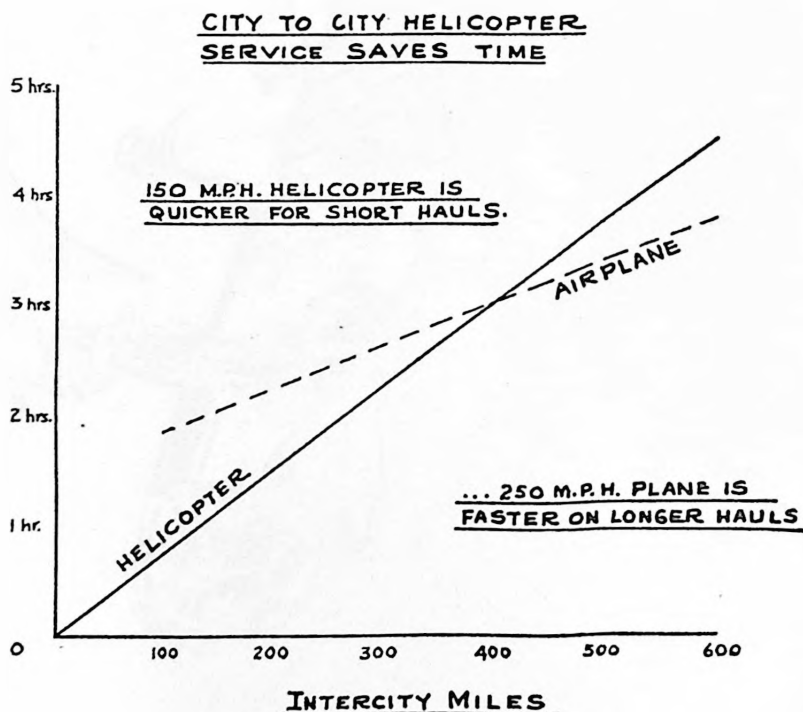


Fig. 3

1. The rapid progress in helicopter design in the last few years to meet military requirements can be used to good advantage to create commercial helicopter transports of satisfactory characteristics.
2. Many cities located on trunklines today should have air service but cannot afford expensive airport installations due to their size or location.
3. The helicopter is by nature essentially a short range vehicle because it cannot, at least in the foreseeable future, attain the high subsonic speeds envisaged today for the coming jet transports, nor can it compete with our present-day 350 miles per hour piston engine-powered airliners.
4. As a matter of national defense in emergency, the helicopter has no peer when ground installations, such as rail terminals, airports, and bridges, have been destroyed.

The helicopter, however, must be considerably improved before it can be considered for scheduled local service. The strong interest of the Military is fostering helicopter developments insofar as flight characteristics are concerned, but other problems, such as all-weather operations, noise reduction (if roof top landings are to be routine), integration in airport traffic patterns, design and development of helicopters, and reduction in operating costs must be resolved before the helicopter becomes a desirable adjunct to scheduled air transportation.

This will take time.

Jet Transport Characteristics

Turbojet engines operate most efficiently at high speed and high altitudes. Their present fuel economy is very poor at low altitudes. While improvements will be made to substantially reduce fuel consumption, it will not economically allow their application to high speed, medium range aircraft — at least for the present. Therefore, we can assume that aircraft powered with turbojets will only be used for flight distances of 700 or 800 miles and up.

Turbine propeller driven engines, however, are adaptable to a wider range of application and may well replace our present reciprocating engines in the future. They are admirably suited for airframes designed for low operating costs per unit of payload per mile, and may well meet the future needs of air coach and air freight services.

Thus, we will have the jet transport for high speed and long

flights; the turboprop equipped transports for air coach and cargo; and the helicopter for feeder and local service schedules.

Now, what do the airlines want in a jet transport?

First of all, the safest and fastest airplane possible. This airplane should profit from our past experience and be so designed as to prevent a recurrence of past mistakes.

Secondly, it should be conceived to give better overall passenger service. The passenger desires comfort, quietness, good visibility, adequate "in flight" facilities, and better handling of his baggage than he has received heretofore.

Thirdly, it should be an airplane designed to operate satisfactorily in and out of our present airports and using navigational aids expected in 1958 or later.

Lastly, it should be a profit producer, so progress can be made and profit earned to reward those who entrusted us with their money and, at the same time, permit the airline industry to continue to purchase new equipment.

These are basic concepts which the aircraft designer must relentlessly bear in mind in evaluating his new aircraft.

There are three stumbling blocks which have held and are holding back the rapid development of jet transports in this country. These are:

1. **Economics.** The airlines are free enterprises operating with a comparatively low rate of return on their investment. It is, therefore, essential that any new equipment purchased by the airlines — particularly of a revolutionary nature such as a jet powered transport — be as economical in operation as the best reciprocating engine powered aircraft today, or, at least, can be operated at a profit with a reasonable load factor.

2. **The Basic Concept of a Jet Transport, that is, What To Design and What to Build.** This revolves primarily in the location of the engines. Are the airlines willing to accept the individual pod arrangement, or should they consider the central grouping of power plants which may have the great advantage of maximum cabin quietness?

3. **The Business Gamble** of spending a large sum of capital by the manufacturers in designing, building and testing a prototype, which may never sell. An error in judgment can seriously impair the financial structure of a sound manufacturer.

While the aviation industry ponders over these problems, the British are going ahead with definite plans — rightly or wrongly.

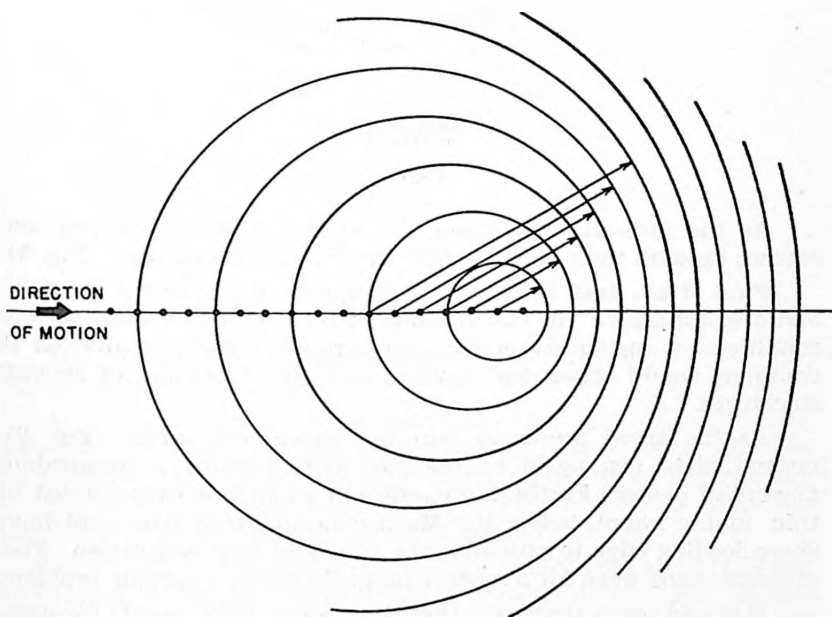
They are steadily progressing due to the foresight of the British Government several years ago in fostering the development of jet propulsion and financial assistance to its manufacturers to encourage the application of jet propulsion to commercial air transports.

Let us now take each of the four basic requirements I mentioned earlier! —

Speed. The best speed performance is extremely desirable providing the operating economics of the airplane can justify it. By this is meant that we must choose between high performance with premium fare or sacrifice some speed to obtain an airplane which can be operated at the same seat/mile cost of our present four-engine transports today.

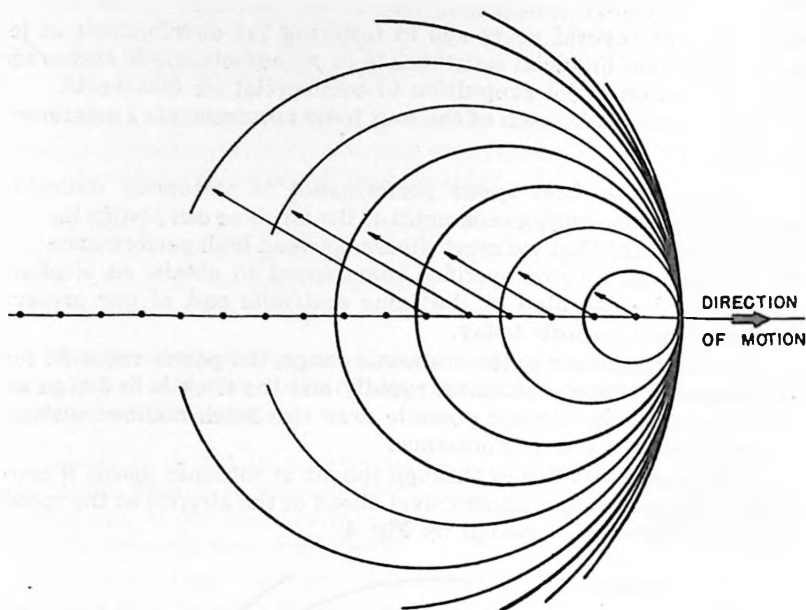
As we get closer to the transonic range, the power required for a given performance increases rapidly and the trick is to design an airframe with the highest possible drag rise Mach number without sacrificing low speed performance.

When an aircraft flies through the air at subsonic speeds it produces pressure waves which travel ahead of the aircraft at the speed of sound. This is illustrated by Fig. 4.



BELOW MACH 1.

Fig. 4



MACH 1.

Fig. 5

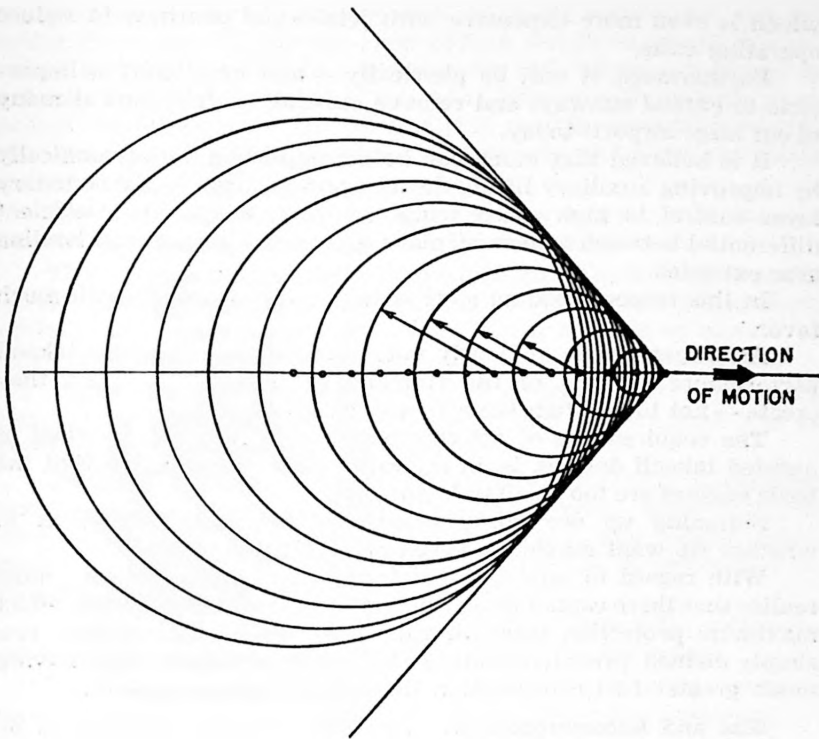
As the aircraft approaches the critical transonic speed and catches up with these same waves, things begin to happen (Fig. 5).

First of all, drag increases very rapidly, lift becomes irregular and drops sharply. The combination of these events creates serious conditions of instability and erratic airloads which, if allowed to continue, would cause, and have caused, disintegration of aircraft structures.

As the speed increases into the supersonic range (Fig. 6), normal flight can again be resumed but requires a tremendous amount of power. Furthermore, efficient supersonic wings must be thin, highly swept, below the Mach cone angle of flow, and have sharp leading edge to minimize the effects of flow separation. Fuel stowage space, even for a modest range, becomes a serious problem.

It would seem, therefore, that supersonic flight speeds for commercial aircraft can only become practical when efficient rockets are developed.

In the meantime, we will stay subsonic commercially, say up to 600 or 650 m.p.h., for some time to come.



ABOVE MACH 1.

Fig. 6

That is fast enough. It means a two hours flight from New Orleans to New York.

At the other end of the speed scale, we must design for stall, approach and landing speeds not exceeding present values, that is, not exceeding 100 to 110 m.p.h. landing speed under the hot day temperature conditions at sea level prescribed in the Civil Air Regulations of the Civil Aeronautics Administration.

Furthermore, it should be possible to operate the aircraft in and out of airports having 5,500 feet long runways at sea level, in still air, at an air temperature of 30°F. above standard. The takeoff gross weight meeting these requirements should allow full payload with a range of 2,000 miles plus required fuel reserves.

It is obvious that the airline operator cannot continue to "buy" airport runway mileage, which also means additional taxi mileage—

which is even more expensive with jets — and continue to reduce operating costs.

Furthermore, it will be physically — and practically — impossible to extend runways and remove existing obstructions at many of our large airports today.

It is believed that much can be accomplished aerodynamically by improving auxiliary lifting devices, and perhaps apply boundary layer control to high speed wings to increase the lift coefficient differential between a clean airplane and one with flaps and landing gear extended.

In this respect, leading edge slats are not regarded with much favor.

Afterburners are obviously not permissible to improve takeoff performance because of the tremendous increase in noise they create — not to mention their fantastic fuel appetite.

The required use of afterburners, which falls in the class of assisted takeoff devices, is, in my estimation an indication that the basic engines are too small to begin with.

Summing up our speed discussion, we must decide as to whether we want maximum speed or maximum payload.

With regard to safety, the airframe and engine designer must realize that there cannot be any design compromise which will affect maximum protection from aircraft fires, because jet engines are, simply defined, pressurized oil burners of large capacity and having much greater fuel consumption than reciprocating engines.

Size and Accommodations. Two of the major problems to be resolved before a definite specification for a jet transport can be intelligently written are:

1. Determination of the proper passenger capacity.
2. Location of the power plants.

With regard to size, it is axiomatic that if the aircraft is too small, the operating cost per seat mile will be greater for a given traffic potential, and if it is too large its operating load factor will be insufficient to support its operating costs.

We can either determine the most economical size by projecting past experience and extrapolating for the future, or assume that they should not be smaller than our largest four-engine transports today. We can add a factor for expected growth traffic, meaning that the passenger capacity should be between 80 and 100 with a total payload of 22,000 to 25,000 lbs. to adequately handle expected air mail and air express requirements.

It is believed that the advent of jet transport speeds, roughly, 75% greater than those of our best piston engine transports today, will certainly create new traffic which can be superimposed over our anticipated growth today.

This means, as a basic criterion, we must assure that any jet transport designed today can grow 25% in weight to absorb this increase in traffic, and must be designed for 50% increase in power to provide for engine progress. The wing area should be such as to permit this subsequent growth and still provide acceptable operation from the standpoint of existing airports and flight personnel requirements.

Faster schedules and greater passenger appeal will unquestionably bring us to a new threshold in traffic volume.

The problem of passenger baggage handling must receive much greater attention than it has in the past. There is nothing more irritating to a passenger than to wait fifteen minutes or more — as he often does now — for the return of his baggage at destination.

Means must be provided within the aircraft for expeditious baggage handling with minimum labor. There must be some way of eliminating rehandling as done today.

From the operator's viewpoint, the present methods of handling and stowing are expensive and time consuming. Some form of carry-on baggage provisions must be made and belly baggage compartment design must undergo a drastic change in philosophy to permit ease of access, loading and unloading.

This is a "Must" as any aircraft speed increase will further accentuate the unpleasantness and cost of the present delays.

Another passenger item found deficient to date is coat storage space. There should be at least 2½" of coat space per passenger.

Needless to say, explosive decompression of pressurized cabins must be entirely eliminated as at 35,000 to 40,000 feet flight altitudes, there is but 15 to 30 seconds time available to fasten seat belts and don oxygen masks while descending to a livable altitude. Even with the best training, the results of sudden decompression would be disastrous.

There is no magic in designing a cabin window system which will be just as foolproof as the major structures of the aircraft insofar as failure is concerned.

Another factor which determines aircraft size is the availability of engines. There are two engines today which have possibilities for adaptation to a jet transport of the size required by 1960 and which can fit an airframe designed to meet the ten to twelve-ton payload requirements.

These engines are the Pratt & Whitney J-57 used on the Boeing B-52 Jet Bomber, and the Wright J-67 which is the American version of the British "Olympus". Both of these are improved engines of the twin-spool type and have characteristics which come closer to meeting airline requirements insofar as fuel consumption and power requirements are concerned than any other engines today,

although developments are now going on with a new type of turbo-jet engine known as the "by-pass" or ducted fan.

Lower specific fuel consumption, quieter operation and better takeoff thrust characteristics are claimed for this new engine. Designed and built by Rolls Royce of England, it has been selected for the new De Havilland Comet Mark IV and the Vickers VC-7 jet transports.

This new type of engine is neither a turbojet nor a turboprop, but a solution in between which offers the distinct advantage of lower fuel consumption than the turbojet and less susceptibility to temperature accountability.

Jet engines today are basically military engines. They have a small frontal area, are light and powerful but consume a lot of fuel and are extremely noisy. These last two attributes are incompatible with airline operation.

The turbojet transport to carry its larger fuel load must have an airframe 8,000 lbs. heavier which at \$40.00 per pound means an additional cost to be depreciated of \$340,000.

Jet engines are lighter than piston engines, but the combined weight of engines plus fuel is still much in favor of the piston engine. It is hoped that the "bypass" engine will equalize them.

Engine selection is thus the crucial problem for both the manufacturer and the operator.

The location of the power plants on the aircraft also presents a dilemma.

There are several possibilities which have been used on military aircraft and on one commercial jet transport which offer promise.

To date, the total time on any individual turbine engine is probably not more than 3,000 to 3,500 hours, which is insufficient to form any conclusion as to the rate of reliability and parts life which may be expected in commercial transport aircraft.

We know that the overhaul period is going to be considerably less during their first years of commercial operation than with present reciprocating engines, and from indications, their cost of overhaul will also be substantially higher.

With engines grouped together, there may be a concentrated heat problem after engine shut-down which may or may not be serious.

The individual pod presents a flexible arrangement in that it can be moved laterally to help solve any problem of wing flutter that may develop during the prototype testing period.

It isolates each engine, permits easier maintenance and servicing as by proper clam-shelling the cowling, it is possible to expose the complete engine in a few seconds. It will undoubtedly be noisier as it is hardly believable that the exhaust cone of noise can be entirely shielded by the wing structure.

It eliminates all fuel lines in the fuselage but will require positive fire prevention and protection in view of its proximity to the fuel tanks.

It permits engine substitution with the minimum of modifications as long as engine weights are similar. In other words, it could be well nigh possible to substitute a ducted fan engine for any straight turbojet of equivalent power. This would be more difficult with grouped engines. Thus, as with all aviation engineering problems, we must strive for the safest compromise.

Flight Safety. We must redesign our cockpits to provide greater functionalism as these large transports will carry from 80 to 100 passengers and will involve a substantial capital investment in the order of \$3,500,000 or more.

Furthermore, with twice the speed, automatic anti-collision means, such as radar, will have to be provided. Cockpit simplification can be readily accomplished with jet engines as the only two basic instruments needed on the flight board are engine r.p.m. and tail pipe temperature indications. All other instruments can readily be installed on the flight engineer's panel.

Greater attention must be paid to cockpit comfort insofar as air conditioning is concerned. At the higher altitudes, some means of air humidification will be required to prevent possible pilot fatigue.

We are progressing technically at a rate much greater than the air transportation business can absorb, so we must carefully select our parameters in order that our coming jet transports will not be obsolete before we get them.

In our examination of what we need in jet transport, we must apply our detailed knowledge gained from many years of reciprocating engine transport operation so the results will reflect our best know-how. It must be realized that because of the permissible increase in speed with jet propulsion, compromises in design are much more difficult than before.

We must narrow the gap between pure theory and practice to reduce the hazards always present with new designs by prefacing design details with the question, will it be safe? In other words, we must contemplate embarking in a jet transport with better than some assurance of success, as at \$3,500,000 or more per aircraft no mistakes can be made.

Airplane design is not yet an exact science as witnessed by the many conceptions proposed. It is still an art which requires a judicial blending of mathematical exactness, a liberal sprinkling of good judgment, backed by plenty of experience. If we look back, the airplane was invented, then designed, then engineered, and now the scientist has taken over to increase its efficiency as a means of transport. Let us make haste slowly.

Safety is often compromised by progress rate differences and sometimes by economic consideration. For instance, if it takes a certain time to develop a product to, let us say, 95% efficiency, it might take "X" time and "Y" dollars more to improve it to, say 98%. It will seldom exceed this regardless of time and money expended, and thus the decision must be made as to when to release for production.

If released too early, it will be troublesome in service and expensive to the operator. If released too late, someone else might capture the market and the increased cost of development might well put it beyond the reach of competition. This is the major element of the calculated risk which the manufacturers and airline operators are facing today. If the design is released too early, greater dependence will be put on the human element for satisfactory and safe performance.

Noise and Airport Problems. The high external noise level is undoubtedly the most disturbing factor in the jet transport picture.

Little attention was paid to the noise of aircraft until those three accidents which occurred in that one-half square mile area of Elizabeth, New Jersey, two years ago and which closed Newark Airport temporarily.

We had been so busy with performance and flight safety that we neglected the noise problem, particularly with reference to the psychological reactions of the people living in communities adjacent to our large airports.

First, I would like to make a few observations which puzzle me and if you will permit me to step down from my official capacity with Eastern Air Lines, I will present them as a layman.

I have talked to a lot of people about aircraft operation, some living close to airports and others within a few miles radius.

Almost all of them, and this was a surprise to me, associate aircraft noise with danger. Yet they tolerate heavy truck traffic which creates the same noise level and is far more dangerous to both surface vehicles and pedestrians alike—as can be attested by the numerous fatalities which occur yearly.

We accept the odd 40,000 deaths yearly from motor vehicles rather casually. We pay little attention to the millions of human

beings hospitalized yearly by motor accidents; but when the three accidents occurred in Elizabeth, we wanted to move the airport and suddenly considered aircraft as terrible death-dealing devices. Why?

Life and accident insurance companies who deal only with facts and figures tell you that the liability insurance rate for taxicabs in our large cities is twice that of scheduled air transportation rates. Is it, perhaps, because the frequency of propeller and engine exhaust noise of aircraft is intermittent and often occurs during the hours of the day when the surface traffic noise level is at the lowest — thus accentuating the noise created by air traffic?

Is it, perhaps, that the average person has not yet fully accepted man's successful effort to overcome gravitation in spite of the many advantages offered by air travel and its necessity in today's industrial tempo?

Perhaps it is because the noise instills a fear of danger and has a disturbing influence. On the other hand, millions have accepted the high noise level of the elevated railroads in New York and Chicago, for instance, and think nothing of it.

Be that as it may, it would seem that if we can attenuate noise, we will satisfy the majority of people — regardless of safety, strange as this may seem.

Excellent examples in the past have been the automobile, the motor-truck and the bus. Many of you will recall in the '20s, the snorting of bus exhaust which scared everyone out of their wits, and the noisy mufflers with which automobiles were equipped.

Improvements were made and everybody was satisfied. But has motor vehicle safety been increased? I'll let you be the judge. Yet, do we close streets or highways after a series of accidents? Of course not. We try to do something about it.

Jet transports will have the advantage over our present-day transports of a higher rate of climb immediately after takeoff, meaning that altitude will be gained more quickly but the difficulty will occur at the beginning of the takeoff when the throttles are fully opened before releasing the brakes. The noise level of (4) 10,000 lbs. thrust jet engines today is substantially higher than that of our largest piston engines equipped with jet stacks, and diligent research must attenuate it.

Jet engines have three potent sources of noise. These are the pressure variations in the jet stream itself, the jet stream boundary turbulence, and the compressor inlet noise.

That something can be done about the three prolific sources of noise is clearly indicated by the fact that the external noise level of

the Boeing eight jet B-52 bomber is less than that of the six jet B-47, in spite of the greater engine thrust of the B-52.

The by-pass or ducted fan engine should further improve the operating noise level.

Water injection as a means of increasing takeoff thrust virtually doubles the plain jet noise and an afterburner increases it ten times (that is, raises it to 150-160 decibels at static takeoff thrust).

This kind of noise is most difficult to abate and unless ways and means are found to substantially reduce it, it can readily be seen why it prohibits the use of afterburning on commercial jet transports.

Another problem will be to educate the public on the difference between jet engine and piston engine exhaust noise.

Serious considerations are being given to every possible way to provide sound barriers at airports which can effectively attenuate exhaust and propeller noise at airports. There are many factors which affect noise transmission, such as grassy fields between runways, trees, cloud level, humidity conditions.

A positive way to minimize the airport noise nuisance is proper zoning *before* the airport is built.

We must plan our airport traffic patterns and institute a rigid runway preferential system which will route departing and arriving aircraft away from populated areas as much as possible and obey the rules. We certainly cannot move our airports. They are part of business life blood, just like the railroad depot and bus station.

While the public must be willing to accept an accidental risk, if only for the sake of national defense, we must relentlessly continue to improve flight safety, orderly operation, and reduce aircraft noise.

There is also the heat effect of the tail pipe on airport surfaces by fuel leakage which attacks macadam surfaces and the tar joints of cement runways. Fig. 7 shows the relation of temperature and velocity of the tail pipe jet to distance.

This will require a change in our present ramp procedures to prevent burning of building facade, ramp equipment, and personnel injury. This is why I believe that any jet transport must be fully self-contained.

By this I mean that it should be equipped with auxiliary power units capable of supplying sufficient power for lighting, heating, cabin air-conditioning and pressurizing, main engine starting, and equipped with means to taxi the aircraft at 20 miles per hour from point of loading to the junction of the taxiway and runway before starting the main engines.

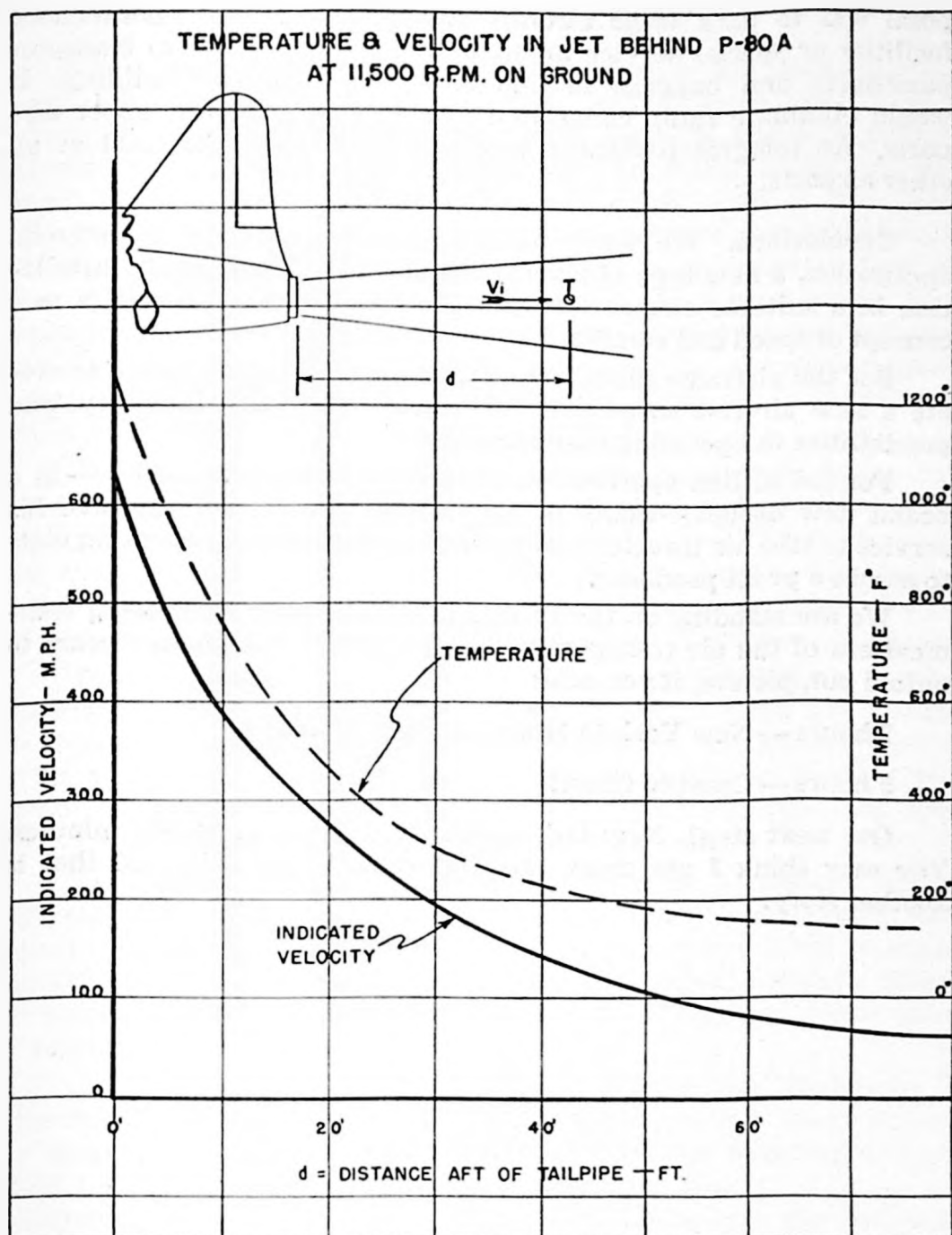


Fig. 7

In other words, the only vehicles required at the terminal will be the refueling units and the caterer's trucks, if needed.

Passenger and baggage loading and unloading could well follow the scheme presented by E. W. Fuller in his SAE paper entitled, "A Proposed Mobile Gate House" at our larger airports. This pro-

posal was to park large aircraft either at the base maintenance facilities or special service areas, and use large buses to transport passengers and baggage to and from the terminal building. It would eliminate ramp congestion and confusion at our super airports. An integral passenger loading ramp would be used at all other airports.

Conclusions. We have today, almost ready for commercial application, a new type of aircraft engine which awaits its installation in a suitable airframe to provide the air traveler with a new concept of speed and comfort.

For the airframe manufacturer, it offers an opportunity to create a new aircraft surpassing all others in speed, reliability, and possibilities in operating cost reduction.

For the airline operator, it is an opportunity to specify — in a brand new design — many of the things which will improve his service to the air traveler and permit a reduction in operating costs to assure a profit producer.

We are standing on the threshold of the most fascinating technical era of the air transport industry. It will take a few years to unfold but, picture, if you will:

2 hours — New York to Miami, or New Orleans!

5 hours — Coast to Coast!

Our next step? New Orleans to New York in fifteen minutes. You may think I am crazy but you cannot prove it, and that is another story.

OLD RIVER CONTROL*

The Lower Mississippi River, its tributaries and distributaries, especially the Old and Atchafalaya Rivers, have been under study by the Corps of Engineers for some 100 years, and a very great amount of data have been collected and analyzed. Since appointment of the Mississippi River Commission in 1879, it has been recognized that there was a growing tendency for the Atchafalaya River to become the master stream, through diversion of flow of the Mississippi River through Old River. In recent years, this tendency has become accelerated, and all engineering and geologic studies now indicate that, unless prevented by the construction of man-made structures, the Atchafalaya River will capture the Mississippi River in the relatively near future.

The Mississippi River is unquestionably the most important river in America, contributing to the physical and economic well-being of almost every citizen of the United States. This river, with its tributaries, drains an area of 1,245,000 square miles. The drainage basin, exceeded in size only by those of the Amazon and Congo Rivers, covers all or parts of 31 states and two Canadian provinces.

The Atchafalaya River is the principal distributary of the Mississippi River. For the past decade the Atchafalaya has carried a discharge exceeded by few other rivers in the United States. This discharge is derived from the Mississippi River, through the short connecting channel known as Old River and from the Red River which joins the Atchafalaya near its head.

The distance to the Gulf of Mexico from the Mississippi River, through Old River and the Atchafalaya River, is 140 miles; the distance from this point by way of the Mississippi River channel is 313 miles. Thus, the slope through the Old-Atchafalaya River system is more than twice that found in the Mississippi below their common point.

Just above Old River on the west side of the Mississippi is the Red River backwater area, which has long been a reservoir and a distributing basin for overbank flow from the Mississippi, Red, and Ouachita Rivers. At less than overbank flow, it distributed the flow from and between the Mississippi, the Red, and the Atchafalaya. Until recently the flow in Old River was not infrequently toward the Mississippi. In recent years the flow has always been away from the Mississippi.

A number of studies have been made of the possibility of uncontrolled diversion of Mississippi River flow through the Atcha-

* Presented before the L.E.S. Jan. 9, 1954 by Brig. Gen. John R. Hardin, President, Mississippi River Commission.

falaya. It is a problem which has been the serious concern of many engineers and geologists working in and concerned with this area. Recently, under the direction of the Mississippi River Commission, two very comprehensive investigations, one concerned with the geologic aspects of the problem and one concerned with the engineering aspects, have been made. It should be added that other engineers, some of whom are members of the Louisiana Engineering Society, have made very important contributions through their writings.

The Mississippi River abandoned its Lafourche course at Donaldsonville and occupied its present course from there past New Orleans about 1200 A. D. Since that time, the only changes which have occurred have been shifting of the river delta as the position of the river mouth was changed.

If past observations of diversions can be taken as accurate indications of future actions of the Mississippi River, the Atchafalaya offers an ideal path along which the Mississippi could steepen its gradient and shorten its course to the sea.

In each of the former Mississippi diversions, it appears that the new course taken by the river was through the route of a smaller stream flowing in a lowland near the Mississippi. Studies show that in some cases the smaller stream became a distributary of the Mississippi when a migrating meander loop intersected it, as did the Atchafalaya. Following this, the distributary enlarged until it became the new Mississippi course. In doing so, it passed through developmental stages which have been termed initial, intermediate, critical, and final stages.

In order to obtain actual data on the effect of distributary flow on the main channel of the Mississippi River, two locations on the Mississippi were selected for study. These were at Chute of Island No. 8, near Hickman, Kentucky, and Brandywine Chute, some twenty miles north of Memphis. Excellent survey and discharge data were available for these two locations for a period of about ten years, which provided important information upon which conclusions regarding diversion characteristics could be predicated.

While data derived from these field investigations are by no means conclusive in themselves, they do provide valuable contributions to the total knowledge of stream diversions.

In studying the various aspects of the problem with regard to the time at which diversion might occur, consideration was given to the rate at which the Atchafalaya River has been pushing through the deposits being dropped in the lower portion of the Atchafalaya Basin known as Grand Lake and Six-Mile Lake, just

north of Morgan City. It was estimated that if the downstream advancement of the river channel which occurred from 1916 to 1950 were continued, an efficient single river channel would be developed by 1985 or 1990. The existence of such a well-developed channel is considered to be an important consideration before the major flows of the Mississippi River will choose a new route to the Gulf.

Another element of time in this study has to do with the discharge capacity of the Atchafalaya River in its upper reaches in the vicinity of Simmesport. It has been found that at a stage of 40 feet at Simmesport the discharge of the river increased 60,000 cubic feet a second between 1892 and 1932, a period of 40 years. During the 18 years between 1932 and 1950, the discharge capacity at the same stage increased an additional 130,000 cubic feet a second.

If it is assumed that the discharge capacity at Simmesport will continue to accelerate in the future as in the past 18 years, a condition would be developed where by 1968 the major portion of the flow of the Mississippi River would have been seized by the Atchafalaya. However, it was pointed out in the engineering report of the Mississippi River Commission that, while it was reasonable to assume that an efficient channel to the Gulf might well be developed at a greater rate than that shown in the past, it was also reasonable to assume that the rate of acceleration of the upper river at Simmesport would not continue in the next 18 years at the same rate that had been observed in the last 18 years, due to a general flattening of the slope of the river in its leveed channel and the need for an efficient channel through the basin for moderate flood flows. In conclusion, the report indicated that the Atchafalaya River could well become the main or master stream below Old River somewhere between 1968 and 1985, probably around 1975. But this was not the full extent of the features of the study which bear on the element of time. The channel dimensions of the Atchafalaya River from its head to the end of the leveed portion of the river were studied in great detail and the rate of enlargement noted. The rate of enlargement of Old River itself was given considerable attention, as well as the changes in cross-sectional area of the Mississippi River itself above and below Old River. The changes in stage discharge relationship were studied intensively for all of the various river channels under consideration. The changes in slopes of the river surfaces and the deepening of the upper portions of the Atchafalaya into the easily erodible sands had a considerable bearing on the conclusions reached. And finally, the geology of the river basin and the previous and indicated

future changes of the river's pattern gave a general insight into the sequences in the phenomena of the river's flow.

We believe that when a distributary of the main river carries approximately 40 percent of the major river's flow the situation has reached a critical stage and the main river is in an uncertain condition as to its future course.

During time of project flood, 900 thousand c.f.s. are to enter the head of the Atchafalaya Basin, 650 thousand of which are to flow down the Atchafalaya River itself and 250 thousand of which are to flow down the West Atchafalaya Floodway. The remaining 600 thousand of the quantity to be diverted is to be carried down the Mississippi River about 20 river miles and diverted through the recently completed Morganza Floodway. All of the diverted flow—a total of one and one-half million c.f.s.—will meet at the lower end of the Atchafalaya River guide levees and will pass through the lower Atchafalaya Basin and disposed of in the Gulf of Mexico through two outlets.

For a flood control plan to function properly during time of major flood, it is vitally necessary that an efficient channel in the Atchafalaya River be developed; otherwise, the plan will not work. For that reason, any closing off of the Atchafalaya River from the Mississippi is out of the question.

In recent years the inland waterways system of the United States has assumed increasing importance in the national transportation network. The tonnage transported on the Mississippi River during 1952 was 77,584,000 tons; on the Gulf Intracoastal Waterway during the same period 42,198,000 tons were transported. Included in the commodities moved by water are such vitally important materials and products as petroleum, salt and sulphur, grain, bauxite, all types of chemicals, and others.

Some of this traffic now uses the Atchafalaya River except at low stages when the channel through the lower basin is too shallow except for vessels of light draft. Commerce on this stream and passing into the Mississippi River through Old River is increasing. The commodities moved by barge in this manner during 1951 and 1952 averaged 1,253,000 tons annually. Prospective traffic, including that estimated for the Overton-Red River Waterway, which is authorized for construction, is estimated to be about 3,626,000 tons annually.

It is evident that the very substantial requirements of navigation cannot be disregarded in any plan for control of flow at Old River.

Should uncontrolled diversion of the Mississippi River through the Atchafalaya be allowed to occur, the present channel of the

Mississippi between Old River and Baton Rouge would in time become filled with sand and silt. Eventually, no flow except that of floods exceeding bankfull elevations would pass down the leveed river. Even a gradual loss of lowwater flow down the present channel of the Mississippi in the near future would increase greatly the cost of maintenance of the navigation channel to Baton Rouge. The present large tonnage of barge traffic to and from the upper reaches of the Mississippi River system would have to be rerouted through the Old-Atchafalaya system and the Intracoastal waterway to New Orleans.

An alternative solution would be to construct a canal with a navigation lock for Old River to Baton Rouge. The initial cost of either solution would be very great, and maintenance would be costly.

Uncontrolled diversion at Old River would result in the present deep-water channel below Baton Rouge becoming a semi-tidal estuary without an adequate supply of fresh water for domestic and industrial use. Salt-water intrusion would be felt as far upstream as Baton Rouge. This consideration would probably have greater far-reaching effect on the industry and economy of the region than any other feature.

A very substantial investment in navigation structures would be lost, as the existing high-lift navigation locks at Harvey, Algiers, and the Industrial Canal in the vicinity of New Orleans would become unnecessary. In addition, slopes and velocities of the Mississippi, Red, and Ouchita Rivers above Old River would be increased, particularly at medium and lowwater stages, with adverse effects on navigation.

The usefulness of the costly Bonnet Carre and Morganza Control structures would be virtually eliminated, as flow passing below Old River would not exceed the present below-bank channel capacity of the Mississippi River at New Orleans.

The results of the uncontrolled diversion would not be restricted to the area below Old River. Equilibrium conditions now existing in the Mississippi River would be disturbed upstream probably beyond Vicksburg, and an increase in meander activity would probably occur. This would make obsolete a large part of the now effective bank stabilization works and would add a threat to the almost completed main line levee system. During the transition phase in development of the Atchafalaya, river navigation below Natchez would be very difficult due to increased velocities and meander.

The existing low-lift locks and navigation floodgates in the lower Atchafalaya basin would have to be reconstructed to provide

higher lifts made necessary by an increase in flood stages. The present Intracoastal Waterway would have to be radically modified or abandoned in this region. Reconstruction or abandonment of existing bridges, pipe lines, power and telephone lines and cables across the Atchafalaya River and Basin would be necessary as a result of the increased channel area of the Atchafalaya River and increased stages. Existing levees and some railroad and highway high-level crossings would have to be reconstructed to higher elevations. It should be borne in mind that raising of the levees to the new grades which would be required would be very difficult and costly, as weak foundation conditions are characteristic of this area and there is a lack of satisfactory material for embankment purposes.

It is evident that, should the Atchafalaya be permitted to capture the Mississippi, the effects will be far-reaching and will be of such vast consequence as to seriously and permanently alter the way of life of a large and prosperous region. The investments already made in this region are so great that it does not appear conceivable that the imminent diversion can be allowed to occur.

It is important to realize that the contemplated prevention of such diversion does not envision changing any existing condition, but is designed only to retain what now exists.

Any works constructed for the prevention of uncontrolled diversion must provide for the regulation of flows to satisfy the many exacting requirements in preservation of present conditions. It appears to be necessary, then, to provide permanent-type control structures so that flows may be regulated as required and so that maintenance of the desired water-sediment relationship may be assured.

Any plan for the control of flows at Old River will require the location of structures in Old River, in the Atchafalaya River, on the west bank of the Mississippi River above Old River, or at a combination of these locations. Regardless of the location, the structure or structures must be capable of passing the project flood flows in the amounts already specified in the existing flood control plan, they must prevent permanent capture of the Mississippi by the Atchafalaya, they must be flexible in operation in order to maintain the present distribution of flows of water and sediment as nearly as possible. The plan arrived at must provide for navigation, it must offer assurances of long life, and it must be reasonable in first cost and subsequent maintenance. The nature of the problem and its vital importance to the national economy require a safe and permanent solution.

If it is believed that the Atchafalaya River will continue to

enlarge and deepen downstream from any structure built within its banks. For this reason, the uncertainty involved in the protection of such structures from scour makes their construction in the Atchafalaya River proper undesirable.

Principal features of the recommended plan are two manually operated control structures located on the west bank of the Mississippi River about ten miles above Old River, an inflow channel from the Mississippi River to the low-sill structure, an outflow channel connecting the low-sill structure with Red River at a point about twelve miles above its mouth, a lock for navigation and the passage of very low flows connecting the Mississippi and Old Rivers, inflow and outflow channels for the lock, an earthen dam closing Old River, enlargement and extension of main line Mississippi River levees from Black Hawk to Torrass, and bank stabilization works as required in the Red and Atchafalaya Rivers between the outflow channel and the vicinity of Simmesport.

The inflow channel from the Mississippi River to the low-sill structure will be about one-half mile long and will have a bottom width of 1,000 feet at elevation minus 5.0 feet m.s.l. and 1-or-4 side slopes.

The outflow channel from the low-sill structure to Red River will be about seven miles long with a bottom width of 900 feet at elevation minus 8.0 feet m.s.l. near the structure sloping to minus 10.0 feet m.s.l. where it enters Red River. Side slopes will be 1-on-4. Under favorable tailwater conditions the outflow channel will have a capacity of 300,000 cubic feet a second at bankfull stage on the Mississippi River.

A navigation lock is to be located about one mile southwest of the mouth of Old River in a land cut between Old River and the existing south bank levee.

Final closure of the Old River channel will be made by a hydraulically constructed earth dam.

After favorable channel alignment has been obtained in the Red and Atchafalaya Rivers between the outflow channel and the vicinity of Simmesport, this reach will be stabilized by means of bank protection works.

About eight to ten years, with the most favorable conditions, are estimated to be required to construct this plan in an orderly, economical manner.

ENGINEERING BRIEFS

"Talking Dictionary" Also Translate Languages. A "talking dictionary" for which Leslie L. Erdos of New York City recently received patent 2,650,097, pronounces words audibly for the user and can be rigged to translate foreign languages into audible English.

The "talking dictionary" uses a group of flexible acetate belts with grooves cut in them. The grooves record the proper pronunciation of words which the user hears through a loudspeaker.

Printed words appearing under windows on the face of the device permit the user to select the word he wants pronounced. Then a pickup is lowered into the proper groove and the word comes through the loudspeaker.

The inventor points out that the dictionary can be rigged so that foreign words can be selected in the windows, but that their meanings are given in English or in another language.

—*Aminco Laboratory News.*

* * *

New Technique Evaluates Effectiveness of Drugs in Killing Fungus Infections. A new, accurate technique, said to be the first reliable test of the effectiveness of drugs in killing fungus infections, has been developed by Dr. J. E. Tarbet and Dr. T. H. Sternberg of the University of California at Los Angeles. This was reported at the annual meeting of the Mycological Society of America and the American Institute of Biological Sciences.

The technique not only indicates the fungicidal powers of the drugs but also suggests dosage levels necessary to combat the infection. The drug to be evaluated is injected into mice in various dosages. Then blood serum from the mice is seeded in test tubes with the infecting fungus. The rate of growth of the fungus in various serum cultures indicates the effectiveness and adequate dosage levels of the drug.

The need for effective fungicides has been accentuated in recent years. They are needed in combating such diseases as coccidioidomycosis, histoplasmosis, and actinomyces, and are in demand for treatment of fungus complications that sometimes follow antibacterial therapy. — *Aminco Laboratory News.*

* * *

Use of Earth Materials for Foundation and Construction Purposes Discussed in New Manual. A government-issued publication entitled "Earth Manual" combines pertinent material from the previously issued "Earth Materials Laboratory Test Procedures Man-

ual", "Field Manual for Rolled Earth Dams", and "Earth Materials Investigation Manual". To this has been added information on foundation investigations, and control of earth materials in canals and miscellaneous earth-works such as dikes, railroad and highway grades, and structure backfill.

The latest edition, 1952, 332 pages, covers both field and laboratory operations, and was prepared by engineers of the United States Bureau of Reclamation.

The "Earth Manual" is obtainable from the U. S. Department of Interior, Bureau of Reclamation, Field Supply Division, Code 841, Denver Field Center, Denver, Colo. Price, \$2.50 per copy.

—Aminco Laboratory News.

* * *

Freedom From Want. Supply for my creature needs and comforts is no problem in my life here in prison. Food for my body is of good quality and is plentiful. I wear a regulation white uniform, which is always clean and fresh. If I wish I may change my clothing every day. I am well-sheltered. My room is fairly large and airy. It is somewhat cluttered with an accumulation of many personal things which seem to add to my enjoyment. Economically speaking, the state is doing a good job looking after my wants.

I have no bills of any kind to pay. The barber comes over three times a week to look after my beard and hair. My laundry goes out and comes back with automatic regularity. If I become ill I'm assured of excellent medical attention. I am exempt from all forms of taxes, federal, state, local. I'm never called upon to contribute to worthy causes. I have no home and family responsibilities, worries, fears, anxieties. There are no civic or other obligations in my life.

It is the philosophic theory of Marx, Engels, and Dewey that economic security is the first and last law of life; that if you make the people economically secure you will have solved their major problems. National and international peace, say these philosophers, depends upon making the people free from the fear of want, hunger, and lack, being the oldest and greatest fear in the world. They also hold economic insecurity as the primary cause of crime, and that economic security is the cure of crime.

I know how false this theory is. I have perfect creature security here in prison. But man shall not live by bread alone. Poverty is not the cause of crime, nor is prosperity the cure of crime. There are no typical paupers confined in this institution. If I depended upon my bodily securities to heal my criminal personality, it would not be healed. My peace and life-gladness are not governed by the amount of food I put into my stomach or the brand of raiment I

drape over my frame. My airy room and good bed, in themselves, cannot give me a contented mind and a tranquil soul.

The reason is an obvious one, namely, that any mental contentment and tranquility of soul produced by worldly means alone puts an end to growth. Except for an active dissatisfaction, I should now be adapted to this prison environment, institutionalized, a helpless victim to state security. Such inmates we call *stir bums*. They are the *adapted* individuals. They are content, satisfied, arrested. It is not yielding to world security that builds character, redeems personality, and releases soul. The reverse is true.

—*The Foundation for Economic Education, Inc.*

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Progress on Federal Recognition of Licensure. One of NSPE's endeavors being to have the Civil Service Commission and federal agencies recognize registration as a basic requirement for holding an engineering position in the federal service, it is encouraging to note that two recent announcements of the Commission state that in evaluating qualifications of applicants for engineering positions, *consideration will be given to the fact that the applicant has obtained registration as a professional engineer, or engineer-in-training.* Membership in professional engineering and technical societies is also mentioned as an evidence of attainment, "as well as to writings, inventions, participation in public affairs, membership in and creative work for professional or scientific societies, and work cited by special honors and fellowships." In due course Congress may insert a *registration requirement for professional engineers* as it has done for lawyers. — *Legislative Bulletin of N.S.P.E.*

* * *

Appropriations Committee Considers Use of Consulting Engineers. Senator Styles Bridges of New Hampshire, chairman of the Senate Committee on Appropriations, has announced that he is studying the feasibility of *using independent engineering services* in the evaluation of federal construction projects before action is taken by the Appropriations Committee. The New Hampshire Senator said that a substantial portion of funds requested of the Congress are for construction and that the Committee has frequently been confronted with *large requests for funds with little engineering data and the Committee acted without the benefit of independent engineering advice.* He said that if the Committee and the Congress are to do a real job in the further reduction of expenditures a more thorough review of requests for funds covering construction projects must be made. — *Legislative Bulletin of N.S.P.E.*

Dealing In Futures. The United States will not be a "have-not" nation in 25 years, but it will have to get the most possible use from the materials it has. This was the conclusion of the Mid-Century Conference on Resources for the Future assembled recently in Washington under the auspices of a non-profit corporation financed by the Ford Foundation.

Nearly 1700 experts on the technical, economic, and social aspects of resources problems devoted three days to examining the natural resources position of the United States today and its future prospects. The Conference opened with a general meeting and panel discussion of a paper prepared by the Brookings Institution as a basic approach to general and specific problems, and continued in eight Section panels, with both papers and discussion. The panel meetings presented no schemes for definite action, but all emphasized the need for continued review of resources technology, greater support of research and education on fundamental problems, and increased cooperation between private industry and government, at all levels, in developing natural resources all over the world.

Land itself is a resource; competing demands arise from such diverse factors as increased urbanization on the one hand and a growing interest in wildlife on the other. Decentralization of cities may provide some additional parks and parking spaces in urban areas, but also requires highways cutting into wild lands. We now know far more about managing cultivated than undeveloped areas; to offset this and to provide watershed protection and recreational areas, the Conference proposes a nation-wide survey of coming demand for land resources.

One Section considered croplands especially. Need for food and non-wood fibers will increase 40 to 50 per cent in 25 years, but we can plant only about 10 per cent more land. The rest must come from greater productivity, achieved through research in soil conservation, use of fertilizer, and farming technology. Wood products pose special problems. Control of pests, forest genetics, and utilization of low-quality woods all need further research, although the past decade has seen conspicuous advances in forest management, wood utilization, and marketing, as the forest industries have shifted to reliance on second-growth rather than virgin timber.

Water Resources

Water, one of the best thing in life, but no longer free, came into the discussions in many Sections. Watersheds, large or small, were suggested as the most logical unit within which people should cooperate to conserve their natural resources. Upstream watershed operations not only reduce the danger of smaller-stream floods—where more than half the total U. S. flood damage occurs—but also

improve farm productivity, help protect downstream power installations, and reduce silting of river channels and reservoirs. Inadequate development of water resources could lead to extensive problems in pollution, hydroelectric power shortages, and short municipal water supplies.

The Section considering the non-fuel minerals urged Government provision of more adequate mapping, satisfactory tariffs, emergency stock-piling, and financial backing for developments in minerals technology. The Section concluded, however, that minerals development should be left to private initiative insofar as possible.

Best use of energy resources depends upon the accuracy of data on fuel reserves, fluctuations of the economy, and the possibility of substantial technological advance, especially in atomic energy. Atomic power will, the conferees expect, constitute at best a small fraction of the U. S. power total in 1975; by then, however, it may be an important factor in new construction. Still, there remain many problems of reactor design, and no time schedule set today can be realistic. The Conference also urged continued research on standard energy sources and on new ones, such as solar energy. Federal development of alternative fossil fuels — oil-shale especially — was noted favorably.

The concern of the United States with world resources, and ways of cooperation with other governments, occupied two Sections. Both studied various ways of supporting further research in resources, which was the full concern of still another Section. The Sections noted a need for increased research in biological fields to bring it into line with research in the physical sciences, and the generally poor correlation between scientific findings and social problems. The future of research as a whole depends upon highly qualified personnel, adequate communications, and integration of the knowledge accumulated from different areas. These factors influence, with equal force, the development of resources for the future. The Conference sponsor, Resources for the Future, Inc., hopes to carry on a continuing review of resources problems and to make research grants for their study.

—*Industrial Bulletin of Arthur D. Little, Inc.*

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Tape And TV. A recent demonstration of television from a magnetic recording may open a remarkable new era for an old invention. Like many other inventions, including television itself, magnetic recording is not a startling new discovery, but a combination of well-known principles with improved techniques.

The first application of the magnetic properties of iron that permit it to receive and retain fixed impressions was in sound reproduction. The earliest magnetic recording device was invented in 1898 and marketed in the United States in the early 1900's. In this invention and its successors, a wire or tape moves over two revolving drums and through the field of an electromagnet, which magnetizes the wire. When the exciting current flowing through the electromagnet is varied, a permanent record of the fluctuations is imposed on the wire as variations in its magnetic state. When this wire "record" is then passed between the poles of another electromagnet, the magnetic variations are changed back into electric impulses. In practice, a telephone transmitter may be used to vary the current in the recording electromagnet. The ensuing record can be reproduced when played back through a telephone receiver.

For modern sound reproduction, magnetized wire is largely replaced by plastic or paper tapes coated with an emulsion containing magnetic iron oxide. Such tape is easier to handle, can be edited simply, and permits closer spacing of the stored information without blurring. The magnetic impressions on tape, as on wire, can be "erased" and the tape used again, perhaps up to 25 times.

Magnetic recording of sound has the highest fidelity of any system thus far known, and the tapes can be played back many times without loss of quality. In this respect they are superior to wax or plastic records, whose grooves will wear out with time and which cannot escape some surface noise. On the other hand, the untouched magnetic tapes will deteriorate faster on the shelf than will the unplayed records; this is one of the current problems in research on tape recording.

Tape Speed Important

When recording sound on magnetic tape, the speed of the tape past the electromagnet is closely related to the frequency or pitch that can be recorded. In general, the higher the tape speed, the higher the frequency which can be reproduced. In conventional high-quality audio equipment, the tape speed is usually 15 inches per second, reproducing a band of frequencies of the order of 15,000 cycles per second. The higher the frequency, the more "information" is impressed on the tape; each bit of information is represented by a small magnetized area.

To record the vast amount of information presented on a television screen requires a bandwidth of four million cycles. Each dot on the viewing screen surface is a piece of information and must be translated into a magnetic impression on the tape; when, in addition, each dot may represent one of the primary colors, as in color

television, the four megacycle bandwidth, or one almost as good, must be recorded three times. For this, it is necessary to increase the tape speed and, to avoid handling astronomical quantities of tape, to record information on multiple channels which include a synchronizing signal to coordinate the successive pieces of information.

The recent color television recording and broadcast used five parallel recording channels on a single half-inch wide plastic tape, traveling at 360 inches per second. There is a channel for each of the three primary colors, one for the synchronizing signal, and one for sound. Each channel can handle up to three million cycles. For black-and-white television, the system would use two channels on quarter-inch tape. Reels 17 inches in diameter contain enough recorded information for five minutes of television program. In the future, closer spacing and other techniques may permit slowing tape travel to 240 inches per second, and a 15-minute program could be contained in a 19-inch reel, which would, however, contain three and a half miles of tape.

While the initial cost of tape is more than that of moving-picture film, the over-all cost is less, since film processing is eliminated and the tape can be erased and used again. One estimate is that eventually the tape cost for black-and-white TV will be 20 per cent that of film, and color tape about 10 per cent that of color film.

The quality of television broadcasts made from tape will probably also improve with time, but it has been reported that black-and-white tape-recorded shows are already up to present standards for commercial live broadcasts. The great quantities of tape which would be required for television recording hold obvious promise for the manufacturers, and imply that tape is well on the way to becoming one of the major media for communication of information.

—*Industrial Bulletin of Arthur D. Little, Inc.*

MINUTES OF THE MEETINGS AND BUSINESS OF THE SOCIETY

Minutes of Meeting of the Board of Direction Held on Monday,
November 9, 1953

The meeting was called to order by President Abraham with Messrs. Boudreaux, Gillen, Macdonald, McNiven, Nelson, Wallace and Fernandez present. Mr. C. C. Edwards of Alexandria presented a letter from President Hogge of the Alexandria Section stating that, due to illness, the latter was unable to be present and that Mr. Edwards would act in his stead. Mr. Ben T. Bogard, Chairman of the Society's Legislative Committee, also was present by invitation.

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

A report of the Committee on Honors and Awards was read, in which Messrs. Arthur J. Naquin and Alexis Voorhies Jr. were recommended to be the 1954 recipients of the Andrew M. Lockett Civic Activities Medal and the L.E.S. Technological Accomplishment Medal respectively. Mr. McNiven moved that the report be accepted and that these nominees be awarded the medals. Motion seconded by Mr. Macdonald and carried.

Discussion followed regarding a recipient for the Certificate of Appreciation. Mr. Wallace moved that Mr. Jeffrey H. Collins Sr. be awarded this honor for his work as Chairman of the Committee on Honors & Awards for the past three years, as well as for his outstanding work as Chairman of the Publications Committee in former years. Motion seconded by Mr. Nelson and carried.

Mr. Boudreaux moved that the state sections be empowered to present a similar certificate of appreciation if they see fit to do so. Motion seconded by Mr. Edwards and carried.

President Abraham presented two petitions requesting that honorary membership be granted to Mr. Bernard Stanley Nelson and Dr. Leo Jos. Lassalle. He reported that the Honorary Membership Committee, consisting of all former presidents of the society, had been polled and approved these awards by more than 80% affirmative vote in accordance with the constitution. Mr. McNiven moved that these two honorary memberships be granted, seconded by Mr. Macdonald and carried unanimously. (This is more than the 75% vote required by the constitution.)

President Abraham then read a letter from the Shreveport Section requesting that Mr. A. D. Jackson's name be added to the list of candidates submitted to the governor to fill the vacancy on the State Board of Registration for Professional Engineers and Land Surveyors caused by the resignation of Mr. J. J. Mundinger. After much discussion Mr. Gillen moved that the list submitted to the governor to fill this vacancy be revised to include Mr. Jackson's name, provided the governor has not already made the appointment. The motion was seconded by Mr. Boudreau and carried with five affirmative votes, four abstaining.

A letter from the Times Picayune Publishing Co. thanking the Society for its endorsement of their application to the Federal Communications Commission for permission to establish a television station in New Orleans, was read.

Mr. Nelson moved that Mr. Charles Sellers be reinstated to the grade of Junior Member in the society, seconded by Mr. Seago and carried.

The secretary reported that, through a misunderstanding, the speaker obtained by the A.I.Ch.E. for the October meeting had billed them for expenses incurred during his visit to New Orleans. In view of this, Mr. Nelson moved that the A.I.Ch.E. not be billed for their pro rata of refreshment costs for the meeting. Motion seconded by Mr. Wallace and carried.

The secretary announced that Mr. Gustave P. R. Magnel, one of the world's foremost authorities on pre-stressed concrete, would be in New Orleans on February 8 and Tulane University has requested that the L.E.S. hold a joint meeting with them to hear this speaker, which the board approved.

Mr. Nelson reported on plans for Engineers' Week, and requested that a joint meeting of L.E.S., A.S.C.E. and S.A.M.E. be held during that week. Mr. Seago moved that Mr. Nelson's committee be authorized to spend up to \$25.00 for expenses incurred in preparation for Engineers' Week, seconded by Mr. Edwards and carried.

Mr. Wallace moved that newly elected honorary members be presented with the society's emblem button in addition to the honorary membership certificate. Motion seconded by Mr. Gillen and carried.

Mr. Bogard reviewed the recommendations of the Legislative Committee regarding proposed changes in the Engineering Registration Act, following which the meeting adjourned in order that the society's regular meeting could open on schedule.

JOHN P. FERNANDEZ, Secretary-Treasurer

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Minutes of Meeting of the L.E.S. Held on Monday, November 9, 1953

The meeting was called to order with approximately 85 members and guests present. President Abraham welcomed members and guests present.

Reading of minutes of the preceding meeting was dispensed with. The secretary then read minutes of a meeting of the Board of Direction held on October 12, 1953 and those of the Louisiana Council of Engineers held on September 28. He then announced that the Nominating Committee, consisting of Messrs. J. A. McNiven, Chairman, Leo J. Lassalle and William H. Rhodes, would consider nominations for the society's officers for 1954 over a period of ten days following this meeting. Members were urged to suggest candidates to the committee.

Mr. B. M. Dornblatt then introduced the main speaker of the evening, Mr. A. D. Morrell, Chief, Engineering Division, Civil Defense Administration, Washington, D. C., who spoke on "The Engineering Aspects of Civil Defense". This was a most interesting, illustrated talk, followed by the usual question period. The meeting then adjourned with a rising vote of thanks to the speaker.

JOHN P. FERNANDEZ, Secretary-Treasurer

**Minutes of Meeting of the Board of Direction Held on Monday,
December 14, 1953**

The meeting was called to order by President Abraham with Messrs. Kelly, Macdonald, McNiven, Nelson, Seago, Wallace and Fernandez present. Mr. Macdonald moved that minutes of the preceding meeting be accepted as read, seconded by Mr. McNiven and carried.

President Abraham reported on plans being made by the committee in charge of Engineers' Week. Mr. McNiven, Chairman of the Nominating Committee, reported that his committee had met and agreed on the following candidates for officers of the Society for 1954:

For President, Frank W. Macdonald; for First Vice-President, R. Mallard Seago; for Second Vice-President, Wayne P. Wallace; for Secretary-Treasurer, John P. Fernandez; for Director for two years, Ernest M. Freeman; for Director for two years, Edward A. McLellan.

Mr. McNiven then moved that the Nominating Committee's report be accepted and presented to the general membership, seconded by Mr. Kelly and carried.

Mr. Seago gave a final report on the survey regarding section boundaries.

Letters from the Monroe and Shreveport Sections giving recommendations for the certificate of appreciation in their respective sections were read.

A letter from Dean Lassalle of L.S.U. was read, wherein he requested the L.E.S. to be co-sponsors of a conference on high-speed computing devices to be held at Baton Rouge January 28-30, 1954. Mr. Seago moved that the L.E.S. accept the invitation to sponsor this conference, seconded by Mr. Kelly and carried.

Mr. Macdonald moved that the resignations of Messrs. William F. Cummer, Melvin C. Williams, H. W. Fletcher and A. M. Scott be accepted with regret, seconded by Mr. Seago and carried.

Mr. Nelson moved that Messrs. Morley A. Hudson and Frank E. Reeves be dropped in accordance with their requests, seconded by Mr. Seago and carried.

Mr. Seago moved that Mr. Vincent L. Goodman be dropped for non-payment of dues, seconded by Mr. Kelly and carried.

Upon the recommendation of the board, President Abraham appointed Messrs. Claude Kelly and Charles M. Kerr to write an obituary for the late affiliate member, James P. Brodtmann.

Discussion followed regarding an increase in membership dues, after which President Abraham appointed the following committee to study the possibility of increasing the Society's revenue by this means:

W. Stone Leake, Chairman; E. M. Gillen, W. M. Davis, Louis Duclos, Tom C. David, H. M. James, T. A. Bonnet.

The president reported that while in Shreveport it was suggested to him that each section should have a sub-committee for each of the standing committees. He then appointed Mr. Wallace to investigate this idea.

It was announced that the next meeting would be the annual dinner for board members and state section officers, to be held at the Engineers' Club on Friday, January 8. The meeting then adjourned so that the Society's regular meeting could begin on schedule.

JOHN P. FERNANDEZ, Secretary-Treasurer

**Minutes of Meeting of the Louisiana Engineering Society
Held on Monday, December 14, 1953**

The meeting was called to order by President Abraham in the Jackson Room, St. Charles Hotel, with approximately 135 members and guests present. The president welcomed ladies, members, guests, and particularly the former presidents of the Society.

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The secretary read minutes of the preceding meeting which were accepted as read, after which he read minutes of a meeting of the Board of Direction held November 9.

Mr. Seago then addressed the gathering, honoring the society's former presidents, and a moment of silence was observed in memory of those now departed. Following this the former presidents in attendance were called to the rostrum to receive a rising round of applause.

Mr. McNiven, Chairman, Nominating Committee, then announced that the committee had met and recommended the following slate of officers for 1954, which had been approved by the Board of Direction:

For President, Frank W. Macdonald; for First Vice-President, R. Mallard Seago; for Second Vice-President, Wayne P. Wallace; for Secretary-Treasurer, John P. Fernandez; for Director for two years, Ernest M. Freeman; for Director for two years, Edward A. McLellan.

Mr. McNiven then moved that the slate be placed on the ballot, seconded by Mr. Grevemberg and carried.

Mr. Nelson then outlined plans under way for the observance of Engineers' Week, following which President Abraham introduced Mr. George Elmer May, who presented a most unusual, interesting and instructive motion picture produced by the Moody Institute of Science, entitled "Dust or Destiny".

The meeting then adjourned.

JOHN P. FERNANDEZ, Secretary-Treasurer

**Minutes of Meeting of the Louisiana Council of Engineers Held on Tuesday,
January 5, 1954 in Room 422 St. Charles Hotel**

The meeting was called to order by Chairman Michael C. Abraham with the following representatives present: Mr. Sargeant F. Jones, ASCE; Mr. Robert H. Grehan, APWA; Mr. Chas. M. Kerr, SAME; Mr. J. T. Ryan and Mr. Ben Z. Segall, AIEE; Mr. Henri J. Molaison and Dr. Francis M. Taylor, AICHE; Mr. R. M. Seago, LES; Mr. John T. Knight, ASRE; Mr. Walter Cooke, ASHVE; Mr. Harold A. Levey, SPE Inc.; Mr. Louis Duclos, La. Hwy. Ass'n.; Mr. Geo. A. Heft, Gulf Institute C. E.; Mr. Allen H. Jensen, ASME; John P. Fernandez, Secretary of Council; Mr. Frank W. Macdonald, State Bd. of Registration.

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

Mr. Heft reported that his committee on the study of methods and procedures for improvement of Delgado Trades School would not act until after the city elections.

Chairman Abraham then canvassed the council members present and was informed that all except ASCE had approved in general the proposed modifications to the existing Engineering Registration Act. Mr. Jones advised that ASCE would hold a meeting on January 6, at which the proposed changes would be taken up.

Mr. Duclos stated that his organization was interested primarily in the highway engineers and would like to secure minor changes in the act to clarify the intent of that part pertaining to public employees.

Mr. Seago explained the recommendations of the special committee, and Mr. Cooke moved that any action taken by the Council at this meeting should be unanimous. Motion seconded by Mr. Taylor and carried.

Mr. Cooke moved that the basic idea of the Engineer-in-Training clause be incorporated in the proposed revisions. Motion seconded by Mr. Knight and carried, with Mr. Grehan of APWA abstaining from vote.

Mr. Duclos stated that the discussion should be confined to the general principles desired and a special committee appointed afterwards to prepare the exact wording, and Mr. Knight expressed the opinion that the model law should be followed as closely as possible.

Mr. Heft moved that all applicants for Engineer-in-Training be required to take an examination in engineering fundamentals prior to the completion of the requisite number of years' experience. Motion seconded by Mr. Duclos and carried.

Mr. Molaison moved that the Council adopt the exact wording of the definition of Engineer-in-Training as stated in the model law. Motion seconded and carried unanimously.

Mr. Heft moved that, in principle, the "Requirements for Registration, Engineer, Graduation plus experience", should consist of : (a) Graduation in an approved engineering curriculum; (b) plus four years' experience; (c) character satisfactory to the board; (d) either prior Engineer-in-Training or examination in fundamental subjects; (e) oral examination as to practical experience. The motion was seconded by Mr. Duclos and after much discussion, particularly concerning the requirement of examination in fundamental engineering subjects, a vote was taken with all present assenting except Mr. Molaison, AICHE, and Mr. Jones. TSCE, with Mr. Grehan, APWA, abstaining. Mr. Molaison stated that were it unanimous he would have abstained from vote. Mr. Jones announced he could not agree until he had

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discussed the matter with his group. It was then decided that Messrs. Jones and Molaison would report that action to their respective societies and advise the council of their views.

Chairman Abraham then appointed Messrs. Heft, Knight, Segall and Macdonald to write the revision, incorporating the views of the AICHe and the ASCE. It was suggested that this revision should be submitted to the various societies before the Council's next meeting.

The meeting then adjourned.

JOHN P. FERNANDEZ, Secretary-Treasurer

Minutes of Annual Meeting of the L.E.S. Thursday, January 7, 1954

The meeting was called to order by President Abraham in the Claiborne Room, St. Charles Hotel, with approximately 90 members and guests present. Reverend James M. Gregory, Pastor, Napoleon Avenue Presbyterian Church, gave the invocation, after which the president welcomed those in attendance. A motion to dispense with reading of minutes was made, seconded and carried unanimously. President Abraham then asked the audience to rise and observe a moment of silence in memory of the late Erwin Hogge, President of the Alexandria Section, who passed away while in office. He then introduced other 1953 Section presidents:

Mr. Henry L. Landry, Baton Rouge; Mr. Felix J. Boudreaux, Lafayette Section; Mr. William M. Davis, Lake Charles Section; Mr. John T. Folk, Sr., Monroe Section; Mr. Ernest M. Gillen, Shreveport Section (absent).

President Abraham then introduced the key-note speaker, Mr. Lloyd J. Cobb, prominent local attorney and former president of International House, who gave a most interesting address on the subject "Engineering Internationalism". The audience acclaimed Mr. Cobb's address with a rising vote of thanks.

The secretary-treasurer then gave his annual report, after which three resolutions were introduced by Mr. R. M. Seago, Vice-President of the Society. These were duly seconded and carried, and copies were attached to these minutes.

Life Membership Certificates then were awarded to the following who have been active members of the Society for 30 years:

Mr. Lewis S. Alcus, (New Orleans); Mr. Joseph McC Gondran, (New Orleans); Mr. Walter Holloway, (Ocean Springs, Miss); Mr. John W. Montgomery, (New Orleans); Mr. Edward M. Naberschnig, Jr., (New Orleans); Mr. Leroy L. Newman, (New Orleans); Mr. William H. Rhodes, (New Orleans).

Mr. Jeffrey H. Collins, Sr., then was called to the rostrum and presented with a Certificate of Appreciation for his generous and untiring service to the Society over a period of years.

The president then announced that two Honorary Memberships had been awarded and called on Mr. Charles M. Kerr, who presented a Certificate of Honorary Membership to Mr. Bernard S. Nelson. He then requested Mr. Lionel J. Cucullu to present a similar certificate to Dr. Leo Joseph Lassalle.

Mr. John A. McNiven, Chairman of the Nominating Committee, then presented the tellers' report and requested the following gentlemen to escort the newly elected officers and board members to the rostrum:

Mr. C. Glenn Cappel, escorting Mr. Waldemar S. Nelson, incumbent Board Member.

Mr. William H. Rhodes, escorting Mr. Claude Kelly, incumbent Board Member.

Mr. Fred N. Billingsley, escorting Mr. Ernest M. Freeman, newly elected Board Member.

Mr. A. Lee Dunlap, escorting Mr. Edward A. McLellan, newly elected Board Member.

Mr. Lionel J. Cucullu, escorting Mr. John P. Fernandez, re-elected Secretary-Treasurer.

Dr. Leo J. Lasalle, escorting Dr. Wayne P. Wallace, Second Vice-President.

Mr. David W. Stewart, escorting Mr. R. Mallard Seagon, First-Vice-President.

Prof. Frederick H. Fox, escorting Mr. Frank W. Macdonald, President.

Retiring President Abraham then handed the gavel to President-Elect Macdonald, who made a brief acceptance speech. He then called on Mr. David Moodie, General Chairman of the 1954 Annual Meeting, who presented a token of appreciation to the retiring president.

President Macdonald then made several announcements concerning the program for the remainder of the day, and adjourned the meeting.

JOHN P. FERNANDEZ, Secretary-Treasurer

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Minutes of Annual Meeting of the Board of Direction with Officers and Representatives of State Sections Held on Friday, January 8, 1954 at Arnaud's Restaurant

The meeting was called to order by President Macdonald, with Messrs. Abraham, Barron, Daniels, Davis, Freeman, Germano, Hadra, Innes, Kelly, Landry, McLellan, McNiven, Moodie, Mayer, Nelson, Seago, Sorensen, Wallace and Fernandez present.

President Macdonald asked each one present to introduce himself, after which minutes of the 1953 meeting were read.

Mr. Abraham stated that his objective while in office was to obtain closer coordination among the sections and with that in mind the telephonic hook-up meeting had been held, which included most of the sections. He recommended that another such meeting be held and that the Shreveport Section be included. He also suggested that a special committee that had recommended salary ranges for engineers in state civil service should continue working on faculty salaries. He pointed out that the Alexandria Section had suffered great loss during the year through the serious illness of its founder and first President, Soule Butler, and the recent death of their 1953 president, Erwin Hogge, who passed away while in office.

Mr. Abraham announced that the Legislative Committee had made recommendations concerning changes in the Engineering Registration Law which should be followed up, and that the educational committee headed by Mr. Felix Alcus was on the verge of completing arrangements for the refresher courses and this committee, too, should continue its work.

President Macdonald then announced that he would ask each section representative to express his views on any matters he might wish to discuss, and to give particular consideration to the following subjects:

- (1) What can be done towards closer cooperation between sections and the parent society
- (2) A telephonic communication meeting
- (3) Financial status

Mr. Barron of Alexandria stated that his section had had a rough year but was optimistic for 1954; he believed joint meetings with other sections were advisable, and stated that his section is well situated geographically to hold joint meetings with other sections. He also would like to see another telephone meeting.

Mr. Innes of Baton Rouge stated his section's problem was getting older members to attend and participate actively in Society affairs. With this in mind, the section hopes to place an older member on its Executive Committee. He further stated that such an addition to the Executive Committee would require a constitutional amendment, which would be submitted to the board very shortly.

It was brought out that technical papers are more popular when the topics pertain to local problems and industry. Mr. Innes also suggested that the parent organization could reduce its mailing costs by canvassing the membership of sections to determine whether they wish to receive monthly meeting notices, since these notices are sometimes confused with local meetings.

Mr. Davis of Lake Charles reported that his section's problem was just the reverse; junior members did not attend meetings. We added that his opinion the March of Dimes effort by the Society was a good idea, and that joint meetings with the Alexandria and Lafayette Sections could be arranged.

Mr. McLellan moved that the president be authorized to visit any of the sections and that the Society pay his expenses so incurred; motion seconded by Mr. Kelly and carried. After further discussion Mr. McLellan moved that the budget committee include an item of \$500 for the president's traveling expenses for visiting state sections, and that when that amount is expended a special authorization be made. Motion seconded by Mr. Abraham and carried.

President Macdonald suggested that junior members be placed on committees, also that, in conducting a telephonic hook-up meeting the biographic introductions be read at each location before telephone connections are made.

Mr. Wallace moved to appoint a Finance Committee for 1954, consisting of Messrs. Seago, Chairman, Abraham and Fernandez. Motion seconded by Mr. Barron and carried.

Mr. Nelson moved that Professor A. M. Hill be appointed editor of the Proceedings for 1954, seconded by Mr. Wallace and carried.

Mr. Abraham moved that two signatures be required for signing checks and that any of the following officers be authorized to sign: Treasurer, President and Immediate Past President. Motion seconded by Mr. Nelson and carried.

Mr. Nelson moved that the President and Treasurer be authorized to enter the Society's safety deposit box. Motion seconded by Mr. Innes and carried.

Mr. Nelson moved that Professor R. A. Steinmayer be appointed to represent the Society at the New Orleans Chamber of Commerce. Motion seconded

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by Mr. Kelly and carried, after which it was recommended that each local section appoint a representative at the Chambers of Commerce of their respective cities.

Mr. Wallace moved that a vote of thanks be given to outgoing President Abraham for his pioneer spirit in introducing the telephone hookup meeting, and this was promptly executed.

Mr. Abraham called attention to the fact that engineering salaries had increased considerably during the years since the Society's annual dues were fixed, and that an increase in dues was in order. In discussing this subject it was believed that a nominal increase in dues would not be objectionable.

The meeting adjourned with a rising vote of thanks to Mr. Moodie, General Chairman of the 1954 Annual Meeting.

JOHN P. FERNANDEZ, Secretary-Treasurer

Minutes of Meeting, Baton Rouge Section Louisiana Engineering Society

Date: November 18, 1953. Time: 7:30 p. m.. Place: Gulf States Unilities Company Auditorium. Officers present: H. L. Landry, president; T. J. Innes, 1st Vice-President; Randall Meyer, Acting Sec'y.-Treasurer.

The meeting was called to order with 21 members and visitors present. On motion, the group dispensed with the reading of the minutes of the previous meeting. Mr. Landry appointed a nominating committee to consist of Messrs. Louis Duclos, Chairman; F. A. Hannaman, Jr., and Austin J. Mary, to nominate a slate of officers for 1954. Mr. Landry announced that Mr. R. B. Nerf had resigned as Secretary-Treasurer, because of being transferred away from Baton Rouge. Mr. Randall Meyer was appointed to act in the office for the remainder of the year.

Mr. Landry read a resolution from the East Baton Rouge City-Parish Planning Committee thanking the society for the services of Messrs. F. A. Hannaman, Jr., Louis Duclos, and W. C. Gaddy, Jr., in planning the future capital improvements program. Mr. Landry added the thanks of the society for these efforts. There being no further business, Mr. Landry turned the meeting over to Mr. Hannaman, who introduced Mr. C. E. Colvin, Chairman of the City-Parish Planning Commission. Mr. Colvin gave a timely and interesting talk on "The Proposal Capital Improvement."

The meeting adjourned at 9:00 p. m. and refreshments were served.

RANDALL MEYER, Acting Secretary-Treasurer

Minutes of Meeting of the Lafayette Section, LES, November 10, 1953

The November meeting was held at Poor Boys' Riverside Inn at 7:30 p. m. on November 10, 1953.

The evening was begun with a supper, after which the business meeting was called to order by President Felix Boudreaux.

Mr. R. M. Hetherwick moved that we dispense with the reading of the minutes of the October meeting. The motion was seconded by Mr. J. E. Jarman and carried.

Mr. L. C. Landry moved that the Lafayette Section send a get well card to Mr. J. O. Herpin. The motion was seconded by Mr. F. Consterdine and carried.

Mr. E. E. Guillot moved that the next meeting be a dinner meeting. The motion was seconded by Mr. F. Consterdine and carried.

President Felix Boudreaux introduced the speaker for the evening, Mr. T. Z. Green, Lafayette Manager of the Southern Bell Telephone Company. Mr. Green gave an interesting talk and film demonstration on "Inter-toll Electronic Telephonic and Key Pulse Dialing". After a discussion period the meeting was adjourned.

ALFRED W. SCHOEFFLER, Secretary-Treasurer

Minutes of Meeting of the Lafayette Section, LES, December 8, 1953

The December meeting was held at Poor Boy's Riverside Inn at 7:30 p. m. on December 8, 1953.

The evening was begun with a supper, after which the meeting was called to order by President Boudreaux.

Mr. F. Consterdine moved that we dispense with the reading of the minutes of the previous meeting. The motion was seconded by Mr. E. E. Guillot and carried.

Mr. E. E. Guillot moved that the next meeting be a dinner meeting. The motion was seconded by Mr. C. J. Russell and carried.

The meeting was turned over to Mr. F. Consterdine who introduced the guest speaker, Mr. Henry LeMieux, of the Raymond Concrete Pile Company.

Mr. LeMieux presented three interesting films pertaining to subsurface exploration for foundations, pre-stressed concrete piles, and cast-in-place piles. After a discussion period the meeting was adjourned.

ALFRED W. SCHOEFFLER, Secretary-Treasurer



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Minutes of Meeting of the Lafayette Section, LES, January 12, 1954

The January meeting of the Lafayette Section of the Louisiana Engineering Society was a dinner meeting and was held at 7:30 p. m. on January 12, at Poor Boy's Riverside Inn. The meeting was a joint meeting held in conjunction with the Lafayette Section of the Corrosion Engineers.

Following the supper the members of the Corrosion Engineers were asked by President Boudreaux to introduce themselves.

After the introduction period Mr. L. C. Landry moved that we dispense with the reading of the minutes of the December meeting. The motion was seconded by Mr. J. R. Gaugler and carried.

Mr. F. Consterdine moved that the next meeting be a dinner meeting. The motion was seconded by Mr. L. C. Landry and carried.

There being no old or new business to discuss, President Boudreaux introduced the guest speaker of the evening, Col. C. T. Tench, District Engineer of the New Orleans District of the Corps of Engineers.

Colonel Tench gave an interesting talk and film demonstration on "The Old River Diversion". After a discussion period the meeting was adjourned with a rising round of applause from the audience.

ALFRED W. SCHOEFFLER, Secretary-Treasurer

Minutes of Meeting of the Lafayette Section, LES, February 9, 1954

The February meeting was held at Poor Boy's Riverside Inn at 7:30 p. m. on February 9, 1954.

The evening was begun with a supper, after which the business meeting was called to order by President Boudreaux.

Mr. H. R. Mason moved that we dispense with the reading of the minutes of the January meeting. The motion was seconded by Mr. J. E. Jarman and carried.

The participation of the Lafayette Section of the Louisiana Engineering Society in the March of Dimes was discussed. Also discussed was the possibility of having a tri-section meeting.

The meeting was turned over to Mr. H. R. Mason who introduced the speaker of the evening, Mr. Roy T. Sessums, Director of the State Department of Public Works.

Mr. Sessums gave a very interesting talk pertaining to the functions of the State Department of Public Works.

Following Mr. Sessums' address, Mr. H. R. Mason thanked the speaker in behalf of the Society.

Mr. Sessums announced that February 21-27 would be proclaimed Engineers Week.

After the announcement by Mr. Sessums, President Boudreaux resumed the chair.

Mr. F. Consterdine moved that the next meeting be a dinner meeting. The motion was seconded by Mr. L. C. Landry and carried.

There being no further business to discuss, Mr. L. C. Landry moved that the meeting be adjourned. The motion was seconded by Mr. J. E. Jarman and carried.

ALFRED W. SCHOEFFLER, Secretary-Treasurer

**Minutes of Annual Meeting of the Lake Charles Section
Louisiana Engineering Society, September 28, 1953**

The meeting was called to order in the cafeteria building of Mathieson Chemical Corp. at 7:30 p. m. by W. M. Davis. Forty-five members and guests were present.

Due to a full program it was suggested that the reading of the minutes of the previous meeting be dispensed with. By unanimous vote this was agreed to.

No old business was brought up when requested. Under the heading of new business Ray Burgess was appointed to the nominating committee to replace C. R. McBride, Jr. who was elected Secretary at the previous meeting.

The distinguished guests were introduced, George Shelly of New Orleans, Sheriff Reed, three reserve officers, members of AICHE, AIEE and other visitors.

Mr. C. C. Hightower, Production Manager of Mathieson, welcomed the group.

Mr. J. A. Leithead was introduced as the C. D. director of Calcasieu and the program was turned over to him. He then introduced the speakers who spoke as follows:

Mr. Elmer Shutts—Civil Defense Engineering Services

Dr. V. F. Christmas—Bacteriological Warfare

Mr. Fred Selby—The Responsibility of Civil Defense.

Films were shown between talks entitled: "Effect of An A-Bomb", "School for Survival", and "Medical Aspects of Nuclear Reaction".

Minutes were read in the November meeting and were approved as read.

The meeting was adjourned at 10:30 p. m.

C. R. McBRIDE, JR., Secretary-Treasurer

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Minutes of Meeting of the Monroe Section LES, December 1, 1953

The Monroe Section of the Louisiana Engineering Society met in the Cameo Room of the Virginia Hotel, Monroe, Louisiana, December 1, 1953. The meeting was called to order by the President, J. T. Folk at 7:30 p. m.

After the guests were introduced the minutes of the September meeting were read by the Secretary, with one correction they were approved as read. The Secretary then gave a financial report for the year 1953 and read a letter relative to the meeting to be held in New Orleans in January. An advance copy of the program for this meeting was also presented for all present to see.

Announcements were made relative to awards made by the Society during 1953. At this time it was voted that Dean Ben T. Bogard should receive the Certificate of Appreciation Award for outstanding service in Engineering.

A short discussion was held regarding assessment of local dues for new members and it was voted "A newly elected member or a member transferred from one grade to another shall be charged with dues beginning with the quarter following his election".

The meeting was then turned over to Mr. H. M. James, Program Chairman, who introduced Mr. Walter W. Kellogg with the Kellogg Lumber Company, Inc. Mr. Kellogg gave a very interesting talk on the "Hardwood Lumber Industry in the South", and also presented a film on this subject.

Mr. A. P. Andrews, Chairman of the Nominating Committee, presented the following nominees for officers for the coming year: President, Mr. Sidney S. Gill; 1st Vice-President, Mr. J. J. Thigpen; 2nd Vice-President, Mr. A. A. Braddock; Secretary-Treasurer, Mr. Farrell W. Adams. There being no other nominees these were unanimously elected.

There being no further business the meeting was adjourned for the refreshment and fellowship portion of the meeting.

**Minutes of the Meeting of the Shreveport Section of the LES
held September 1, 1953 (Corrected)**

The meeting was held in the Hostess Room of the Continental Banking Company, Inc., and was called to order by President Gillen at 07:00 p. m.

Secretary Snyder read the minutes of the last two (2) meetings which were approved as read.

Treasurer Snyder gave a report on the finances of the Society.

President Gillen appointed the following persons to comprise the Nominating Committee to nominate candidates for offices to be elected at the December, 1953, meeting: Robin M. Hood, Chairman; Henry N. Brown, Winfield W. Alsup, Val A. Lyons, and A. J. Shoup.

President Gillen appointed the following persons to comprise the Barbecue Committee to arrange for the annual barbecue and shrimp boil to be held at the Caddo Parish Police Jury camp at a time to be arranged later: John L. Iles, Chairman; John H. Ellis, R. C. Oliver, and Millard P. Snyder.

Mr. Jeff Dykes discussed the programs, past, present, and future, then showed us the movie, "The American Road." It was enjoyed by all present.

After those in attendance had partaken of light refreshments the meeting was adjourned.

MILLARD P. SNYDER, Secretary-Treasurer

**Minutes of the Meeting of the Shreveport Section of the LES
Held December 1, 1953**

The meeting was called to order by President Gillen at 07:00 p. m. in the Lake Room of the Captain Shreve Hotel. We were privileged to have as our guests Mr. Michael C. Abrahm, President of the Louisiana Engineering Society; Mr. John P. Fernandez, Secretary-Treasurer of the Louisiana Engineering Society; Mr. H. L. Lehmann, Past-President of the Louisiana Engineering Society; and Messrs. Vaughn and Beatty, past and future members, respectively, of our local Section.

Secretary Snyder read the minutes of the last two (2) meetings which were corrected and then approved.

Treasurer Snyder gave a report on the finances of the Society.

Mr. Dykes moved that the Society absorb from the treasury whatever additional expense incurred in connection with this meeting over and above that collected from the members present be paid out of the Society's funds on hand. This motion was seconded and unanimously carried.

Secretary Snyder read a letter from Mr. Mason Guillory concerning the forthcoming annual meeting of the Louisiana Engineering Society in New Orleans on 7, 8, & 9, January 1954.

Secretary Snyder read the report of the Nominating Committee as regards officers for 1954. Mr. Freeman moved that it be accepted. Mr. Ellis seconded the motion and it was unanimously carried. The officers are: Carl M. Hadra, President; O. J. Dykes, Jr., 1st Vice-President; C. W. Sorensen, 2nd Vice-President; and Millard P. Snyder, Secretary-Treasurer.

Mr. Freeman moved that fifty dollars (\$50.00) be appropriated from the Society's funds to aid Mr. Soule Butler, a member of the Alexandria Section

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who has been seriously ill for an extended period of time, and that post cards be sent to the members of the Society soliciting voluntary contributions for Mr. Butler's aid, also that those present who wished to do so contribute to this fund at the end of the meeting. Mr. Sorensen seconded the motion which was unanimously carried.

Mr. Dykes introduced Mr. Fernandez, who discussed the structure of the Louisiana Engineering Society and spoke about an appreciation certificate which the Society awards.

Mr. Dykes then introduced President Abrahm, who discussed engineers at three levels, local, state, and national.

Both speeches were thoroughly enjoyed by all present.

Mr Fernandez read a letter concerning the Louisiana Industrial Development Conference inviting all engineers to attend it at Pleasant Hall, Louisiana State University, in Baton Rouge on 15-16 December 1953.

President Gillen introduced Mr. Lehmann who discussed the forthcoming March of Dimes drive from 1-31 January 1954 and the participation therein of the Louisiana Engineering Society. Previously the Executive Committee of the local Section had approved our participation therein.

President Gillen introduced our first President, Mr. Freeman, who said a few words. After that Messrs. Vaughn and Beatty were introduced.

There being no further business the meeting was adjourned.

MILLARD P. SNYDER, Secretary-Treasurer

**Minutes of the Meeting of the Shreveport Section of the LES
Held January 4, 1954**

The meeting was called to order by retiring President Gillen at 7:00 p. m. in Brocato's Italian Restaurant. We were privileged to have as our guest speaker Mr. James C. Gardner, State Representative from Caddo Parish.

Secretary Snyder read the minutes of the last meeting which were approved as read.

Treasurer Snyder reported that the treasury contained \$159.83 and that the Soule Butler fund totaled \$176.41 net plus a late contribution of \$10.00 which was turned over to Mr. Butler without going through the treasury.

Mr. Wheless moved that the treasury absorb any expenses incurred at this meeting in excess of revenue from it. Mr. Dykes seconded the motion which was unanimously carried. The extra expenses amounted to \$17.60.

Secretary Snyder read a letter from Mr. Lehmann concerning the March of Dimes campaign and another from Mr. Wade O. Martin, Jr., Secretary of State, concerning appointments to State Boards.

Mr. Roeger moved that \$60.00 be taken from the treasury and given to our official delegate to the State convention at New Orleans. Mr. Fitzgerald seconded the motion which was carried unanimously.

After expressing appreciation for his term in office retiring President Gillen turned the meeting over to Mr. Hadra, our 1954 president, who introduced Messrs. Dykes and Sorensen, 1st and 2nd Vice-President, respectively, for 1954, then discussed plans and appointed committees for the forthcoming year. The committees are:

Executive: 1954 officers plus past-presidents Gillen and Roeger.

Charter and Rules: Val A. Lyons, chairman; Foster and Angler.

Entertainment and Program: Segall, chairman; Marsalis and Hood.

Publicity: W. E. Fitzgerald, chairman; McLemore and Dykes.

Membership: Grant, chairman; Ferguson and Iles.

March of Dimes: Sorensen.

Nominating: To be announced later.

Mr. Dykes introduced Rep. Gardner, who gave a most interesting talk about the state of the State (of Louisiana), which concerned its finances.

All the business having been taken care of the meeting was adjourned.

MILLARD P. SNYDER, Secretary-Treasurer

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FINANCIAL REPORT OF THE SECRETARY-TREASURER FOR 1953

INCOME:

Advertising	\$ 821.73
Annual Meeting	2,628.50
Annual Outing	748.80
Certificates	56.00
Dividends	262.00*
Dues	8,700.70
Monthly Meetings	275.72
Proceedings, Sale of	2.00
Miscellaneous	15.16

Total \$13,510.61

EXPENDITURES:

Advertising Rebates	\$ 66.00
Annual Meeting	2,734.16
Annual Outing	918.17
Dues Rebates	1,435.50
Floral Offerings	41.20
Library Service	48.00
Miscellaneous, Large	581.29
Miscellaneous, Small	66.49
Monthly Meetings	800.67
Office Supplies	93.04
Proceedings, Printing	1,970.80
Proceedings, Editing	300.00
Salaries	2,400.00
Stationery, Printing and Postage	1,135.92
Taxes	39.75

Total 12,630.99

Operating Increase for 1953 \$ 879.62

CAPITAL ACCOUNT:

Lapel Emblems Purchased	\$ 847.59
Less amount sold to date	147.50
Inventory value of emblems on hand	\$ 700.09

STATEMENT OF ASSETS

December 31, 1953

Cash, Whitney National Bank Checking Account \$ 3,750.80

U. S. Savings Bonds, Series F:

1942	\$ 962.00
1943	945.00
1945	887.00
1946	861.00
1950	1,534.00

Total 5,189.00

Homestead Investments:

Columbia Homestead Association	\$ 374.60
Commonwealth Building & Loan Association	306.72
Greater New Orleans Homestead Association	1,861.26
Security Building & Loan Association	500.00
Sixth District Building & Loan Association	500.00
Union Savings & Loan Association	500.00

Total 4,042.58

Emblems on hand 700.09

Total Liquid Assets December 31, 1953 \$13,682.47

Total Liquid Assets January 1, 1953 12,802.85

Increase during the Year \$ 879.62

* Includes \$199 increase in book value.

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1953 MEMBERSHIP REPORT

GAINS:

Elected:

Members	48	
Affiliates	3	
Juniors	45	96

Reinstated:

Members	1	
Juniors	4	5

Total Gains 101

LOSSES:

Life Member (deceased) 1

Members:

Deceased	2	
Resigned	5	
Dropped	30	37

Affiliates:

Deceased	1	
Resigned	4	
Dropped	2	7

Juniors:

Resigned	4	
Dropped	30	34

Student Member (dropped) 1

Total Losses 80

Net Gain 21

TRANSFERS:

Life Member to Honorary Member	1
Member to Honorary Member	1
Member to Life Member	7
Junior to Member	6
Junior to Affiliate	1

SUMMARY:

Charter Member	1
Honorary	9
Life	68
Members	955
Affiliates	67
Juniors	390

1,490

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Greensboro, N. C.

PROCEEDINGS

OF THE

LOUISIANA ENGINEERING SOCIETY

Vol. 40

JUNE, 1954

No. 2

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A Message From Our President. At the mid-year, it is my pleasure to report that the Board of Direction has been very active in administering the affairs of the Society. Several meetings of the Louisiana Council of Engineers were held to discuss the possibility of submitting to the Louisiana State Legislature amendments to the engineer's registration law (Act 73 of 1950). After considerable study and discussion, it was agreed that no action would be proposed this year. It was the feeling of the Council that the engineering groups should first agree on the minimum changes that are needed to bring the law up to the standards in other States, and that these proposed changes should be discussed thoroughly with the engineers throughout the State so that organized support could be given to the amendments in the 1956 session of the legislature.

A concerted effort has been made to increase the membership of the Society. The Secretary reports that many new applications have been received, particularly from the Baton Rouge area. Your cooperation in continuing this drive will be appreciated.

At the request of many of our members throughout the State, a questionnaire was sent out to determine the feeling of the members in having an Annual Meeting in Baton Rouge. The re-

ports of this ballot indicated that the majority would like to have a meeting in this city. Accordingly, plans are being made for holding the 1956 meeting in Baton Rouge.

It is my intention to endeavor to visit the Sections of the State during the summer. The demands of my position have prevented me from doing this up to the present time, but I am looking forward to meeting with the Sections in the very near future.

FRANK W. MACDONALD

Our Annual Outing. On Thursday, July 15, 1954 the annual outing will be the order of the day. Golf, horseshoes and barbecue supper have been arranged. There will be the usual form of entertainment during the evening. Various prizes will be awarded. Golf and horseshoes will start early in the afternoon.

Sidney Ellis is general chairman; John Rebold, vice-chairman. Plan now to take part in this event at the Colonial Country Club. Golf: Ben Lockett, Jr., Chairman, Felix Alcus, Henry G. Armatis.

Entertainment: Bernard Louviere, Chairman, Don Schell, Allan Harris.

Refreshments: Harold Norman Ford, Chairman, Ronald Cressy, Fred Baehr, Jr.

Prizes: Roy Cappel, Chairman, Ray P. Bassich, Joe Riorda, R. Nelson Crews, Tom Fromherz, Robert H. Grehan, W. Horace Williams, Jr.

Horseshoes: James Janssen, Chairman, Ole K. Olsen, Honorary Chairman, Claude J. Kelly, Louis Duclos.

Supper: Clifford King, Chairman, S. Kenan Manson, John H. F. Webert.

Publicity: Edgar Pavia, Chairman, Walter F. Plauche, Curtis F. Hawley.

Erata. In our March issue, the Committee for Engineers' Week was incomplete. The correct list is: Waldemar S. Nelson, Co-Chairman; William J. Drawe, Jr., Co-Chairman; Michael C. Abraham, Ellis L. Begnaud, Leo L. Holzenthal, Charles P. Knost, Joseph R. Mooney, Roy T. Sessums, Lucien T. Vivien, Jr.

**OBITUARY OF
JOHN ALEXANDER McNIVEN
Died January 18, 1954**

On January 18, 1954, John Alexander McNiven, the son of Effir McCollum and Angus McNiven, died in the City of New Orleans, La.

Mr. McNiven was born on Monday, March 6, 1887 in Putnam, Ontario, Canada, of Scottish parentage. He came to the United States in the year 1916, and on June 10, 1925 was naturalized.

Before attaining his American citizenship, he practiced Engineering in the Dominion of Canada, and was employed there in the design and construction of Grain Elevators, by the C. D. Howe Company, of Port Arthur, Canada. He later was associated with the firm of Barnett and Record of Port William, Ontario, Canada.

He continued in the practice of his profession after his entry into the United States in 1916, and was associated with the firms of James Stewart and Company of Chicago, Illinois; Ford-Bacon and Davis of New Orleans, Louisiana; and with Janse-Brothers-Boomer-Crane and Howe, as Construction Engineer on the first Grain Elevator erected by the Board of Commissioners of the Port of New Orleans, La.

Mr. McNiven entered into the employment of the Board of Commissioners of the Port of New Orleans on October 16, 1917, as Assistant Engineer, and as Special Engineer in the design and construction of the annex to the original Elevator extension, and was later closely associated with the planning and building of the seven million dollar addition, which was dedicated on November 30, 1953.

He left the Dock Board in 1918 and 1919, and became associated with the United States Government as assistant to the Commanding Officer of the New Orleans Army Supply Base. In October, 1920, he was again employed by the Dock Board, with the title of Assistant Engineer, was promoted to Principal Assistant Engineer in 1925, and to Chief Engineer in November 1925, which position he held until the date of his death.

Mr. McNiven specialized in the design and construction of Grain Elevators, and gained an International reputation in this field of endeavor. His duties as Chief Engineer of the Dock Board, in the development of the Port, called for a wide experience and keen executive ability. He was deeply interested in his profession, and as a Member of the American Society of Civil Engineers, served as President of the Louisiana Local Section in 1941, and as a member of the Louisiana Engineering Society, served as its president in 1952. He was interested in the activities of the Student Chapter of the American Society of Civil Engineers at Tulane University, and in his association with them, was able to be of great help. He was a member of the Scottish Society of New Orleans; of the Engineers Club of New Orleans; of the American Wood Preservers' Association; of the American Society of Testing Materials; of the International House; of the Propellor Club of the United States; of the Chamber of Commerce of the New Orleans Area; of the American Association of Port Authorities; of the Traffic Club; of the National Defense Transportation Association; of the Permanent International Association Navigation Congress; and of the American Public Works Association. He was a Member of the Perfect Union Lodge No. 1—F.A.M.—the first Masonic Lodge established in Louisiana.

As was said of Sir Christopher Dren, can be truthfully said of John McNiven, "For his monuments look around." These monuments are numerous, and his career so fully exemplifies the fact that ability, faith and Christian conduct not only lead to worthwhile and responsible positions but to a full and satisfactory life for the individual himself.

Mr. McNiven is survived by his wife, the former Ella Linton Mahaffy, a son James A. McNiven, and a daughter, Mrs. F. Bruce Avery.

DONALD DERICKSON, Chairman

HORACE E. CRUMP

CHARLES M. KERR.

* * *

OBITUARY OF

DOUGLAS SMITH ANDERSON

The death on March 2, 1954, of Douglas Smith Anderson, at the age of 82, left a feeling of regret in the hearts of his associates and students; regret that to all men the inevitable must come—and in hearts that always found him a loyal and true gentleman under all circumstances.

Teacher, administrator, or just "one of the boys", the place left vacant after a long and fruitful career in Louisiana Engineering Society affairs will be difficult to fill. Past President and Honorary Member—"Doug" as much as any man contributed to the development, to the stature, to the standing of the Engineering Profession; not only in local circles, but national as well.

Son of John Randolph and Martha (Heiskell) Anderson, born in Lexington, Virginia, September 6, 1871, he earned the A. B. Degree from Tulane University in 1892. Washington and Lee conferred upon him the D. Sc. (Honorary) in 1933; and Tulane the LL.D. in 1937.

He became associated with the Physics Department at Tulane University as an instructor in 1892, progressing through the positions of Assistant Professor of Physics and Assistant Professor of Physics and Electrical Engineering to Associate Professor of Physics and Electrical Engineering, 1898-1900. The school year 1900-1901 was spent as Professor of Electrical Engineering at the University of Mississippi. He returned to Tulane as Associate Professor of Electrical Engineering, 1901-1906. Taking a year's leave of absence, 1906-1907, he did special work in electricity and magnetism at the Polytechnic School of Zurich. He again returned to Tulane in 1907 as Professor of Electrical Engineering, which position he retained until his retirement.

As Director of War Training School for Radio Operators at Tulane University during World War I, he made a major contribution to our national effort in that war.

Serving as Dean, College of Engineering, Tulane University from 1919-36, he was also Acting President of the University in 1935-36, earning a much deserved retirement on August 31, 1936, after 44 years of service to the University. Upon his retirement he was made Professor Emeritus of Electrical Engineering and Dean Emeritus of the College of Engineering.

Fellow of American Association for the Advancement of Science, member of the New Orleans Academy of Sciences, and of the American Institute of Electrical Engineers, Douglas Smith Anderson was President of the Society for the Promotion of Engineering Education in 1936.

He was a member of the Honorary Fraternities: Sigma Phi Delta, Omicron Delta Kappa, Kappa Delta Phi, Phi Beta Kappa and Tau Beta Pi.

His first wife, Miss Harriet Stetson Mason, of New Orleans, died in 1940, and in 1942 he married Mrs. Marjorie Harrison Imrie of New York, who survives him.

After retirement, Dr. Anderson moved to Ogunquit, Maine, but for a few years spent each winter in Mandeville, La., or on the Mississippi Gulf Coast.

Failing health prevented his travel in his last years. Thereafter, to the regret of his Southern friends, he spent his summers in Maine and his winters in New York City.

Dr. Anderson held the respect and admiration of all who knew him. His intelligence, ability and judgment always graciously shared with whomever he came in contact, were the guiding principles in character formation for many of his students. He will be missed amongst us. The Louisiana Engineering Society is greatly indebted to the memory of Douglas Smith Anderson.

D. DERICKSON
A. L. DUNLAP
J. P. FERNANDEZ
F. H. FOX
C. M. KERR
O. K. OLSEN
C. W. RICKER
J. M. ROBERT
JAMES M. TODD, Chairman

* * *

OBITUARY OF TRAVIS F. CASH

On Saturday, February 13, 1954, Travis F. Cash died in a Shreveport hospital after an illness of several weeks. Funeral services were conducted on Sunday, February 14, 1954, by the Reverend W. L. McLeod, Pastor of the First Presbyterian Church, assisted by Reverend J. Lawrence Plumley, Rector of St. Mark's Episcopal Church, and interment was in Forest Park Cemetery in Shreveport.

He was a long-time employee of United Gas, having joined a predecessor company at Houston, Texas in 1928. He moved to Shreveport in 1942 when he was promoted to the position of engineer, which he held at the time of his death.

He was born at Dallas, Texas and received his early education there and at Mineral Wells, Texas. He was a graduate in civil engineering of the University of Oklahoma; was a Registered professional Engineer in the State of Texas; and a charter member of the Shreveport Section of the Louisiana Engineering Society.

He is survived by his widow, the former Miss Kamita May Pyles of Oklahoma City; a sister, Mrs. T. W. Reed of New Orleans; and a brother, Lee E. Cash of Dallas.

The death of Travis Cash is felt with deep regret by his many friends in Shreveport and Houston and especially by the members of the Louisiana Engineering Society who will miss his regular attendance at their meetings.

J. P. McCULLOUGH
EDWARD C. GRECO

New Members. The following have been elected on the Mrch ballot. We welcome them, and trust that they will be active in the affairs of the Society.

For Member

THELBERT C. BEASLEY, Ruston; age 45. Endorsed: B. T. Bogard, J. T. Folk, R. A. Smith. La. Polytechnic Institute, B.S.M.E., 1932. Atlantic, Gulf & Pacific Dredging Co., Civil Engr., 1933-34. Soil Conservation Service USDA, Soil Scientist, 1935-45. Ruston Brick Works, Owner-operator, 1946-54. Mayor, City of Ruston, 1953 to date.

ERNEST A. BURGUIERES, JR., New Orleans; age 36. Endorsed: J. S. Burke, J. T. Knight, Jr., C. M. Rogers. University of Santa Clara, Civil Eng., 1935-37. Tulane University, summer survey course, 1937. Various Naval Training Schools during 6 years service. Member Delta Chapter, ASHVE. Registered M.E., La. City of Santa Clara, Asst. to City Engineer, 1937. Engineering course for Ensign, USNR, 1940. USS Cassin, Asst. Eng. Officer, 1941. In command of own ships, 1942-46. Honduras Machinery Co., Manager, 1947. Ernest Engineering Co., Inc., President, 1948-date. Ernest Burguières & Cia, Ltda., Managua, Nicaragua, presently serving as General Manager, air conditioning of several large projects including new U.S. Embassy Building.

PRUDENT B. CAMBRE, Lafayette; age 44. Endorsed: R. J. Cambre, J. R. Gaugler, J. E. Reed. La. State University, B.S.M.E., 1932; M.S.M.E., 1934. Registered P.E. Tex The Texas Pipe Line Co. 1934-date, now Division Manager, East Texas-La. Div.

WALTER COOKE, New Orleans; age 59. Endorsed: M. C. Abrahm, G. E. May, J. M. Todd. Tulane University, B.E. in M & E, 1917. Member A.S.R.E., A.S.H.V.E. Registered M.E., E.E., La. No. 2033. A. M. Lockett & Co., Ltd., Estimator, 1917-18 U.S. Army, 1918-19. A. M. Lockett & Co., Sales Engr., 1919-21. Celotex Corp., Chief Draftsman, 1922-24. A. M. Lockett & Co., Sales Engr., 1924-28; Dept. Mgr. & Asst. to Vice-Pres., 1928-33. Manufacturer's Representative, 1933-date.

HILTON I. COTTEN, JR., Port Sulphur; age 29. Endorsed: V. H. Brogdon, D. A. Brooks, W. N. Tuller. Merchant Marine Cadet Corps, Marine Eng., 1943-45, 35 cr. hrs. University of Florida, B.S. (Chemistry) 1948; B.Ch.E., 1950; Asst. Dean of Students, Part-time, 1942-50. Delta Petroleum Co., N. O., Head of Laboratory, 1948-49. International Paper Co., Chemical Engineering Trainee, 1950-51. Freeport Sulphur Co., Chemical Engr., Jan. 1952-date.

STANLEY G. DINKEL, New Orleans; age 33. Endorsed: W. S. Leake, A. J. Lehman, H. Schaeffer. Tulane University, B.E.E., 1942. Associate Member A.I.E.E., Life Member Tau Beta Pi. Registered E.E., La., Miss. General Electric Co., 1942-date, now Manager of Eng., N. O. Office. Tulane University, Part-time instructor, electrical lab courses, 1945-46.

RUSSELL N. ELLIOT, Lafayette; age 33. Endorsed: W. R. Hollier, H. R. Mason, J. R. Troxler. Southwestern La. Institute, B.S.E.E., 1943. University of Ill., E.E., 1946-47 Humble Oil & Ref Co., Jr Electrical Engr., 1943-44. U. S. Navy, Ensign and Lt. jg., 1944-46. Texas Pipe Line Co., Field Electrical Engr., Nov. 1947-date.

PETER A. FERINGA, New Orleans; age 59. Endorsed: M. C. Abrahm, G. E. May, C. L. Nairne. Lehigh University, C.E. degree, 1921. Member A.S.C.E. Corps of Engineers, U.S. Army Regular Officer, all grades from 2nd Lt. to Major General. Important assignments: District Engr., Jacksonville, Fla. District and Savannah, Ga. District. Resident Member Board of Engrs. for Rivers and Harbors. Asst., Chief of Engrs. for Civil Works. President, Mississippi River Commission.

CHARLES H. FISHER, New Orleans; age 47. Endorsed: B. L. Kiernan, P. P. Krutak, R. M. Persell. Roanoke College, Salem, Va., B.S. Chemistry, 1928. Univ. of Illinois, M.S. Chemistry, 1929; Ph.D., 1932, major Organic Chemistry, minors Physics and Physical Chemistry. Member American Chemical Society, Am. Ass'n for Advancement of Science, Am. Oil Chemists Society, Southern Ass'n of Science and Industry. Pennsylvania Coal Products Co.,

Research Chemist, summers 1931-32-33. Harvard University, Instructor Organic Chemistry, 1932-35. U.S. Bureau of Mines, in charge Organic Chemistry Research, working in cooperation with engineers, 1935-40. U.S. Dept. Agriculture, Eastern Regional Research Laboratory, Head, Carbohydrate Div., 1940-50; Southern R. R. Lab., Director, 1950-date.

OLIVER M. FLETCHER, Monroe; age 36. Endorsed: B. T. Bogard, F. W. Adams, J. T. Folk, W. H. Huckaby. Alabama Polytechnic Institute, B.S.M.E., 1939. Registered M.E., La., Ala. Newport News Shipbuilding & Dry Dock Co., Piping design and drafting, 1939-40. Ala. Dry Dock & Shipbuilding Co., Chief Draftsman, Asst. Supt. of Engr., 1940-42. U. S. Army, Captain, Corps of Engrs., 1942-46. Ala. Dry Dock & Shipbuilding Co., Mech. and Marine Engr., 1946-47. Commonwealth & Southern Corp., Mech. Designer, 1948. Federal Bureau of Investigation—various locations. Weaks Supply Co., Ltd. Industrial Sales Engr., 1953-date.

EDWARD A. GASTROCK, New Orleans; age 55. Endorsed: H. J. Molaison, J. M. Todd, C. S. Williamson, Jr. Tulane University, B.E. in Ch.E., 1918. Member A.I.Ch.E., Am. Chemical Society, Am. Oil Chemists Soc. Registered Ch.E., La. Phoenix Cotton Oil Co., 1918. U.S. Navy, 1918. American Paint Works, Supt. of Mfg., 1919-21. Cook Paint & Varnish Co., Factory Mgr., 1921-22. Southern Cotton Oil Co., Asst. Supt. Hydrogenation, 1922-24. Celotex Corp., Chief Chemist, 1924-37. U.S. Dept. Agriculture, Chem. Engr., 1937-39; Head, Eng. and Dev. Div., Southern Regional Research Laboratory, 1939-date.

HENRY I. HUTTO, New Orleans; age 47. Endorsed: E. L. Begnaud, M. B. Hutson, W. S. Nelson. Tri-State Eng. College, Indiana, B.S.E.E. 1950. N. O. Engrs. Club, Member 1953. Registered E.E., La. U. S. Coast Guard Chief Engr. Unlimited Horsepower, No. 61355. John O. Claybourn, Supt. of Dredging, Chief Engr., Dredging Div., Floating Eqpt., Panama Canal, 1941-43. U.S. Army Trans. Corps, Port of Spain, elec. rwy. construction, marine and rwy. maintenance, 1943-44; Boston Port of Embarkation, Asst. Supt. Engr., 1944-45. Self-employed, electrical contracting and armature shop, 1951-53. Chemical Construction Corp., field design, coordination of sub-contractor's personnel and technical advice, Feb. 1953-date.

MIKE KELLEHER, New Orleans; age 57. Endorsed: I. Isaacson, W. Moses, L. S. Weil. All education gained outside of U.S. by private teachers, then worked with my father, a Mining Engr., following engineering profession until World War I. Also took correspondence courses ICS and Wilson

Engineering. Registered M.E., E.E., La. No. 2743. Continental-Mexican Petroleum, Master Mechanic, 1921-25. Mexican Petroleum Co., Chief Electrician, 1926-27. Cia. Carbonifera de Sabinas, Electrical Engr., 1928-29. Myles Salt Co., Chief Engr., 1930-36. Woodward Wight Co., Sales Engr., 1936-47. Kelleher Eng. Corp., Owner, 1947-date.

GEORGE H. KELLERMAN, New Orleans; age 36. Endorsed: W. S. Leake, E. A. McLellan, D. W. Stewart. Duke University, B.S.E.E. 1940. Member A.I.E.E. Registered P.E., Mass. General Electric Co., 1940-date, Test Engr, Design Engr., Commercial Application Engr., Sales Engr.

FERDINAND L. LARUE, JR., Lafayette; age 37. Endorsed: F. J. Boudreaux, R. J. Cambre, A. W. Schoeffler, F. W. zurBurg. Tulane University, B.E. in Ch.E., 1937; graduate work, chemistry, physics, 1937-39. N.O. Public Service Inc., Jr. Engr., 1939-41. U.S. Army Air Force, Photographic, administrative and chemical warfare officer, 1941-45. Firestone Tire & Rubber Co., Research and dev. Engr., 1946. Mathelson Chemical Corp., Technical Asst., 1946-48. Kemso Chemical Co., Chief Engr., charge of process development and plant operation, 1948. Sowela Vocational-Technical School, taught math, science, drafting and industrial chemistry, 1948-53. Southwestern La. Institute, Asst. Professor of Eng. Drawing, Sept. 1953-date.

MARVIN R. McCARTY, New Orleans; age 30. Endorsed: B. T. Bogard, W. P. Richardson, J. R. Rombach. La. Polytechnic Institute, B.S.M.E., 1947. La. State University, M.S.M.E., 1948. Truman B. Wayne & Associates, Mec. Engr., 1948-50. Magnet Cove Barium Corp. Service Engr., 1950-53. Johns-Manville Sales Corp., Sales Engr., 1953-date.

WANNER L. POTIN, New Orleans; age 33. Endorsed: L. J. Lassalle, W. C. Ellis, M. B. Voorhies. La. State University, B.S.E.E., 1948; M.S.E.E., 1950. Associate Mbr. A.I.E.E. Registered E.E., La. La. State University, Instructor in E.E., 1948-50. Geo. P. Rice, Consulting Engr., Electrical Engr., 1950-51.

U.S. 8th Naval District, Electronic Engr., 1951-53. Walter J. Barnes Electric Co., Office Engr., March 1953-date.

WILLIAM E. ROBERT, Lafayette; age 47. J. E. Jarman, F. A. Consterdine, C. J. Russell. Registered C.E. (Public Employee) La. No. 1247. La. Highway Commission, Instrument-man, 1925-33. U.S. Forest Service, Asst. Supt. CCC Camps, 1933-42. Black & Veatch, Architect Engrs., airport construction, 1942-44. Commercial Solvents Corp., Sr. Operator, ammonia plant, 1944-47. Self-employed merchant, 1947-49. La. Dept. of Highways, Project Engr., Asst. District Engr., 1949-date.

FRANCIS B. SESSUMS, Lafayette; age 37. Endorsed: W. P. Wallace, C. T. Watts, F. W. zurBurg. La. Polytechnic Institute, B.S. Chemistry, 1936; B.S.C.E., 1938. La. State University, graduate school of Eng. Mechanics, 1 semester 1938. Assoc. Mbr. A.S.C.E., Member Tau Beta Pi. Registered C.E., La., Tex. U.S. Geological Survey, Water Resources Div., 1939-53, various engineering positions. La. State Dept. of Public Works, Asst. District Engineer, Lafayette, June 1953 to date.

For Transfer from Junior to Full Member

JAMES HOWELL PEEBLES, JR., New Orleans; age 32. Tulane University, B.E. in M.E., 1946. La. State University, M.S.M.E., 1952. Registered M.E., La. Tulane University, Instructor, 1946-49, Asst. Professor, 1949-date. New Orleans Public Service Inc., Test Engineering, summer 1953.

RODNEY M. VINCENT, Lake Charles; age 28. Tulane University, B.E. in C.E., 1948. Registered C.E., La. J. Ray McDermott Co., Engineer, 1948. Parish of Calcasieu, La., Parish Engineer, 1948-date.

For Affiliate Member

WALTER H. McELROY, Alexandria; age 25. Endorsed: O. E. Barron, L. J. Melancon, C. K. Elkins, Newton Himel. U.S. Navy Class A Electrical School, Great Lakes, Ill., May-Aug. 1946 (16 weeks). Southern Bell Tel. & Tel. Co., Lineman, 1945-46. U. S. Navy, Electrician, power and communications mtce., 1946-47. Southern Bell Tel. Co., Lineman, Station Installer, Repairman, Rural Development Representative, Junior Engineer, 1947 to date.

WALLACE J. TRAMMELL, New Orleans; age 33. Endorsed: M. C. Abrahm, R. M. Seago. Tulane University (no degree) Columbia University (no degree). Eugene Dietzgen Co., 1935-52, sold surveying and drafting equipment and supplies. Haag & Trammell, Jan. 1953 to date, Partner, sale, rent and repair of surveying and engineering instruments.

For Junior Member

ROBERT NOLAN BRUCE, JR., New Orleans; age 23. Endorsed: W. E. Blessey, F. H. Fox, F. W. Macdonald. Tulane University, B.S.C.E., 1952; M.S.C.E., 1953. Registered C.E., La. Tulane University, Instructor in Surveying and Structures, 1952-53 Farnsworth & Chambers Co., Inc., Engineer, Expediter, Layout, 1953 to date.

PAUL A. DIGIOVANNI, Lake Charles; age 29. Endorsed: Mack Abraham, W. M. Davis, G. B. Wooster. Southwestern Louisiana Institute, B.S.C.E., 1950. Tennessee Gas Transmission Co., Party Chief, Jan. - Oct. 1951. Cities Service Refining Corp., Butadiene Plant, March 1952 to date.

ALBA J. ETIE, JR., Shreveport; age 29. Endorsed: W. W. Alsup, J. E. Kelly, E. S. McRoberts. Texas A & M, Freshman Eng., Feb.-May 1943; University of Louisville Eng. School, 1943-44; Georgia University, May-Sept. 1944; Mercer University, 1944-45; Ga. School of Technology, Junior Eng., 1945-46; Northwestern State College of La., B.S. in Mathematics, Jan. 1948. J. B.

Beaird Co., Engr., Compressor Dept., ½ yr. Humble Oil & Refg. Co., Rotary Helper, 2 yrs. City of Tyler, Tex., Supt. of Recreation, ½ yr. Cities of Texarkana, Tex. and Ark., Supt. of Parks and Recreation, 3½ years.

WESLEY D. GLASSELL, Shreveport; age 28. Endorsed: E. M. Freeman, R. A. McClenaghan, Ralph Segall. Louisiana State University, B.S.C.E., 1951. Registered C.E., La. and Ark. R. P. Farnsworth & Co., Construction Engineer, 1951. West Camden Heights Corp., Consulting Engineer, 1952. W. D. Glassell Co., Consulting Engineers, 1953 to date.

M. CONWAY LUSK, Baton Rouge; age 28. Endorsed: L. Duclos, J. T. Huey, S. A. Nasca. Louisiana State University, B.S.C.E., 1951. Registered C.E., La. La. Dept. of Highways, Senior Bridge Detailer, 1951-52. Sverdrup & Parcel, Inc., St. Louis, Mo., Draftsman 1952-53. La. Dept. of Highways, Bridge Designer, 1953 to date.

LOUISIANA ENGINEERING SOCIETY

ANNUAL OUTING

Colonial Country Club

NEW ORLEANS, LA.

JULY 15

GOLF	\$3.00
HORSESHOES	\$1.00
SUPPER & ENTERTAINMENT	\$5.00

THE BRIDGE OVER THE MISSISSIPPI RIVER AT NEW ORLEANS*

A project that has long been the dream of every civic-minded New Orleanian should soon become a reality.

A Mississippi River bridge, linking downtown New Orleans with the rapidly expanding and progressive west bank has passed beyond the preliminary planning stage. It is now in the hands of the engineers . . . the builders . . . the men who will raise the steel, and the men who will risk their lives above the turgid Mississippi to build what may well be an engineering miracle of our times.

Test borings for the main bridge are just about completed and we should receive the first laboratory analysis reports within a few days. Some of the test borings were to 400 feet. Others are 250 foot borings, four for each of the main piers and two for each anchor pier. The data provided by these tests will give the designers the necessary information to begin their detailed working plans.

According to our tentative time-table, the first foundation contracts should be awarded late in 1954. By January of 1958, we hope the first cars will be rolling over a great new span.

When the bridge and the approaches are complete, and when the State Highway Department has built its projected expressway, you will be able to drive from the Airline Highway to the bridge toll gates in Algiers — a distance of about six or seven miles — without meeting a single traffic stop, and thence from the toll plaza to Avondale on a new modern highway.

Tonight it gives me a great deal of pleasure to appear before the Louisiana Engineering Society to tell you about the latest developments in the Mississippi River Bridge project. I would like to tell you some of the seemingly insurmountable problems — both legislative and engineering — that we have already encountered or which are anticipated.

This bridge, like any other important undertaking, must have a reason. The end must justify the means. We are going into this venture with the full and complete understanding that it is going to cost a lot of money — approximately 54 million dollars for the bridge and approximately 30 million dollars for the approaches, giving a total of approximately 84 million dollars for the project.

* By Capt. Neville Levy, Presented at regular meeting of the Society, May 3, 1954.

But the need for this project is, I believe, clearly apparent to everyone. We know that the Mississippi River Bridge will mean the difference between continued growth and prosperity for new Orleans — and stagnation.

New Orleans proper — that is, the portion of our city situated on the east bank of the river — is seriously lacking in industrial property. If we are to have new industry, it must grow on the west bank. It is absolutely necessary that we provide a means of quick transportation across the river in the vicinity of our commercial district.

But there is another, and possibly an even more impelling need for such a structure that will join the two halves of our community into one great center. That is national security. Because of its strategic position as America's gateway to the south, New Orleans is an important target area: yet most of our defenses are located on the west bank of the Mississippi River. The project joint armed forces air base facility at Callender field, and the various naval defense facilities on the west bank demand quick access to the New Orleans side of the river.

This has become even more significant with the announcement recently, that the Navy plans to spend a billion dollars during the next twenty years to make the Algiers Naval Station a permanent base.

The culmination of our Mississippi River Bridge project, that has been so long in the making, will weld together the two halves of greater New Orleans.

Many generations of New Orleanians have dreamed about this bridge. When the great leader and philanthropist McDonogh used to row his skiff from his home on the west bank of the river to the New Orleans side, he undoubtedly thought of such a structure. The earliest record we have are newspaper accounts of 1838 which proposed that a toll bridge be constructed — and even then there was considerable opposition to the plan. The public press of that day reported one opponent as saying that while a bridge toll would have been 3 cents cheaper than the ferry toll, there would be an extravagant waste of shoe leather to reach the entrance to such a bridge.

Continued agitation for a toll bridge across the Mississippi again was manifested in 1889. The Times-Picayune of December 22 of that year presented an argument in favor of bridging the Mississippi. We have no way of knowing, of course, how frequently this thought occupied the public mind. We can only assume that our forefathers, being men of wisdom and foresight, had long realized the need for joining the east and west banks of the river.

You might say that the New York Port Authority, with its successful "pay-as-you-go" operation, was the inspiration for the latest movement for a Mississippi river toll bridge and similar revenue projects.

The New York Authority was formed in 1928 to undertake certain projects intended to overcome the transportation barriers of that great metropolis. So successful was this plan, that within 20 years the New York Authority had accumulated a surplus of 99 million dollars over the bonded indebtedness. A few of us reasoned that what had worked in New York and in other states would certainly work in New Orleans and Louisiana.

There was first a legal obstacle to be overcome. Louisiana had an aversion dating back to the ill-fated Watson-Williams bridge venture — which discouraged the levying of tolls for any road or bridge project. Before a bridge authority would have the power to issue bonds for a toll project without involving the faith and credit of the State, it would be necessary to obtain legislative assistance.

We studied the legislation of other states — New York, Pennsylvania, California and New Jersey. We held numerous conferences to prepare and review the proper legislation which would conform to the legal requirements of our state: and finally, in the 1950 session of the legislature, two bills were introduced in the House of Representatives which would permit tolls to be collected and which would create the Louisiana Bridge Authority and designate its duties and powers.

These bills passed the House but were not presented to the Senate because we felt that they would not be passed at the 1950 session.

There followed another two years of waiting — and planning. Countless hours of research and study went into the preparation of our bills. When the 1952 session of the State Legislature was convened, the present acts were passed and were voted, by a substantial margin, in the November election of that year.

Two pieces of legislation were involved — Acts 7 and 90. They provided for the incorporation of the Mississippi River Bridge Authority and allocated funds for its operation. The latter act allocated from Highway Fund No. 2 funds collected from vehicle licenses taxes in six parishes to be distributed in this manner: Fifty thousand to St. Charles Parish; fifty thousand to St. John the Baptist Parish; two hundred thousand to Highway 11; three hundred thousand to Highway 51, and the balance to be divided equally between the Mississippi River Bridge and the Lake Pontchartrain Causeway.

Under the terms of this act, the Bridge Authority is to receive \$750,000 per year for four years — beginning June 30, 1953. The first payment was received last July.

Act 7 provided for the incorporation of bridge and ferry authorities. It described the rights, powers and duties of the authorities, and it authorized the acquisition, construction, improvement, maintenance and operation of toll bridges and ferries. It further authorized the borrowing of money, the issuance of bonds and conferred the right of expropriation. It made it possible for this and other authorities to enter into contracts with the federal and state governments, and to accept government grants.

The act provided for a seven-member board, two to be appointed by presiding officers of the governing bodies of Orleans and Jefferson parishes, and three by the Governor of the State. Two of the gubernatorial appointees must be members of the State Board of Highways at the time of their appointment.

This board consists of Richard W. Freeman, Richard White and Robert L. Simpson, appointed by Governor Kennon; State Senator Alvin T. Stumpf and Police Jurymen John W. Stone, appointed by the Jefferson Parish Police Jury, and William O. Turner and myself, appointed by Mayor deLesseps S. Morrison.

We held our organizational meeting on July 3, 1952, to elect officers. At last the legal path was cleared for the Mississippi River bridge, but there were other complications.

The State Highway Department held a permit from the U. S. Corps of Engineers for construction of a bridge extending from Calliope Street, on the New Orleans side, to Lamarque Street on the Algiers side of the river. That permit was to expire in September of 1952.

The board had been studying the recommendation for a Thalia Street bridge location, and so we requested the Highway Department to have its permit extended.

The U. S. Engineers held a public hearing September 25, 1952, on the Highway Department's application for an extension of the original permit but took no action, and on January 12, 1953, the Bridge Authority filed a brief with the U. S. Engineers to support the Highway Department's application for a bridge in the vicinity of Thalia Street.

The application was returned without approval by the Corps of Engineers on March 18, 1953.

This was a minor setback, after all we had been through. We simply went back to the Calliope Street plan and on May 28, 1953, the board adopted a resolution approving an application by

the State Department of Highways for a permit to build an 1800 foot cantilever bridge at Calliope Street. The U. S. Corps of Engineers announced approval of the application on last July 3. One week later Mr. George S. Covert, director of the Department of Highways, presented the approved permit. The U. S. Corps of Engineers officially transferred this permit to the Bridge Authority on last December 11.

Here is what we had: Permission to build an 1800 foot cantilever type span, 3000 feet in length, with one pier approximately 250 feet from the Algiers side near Lamarque Street, and another pier 20 feet from the face of the Calliope Street wharf on the New Orleans side. The Bridge would be 176 feet above mean low water. Including approaches, it would be approximately two miles in length.

Meanwhile, the Bridge Authority had engaged the engineering firm of Modjeski and Masters of Harrisburg, Pennsylvania. This is the firm that built the Huey Long bridge. After a thorough study of the proposal, they reported that the Calliope Street location was not feasible due to engineering difficulties involved and that the cost of such a project would extend beyond the capabilities of the Authority's finances.

In all they conducted some seventeen different studies of various types of bridges and tunnels. They went exhaustively into the various types of structures, length of spans, and economics of the numerous proposals. All of their studies and layouts were further checked by the firm of Sverdrup & Parcel, Inc., consulting engineers of St. Louis, to determine the maximum safety and navigability that could be obtained within the scope of available funds.

Finally, on January 21 of this year, we unanimously adopted a resolution to file application for a revised permit to construct a cantilever type bridge across the river at Thalia and Bringier Streets. On that same day we delivered the permit application to Colonel Charles T. Tench, District Engineer for the U. S. Corps of Engineers and, as you all know, this new bridge plan has been approved, and the preliminary work is under way.

At this time, I would like to state that Colonel Tench, by his keen insight, his understanding and his remarkable engineering talents, has done much to further this project and has helped us immeasurably. Fortunately for us, he is a doer and I can say that he is truly an outstanding engineer officer.

We know that the construction of the Mississippi River bridge will present one of the greatest engineering problems of all time. The bridge is to be 2.2 miles in length. The overall project, includ-

ing the approaches, will be 3.4 miles long. The width of the roadway from curb to curb, will be 52 feet, providing for two 24 foot roadways and a four foot medium. In the future, as access to the bridge and traffic flow from the city streets justifies the increase, it will be possible to provide five traffic lanes, three in one direction and two in the other.

One of the most spectacular features of the bridge will be the 1,575 foot center span, which will be the longest in the United States and one of the three longest cantilever spans in the world. The only longer spans of this type are the Quebec bridge over the St. Lawrence River in Canada, and a cantilever railroad bridge in Scotland.

We have been discussing with the steel companies the various methods of constructing this center span. It is the plan of the engineers, of course, to build out from the two center piers and join the span in the middle; but soil conditions may force us to abandon this idea. It may be necessary to float the central portion of the span — about 500 feet — into position by barge and hoist it into place. This would be a monumental task, considering the fact that the bottom of the steel structure will be 170 feet above mean low level of the river. Indeed, this might well require the use of the largest floating cranes in existence.

This will be one of the more complex engineering problems that can be solved only on the designing table.

The bridge will be supported by four piers. One of the two main piers — the only one in the river — will be 555 feet from the New Orleans side wharf line and 1,700 feet from the Algiers side levee. The two main piers will support the bulk of the 40 million pounds of steel that will go into the bridge.

To build this main river pier will require about 75,000 cubic yards of concrete. It will extend 133 feet or more beneath the bed of the river, equivalent to the size of an 11 story office building. The pier will rise from its footing to the bridge truss a height of 550 feet, 200 feet higher than the Hibernia Bank Building and only five feet shorter than the Washington Monument.

We expect this to present the first of our major engineering problems. The main river pier probably will be constructed by the floating caisson method.

It is estimated that construction of the main river pier alone will require more than nine months to complete and will cost more than \$6,000,000.

The other main pier will be located in the Algiers batture, 129 feet in front of the center line of the levee but behind the 30 foot river depth line. It will be out of navigable stream.

The anchor pier on the New Orleans side will be situated behind the Thalia street wharf, and the anchor pier on the west bank of the river will be about 370 feet behind the Algiers levee.

The New Orleans approach to the bridge will start at Camp Street and will contain approximately 18 and a half million pounds of steel. The Algiers approach, containing about 16 million pounds of steel, will start from the vicinity of Shepard Street and Behrman Avenue. There will be approximately 12,000 cubic yards of concrete in each approach.

There will be 10 collection stations for gathering the tolls. This, as you know, will be the chief means of financing the project. The tolls, together with monies received from Highway Fund No. 2, will be used to retire the bridge bonds. These 10 stations will be located on the Algiers end of the bridge in a toll plaza. There are several reasons for this. First, this agreement will provide greater administration efficiency. All of the operating personnel — the collectors, supervisors and other employees — will be concentrated in one place.

And second, the toll plaza will be about 170 feet in width, and property can be acquired on the Algiers end of the bridge at a lower price than on the New Orleans side.

It might be interesting to compare the proposed new structure with the Huey Long bridge, with which we are all familiar. It will be three tenths of a mile longer, about 20 feet higher, and its main center span will be approximately twice the length of the center span of the Huey Long bridge.

The engineers found far better foundation conditions at the Huey Long bridge site. This apparently, was a matter of luck. The Huey Long bridge was built primarily to serve the railroads, and the site was chosen principally for convenience. But the engineers found a good, coarse sand which allowed a net additional overload of 3.5 tons. The site for our new bridge has fine sand, silt and plastic clay which will limit the net additional overload to 2.5 tons.

Piers for the Huey Long bridge went to minus 170 feet. Soil conditions existing at the site of the new bridge will require a total depth of roughly minus 200 feet for the main piers.

As you can see, our job has just begun. There will be many heartaches—and headaches—before it is finished. But this bridge will stand as a symbol of what civic enterprise and cooperation can accomplish.

To those who have objected to this bridge on the grounds that it might create a needless hazard for shipping, let me remind you of the many hazards that now exist in the harbor — the ferries, the

Chalmette Anchorage, the dredges. The bridge, with its single pier in the river, will be less hazardous to river traffic than the many other obstacles.

In closing, I wish to pay special tribute to the men who have had such a great part in making this whole gigantic enterprise a possibility, to the unfailing loyalty and to the assistance they have lent to what may be one of New Orleans' greatest achievements.

The greatest legal minds of our city worked unstintingly to make this undertaking legally possible. Federal Judge J. Skelly Wright, Civil District Judge Louis H. Yarrut, Colonel Eberhard P. Deutsch and Lemle, Mareno and Lemle, carefully paved the legal way back in the days when the bridge was still a dream.

The guidance and support of Governor Kennon, Mayor Morrison, Senator Eustis, Raburn Monroe, our entire delegation in the State Legislature, the press, radio, TV and many others too numerous to mention, turned this dream of ours into law.

But in the end it will be you, of the engineering fraternity, led by the great bridge builder, Frank Masters, who will bear upon your shoulders the final responsibility of seeing that the bridge is built well. Scientifically and methodically you have helped to overcome every possible objection. You have designed for us a structure that should meet the growing needs of our community for many generations to come. Your planning has been sound. This project, when completed, will be a monument to American ingenuity and enterprise.

ENGINEERING BRIEFS

If Men Were Free to Try. Private ownership, private initiative, the hope of reward, and the expectation of achievement have always been primarily responsible for the advancement of mankind. Continued progress—be it spiritual, mental, or material—rests squarely upon a better understanding of the idea of individual freedom of choice and action, with personal responsibility for one's own decisions.

For the purpose of illustrating this idea, let us suppose you had lived in 1900 and somehow were confronted with the problem of seeking a solution within 54 years to any one of the following problems:

1. To build and maintain roads adequate for use of conveyances, the operators, and passengers.
2. To increase the average span of life by 30 years.
3. To convey instantly the sound of a voice speaking at one place to any other point or any number of points around the world.
4. To convey instantly the visual replica of an action, such as a presidential inauguration, to men and women in their living rooms all over America.
5. To develop a medical preventive against death from pneumonia.
6. To transport physically a person from Los Angeles to New York in less than four hours.
7. To build a horseless carriage of the qualities and capabilities described in the 1954 advertising folder of any automobile manufacturer.

Without much doubt you would have selected the first problem as the one easiest of solution. In fact, the other problems would have been rejected as the figments of someone's wild imagination.

Now, 54 years later, let us see which of these problems has been solved. Has the easiest problem been solved? No. Have the seemingly fantastic problems been solved? Yes, and we hardly give them a second thought.

It is not accidental that solutions have been found wherever the atmosphere of freedom and private ownership has prevailed wherein men could try out their ideas and succeed or fail on their own worthiness. Nor is it accidental that the coercive force of government — when hooked up to a creative field such as transportation — has been slow, plodding, and unimaginative in maintaining and replacing its facilities.

Does it not seem odd that a privately-owned automobile company found it expedient to sponsor a national contest with tremendous prizes and to conduct its own search in order to correct the faults of the publicly-owned and inadequate highway system? The highway dilemma has become more and more acute until someone other than the public owner seeks an answer. If the points of ownership had been reversed in 1900—that is, motorcar development in the hands of the government, and highways left to private individuals—we would today likely be participating in a contest sponsored by the privately-owned highway companies to suggest how to improve the government's horseless carriage so that it would keep pace with the fine and more-than-adequate-highways.

How could roads be built and operated privately? I do not know. This is a subject to which none of us directs his creative attention. We never do think creatively on any activity pre-empted by government. It is not until an activity has been freed from monopoly that creative thought comes into play.

But go back to 1900. Could any of us then have told how to solve the six problems to which solutions have been found? Suppose, for instance, that someone could at that time have described the looks and performance of a 1954 automobile. Could any of us have told him how to make it? No, no more than we can describe how privately to build and operate highways today.

What accounts, then, for the 1954 automobile and other "fantastic" accomplishments? Government did not pre-empt these activities! Instead, these have been left to the area of free, uninhibited, creative thinking. Millions of man-hours of technically skilled, inventive thought have been at work. And the end is not yet. Nor will there be an end if the inhibitory influence of government is confined to its proper functions of protecting equally the life, liberty, and property of all citizens; if men are free to try their ideas in a competitive and voluntary market.—*John C. Sparks, 4726 Seventh Street, S.W., Canton 10, Ohio.*

* * *

Making Appliances. At G.E.'s huge new Appliance Park in Louisville, Ky. some of the world's most up-to-date manufacturing

methods are used to turn out dishwashers, ranges, washers, dryers and other appliances.

Range making is a good example of how these methods work. The range bodies begin as flat sheets of steel. A rubber suction cup grabs a sheet from the pile and puts it on a conveyor which feeds it to an 850-ton press where it is moved through trimming, piercing and forming dies. It then goes to a machine that folds up the sides of the range body and ejects the fabricated part — a completely “no hands” operation.

Meanwhile the complicated range tops, with their Calrod heating units, timers, and push buttons, are being assembled on an endless overhead conveyor belt, which also serves as storage and delivery to the main assembly line. As the tops move along, another belt carries parts from a distant stock room to workers. This “moving stock room” gives the assembler everything he needs at his fingertips, making his job considerably less of a chore.

Another ingenious device, used in manufacturing washers and dryers, is an electrostatic paint spray. This spray system builds up opposing electrical charges in the appliance and the paint, making them attract each other and literally drawing the paint onto the metal surface. Works well too—98 per cent of the paint is actually applied to the surface; 50 per cent is par for an ordinary hand spray.

* * *

Free-Piston Engine. Interest in the free-piston engine, which will compress air or drive a gas turbine, is now growing rapidly, particularly for applications such as portable power stations, railroad locomotives, and pipeline booster stations. U. S. acceptance of this type of engine has been slow, but a recent review in *Consulting Engineer* indicates that developments now underway in this country will hasten the progress already made abroad.

Basically, a free-piston engine consists of two opposing pistons mounted in a cylinder. Unlike the pistons in a diesel, however, neither is connected to a crankshaft, but the over-all cycle is similar to that of a diesel. Fuel is injected into the space between the pistons and ignited; the expanding gases force the pistons apart, and, as they fly apart, the outer faces of the pistons compress air in chambers beyond either end of the firing chamber. This compressed air flows through the firing chamber, where it sweeps out the residue of the exhaust gases. Both the exhaust gases and the compressed air then flow through a turbine, which can drive a ship, an electric generator, a pump, etc. Alternatively, the hot com-

pressed gas can be used as such in a variety of ways. The pistons are returned to their initial position, ready for the next stroke, not by connecting rods from a crankshaft, but by the spring action of a cushion of air compressed by the pistons during their power stroke.

The free-piston engine operates in a definite cycle, like that of any diesel engine. First, the fuel gases are ignited and force the pistons apart. Second, as this expansion continues, the hot gases leave the power cylinder, air is compressed and forced into the power cylinder to clean it out, and a cushion of air builds up behind the ends of the pistons. Third, when burning of fuel is over, the air cushion expands and forces the pistons back together. During the return stroke, scavenging or cleanout of the combustion area continues until the pistons cover the inlet and exhaust ports. Clean compressed air is then trapped in the power cylinder and is further compressed as the pistons return to inner dead center. The engine is then ready for another cycle. In contrast to a conventional internal-combustion engine, where the stroke or total movement of the piston is determined mechanically, the stroke of a free-piston engine varies with the amount of fuel being burned and the air pressure in the air cushion.

A free-piston engine is simple, but requires much more exacting engineering analysis than does a diesel or a simple gas-turbine engine. Nevertheless, it has the advantage of a small number of moving parts, with presumably low maintenance cost. In addition, it is possible to couple several units to a single turbine, giving an over-all power plant with fewer component parts.

Allowing for frictional losses, practical thermal efficiencies of some 46 per cent have been achieved, compared with 38 for good diesel practice and 35 per cent for steam power plants. The improvement is largely due to the engine's ability to handle gases at high transient pressures and temperatures in the power cylinder. Thus it attains high efficiencies without extremely high turbine temperatures. This makes it possible to use present-day construction materials, both in the engine itself and in the associated gas turbine.

Besides being more efficient, this type of engine is relatively light and small and, because of the balancing effect of the opposed pistons, substantially free from vibration. Such advantages would be desirable for ship propulsion, particularly in submarines. Between World Wars I and II, French, German, and Swiss research

developed the free-piston engine from an impractical invention to a useful power component. During World War II, Junkers free-piston compressors were used on German submarines for charging torpedoes and blowing tanks; some of these were removed by the U. S. Navy from captured submarines and tested. Later, the Navy placed contracts for design and construction of several units for ship propulsion.

Interest in this country is no longer confined to naval applications; at least one company is now actively designing and building units for electric power generation and fluid pumping. The engines have also been suggested as a compressed air source to drive helicopter blades (the use envisioned by one of the early workers in this field); for uses where engine mountings are a problem, since the engine is free of vibration; and for a general source of compressed hot gas. Increasing familiarity with this type of engine may breed much more widespread use.—*Industrial Bulletin of Arthur D. Little, Inc.*

* * *

The Second R.—Technical writers and editors now have their own professional society. Almost a hundred of them enrolled as charter members of the Society of Technical Writers at a recent organization meeting at their headquarters in the American Academy of Arts and Sciences in Boston. The members come from more than twenty industrial, consulting, research, educational, and publishing organizations in the Greater Boston area; the Society has received inquiries from other cities and looks forward to achieving national stature.

These writers have the job of conveying technical information to people who must use it directly, to engineers and managers, and, via instruction manuals, bulletins, and descriptive circulars, to the consuming public. In the last several years this function has become more and more work of specialists, partly because organizations have become larger and more people must be informed, partly because management now relies more on technical findings, and partly because technology itself is now more pervasive. Many executives and most consumers are not technically trained, and all of them are busy. Therefore technical reports to them must be clear, accurate, and brief. Effective organization and presentation of reports, even though expensive, can frequently save money at the executive level — just as job simplification can in the factory.

Various organizations produce technical reports in various ways. In the simplest scheme, the person who has gathered the

information, whether by experiment, literature search, or survey, is wholly responsible for putting it into report form. His supervisor will then probably see and approve the draft before it is reproduced for circulation.

Technical Editors

Some organizations, increasingly anxious to improve their reports, now have technical editors to revise and polish at least the more important documents before publication. The technical editor, a member of a new and rapidly growing profession, usually has a degree in some branch of science or engineering. He looks not only to matters of composition, punctuation, consistency, and mechanics, but also to over-all organization and even technical content. He sees to it that the central theme of the report of paper is immediately evident; that the significant findings can be found and recognized without a search; and that insignificant details are relegated to the appendix (or to the wastebasket). In the course of the process he usually consults with the author, and at least submits the revised draft to him for approval. This program not only improves the quality of the individual report, but also educates the author. In time, his reports should require less and less work on the part of the editor.

Other organizations employ technical writers, as distinct from editors. Raw information — from notebooks or data sheets — is turned over to the writer, who converts it into report form. Although this system is widely used, some people feel that only the man who has made the investigation — who has the information at first hand and who has been immersed in the problem — can write about it authoritatively. This view holds that at least a fifth draft even if it is rough and rudimentary, should come from the man who did the original work.

Outside Production

Still another alternative is the whole production of technical publications by outside firms. This scheme is most widely applied to instruction books for electrical or mechanical equipment. In almost every industrial center there have sprung up technical-publications groups with complete staffs of writers, editors, draftsmen, artists, layout men, and production experts. Some of these groups are independent, some are attached to printing plants, and some are departments of engineering consulting firms. They will take responsibility for producing instruction manuals or other

technical publications from the raw-information stage through printing and even mailing.

Finally, some consulting firms send trained men into an organization to assess its needs, examine its reporting procedures and forms, and recommend improvements. Such an arrangement may well include an educational program for the men who do the writing and their supervisors. Instruction of this kind, based on actual work situations, is well received by men in industry or research who scorned it a few years previously. By now they have something to say, and they realize that their professional effectiveness depends to a large degree on their ability to say it.—*Industrial Bulletin of Arthur D. Little, Inc.*

Hormones Increase Rubber Production. Rubber yields as high as 75% above normal have been obtained in experiments with hormone treatment of the bark of the rubber tree, the Rubber Research Institute of Malaya reports.

Small concentrations of hormones and sodium salts in palm oil applied to the bark just below the tapping point gave the best results in these tests.

The hormone treatment was given for 14 months in the area where the rubber yield increased 75%. In another area production increased 20% to 30% above normal over a period of one and a half years' treatment.

Injections of copper sulphate in holes bored into the rubber trees, a procedure long known by rubber planters to increase rubber yields, proved objectionable for several reasons, the Malaysians found.

The copper-sulphate treatment turned out to be harmful to the wood and bark of the tree, uneconomical, and likely to increase the copper content of the latex concentrates. The rubber experts stressed this last disadvantage, since accidental spilling of copper sulphate in administering the injections would highly contaminate the latex.—*Aminco Laboratory News.*

* * *

Anti-Corrosion Current. A preservative process involving electrolysis is being used to reduce corrosion on reserve vessels anchored in salt water, according to Product Engineering, Mc-

Graw-Hill publication. Rectifiers set up a direct current voltage between the submerged portion of the ship and the water, preventing the ship bottoms from rusting, according to reports. The process is estimated to be saving the government \$3,250,000 per year.

* * *

Higher Road Expenditures. The House has approved a bill authorizing expenditures of \$875,000,000 per year for the two years from July 1, 1955 to June 30, 1957. The funds are to be matched in whole or in part by the states. Federal aid for road building now totals about \$550,000,000 a year. The money for the enlarged program is to be divided: \$270,000,000 for primary highways, \$18,000,000 for secondary roads, \$150,000,000 for primary highway work in urban areas and extensions of interstate roads, \$200,000,000 for interstate defense highways, plus a number of specialized purposes with smaller amounts.

The American Municipal Association has told a Senate committee that the government was only "creeping" toward a solution of highway needs. Senator Homer Ferguson of Michigan has introduced a bill calling for spending \$4.4 billion Federal dollars on road construction during the two years starting July 1, 1955. The Michigan Senator called it the first installment on a 15-year program to meet the Nation's 35 billion dollars' worth of highway needs listed in the President's economic report. His bill calls for spending nearly three times more than the amount contained in the House bill. Most of the funds under the Ferguson bill — \$900 million each year — would be earmarked for the interstate highway system, linking different sections of the country. (S. 3069).— *Legislative Bulletin, National Society of Professional Engineers.*

MINUTES OF THE MEETINGS AND BUSINESS OF THE SOCIETY

Minutes of Meeting of Baton Rouge Section, Louisiana Engineering Society

Date, February 1, 1954; Time, 7:00 p. m.; Place, Mike and Tony's Steak House; Officers present, T. J. Innes, president; W. D. Poole, 1st vice-president.

One hundred thirty-two members of the Baton Rouge Section were the guests of Delta Tank Manufacturing Company at a dinner.

Mr. Innes presided at a short business session immediately following dinner. Due to the resignation of Mr. R. J. Robertson from the office of Second Vice-President 1953 Nominating Committee had been requested to submit a new candidate for the office. Mr. F. G. Hornsby was their selection. A motion to elect Mr. Hornsby 2nd Vice-President was made by Mr. Louis Duclos and seconded by Mr. F. A. Hannaman. The motion passed by majority vote. Mr. Innes then introduced Mr. R. L. Farabee, Vice-President of Delta Tank Manufacturing Company. After short talks by Mr. Farabee and by Mr. Max Fetty, Public Relations Director of Delta Tank, the members left Mike and Tony's for a tour of Delta Tank's production plant.

T. J. INNES

For Randall Meyer, Secretary-Treasurer

Minutes of Meeting of Baton Rouge Section, Louisiana Engineering Society

Date, March 17, 1954; Time, 7:30 p. m.; Place, Agricultural Engineering Auditorium, Louisiana State University; Officers present, T. J. Innes, president; F. G. Hornsby, 2nd vice-president; Randall Meyer, secretary-treasurer.

Mr. Innes called the meeting to order with forty-three persons present. There being no old or new business to transact, he introduced Mr. John Daniel, Public Relations Director of Kaiser Aluminum and Chemical Corporation. After brief introductory remarks, Mr. Daniel presented a movie on Kaiser's integrated aluminum operations, "Take a Look at Tomorrow." Mr. Winston Cundiff, Kaiser's Technical Manager, then outlined the Baton Rouge operations and activities of Kaiser engineers. After a discussion period, the meeting adjourned and refreshments were served.

RANDALL MEYER, Secretary-Treasurer

Minutes of Meeting of Baton Rouge Section, Louisiana Engineering Society

Date, April 20, 1954; Time, 7:30 p. m.; Place, Consolidated Chemical Industries, Inc.; Officers present, T. J. Innes, president; Wiley D. Poole, 1st vice-president; F. G. Hornsby, 2nd vice-president; Randall Meyer, secretary-treasurer.

Mr. Innes presided with forty-four members and visitors present as guests of Consolidated Chemical Industries, Inc. Mr. Hornsby introduced Mr. W. J. Daspit, Plant Manager of Consolidated. Mr. Daspit, Mr. M. J. Guillory, Mr. E. L. Koffler, and Mr. Harold Crespo explained the various phases of the Baton Rouge plant operation. Following a discussion period and refreshments, Consolidated personnel conducted the group on extensive plant tours. Adjourned at 10:15 p. m.

RANDALL MEYER, Secretary-Treasurer

Minutes of Meeting of the Board of Direction held on April 12, 1954 in the St. Charles Hotel

The meeting was called to order by President Macdonald with Messrs. Seago, McLellan, Nelson, Abraham, Kelly, Wiley D. Poole (representing the Baton Rouge Section) and Fernandez present. Mr. Robert Grehan, Assistant Secretary, also was present, as was Mr. Calvin T. Watts, Chairman of the Society's Legislative Committee.

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

President Macdonald announced that Messrs. Clayton L. Nairne and Hermann L. Lehmann had been appointed Chairman and Vice-Chairman, respectively, of the committee to investigate the possibility of reorganizing the L.E.S. as a state organization with New Orleans as a section.

The secretary reported that, due to his wife's serious illness Mr. W. Stone Leake had been forced to resign the chairmanship of the committee appointed to study the society's finances with a view to increasing dues. Mr. Abraham moved that Mr. Nairne be asked to head this committee in connection with his other assignment, or appoint a sub-chairman to do so. Motion seconded by Mr. Poole and carried.

The secretary read minutes of a meeting of the Louisiana Council of Engineers held on March 29, 1954. Mr. Watts then reported on the meeting. and Mr. McLellan moved that the Board go on record as accepting the decision of the Council not to introduce any legislation affecting the engineering registration act at this time, and that the legislative committee correlate the common views of the various council members. Motion seconded by Mr. Nelson and carried.

The secretary reported that all applicants for membership named in the March ballot had been elected to their respective grades.

The treasurer's quarterly financial report was presented and accepted.

A report on the 1954 Annual Meeting submitted by Mr. David Moodie, General Chairman, was read and accepted, after which Mr. Seago moved that Mr. A. W. Durning be appointed General Chairman of the 1955 Annual Meeting, seconded by Mr. McLellan and carried. Mr. Nelson moved that the president be authorized to appoint a chairman of the Technical Paper Committee for the 1955 meeting, seconded by Mr. Kelly and carried.

A letter from Mr. John W. Montgomery, who recently was awarded Life Membership in the Society, was read.

A letter from the National Society of Professional Engineers was read, after which Mr. Nelson moved that Mr. Carr Forrest, its president, be invited to give a short talk at the May meeting. Motion seconded by Mr. Abraham and carried.

A letter from Mr. E. S. Randolph was read and the secretary was instructed to refer same to the Tulane University Library.

A letter from the New Orleans Section, American Institute of Chemical Engineers was read, in which they thanked the society for its cooperation on the occasion of their last joint meeting.

A letter composed by members of the Baton Rouge Section concerning the holding of an annual meeting at Baton Rouge was read. Mr. Poole moved that this be mailed to the general membership and a reply requested from each member. Motion seconded by Mr. Nelson and carried.

A letter from the 1954 Annual Outing Committee offering a plan of activities for the outing was read. Mr. McLellan moved that the committee's recommendations be approved, seconded by Mr. Nelson and carried by a vote of 3 yeas, 2 noes, and 2 abstaining.

Resignations of the following were accepted with regret: Harry T. Bailey, Jr., John H. Duchkar, W. S. Daubert, and Benjamin F. Hatfield.

The secretary reported the recent death of Mr. L. V. Cressy, whereupon President Macdonald appointed Messrs. John L. Porter, J. T. Knight, Jr., and Cary B. Gamble to prepare an obituary for the deceased member.

Discussion followed concerning suitable means of honoring departed engineers who have rendered notable service to the community, whereupon Mr. Abraham moved that the president be empowered to take such action as he sees fit to induce the Board of Commissioners of the Port of New Orleans to name the new Public Grain Elevator in honor of the late John A. McNiven, former Chief Engineer of the Dock Board and a recognized outstanding engineer of New Orleans for nearly 40 years. The motion was seconded and carried.

It was brought out that, in recent dedications of overpasses, Mayor Morrison has failed to mention the engineers who designed and constructed these structures. President Macdonald advised that he would call the mayor's attention to this oversight.

A report from the Monroe Section on the program carried out in observance of Engineers Week at Ruston was read, and the secretary was instructed to thank Dean Bogard for the excellent work and to forward the report to Mr. Wm. J. Drawe, Jr., State Chairman of Engineers Week Committee.

The meeting then adjourned in order that the society's regular meeting could begin on time.

JOHN P. FERNANDEZ, Secretary-Treasurer.

Minutes of Meeting of the L.E.S. Held on Monday, April 12, 1954

The meeting was called to order by President Macdonald with approximately 100 members and guests present. Mr. R. N. Graham moved that the reading of minutes of the preceding meeting be dispensed with, seconded by Mr. R. A. Steinmayer and carried. The secretary then read minutes of the March meeting of the Board of Direction.

Mr. James M. Todd then read an obituary of the late Douglas S. Anderson, former President and Honorary Life Member of the Society. Mr. John L. Porter moved that the obituary be accepted as read and published in the Society's Proceedings, with copies sent to Dr. Anderson's immediate family. A moment of silence then was observed in memory of the deceased.

There being no further business, Mr. Mario G. Zervigon then introduced the speaker of the evening, Mr. Frank J. Coogan, Chief, Division of Research and Statistics, Louisiana Wildlife and Fisheries Commission, and Executive Secretary, Louisiana Stream Control Commission, who spoke on "The Stream Pollution Abatement Program in Louisiana". Following his interesting and instructive lecture, the meeting closed with a rising vote of thanks to the speaker.

JOHN P. FERNANDEZ, Secretary-Treasurer.

Minutes of Meeting of the L.E.S. Held Jointly with the New Orleans Section, A.S.M.E. on March 8, 1954

The meeting was called to order by President Macdonald with approximately 120 members and guests present. The president welcomed members and guests of A.S.M.E. Mr. Knost moved that the reading of minutes of the preceding meeting be dispensed with, seconded by Mr. Nelson and carried, whereupon the secretary read minutes of a meeting of the Board of Direction held on February 2, 1954.

There being no formal business to come before the meeting, the chair was relinquished to Mr. Allen H. Jensen, Chairman, A.S.M.E., who introduced the speaker of the evening, Mr. C. Lawrence Bulow, Corrosion Metallurgist, Bridgeport Brass Company, Connecticut. A very interesting and informative talk on "Corrosion Resistance of Copper Alloys" was presented by Mr. Bulow, followed by a lengthy discussion period.

President Macdonald then resumed the chair and adjourned the meeting with a rising vote of thanks to the speaker.

JOHN P. FERNANDEZ, Secretary-Treasurer.

Minutes of Meeting of the Board of Direction held on Monday, March 8, 1954 in the St. Charles Hotel

The meeting was called to order by President Macdonald with Messrs. Abraham, Innes, Barron, Freeman, McLellan, Nelson, Seago, Wallace and Fernandez present. Mr. Calvin T. Watts, Chairman, Legislative Committee, also was present by invitation.

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

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

President Macdonald reported on the Louisiana Council of Engineers and pointed out that each L.E.S. board member had been sent a copy of the proposed revisions. Each member organization on the Council received five copies, as did each local section of L.E.S.

Mr. Freeman presented a letter and telegram from the Shreveport Section and its President, Mr. Carl M. Hadra, requesting that Mr. Freeman be allowed to act as their spokesman. He then announced that the Shreveport Section was opposed to the suggested revisions. Among the objections raised was the fear that an attempt to revise such recently enacted legislation may result in losing the registration law altogether; that the Shreveport Section does not fully recognize the necessity for requiring a written examination for everyone; that the board's authority is not sufficiently well defined; and that, if categories of engineering branches are listed, additional branches should be included.

Mr. Barron, President of the Alexandria Section, announced that his section opposed revision of the registration law at this time because many members do not understand the necessity for such revision. He believed that a period of education should be allowed and that the proponents of the revision should convince the membership of L.E.S. before attempting such legislation.

Discussion followed during which it was pointed out that time was very short in which to poll the membership, after which Mr. Wallace moved that the Board of Direction of L.E.S. instruct its delegate on the Louisiana Council of Engineers to move that the proposed revisions be deferred until the next session of the Legislature. Motion seconded by Mr. Barron and carried.

Mr. Freeman moved that these proposed revisions be referred back to the Legislative Committee, seconded by Mr. Nelson and carried. President Macdonald then appointed Mr. Watts, Chairman, Legislative Committee, to be the society's representative at the meeting of the Louisiana Council of Engineers on March 29.

Mr. Abraham, Chairman of the special committee appointed to study the feasibility of holding the 1955 Annual Meeting in Baton Rouge, reported that the invitation should be extended during an annual meeting of the society in order to give an opportunity to a fair representation of the membership to discuss the proposed change in location; also, that the membership-at-large be thoroughly advised of the matter in writing and a survey made accordingly. Mr. Wallace moved that the committee's report be accepted, seconded by Mr. McLellan and carried. Mr. McLellan then moved that the society poll its membership on this matter, seconded by Mr. Wallace and carried.

A letter from Mrs. J. A. McNiven, thanking the society for flowers sent her late husband, was read.

Letters from the Shreveport Geological Society and the Louisiana Safety Association, requesting that the L.E.S. pass a resolution favoring the proposed state stock law, were read and the secretary was instructed to answer same.

A letter from Dean Lee H. Johnson of Tulane University was read, in which he thanked the society for holding a joint meeting with the university on February 8.

A letter from Mr. T. C. Forrest, Jr., President, National Society of Professional Engineers, inviting an officer of L.E.S. to attend their State Presidents' Conference March 19-20 in Pittsburgh was read. The secretary was instructed to acknowledge their generous invitation but declined because no one was able to attend.

Mr Abrams moved that Mr. Jesse C. Watson and Mr. E. E. Evans be reinstated to the grade of member, and Mr. Ben Barnes be reinstated to the grade of affiliate member. Motion seconded by Mr. McLellan and carried.

Mr. Seago moved that the following be dropped for non-payment of dues. (These members have lost contact with the society and their present addresses are unknown.) Motion seconded by Mr. McLellan and carried:

Felix J. Blanchard, William H. Butts, Robert R. Fightmaster, James H. Martin, Jr., Edwin W. Myers, John C. Seeger, Jr.

It was announced that Dean Douglas S. Anderson, former president and honorary member of the society, had passed away, whereupon Mr. Abraham moved that the president be empowered to appoint a committee to prepare his obituary. Motion was duly seconded and carried.

Mr. Innes stated that, with the view to strengthening the Louisiana Engineering Society as a truly state-wide organization, the society should be reorganized, making New Orleans a local section equivalent to the other sections and having a statewide administrative body over all. In the discussion that followed it was pointed out that the constitution would have to be revised and the matter of finances would have to be studied carefully. Mr. Innes then moved that a committee be appointed to study the feasibility of such a reorganization and to prepare a revised constitution if the proposed plan is judged favorably, said plan to be submitted by the date of the annual meeting. Motion seconded by Mr. Seago and carried. Mr. Seago then moved that the president be empowered to appoint a committee to make this study, seconded by Mr. Abraham and carried.

Mr. Abraham announced that he had been requested to make an address at the Industry-Faculty Conference to be held at L.S.U. and requested that his paper be reviewed by President Macdonald. Mr. Nelson moved that Mr. Abraham be authorized spokesman for the society at this conference, seconded by Mr. Freeman and carried.

Mr. Seago moved that the Society's Committee for Engineers' Week be commended for its excellent work. Motion seconded by Mr. Abraham and carried.

The meeting adjourned.

JOHN P. FERNANDEZ, Secretary-Treasurer.

**Minutes of Meeting of L.E.S. with Department of Civil Engineering,
Tulane University, Held on February 7, 1954**

The meeting was called to order by Professor Frederick H. Fox, former president of the Louisiana Engineering Society and Head of the Department of Civil Engineering, Tulane University, at Dixon Hall, Tulane Campus. He expressed the university's appreciation to L.E.S. for holding this joint meeting, and then relinquished the chair to President Macdonald, who announced the program of events scheduled for Engineers Week, February 21-27.

Mr. Charles P. Knost moved that all business of the meeting be dispensed with, seconded by Mr. E. M. Freeman and carried. The chair then was returned to Professor Fox, who called upon Dean Lee Johnson to introduce the speaker, Professor Gustave Magnel of the University of Ghent, Belgium, internationally recognized authority on prestressed concrete. Professor Magnel gave a most interesting and informative lecture on that subject.

The meeting then adjourned and a reception in honor of the distinguished lecturer followed.

JOHN P. FERNANDEZ, Secretary-Treasurer.

**Minutes of Meeting of the Board of Direction held on Tuesday, February 2,
1954, at Tulane University**

The meeting was called to order by President Macdonald with Messrs. Abraham, Kelly, Freeman, Innes, Nelson, Seago, Wallace and Fernandez present. Mr. Seago moved that minutes of the preceding meeting be accepted as read, seconded by Mr. Nelson and carried. President Macdonald reported on a recent meeting of the Louisiana Council of Engineers and advised that the special committee appointed by the council to prepare the final wording of proposed revisions to the Engineering Registration Act had held a preliminary meeting at which rapid progress had been made. It was agreed that when final revisions were complete copies would be sent to each L.E.S. Section as well as each member organization on the Council; also that a two or three-week time interval would be allowed to permit each group to meet and instruct its delegate.

Mr. Seago, Chairman, Finance Committee, presented a budget for 1954. It was moved by Mr. Freeman, seconded by Mr. Abraham and carried, that this budget be accepted.

A report by Mr. F. L. Alcus, Chairman, Educational Study Committee, was read and accepted upon motion by Mr. Nelson, seconded by Mr. Innes. Mr. Seago moved that the same committee personnel be reappointed to continue this special project since it is so near completion, whereupon Mr. Innes requested that Mr. W. H. Carter replace Mr. Randall Meyer on the committee. Mr. Seago accepted the amendment, and the amended motion was seconded by Mr. Abraham and carried.

Reports of the 1953 Employment Committee and the Advertising Committee for the 1954 Annual Meeting were read and accepted.

A letter from Miss Angela Gregory was read, in which she thanked the board for its recognition of her late mother's service to the Society in establishing the Woman's Auxiliary.

A letter from the president of the Baton Rouge Section, suggesting that the Society's 1955 Annual Meeting be held in Baton Rouge, was read. Mr. Seago moved that a committee be appointed to study the matter and make recommendations before plans for the 1955 meeting get under way. Motion seconded by Mr. Abraham and carried, whereupon the president appointed Mr. Abraham, Chairman, and Messrs. Collins, Fernandez and Lehmann members of this committee.

Mr. Abraham moved that the resignations of the following be accepted with regret, seconded by Mr. Seago and carried: Mack F. Guinn, Thomas M. Keller, I. M. Richardson, Marcel Garsaud*, R. W. Schupp, Lawrence L. Smith, Jr., and James T. Tigner, Jr. *Mr. Garsaud's resignation to be effective January 1, 1953 in accordance with his request of that date.

Mr. Nelson moved that the following be dropped from the rolls in accordance with their requests, seconded by Mr. Kelly and carried: E. C. Greco, C. R. Henry, K. G. Johnson, and L. T. Martin.

Mr. Kelly moved that Mr. David B. Fried, Jr., and Robert L. Green be reinstated to the grades of Junior Member and Member respectively. The motion was duly seconded and carried.

Upon the recommendation of the Board, President Macdonald appointed Messrs. Horace E. Crump, Donald Derickson and Charles M. Kerr to prepare the obituary of the late John A. McNivan, former President of the society.

A list of proposed standing committees for 1954 was presented. After some discussion and modifications, Mr. Freeman moved that the revised list be approved and those named therein appointed, seconded by Mr. Abraham and carried.

Discussion followed concerning the difficulty faced by out-of-town board members in attending board meetings. Mr. Abraham moved that, beginning in May, the society's regular meetings be held on the first Monday of the month for the convenience of members residing out of the city. Motion was duly seconded and carried.

Mr. Innes submitted a draft of revised by-laws for the Baton Rouge Section. It was recided that Article II designating the geographic limits of the section be deleted, since the special committee on second boundaries had recommended that same be fixed on an air-line mile basis from section headquarters, and this recommendation was approved at a meeting of the Board of Direction with Contact Representatives and Section Officers held on January 9, 1953. A slight modification also was made in Section IX entitled "Amendments". Mr. Kelly then moved that the proposed by-laws of the Baton Rouge Section be approved as revised, seconded by Mr. Seago and carried.

Mr. Innes extended an invitation to the board to attend a meeting of the Baton Rouge Section on February 19.

There being no further business, the meeting adjourned.

JOHN P. FERNANDEZ, Secretary-Treasurer.

March 19, 1954

Officers and Board of Direction
Louisiana Engineering Society
422 St. Charles Hotel
New Orleans 12, Louisiana

Subject: 1954 Annual Meeting
Report of General Chairman

Gentlemen:

Please accept the following as my report on this year's Annual Meeting of the Louisiana Engineering Society, which was held at the St. Charles Hotel, January 7, 8 and 9, 1954.

Your committee as a whole tried to provide a program which would measure up to and be on at least a par with those of previous years. We feel justified in our belief that this was accomplished, as evidenced by the better than average attendance at each of the functions. The wonderful co-operation and assistance given us however, by President Abraham, our genial Secretary-Treasurer John Fernandez, the officers and board members, and

the Woman's Auxiliary, is herewith acknowledged with deep appreciation.

Full advantage was also taken of the many fine suggestions and recommendations advanced by the 1953 committees, and we in turn trust that as much benefit may be derived by our successors from any suggestions offered herein.

Since a copy of each committee chairman's report, together with a copy of the financial report for the Annual Meeting, is attached to and forms part of this report, each will be discussed here only in brief:

1. Financial Report

This report, prepared and submitted by Mr. Fernandez, we believe, shows a very satisfactory net cost of \$90.68 to the Society for the entire meeting.

2. Banquet Committee: Charles M. Kerr, Chairman

Income from the sale of tickets, as shown in the financial statement, shows a record attendance of 440 people, and resulted in a net profit of \$288.00.

The new innovation of serving food on the mezzanine gallery of the hotel was more or less forced on us by the capacity crowd. However, this move turned out to be so highly successful that we doubt if the hotel management would wish to have it otherwise at future similar gatherings.

Elimination of the speakers' platform and table this year for the first time, apparently had no adverse repercussions. This contributed considerable additional space for guest tables.

Attention is drawn to Mr. Kerr's report in which he suggests the devising of some system to better regulate the sale of banquet tickets, whereby the number of duplicate applications could be reduced to a minimum.

3. Contact with the Woman's Auxiliary: Jules A. Lorio, Chairman

To date no report has yet been submitted by this committee, however, we wish to express our indebtedness to the many members of the Auxiliary who gave of their time and rendered valuable assistance at Registration Desk and the Thursday evening General Interest Program and Coffee Party at Dixon Hall

4. Plant Inspection Committee: Herbert C. Swan, Chairman

As will be noted in Mr. Swan's report, both the plant visitation trip to Kaiser Aluminum and Chemical Company at Chalmette, and the harbor inspection trip aboard the Dock Board yacht "Good Neighbor", were conducted very smoothly. An equal number of guests, fifty-two, made each trip.

5. Program Committee: Frank Riess, Chairman

Under the able handling of Mr. Riess this committee did exceptionally fine work in its preparation of the printed programs. Credit for design of the "new face" given the program this year, belongs entirely to Mr. Riess and his Vice-Chairman Mr. Schneider. Faultless arrangements were made with the hotel management for rooms for the various technical sessions and other functions of the meeting. As is reflected in his very complete report, a close check was made on attendance at each and every event on the program.

Supplementary programs were also printed for the Student Conference, and provided at the Registration Desk for distribution.

A suggestion has been offered for consideration by future program committees, to prepare and have printed for enclosure with the printed program, a brief biographical sketch of each of the scheduled speakers. It is felt that some advance publicity in the way of information regarding each speaker's background, would contribute considerably towards creating interest and thus improve attendance at the meetings.

Complaints have been received with regard to considerable unnecessary noise at the freight elevator behind the Jackson Room. This is apparently caused by the hotel help handling china, glassware, cutlery, etc. It has been suggested that this area be policed while meetings are in session.

6. Publicity Committee: J. Mason Guillory, Chairman

Excellent newspaper coverage prior to and during this meeting was obtained through the efforts of Mr. Guillory and his committee. In his report he emphasized the capable assistance rendered by his Vice-Chairman, Mr. Sydney Ellis, Jr.

Advance copies of the program were mailed to the secretaries of all participating engineering societies. Letters of invitation to attend the technical sessions, together with copies of the program were sent to superintendents of local schools for distribution to science or other interested teachers. Radio and television stations, air-line officers, and the local office of the General Contractors Association were all contacted and requested to draw to the attention of their engineers, specific technical sessions which would be of interest to them.

7. Registration Committee: Albert J. Fransen, Chairman

No report is yet at hand from Mr. Fransen, but we can report that he and his committee faithfully performed the duties required of them.

For some not apparent reason, registration at this meeting fell approximately 22% below last year. At the final meeting of committee chairmen and vice-chairmen, held March 10, when all committee reports were read and

reviewed, considerable discussion developed with regard to this falling off of registration. A comparison of registration figures for the past four meetings has been prepared and is included as part of this report. These figures show a gradual decline in registration, and as the Society's membership is constantly increasing, the reverse would be expected as far as attendance at Annual Meetings is concerned. In view of the above, it is suggested that some study and thought be given, as soon as possible, to determine what steps could be taken to stimulate interest of the membership in the Annual Meetings.

8. Student Conference: Sam P. Gullatt, Jr., Chairman

Despite four very interesting and very well presented papers, the attendance of 61 was below par. This was attributed to perhaps the changing of the day of the Conference from Thursday morning to Saturday morning. However, quoting Professor Gullatt's report, "Judging from the favorable comments heard, this seems to have been a wise move and it is recommended that the Conference be scheduled on Saturday in future meetings."

As an aid to increasing attendance at the Conference, it is suggested that the Dean of Tulane School of Engineering be requested to excuse Junior and Senior classes the morning of the Conference.

Professor Gullatt recommends that the Student Conference committee membership, other than chairman and vice-chairman, be appointed by the deans of the various engineering schools represented. It is felt that this procedure will provide an energetic and well qualified committee, and at the same time greatly assist the committee chairman and vice-chairman.

9. Technical Papers Committee: Ivan H. Purinton, Chairman

Five excellent technical papers, covering a wide diversity of engineering subjects, with men of national prominence in each of their particular fields to present the papers, were obtained by Mr. Purinton and his committee.

The Program Committee Chairman's report shows that, although total registration for the meeting was low, attendance at each of these five technical sessions was very good, and compared very favorably with previous meetings.

It will be gathered from Mr. Purinton's report that he considers the attendance at these technical sessions a very poor showing for such a state-wide organization as the Louisiana Engineering Society. He feels that such apparent lack of interest by the membership is not only unfair to the speakers, but is very disappointing to the chairman and his committee. Mr. Purinton's suggestions for possible overall improvement of the Annual Meeting are recorded in his report, and are passed along for consideration by incoming committees.

In conclusion, I wish to again express my gratitude to the officers, board members and committeemen. The cooperation given me made the job run very smoothly, and it was indeed a pleasant experience working with such a group. Mr. Gus Durning, General Vice-Chairman, has indeed been "my right-hand man", and I herewith recommend him for the position of General Chairman for the 1955 Annual Meeting.

Respectfully submitted,

DAVID MOODIE, General Chairman
1954 Annual Meeting

cc: Messrs. John P. Fernandez
Augustus W. Durning

**Minutes of the Meeting of the Shreveport Section of the L.E.S.
Held March 2, 1954**

The meeting was called to order by President Hadra at 7:30 p. m. in the Lake Room of the Captain Shreve Hotel. Forty members and guests were present.

Secretary Snyder read the minutes of the last meeting which were approved as read, and also announced that the Treasury contained \$111.67 and that the results of the March of Dimes campaign were \$163.00 collected.

President Hadra appointed Messrs. McCullough and Greco to write an obituary for Mr. T. F. Cash, who died on February 13, 1954.

President Hadra discussed a proposed law banning livestock from Louisiana highways. This was done at the behest of the Ark-La-Tex Geophysical Society. No action was taken.

President Hadra discussed the proposed revisions in the Louisiana engineer registration law as set forth by the Louisiana Engineering Society and Louisiana Council of Engineers.

Mr. Ralph Segall, our program committee chairman, introduced Judge George W. Hardy, Jr. who made a most interesting speech about "The Legal Limitations and Liabilities of an Engineer in Regard to His Design".

There being no further business the meeting was adjourned.

MILLARD P. SNYDER, Secretary-Treasurer

Minutes of the Meeting of the Executive Council of the Shreveport Section of the Louisiana Engineering Society held at 1839 Line Ave., Shreveport, La., March 5, 1954

President Hadra called the meeting to order at 5:00 p. m. Messrs. Sorenson, Freeman, Gillen, and Snyder were present.

The proposed new Louisiana licensing law for engineers was discussed at length. It was decided that the Shreveport Section is opposed to scrapping the present law in favor of a new one, instead favors gradual revision of the present statute in particular adding an engineer in training amendment but without an examination if the engineer in training is a graduate of accredited engineering school.

The attached resolution concerning livestock on Louisiana highways was unanimously approved.

No action was taken regarding the usual spring fish fry until after the first quarter 1954 dues rebate is received.

Mr. Sorensen proposed increasing the number of regular meetings of the Shreveport Section to six (6) annually. This matter is to be discussed later.

After that the meeting was adjourned.

MILLARD P. SNYDER, Secretary-Treasurer

RESOLUTION

WHEREAS, the principal highway of Louisiana are intended for the passtge of traffic, not for the grazing of livestock, and

WHEREAS, the safety of the citizens using these highways is put in jeopardy by the roaming of animals thereupon, and

WHEREAS, the need for a statewide highway stock law in Louisiana has become increasingly apparent, and

WHEREAS, the nature of the work in which a high percentage of the membership of the Shreveport Section of the Louisiana Engineering Society is involved is such as to require their use of the highways at all times, both day and night, and

WHEREAS, the State Legislature at its last meeting failed to pass a statewide highway stock law,

BE IT THEREFORE RESOLVED by the Shreveport Section of the Louisiana Engineering Society at the regular meeting of its Board of Directors that we do urge the members of the State Legislature to pass a law which will require the banning of livestock from the principal highways of this State in order that vehicular traffic thereon will not be menaced or placed in jeopardy by said livestock.

BE IT FURTHER RESOLVED that copies of this resolution be furnished to the local Press, members of the State Legislature, and the Louisiana Engineering Society.

We certify that the above and foregoing is a true and correct copy of the resolution passed by the Shreveport Section of the Louisiana Engineering Society at the meeting of its Board of Direction held on the 12th day of March, 1954, at Shreveport, Louisiana.

CARL M. HADRA, President

MILLARD P. SNYDER, Secretary-Treasurer

Minutes of Meeting of the Monroe Section, L.E.S., March 3, 1954

The Monroe Section of the Louisiana Engineering Society met in the Engineering Laboratory at Louisiana Tech in Ruston, La., on March 3, 1954. Before the meeting was called to order the members and guests enjoyed a shrimp and oyster supper prepared by the members of the Entertainment Committee. There were 36 members and 21 guests in attendance.

Mr. Sidney S. Gill called the meeting to order at 8:30 p. m.

The minutes of the December 1, 1953 meeting were read and approved.

Mr. J. J. Thigpen gave a short report on the presentation of the Certificate of Appreciation for outstanding service in engineering to Mr. Ben T. Bogard during Engineer's Week.

Mr. Ben Bogard gave a brief resume of the draft of proposed provisions of Engineer's Registration Law. The section then voted unanimously to go on record as approving the recommendations of the special committee of the Louisiana Council of Engineers. This motion was made by Mr. H. M. Rhodes and seconded by Mr. Lonnie Smith.

Mr. John Calhoun introduced the speaker Mr. M. T. Haddock, senior in Petroleum Engineering at La Tech, who gave an interesting talk on Off-Shore Drilling off the South Louisiana Coast.

Mr. Gill announced the next regular schedule meeting of the Monroe Section would be held in Monroe.

There being no further business the meeting was adjourned.

FARRELL W. ADAMS, Secretary-Treasurer

Minutes of Meeting of the Alexandria Section of the L.E.S., March 3, 1954

The Alexandria Section of the Louisiana Engineering Society was called into a special meeting on March 3, 1954 by President O. E. Barron this meeting being held at the Alexandria Community Center. A quorum was present to study and discuss the proposed revision to the Engineers Registration Law as drafted by Special Committee presented to the Louisiana Engineering Society.

A report from the appointed committee of Messrs. David, Rogers, Edwards and Barron was presented to the Section and a written report of Mr. Cook's was read by Mr. David due to Mr. Cook being unable to attend this meeting. A general discussion was held and after an expression of views and thoughts by each member present the Section was ready for an opinion. A motion was offered by Mr. David that the proposed revision to the Engineers Registration Law as presented to this Section for Action be returned with the recommendations that the Alexandria Section of the Louisiana Engineering Society do not find this revision as satisfactory to this group. A second to this motion was made by Mr. Rogers. A secret ballot was taken and the vote was unanimous as to not being satisfactory or acceptable to the Alexandria Section.

Resolutions for Amendments to the present Act of 1950 were offered as follows:

Motion by Mr. Smith that the registrations for licensing of Professional Engineers be separated from Land Surveyors and each shall have their own board of registration. A second to this motion was made by Mr. Balentine. The vote on this motion being in a majority for the separation of Professional Engineers and Land Surveyors.

Motion by Mr. Smith that Section 2 shall also include the phrase of holding out one's self to the public as being engaged and qualified to practice Engineering. This motion was seconded by Mr. Rogers. The vote on this to be included.

Motion by Mr. L'Heureux that the board of registration be composed of a member from each of eight Congressional Districts and a Member at large also the changing of the number of members needed for a quorum from four to five. This motion was seconded by Mr. Smith and a unanimous vote was taken for the revision of members and a selection from each Congressional District.

Motion by Mr. David that Amendments be made to Section 12 that they require for professional license four (4) years of accredited college with degrees and two (2) years of experience in Engineering work that is satisfactory to the Board or additional two (2) years of higher schooling. A second to this motion was made by Mr. Rogers and a majority vote was given for the adoption of this amendment.

Motion by Mr. Smith that a Public Employee registered as an Engineer should be reinstated when returning to the employ of a Public Agency, this to be checked by President Barron. This motion was seconded by Mr. Edwards and an unanimous vote was taken on this motion.

The above resolutions and motions to be considered as amendments to the present and existing law and to be presented by President Barron at the Council meeting that is to be held in New Orleans on Monday, March 8, 1954 also presenting the recommendations of the Alexandria Section of the Louisiana Engineering Society.

The above taken from the minutes of meeting held on Wednesday, March 3, 1954.

C. C. EDWARDS, JR., Secretary-Treasurer

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MEMBERSHIP LIST

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

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

A

ALFRED E. ABAUNZA, (1938), C. E. R., Ajax Machine Works. 3133 Tchoupitoulas St., New Orleans 15.
HENRY G. ABBOTT, (1925), Ch. E., Esso Standard Oil Co., Box 1767, Baton Rouge.
MACK ABRAHAM (J), (1948), M. E., R. Cities Service Refining Corp. Butadiene Plant, Lake Charles, La.
CARL E. ABRAHAMSON, (1950), C. E., R., La. Dept. of Hwys., P. O. Box 1002, Baton Rouge 1.
NILS C. C. ABRAHAMSON, (1944), C. E., Department of Hwys., P. O. Box 1002, Baton Rouge 1.
MICHAEL C. ABRAHM, (1936), M. E., R., New Orleans Public Service Inc., 317 Baronne St., New Orleans 9.
AARON ABRAMSON, (1946), M. E., Ch. E., R., Petrolane Gas Co., Inc., P. O. Box 4067, Sta. F., New Orleans.
FARRELL W. ADAMS, (1948), M. E., R., United Gas Corp., Box 1601, Monroe, La.
FRED R. ADAMS, (1940), E. E., R., Southern Bell Tel. and Tel. Co. 304 Iris St., Lake Charles.
GEORGE C. ADAMS (J), (1943), M. E., R. City of Alexandria, City Hall, Alexandria, La.
JERRY W. AFFOLTER, JR., (1952), Ch. E., Esso Standard Oil Co., 745 Parlange Drive, Baton Rouge 6.
FELIX L. ALCUS, (1922), (L.M.), M. E., R., La., Miss. Self employed. 219 Pan-American Bldg., New Orleans 12.
LEWIS SCHERCK ALCUS (L. M.), (1923), M. E., R., 474 Audubon St., New Orleans 18.
ALBERT M. ALEXANDER, (1944), C. E., R. La., Miss., Consulting Engineer, 308 Balter Bldg., New Orleans 12.
LESTER F. ALEXANDER, (1915), (L.M.), C. E., Alexander Ship Yard, Inc. 834 Audubon Bldg., New Orleans 16.
MILLER H. ALEXANDER, (1950), M. E. and Hydraulic E., R., American Rice Growers. 904 Kirby St., Lake Charles.
TOM E. ALEXANDER, (1946), M. E., E. E., Crane Packing Co., 644 Carol Marie Drive, Baton Rouge.
JOHN W. ALLEE, (J), (1948), C. E., R., B. M. Dornblatt & Associates, 119 Elvis Court, New Orleans 20.
HUNTER S. ALLEN, (A), (1948), C. E., R. Black Rogers & Co 304 La. Nat. Bank Bldg., Baton Rouge.
JACK W. ALLEN, (1949), M. E., E. E., R., The Celotex Corp. 236 Ridgewood Drive, New Orleans 20.
JAMES E. ALLEN, (J), (1949), C. E., A. The Allen Const. Co., Box 3044, Shreveport, La.
ROBERT D. ALLEN, (1947), M. E., R., Gulf Engineering Co., 1000 S. Peters St., New Orleans 13.
WINFIELD W. ALSUP, (1949), C. E., R., J. B. Beaird Co., P. O. Box 1115, Shreveport, La.
NORMAN G. ALVIS, (1952), E. E., R., Wagner Electric Corp. 227 International Trade Mart, New Orleans 12.
ROBERT W. AMMON, (J), (1951), M. E., Esso Standard Oil Co. 833 Geranium St., Baton Rouge, La.
WALTER J. AMOSS, (1943), C. E., Valentine Sugars Co. 1571 Henry Clay Ave., New Orleans 18.
NATHAN L. ANDERSON, (J), (1951), M. E., Kaiser Aluminum & Chemical Corp., Rt. 1, Box 158, Chalmette, La.
HERMAN M. ANDREAS, (1951), Texas-Bitulithic Co. Box 8044, New Orleans 22.
ALVIN P. ANDREWS, (1947), Surveyor, C. E., R., Dept. of Public Works. P. O. Box 1206, Monroe, La.
PHILIP P. ANGIER, (1942), C. E., R., La. Dept. of Highways. Rt. 5, Box 318, Shreveport, La.
JULIUS B. ARBOUR, (J), (1947, M. E., Esso Standard Oil Co. of N. J., La. Div. 2952 Belmont Ave., Baton Rouge, La.

- AUSTIN ARDOIN, (J), (1950), E. E., Southern Bell Tel. Co. 1560½ N. Dorgenois St., New Orleans 19.
 ROBERT L. ARGUS, (1938), M. E., R., Pan-Am Southern Corp., Destrehan, La.
 WILBERT L. ARGUS, (1938), C. E., R., Alumaglass Bldg. Products Inc., 223 N. Carrollton Ave., New Orleans.
 HENRY G. ARMATIS, (1953), C. E., M. E., R., La., Neb. Welding & Mfg. Co., 3650 Fairmont Drive, New Orleans, La.
 M. GEORGE ARNETT, (1950), M. and E. E., R., Central La. Electric Co., P. O. Box 1096, Lafayette, La.
 ALANSON J. ARNOLD, (J), M. E., R. American Radiator and Standard Sanitary Corp. 1933 Wilton Drive, New Orleans 22.
 THOMAS H. ARNOLD, JR., (J), (1951), Ch. E., La. State University. Box 8817, L.S.U., Baton Rouge 3, La.
 VERNON W. ASHWORTH, (J), (1953), M. E., R., George C. Hengy & Co. 273 Vine St., Shreveport.
 BEN D. ATCHLEY, SR., (J), (1951), C. E., R., City of Shreveport. 1830 Jenkins St., Shreveport.
 OREN H. ATKINS, (1953), M. E., E. E., R., Pogue-Atkins Co., Inc. 502 Austin Ave., W. Monroe, La.
 JAMES G. ATTEBERRY, (J), (1950), C. E., R., Gulf Oil Co. 336 W. Laurel St., Eunice, La.
 THOMAS L. AUBIN, JR., (J), (1950), M. E., United Gas Pipe Line., 914 Erie St., Shreveport, La.
 WILLIAM W. AYER, JR., (1953), Pet. E., R., Cities Service Refining Corp. 3716 Vanderbilt Drive, Lake Charles.
 SAUNDERS AYMOND, (A), (1951), (C.E.), Draftsman, Pan-American Engineers, 1022 Tenth St., Alexandria, La.

B

- BENTON P. BABIN, (1945), E. E., R., Westinghouse Electric Corp., 1241 N. Rampart St., New Orleans 16.
 LIONEL J. BABIN, JR., (J), (1948), M. E., B & M Corp. P. O. Box 6, Houma, La.
 FRED J. BAEHR, JR., (J), (1953), M. E., R., N. O. Public Service Inc. 1600 So. Peters St., New Orleans 13.
 JEROME C. BAEHR, (1931), C. E., R., U. S. Engineer Corps, New Orleans District, 7407 St. Charles Ave., New Orleans 18.
 JOE M. BAKER, (1948), Production Supt., Union Sulphur Co., 3819 Drake St., Houston 5, Texas.
 OREN BAKER, (1951), C. E., R., La. Dept. of Highways, Box 872, Alexandria, La.
 JOSEPH L. BALCH, (J), (1950), E. E., 6 Union St., Schenectady, N. Y.
 ALONZO A. BALCOM, JR., (1940), C. E., R., Balcom Supply Co., Inc., 4608 Capitol Hts. Ave., Baton Rouge.
 SAMUEL L. BALENTINE, (J), (1954), Howard L'Heureux, Consulting Engrs. Route 1, Alexandria.
 ROBERT A. BANCK, (1953), M. E., R. Mich., Riley-Stoker Corp. 504 Pan American Bldg., New Orleans 12.
 FRED N. BANKER, (A), (1950), Telephone Eng., Gonzales Telephone Exchange, Box 36, Gonzales, La.
 WARREN K. BANKSTON, (1948), M. E., N. O. Public Service Inc., 5958 Argonne St., New Orleans 24.
 PAUL M. BARBER, (1951), Surveyor. 3541 N. Market St., Shreveport.
 CHARLES C. BARNARD, (1937, C. E., R., Barnard & Burk, 1023 Nicholson Dr., Baton Rouge, La.
 CHARLES P. BARNARD (J), (1954), C. E., R., Barnard & Burk. Box 268, Baton Rouge.
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 ROBERT LELAND BARNES, (1942), C. E., R., La. Dept. of Highways, Fordoche, La.
 WILLIAM WALTON BARNES, JR., (1948), E. E., 818 Sixth St., Lake Charles, La.
 VAN A. BARNETT, (1949), C. E., R., Consulting Engineer, Private Practice. 214 Simon Bldg., Shreveport, La.
 JOSEPH H. BARNWELL (1951), M. E., R., 3049 Broadway, Schenectady 6, N. Y.
 WILLIAM A. BARNWELL, JR., (J), (1951), Ch. E., Dow Chemical Corp., Box 91, Lake Jackson, Tex.
 WILLIAM C. BARNWELL, (1949), M. and E. E., R., Gaylord Container Corp. 823 N. Border Dr., Bogalusa, La.
 HAROLD T. BARR, (1947), Agricultural E., R., Agricultural Experiment Station L.S.U., Baton Rouge.
 OTHA E. BARRON, (1951), E. E., R., Southern Bell Tel. & Tel. Co. 825 Murray St. Alexandria.

- OTHA E. BARRON, JR., (1952), E. E., Robbins & Meyers, Inc., 6731 General Diaz St., New Orleans 19.
- ROBERT H. BARTHOLOMEW, (1948), Ch. E., Shell Oil Co., Inc., Norco, La.
- Z. W. BARTLETT, (1949), Mining E., R. La., Tex., Freeport Sulphur Co., 1904 American Bk. Bldg., New Orleans 5.
- JOHN C. BARTLEY, (1940), C. E., R., Bartley & Binnings. 433 Gravier St., New Orleans 12.
- RAYMOND P. BASSICH, (A), (1929), N. O. Blue Print & Supply Co., Inc. 824 Union St., New Orleans 12.
- AYLMER P. BATCHELOR, (1952), M. E., R., United Gas Pipe Line Co. 940 Ockley Drive, Shreveport, La.
- JOHANNA O. BAUMAN, (A), (1947), Gulf States Utilities Co. 3126 Monroe Ave., Baton Rouge.
- CLAYTON M. BEAMER, (1945), Ch. E., Enjay Co., Inc. 15 West 51st St., Maplewood, N. J.
- THELBERT C. BEASLEY, (1954), M. E. Mayor, City of Ruston, P. O. Box 485, Ruston, La.
- HAL C. BECKER, (1953), E. E., R., Tulane University School of Medicine. 5711 West End Blvd., New Orleans.
- WILLIAM K. BECNEL, (1941), C. E., R., Bedell & Nelson, 2702 Manley Ave., New Orleans 20.
- JOHN G. BEDELL, (1946), C. E., V. J. Bedell Co. 840 Union St., N. O. 12.
- VICTOR J. BEDELL, (1936), C. E., R. La., Ark., Miss., Bedell & Nelson. 840 Union St., New Orleans 12.
- ELLIS L. BEGNAUD, (J), (1951), E. E., L. F. Gaubert & Co. 1831½ Esplanade Ave., New Orleans 16.
- ALEXANDER B. BELL, (J), (1950), Communications S., Southern Bell Tel. & Tel. Co., General Delivery, Broussard, La.
- BEN H. BELL, (L.M.), (1920), E. E., R., New Orleans Public Service Inc. 4604 S. Derbigny St., New Orleans 15.
- PHILIP L. BENFIELD, (J), (1952), Agri. E., Agricultural Eng. Bldg., L.S.U., Baton Rouge, La.
- R. F. A. BENSON, (1938), M. E., Gulf Refining Co. 4480 Arts St., New Orleans 22.
- LOUIS A. BERGERON, (J), (1949), C. E., La. Dept. of Highways, Box 446, Gonzales, La.
- CHAILLE CLAUDE BERNARD, (1943), C. E., R., La., Miss., La. Dept. of Highways. 2040 Oleander St., Baton Rouge 6.
- JOHN H. BERNHARD, (L.M.), (1921), Consulting E., Retired. 1728 N. Third St., Clinton, Iowa.
- CHESTER R. BEST, (1952), E. E., R., College of Eng., La. State University, Baton Rouge, La.
- ROY W. BEST, (1947), M. E., R., Cities Service Refining Corp. Lake Charles, La.
- ALLEN W. BETZ, (1945), Ch. E., R., Betz Engineering Sales Co. 6 Wavertree Court, New Orleans 20.
- MALCOLM L. BIENVENU, (J), (1949), E. E., General Electric Co. 7125 Manchester St., Apt. 2-A, Houston, Texas.
- CECIL W. BIGGS, (1949), C. E., Tellepson Const. Co., Route 4, Winnsboro, La.
- ARTHUR E. BIGLER, (1946), E. E., R., La. Power & Light Co. 353 Soniat Ave., Harahan, La.
- F. N. BILLINGSLEY, (L.M.), (1915), C. E., E. E., M. E., R., La., Ala., Billingsley Engineering Corp. 409 Cigali Bldg., New Orleans 12.
- ROGER BISSINGER, (J), (1952), E. E., R., Electrical Sales Co., 2102 Audubon St., New Orleans 18.
- CHARLES BITTENBRING, (J), (1940), C. E., R. La. U.S. Navy, District Public Works. 403 Whitney Blvd., New Orleans 20, La.
- F. B. BLACKSTONE, (1944), M. E., R., Freeport Sulphur Co., Port Sulphur, La.
- HUGH M. BLAIN, JR., (1941), M. and Ch. E., R., New Orleans Public Service Inc. 527 Magnolia St., New Orleans 13.
- GLEN P. BLANCHARD, (J), (1949), M. E., C. B. Construction Co. 1085 Choctaw Drive, Baton Rouge.
- LEE J. BLANCHARD, JR., (J), (1950), M. E., L.S.U. Rt. 1, Box 61, St. Martinville, La.
- JOHN G. BLANCHE, (1949), M. E., R., L.S.U., 3239 Morning Glory Ave., Baton Rouge, La.
- ROBERT F. BLAND, (J), (1948), C. E., R., R. P. Farnsworth & Co. 1626 Napoleon Ave., New Orleans 15.
- WALTER E. BLESSEY, (1943), C. E., R., College of Engineering, Tulane University, New Orleans 18.
- ALBERT R. BOELTE, (1937), C. E., R., Board of Commissioners, Port of New Orleans. 6032 Patton St., New Orleans 18.
- J. EDWIN BOELTE, (A), (1945), M. E., E. E., R., Sperry Gyroscope Co., Inc. 19 Maryland Drive, New Orleans 20.
- BEN T. BOGARD, (1949), M. E., R., La. Polytechnic Institute. 36 University Drive, Ruston, La.

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- WILLIAM BREWSTER GURNEY, (1943), M.E., Gulf States Utilities Co. 2631 Hundred Oaks Ave., Baton Rouge.
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- JOSEPH O. HACHET, JR., (1948), E. E., Shell Oil Co. Box 153, LaPlace, La.
- ALLEN S. HACKETT, (L. M.), (1921), C. E. 1580 Jefferson Ave., New Orleans 15.
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- EDGAR J. HAGSTETTE, JR., (1935), Ch. E., R., Calif. P. O. Box 1675, Houston, Texas.
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- RUSSELL A. HALL, (J), (1951), C. E., R., T. Edward Ernst. 513 Sena Drive, New Orleans 20.
- W. HANSEN HALL, (1941), E. E., R., La., Tex., Miss. Self employed. 212 Fourth St., De Ridder, La.
- DANIEL HALLARON, JR., (1939), M. E., E. E., R., New Orleans Public Service Inc. 317 Baronne St., New Orleans 9.
- JAMES H. HAMILTON, (1951), Ch. E., Barrow-Agee Laboratories, Inc. Box 858, Shreveport, La.
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- NILS E. HANSEN, (J), (1953), C. E., R. 607 Filmore Ave., New Orleans 24.
- IRVEN E. HANSON, C. E., R., Freeport Sulphur Co. 2115 Joseph St., New Orleans.
- FENTON HARDING, (1953), C. E., R. La., Tex. Southwestern La. Institute. Box 344, S.L.I., Lafayette, La.
- WILLIAM HARDY, (1937), Construction E., Hardy-Stevens Co. 917 Carondelet Bldg., New Orleans.
- QUENTIN W. HARGROVE, (1953), M. E., E. E., R. Neild-Somdal Associates. 960 Jordan St., Shreveport, La.
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- MAURICE R. HARTMAN, JR., (1953), M. E., R., Matheison Chemical Corp. 1512 Tenth St., Lake Charles, La.
- AUDIO G. HARVEY, (1952), E. E., M. E., La. Delta Exploration Co. 11 Park St., Port of Spain, Trinidad, B.W.I.
- JAMES E. HASSINGER, JR., (J), (1945), C. E., R. 2021 S. Carrollton Ave., New Orleans 18.
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- N. L. HAWKINS, (1943), C. E. Orleans Materials & Equipment Co. P. O. Box 87, New Orleans 6, La.
- CURTIS F. HAWLEY, (J), (1954), E. E. Westinghouse Electric Corp. 1226 Whitney Bldg., New Orleans 12.
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- LINDA REX HAYS, (1948), M. E., Cities Service Refining Corp. Rt. 1, Box 78, West Lake, La.

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- OMER J. HEBERT, (1947), C.E., R., Hebert Bros. 1015 Osage Ave., Plaquemine, La.
- GEORGE A. HEFT, (1939), C.E., M.E., E.E., R. La., Ala., G. A. Heft & Co. 820 Union St., New Orleans 12.
- ELBERT S. HEIM, (1949), C.E., R., La. Dept. of Highways. 1017 Benton Road, Bossier City 66, La.
- CARL J. HELBAK, (1949), C.E., R. La. c/o Ellis LaBorde, Mgr., City Park, New Orleans 19.
- SAMUEL J. HELFMAN, (1950), E.E., R. Barnard & Burk. 1023 Nicholson Drive, Baton Rouge, La.
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- NUMA J. HELWICK, (1936), M.E., R., American Heating & Plumbing Co. 809 Greenwood St., New Orleans 19, La.
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- F. M. HERROY, SR., (1946), C.E., U. S. Corps of Engineers., N. O. District. 103 Elvis Court, New Orleans 20.
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- R. M. HETHERWICK, (1950), E.E., R. Southwest La. Electrical Membership Corp. 130 Azalea St., Lafayette, La.
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- FREDERICK J. HOFFMAN, (1952), Chemist & Engr. N. O. Public Service Inc., 1600 S. Peters St., New Orleans 13, La.
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- LEO LEONARD HOLZENTHAL, (1946), Ch. E., M. E., R. U.S.D.A. Southern Region Research Laboratory. 2100 R. E. Lee Blvd., New Orleans.
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- WILLIAM M. HOWE, (J), (1950), E. E., Container Corp. of America. 4210 N. W. 25th, Fort Worth, Texas.
- ROBERT E. HOWSON, (J), (1935), C. E., R. Military Road, Covington, La.
- CHARLES P. HOYT, (1945), M. E., R. Esso Standard Oil Co., P. O. Box 864, Baton Rouge, La.
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- JOHN H. HUFFMAN, (A), (1952), Petroleum E., R., United Gas Corp., Monroe, La.
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- FREDERICK KRING, JR., (1948), M. E., Esso Standard Oil Co. 628 Audubon Ave., Baton Rouge, La.
- S. HENRY KRONTHAL, (1950), Architectural E., Rust Eng. Co. P.O. Box 1149, Pasadena, Tex.
- EMILE S. KROUSE, JR., (J), (1952), Agri. E., R., Gulf States Utilities Co. 340 Florida St., Baton Rouge.
- PAUL P. KRUTAK, (1935), E. E., Westinghouse Electric Corp. 1226 Whitney Bldg., New Orleans.
- ROBERT J. KUHN, (1925), E. E., M. E., R., La., Ky. Consulting Engineer, 1643 Octavia St., New Orleans 15, La.
- A. R. KUZEL, (1950), M. E., R., La. Dept. of Highways. 5836 Fairfield Ave., Baton Rouge, La.

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- CHARLES F. LACK, (1950), C. E., R. La., N. Mex. Neild & Somdal. 1040 Kings-highway, Shreveport.
- KENNETH D. R. LaCROIX, (1951), Ch. E., Esso Standard Oil Co. 2422 Hollywood Drive, Baton Rouge.
- EDWIN A. LAFAYE, M. E., R., Murray-Baker-Frederic, Inc. 234 Humble Bldg. New Orleans 26.
- PAUL M. LAGARDE, (1947), C. E., R., Standard Fruit & S. S. Co., LeCeiba, Honduras.
- THEODORE J. LALA, (J), (1951), M. E., R., Hepinstall Steel Works. 5412 Milne St., New Orleans 19.
- GEORGE B. LAMBERT, JR., (1939), Engineer, M. T. Reed Construction Co. Mississippi City, Miss.
- ALBERT F. LANDERS, (1953), M. E., E. E., Bateman Drilling Co. 1701 Texas Bldg., New Orleans 16.
- EARLE A. LANDRY, (1942) C. E., R., La. Dept. of Highways. 327 Commerce Ave., Port Allen, La.
- HENRY LOUIS LANDRY, (1942), E. E., R. Gulf States Utilities Co., 2222 Cedardale Ave., Baton Rouge, La.
- LOUIS C. LANDRY, JR., (1950), E. E., M. E., R., United Gas Corp., New Iberia, La.
- WALTER A. LANDRY, JR., (J), (1950), M. E., R. National Gypsum Co., 5300 Tchopuitoulas St., New Orleans.
- HERRICK J. LANE, (L.M.) (1929), C. E., W. Horace Williams Co. 833 Howard Ave., New Orleans 13, La.
- HERRICK J. LANE, JR., (1946), C. E., W. Horace Williams Co., 1206 Nashville Ave., New Orleans 15, La.
- EDMOND J. LANGHETEE, JR., (J), (1951), Petroleum E., R. La. Land & Exploration Co., 4405 Cartier Ave., New Orleans 22.
- JOHN E. LANGLEY, (1951), M. E., R., Esso Standard Oil Co. 1812 Ingleside Dr., Baton Rouge, La.

- WILLIAM J. LANK, (1949), C. E., R. Kansas City Southern Ry. Co. 171 Albert St., Shreveport, La.
- N. E. LANT, (1937), C. E., R. La. Dept. of Highways, Baton Rouge, La.
- FERNAND S. LAPEYRE, (1948), M. E., E. E., R., The Peelers Co., 635 S. Peters, New Orleans, La.
- WILLIAM M. LARKIN, (1944), E. E., Gulf States Utilities, Lake Charles, La.
- FERDINAND L. LARUE, JR., (1954), Ch. E., Southwestern Louisiana Institute. 435 N. Sterling St., Lafayette, La.
- LEO J. LASSALLE, (1936), (H.M.), C. E., M. E., R., La. State University and A & M College, University Station, Baton Rouge 3.
- DOUGLAS F. LATIMER, (1946), M. E., C. E., Gulf States Utilities Co., P. O. Box 2431, Baton Rouge, La.
- JOHN A. LAURENT, JR., (J), (1946), E. E., 1941 Congress St., New Orleans.
- ROBERT D. LAW, JR., (J), (1950), C. E., R. La. Dept. of Highways, 980 Carrollton Ave., Baton Rouge.
- WHITMEL E. LAZARUS, J), (1951), E. E., Westinghouse Electric Corp. 141-B Fir St., Park Forest, Ill.
- MAXWELL A. LEA, (1948), M. E., R. Ethyl Corp., 3970 100-Oaks Ave., Baton Rouge 6.
- W. STONE LEAKE, (1934), E. E., R., General Electric Co. 1004 Richard Bldg., New Orleans 12, La.
- H. A. LeBLANC, JR., (1947), Ch. E., Shell Oil Co., Inc., Norco, La.
- OWEN V. LEBLANC, (1944), C. E., R., W. Horace Williams Co., 6480 Argonne St., New Orleans.
- WHARTON A. LEBLANC, (1948), Agricultural E., M. E., R., General Gas Corp. Box 2271, Baton Rouge, La.
- WENDEL J. LECHTENBERG, (J), (1944), E. E., Mathieson Chemical Corp. 3721 Vanderbilt St., Lake Charles, La.
- STANLEY M. LECOURT, (1933), C. E., M. E., R., Mississippi Shipping Co., Inc. 920 Picheloup Place, New Orleans 19.
- J. McLEAN LeDOUX, (1945), E. E., National Electric Products Corp. 629½ Baronne St., New Orleans 12.
- CLARENCE O. LEE, (1944), Mining E., R., Freeport Sulphur Co. P. O. Box 1520, New Orleans 5.
- ROBERT E. LEE, JR., (J), (1951), M. E., Esso Standard Oil Co. 3124 Tyrone Dr., Baton Rouge, La.
- PERSHING J. LEFORT, (J), (1952), M. E., Southern Production Co. Inc., P. O. Box 66, Galliano, La.
- RANDALL F. LEGEAI, (L.M.), (1923), E. E., R., New Orleans Public Service Inc. 3824 Nashville Ave., New Orleans 15, La.
- WALTER C. LEHIGH, (A), (1950), Shell Oil Co., P. O. Box 673, New Orleans 7.
- A. J. LEHMAN, (1948), E. E., R., La., Texas, Freeport Sulphur Co., Box 187. Port Sulphur, La.
- H. L. LEHMANN, (1937), C. E., R. La. Dept. of Highways, Baton Rouge, La.
- WENDEL G. LEIBE, (J), (1948), M. E., R., City of N. O., Dept. of Mech. Inspection. 426 S. Jefferson Davis Parkway New Orleans 19, La.
- MARSHALL B. LEICHT, (J), (1949), E. E., E. I. duPont de Nemours Co. 116 Amarylliss Ave., Orange, Texas.
- HENRY F. LemIEUX, (J), (1951), C. E., E. E., R. Raymond Concrete Pile Co. 201 Pere Marquette Bldg., New Orleans 12.
- GEORGE P. LEMOINE, (1950), Ch. E. Lemoine Bros. P. O. Box 298, Bunkie, La.
- JAMES A. LEMOINE, (1952), M. E., Lemoine Bros., Box 298, Bunkie, La.
- LEON C. LEONARD, (J), (1953), M. E., R., A. M. Lockett & Co., Ltd., 4630 St. Charles Ave., New Orleans 15.
- FRED E. LESHE, (1950), C. E., Cities Service Refining Corp. 18 Poinsettia Road, Maplewood, La.
- HAROLD A. LEVEY, SR., (1936), Ch. E., M. E., E. E., R. La., Texas. American Products Co., Inc. 311 Audubon Blvd., New Orleans 18.
- DAVID J. LEVINE, (J), (1952), M. E., R., Equitable Equipment Co. Inc. 410 Camp St., New Orleans 12.
- ERNEST LEE LEVINGSTON, (1954), C. E., Cities Service Refining Corp. 2005 Fourth St., Lake Charles.
- ALLISON M. LEVY, (J), (1944), M. E. de Laureal & Moses. 208 DeSoto Bldg., Pensacola, Fla.
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- EUGENE LEVY, (A), (1946), E. Levy & Co., Electrical Contractors. 530 Murray St., Alexandria, La.
- MILTON L. LEVY, (1946), E. E., R. Higgins Inc., 5673 West End Blvd., New Orleans 24.
- NEVILLE LEVY, (1929), M. E., E. E., R. Equitable Equipment Co., Inc. 410 Camp St., New Orleans, La.
- HOWARD B. L'HEUREUX, (1951), C. E., R., Howard L'Heureux & Associates. 720 Murray St., Alexandria, La.

- RALPH E. LIND, (1930), C. E., R. 6624 Louis XIV St., New Orleans 24.
 ARCHIE C. (BOB) LINDSAY, JR., (A), (1950), C. E., R. City of Shreveport.
 2515 James St., Shreveport, La.
 R. P. LINFIELD, (1930), C. E., R. 7715 Burthe St., New Orleans 18.
 WILLIAM A. LOCHTE, (1945), M. E., American-South African Steamship
 Co. 7021 Hickory St., New Orleans 18, La.
 ROBERT P. LOCKETT, (A), (1931), M. E., E. E., R. A. M. Lockett & Co. 308
 Whitney Bldg., New Orleans 7.
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 Whitney Bldg., New Orleans, La.
 T. BENBURY LOCKETT, (1949), M. E., R., Standard Supply & Hardware Co.,
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 Z. L. LOFLIN, (1952), M. E., Ch. E., R., Southwestern Louisiana Institute.
 Box 353, S.L.I. Station, Lafayette.
 GEORGE L. LOGAN, (1948), Petroleum E., R., Lyons, McCord & Logan. 404
 Texas-Eastern Bldg., Shreveport, La.
 JOHN S. LOGAN, (1949), Highway E., U.S. Bureau of Public Roads. 416 East
 Drive, Baton Rouge 6.
 JULES A. LORIO, (L.M.), (1921), M. E., Dibert, Bancroft & Ross Co., Ltd. 7420
 Benjamin St., New Orleans 18.
 STAVROS D. LOUCHIS, (1951), M. E., R., Kaiser Aluminum & Chemical Corp.,
 Chalmette, La.
 ALFRED J. LOUP, JR., (J), (1949), C. E., R. Dunham Wilson Co. 2349 Edge-
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 L. A. LOUSTALOT, (L.M.), (1931), C. E., R. Guaranty Bank & Trust Co.,
 Hammond, La.
 BERNARD LOUVIERE, (1949), M. E., R., Gulf Engineering Co., Inc. 1000
 S. Peters St., New Orleans 13, La.
 M. CONWAY LUSK, (J), (1954), C. E., R. La. State Highway Dept. 1945 Bay
 St., Baton Rouge 2.
 A. A. LYONS, (1949), C. E., R., City of Shreveport. 659 Rutherford St., Shreve-
 port, La.
 BYRON PHELPS LYONS, (1949) (C. E., R., La. Dept. Public Works, 614 Drehr
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 BYRON P. LYONS, JR., (J), (1951), M. E., P. Farnsworth Const. Co. 614 Dhehr
 Ave., Baton Rouge.
 VAL A. LYONS, (1949), C. E., R., E. M. Freeman & Associates. 228 E. Wilkin-
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- DANIEL P. MABEL, (1945), E. E., Anaconda Wire & Cable Co. 601 Hibernia
 Bldg., New Orleans 12, La.
 AUBON L. MABRY, (1947), C. E., R. Wm. H. Armstrong Str. Engr., 3051 Pied-
 mont Road, Atlanta, Ga.
 FRANK W. MACDONALD, (1933), C. E., R., Tulane University, New Orleans
 18, La.
 WALLACE RAY MACK, (1942), C. E., R. La. Department of Highways. Box
 555, Oakdale, La.
 KENNETH W. MACKENZIE, (1939), Testing Engineer, Construction Materials
 Laboratory, 624 Atchley St., Knoxville, Tenn.
 RAYMOND P. MADDUX, (J), (1953), M. E., General Delivery, St. Simons
 Island, Ga.
 LEONARD F. MAGEE, (1951), E. E., R. City of Alexandria. 2425 Elliot St.,
 Alexandria, La.
 LELAND S. MAJOR, (1953), M. E., Esso Standard Oil Co. 4511 Highland Road,
 Baton Rouge.
 JOHN S. MALAHY, JR., (1951), M. E., E. E., R., La., Tex., Miss. Hadra &
 Malahy, 1839 Line Ave., Shreveport, La.
 JOHN J. MALARKEY (A), (1952), Draftsman, Matheison Chemical Corp. 1606
 Sixth St., Lake Charles.
 JOHN F. MALLETT, (1943), C. E., R., La. Dept. of Highways. Rt. 2, Box 265-A,
 Monroe, La.
 JOHN D. MALONE, JR., (1937), E. E., New Orleans Public Service, Inc. 317
 Baronne St., New Orleans 9, La.
 LAWRENCE MANN, JR., (J), (1952), M. E., R., Esso Standard Oil Co. Box 551,
 Baton Rouge, La.
 LOUIS B. MANN, (J), (1952), M. E., U.S. Naval Reserve CEC. Box 580,
 Lafayette.
 H. H. MANNER, JR., (1947), Architectural E., La. Metal Culvert Co. Box 2427,
 Baton Rouge, La.
 JOHN F. MANSON, (1951), C. E., R. P. Farnsworth Co., Inc. Box 850, New
 Orleans, La.
 S. KENAN MANSON, JR., (1942), C. E., R., Clifford A. King, 401 Park Road,
 New Orleans 20.

- MICHAEL J. MARCHESE, (1948), C. E., U.S. Engineer Corps, N. O. Dist. 1716 St. Roch Ave., New Orleans 17.
- WARREN E. MARCUM, (A), (1952), C. E., R., La. Dept. of Highways. 2045 North 17th St., Baton Rouge.
- GODFREY L. MARINE, (J), (1951), E. E., R., Marine Electric Co. 114 E. Congress St., Lafayette, La.
- ALBERT E. MARKS, (1925), C. E., M. E., E. E., R. 5633 Rosemary Place, New Orleans 19.
- WILLIAM M. MARLIN, (J), (1953), E. E., Cities Service Refining Corp. 1 Clarence St., Lake Charles.
- HAROLD O. MARQUART, (1943), C. E., Gaylord Container Corp., Mill Div. P.O. Box 322, Franklinton, La.
- GORDON A. MARSALIS, (1951), C. E., R. Industrial Steel Products Co., Inc., P.O. Box 1814, Shreveport.
- JOHN L. MARTINEZ, (1947), M. E., R. Tulane University. 12 Fontainebleau Drive, New Orleans 18.
- CONRAD W. MARVIN, (1952), M. E., Ch. E., R., Texas-Eastern Transmission Corp. 363 Atlantic St., Shreveport.
- AUSTIN J. MARY, (1946), E. E., R., Gulf States Utilities Co. 1767 Cedardale Ave., Baton Rouge.
- HIRAM RUSSELL MASON, (1945), E. E., R. Southwestern Louisiana Institute. 204 Stephens St., Lafayette, La.
- SEBASTIAN V. MASSIMINI, (1931), M. E., Gulf Engineering Co. Inc. 1000 S. Peters St., New Orleans 13.
- WILLIAM A. MASSIMINI, (J), (1950), M. E., R. Gulf Engineering Co., 1000 S. Peters St., New Orleans 13.
- ALLEN J. MATHERNE, JR., (1943), E. E., Gulf States Utilities Co. 41 Eucalyptus Road, Maplewood, La.
- EMMETT LEE MATHEWS, JR., (J), (1949), E. E., City of Alexandria. Route 2, Box 21, Alexandria, La.
- GEORGE F. MATTHES, (1953), M. E., E. E., R. Louisiana State University, Baton Rouge 3.
- ARNOLD CARL MATTHIES, (1945), Ch. E., Esso Standard Oil Co. 655 Waverly Drive, Baton Rouge, La.
- E. D. MATTIX, (1947), Ch. E., Cities Service Ref. Corp. 1616 Seventh St., Lake Charles, La.
- GEORGE ELMER MAY, (1940), M. and E. E., N. O. Public Service Inc. 2031 Short St., New Orleans 18.
- JOHN K. MAYER, (1933), M. E., C. E., E. E., R. College of Engineering, Tulane University. 2419 Audubon St., New Orleans 18.
- WILLIAM G. MAYER, (J), (1950), C. E., R. La. Dept. of Highways. 301 Westfield, Bossier City, La.
- CHARLES J. MAYEUX, JR., (1947), C. E., R. Gaylord Container Corp. 906 North Border Drive, Bogalusa, La.
- JOHN F. MAYS, (1937), C. E., U.S. Corps of Engrs., N. O. Dist. 1407 First St., New Orleans 13, La.
- JOHN E. McADAM, (1949), E. E., R. Dixie Electric Membership Corp. 381 Finchley Drive, Baton Rouge.
- SAMUEL H. McAFEE, JR., (1950), M. E., New Orleans Public Service Inc. 2838 Iberville St., New Orleans, La.
- CHARLES R. McBRIDE, JR., (1950), M. and E. E., Firestone Tire & Rubber Co., P. O. Drawer 1361, Lake Charles, La.
- JOHN I. McCain, C. E., R. McCain & Associates. 8200 Florida St., Baton Rouge.
- JOHN C. McCAMPBELL, (1952), Geologist. Tulane University, P.O. Station 20, New Orleans 18.
- A. HEWS McCANN, (1946), Architect. C. E., R., La., Ia., Ill. Partner. A. H. McCann & Associates. 410 Howes Bldg., Clinton, Iowa.
- DANIEL B. McCARTY, (1951), C. E., R. La. Dept. of Highways. P. O. Box 271, Delhi, La.
- MARVIN R. McCARTY, (1954), M. E., Johns-Manville Sales Corp. P. O. Box 7072, Mid City Station, New Orleans.
- R. A. McCLENAGHAN, (1949), C. E., R. La., Tex. Self employed. P. O. Box 4117, Shreveport, La.
- S. LOGAN McCONNELL, (1947), M. and E. E., R. City of New Orleans, Howard Annex, 537 St. Charles, New Orleans 12.
- ALEXANDER McCOOL, (J), (1950), Hydraulic E., U.S. Waterways Experiment Station. Box 631, Vicksburg, Miss.
- LUTHER D. McCORQUODALE, (1942), C. E., R., La. Dept. of Highways, 1007 S. Division St., Lake Charles, La.
- WILLIAM R. McCOY, (1953), C. E., R. U.S. Army Corps of Engineers. 1416 South Fourth St., Monroe, La.
- JAMES P. McCULLOUGH, (1938), Ch. E., United Gas Pipe Co. P. O. Box 1407, Shreveport, La.
- THOMAS J. McDANIEL, (1951), E. E., Gaylord Container Corp. Route 3, Box 67, Bogalusa, La.

- A. H. McDONALD, (1949), C.E., R. United Gas Pipe Line Co. Box 1407, Shreveport, La.
- HENRY E. McDOWELL, (1951), C.E., U.S. Army Corps of Engineers. 2 Rainbow Drive, Pineville, La.
- WALTER H. McELROY, (A), (1954), Southern Bell Tel. & Tel. Co. 825 Murray St., Alexandria, La.
- WILLIAM E. McFARLAND, (1953), Ch.E., M.E., R. Henderson Sugar Refinery, Inc., 1136 Washington Avenue, New Orleans 13.
- J. LUCIUS McGEHEE, (J), (1949), M.E., E.E., R. Delta Bag Co. Inc., 218 Pine St., New Orleans 18.
- HARRY F. McGOWEN, JR., (A), (1951), Research Machinist. United Gas Corp. 241 Roma Drive, Shreveport, La.
- GEORGE B. McGUIRE, (1947), C.E., Standard Oil Development Co. Box 1022, Durban, South Africa.
- DEAN C. McKEE, (J), (1952), C.E., R., Ruckstuhl & Fisk, Inc., Contractors. 5850 Catina St., New Orleans 19.
- PAUL A. McKIM, (1944), Ch. E., Ethyl Corp. 630 Delgado Drive, Baton Rouge.
- MARC McKINLEY, (A), (1947), E.E., 1416 Ford St., Lake Charles, La.
- GEORGE E. McLEAN, (J), (1953), Aero. Eng. Gulf Engineering Co., Inc. 1000 S. Peters St., New Orleans 13.
- LEAL C. H. McLEAN, (1933), M. and E.E., Jones & Laughlin Steel Corp. P. O. Box 66, New Orleans 6.
- EDWARD A. McLELLAN, (1938), M.E., R. McLellan Equipment Co. 2375 Tchoupitoulas St., New Orleans 13, La.
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- GEORGE C. McMILLEN, (1951), Mining E., R., La., Tex. Freeport Sulphur Co., Port Sulphur, La.
- EDWARD J. McNAMARA, (1937), C.E., R. Freeport Sulphur Co., 308 Dunboyne Place, Thibodaux, La.
- FRANK P. McNAMARA, (J), (1949), C.E., R. Cities Service Refining Corp. 425 Phillips St., Sulphur, La.
- JOHN E. McNAMARA, (1950), Radio E. General Electronic & Engineering Service Corp. 601 South Crocker St., Sulphur, La.
- ERNEST W. McNEIL, JR., (1948), E.E., Esso Standard Oil Co. 1449 Rosemont Drive, Baton Rouge 6.
- NEIL McNELIS, (1949), C.E. R. The Carter Oil Co. 212 East Elmwood St., Shreveport, La.
- E. S. McROBERTS, (1949), M.E., R. The J. B. Beaird Co., Inc. 6114 Henderson St., Shreveport 41, La.
- WILLIAM E. McWHIRTER, JR., (J), (1951), Ch. E., R., Pan Am Southern Corp. 2022 Dante St., New Orleans 18.
- GEORGE P. MEADE, (1936), Ch.E., Colonial Sugars Co., Gramercy, La.
- E. A. MEAGHER, (1950), C.E., R., City of Shreveport. 160½ E. Lister St., Shreveport, La.
- ALLAN G. MEAKIN, (1950), Ch. E. Esso Standard Oil Co. 6595 Goodwood Ave., Baton Rouge 6.
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- CHARLES L. MELANCON, JR., (J), M. E. Dow Chemical Co. 807 Magnolia, Lake Jackson, Texas.
- LOLAN J. MELANCON, (A), (1951), E.E., R. Southern Bell Tel. & Tel. Co. 132 Tudor St., Pineville, La.
- C. GLENNON MELVILLE, (1943), C.E., R. Private Consulting Practice. 6026 Memphis St., New Orleans 19, La.
- HAROLD MELVILLE, JR., (J), (1950), Petroleum E., R. F. A. Callery Inc. Box 525, S.L.I. Station, Lafayette, La.
- OSKAR R. MENTON, (1948), E.E., Esso Standard Oil Co. 350 East State Street, Baton Rouge, La.
- CHARLES A. MENVILLE, (1952), M.E., Esso Standard Oil Co. 1251 Longwood Drive, Baton Rouge 6.
- WALTER H. MERCIER, (1947), M.E., R., Esso Standard Oil Co. 2220 Terrace Ave., Baton Rouge, La.
- CLAIR V. MERRIAM, (1953), E.E., Gulf States Utilities Co. Box 2431, Baton Rouge 2.
- RICHARD F. MESSINA, (1945), C.E., Messina Engineering Sales Co. 10 Brockenbaugh Court, New Orleans 20, La.
- HENRY M. MESSINGER, (1950), Surveyor, R., Private Practice. 401 Jackson St., Bastrop, La.
- EDWARD R. METZ, JR., (1951), M.E., R., Delta Tank Mfg. Co., Inc. 6648 Sheffield Ave., Baton Rouge, La.
- RANDALL MEYER, (1950), M.E., Esso Standard Oil Co. 240 L.S.U. Avenue, Baton Rouge.
- RAYMOND J. MEYER, (J), (1947), M.E., R. La Power & Light Co. 936 Huey P. Long Ave., Gretna, La.
- ALBERT J. MEYERS, (1933), C.E., M.E., R. Shell Oil Co., Norco, La.

- GEORGE F. MEYN, (1951), C.E., U.S. Corps of Engrs., N. O. District. 4737 Venus St., New Orleans 22, La.
- FRANK J. MIANO, (J), (1942), M.E., J. H. Rutter-Rex Mfg. Co. 8 West Chalmette Circle, Chalmette, La.
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- HAROLD A. MILLER, (J), (1951), E.E., R. Edwards Engineering Corp. 4226 Dumaine St., New Orleans 19.
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- OSWALD A. MINIERIS, (1953), M.E., Esso Standard Oil Co. 513 East Boyd Drive, Baton Rouge, La.
- ERNEST L. MIRE, (1938), C.E., R. New Orleans Public Belt Railroad. P. O. Box 1240, New Orleans 10, La.
- EDWARD C. MISHOU, (1949), Petroleum E., M.E., R., Interstate Oil Pipe Line Co., Southern Div., 14 Lakeforest Hills, Shreveport, La.
- CHARLES A. MITCHELL, (1949), M.E., R., Ohio, La., Ala. Joseph W. Eshleman & Co., 208 Woodland Ave., Homewood, Ala.
- H. LANE MITCHELL, (1944), C.E., R. City of Shreveport. City Hall, Shreveport, La.
- H. C. MOFFITT, JR., (1948), C.E., R. U.S. Engineer Corps, Galveston District. 6055 Patton St., New Orleans.
- HENRI J. MOLAISSON, (1934), Ch.E., R., Tex., La. U.S. Southern Regional Laboratory. 6665 Memphis St., New Orleans 24.
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- JOHN W. MONTGOMERY, (L.M.), (1923), Structural E., Retired. 4109 Tchoupitoulas St., New Orleans 15.
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- DAVID MOODIE, (1933), M.E., R. N. O. Public Service Inc. 1600 So. Peters St., New Orleans 13.
- JOSEPH R. MOONEY, (1951), M.E., C.E., R., Gulf Refining Co. 5117 Louisa Drive, New Orleans 22.
- ANDREW M. MOORE, (1950), E.E., R. Central Louisiana Electric Co., Inc. Box 111, Alexandria, La.
- JOHN E. MOREHISER, JR., (1938), M.E., Orleans Parish School Board, Ind. Arts Dept. Route 7, Box 1254, New Orleans 23.
- CYRIL K. MORESI, (1950), Petroleum Geologist. Busch and Moresi, P. O. Drawer 1302, Oil Center Sta., Lafayette, La.
- JAMES S. MORGAN, (1951), Ch.E., Barrow-Agee Laboratories Inc. 4355 Bayliss Ave., Memphis, Tenn.
- KEITH HAL MORGAN, (1950), E.E., R. Southern Bell Tel. & Tel. Co., Inc. 1353 Laurel St., Baton Rouge 8, La.
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- R. DOUGLAS MORGAN, (1949), C.E., R. La., Tex. T. L. James & Co. Inc. P. O. Box 403, Kenner, La.
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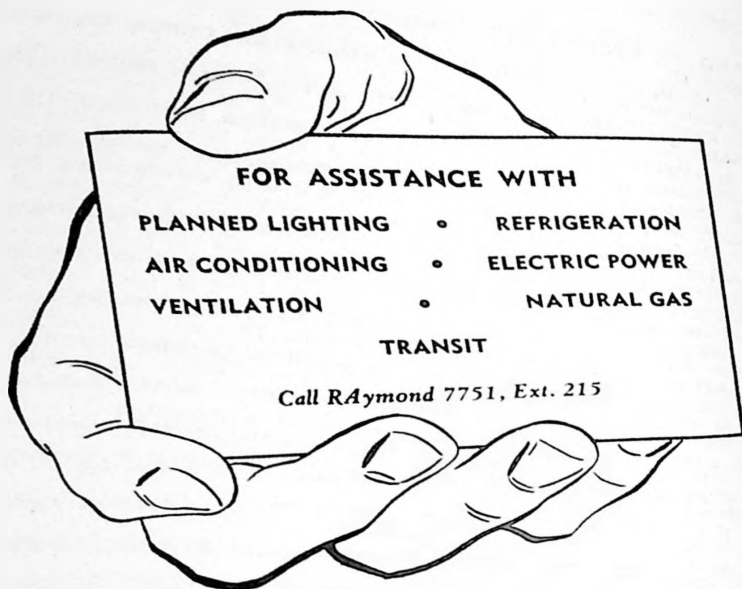
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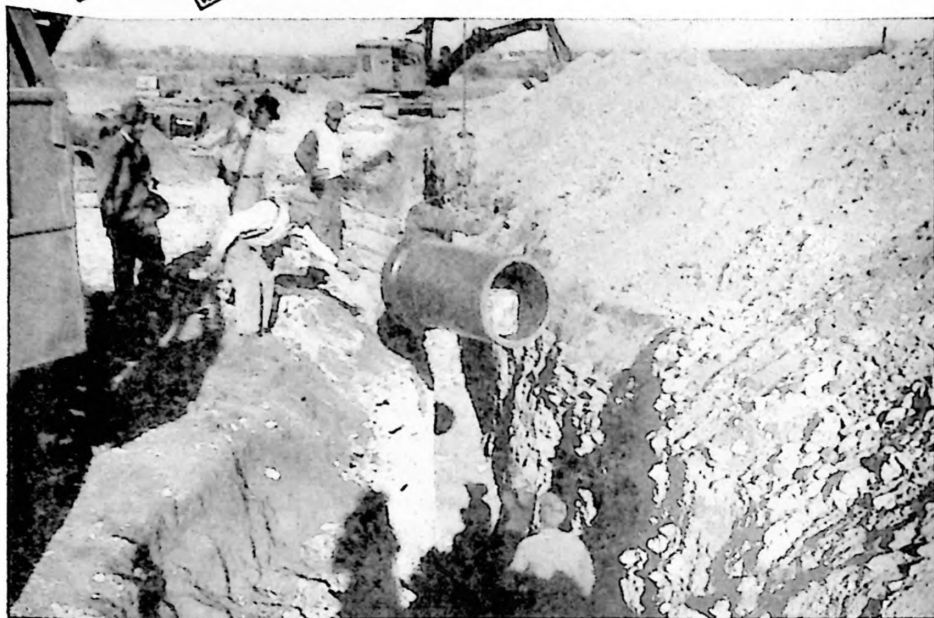
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EDITORIAL NOTES AND COMMENT

Our Annual Outing. The outing drew a crowd of 250 members and guests at the banquet, 110 for golf, 32 for horseshoe pitching. Two circumstances were unusual—it didn't rain and the affair showed a profit of \$153. The outing was under the guidance of the following: Sidney Ellis, General Chairman; John Rebold, Vice-Chairman. Golf: Ben Lockett, Jr.; Entertainment: Bernard Louviere; Refreshments: Harold N. Ford; Prizes: Roy Cappel; Horseshoes: James Janssen; Supper: Clifford King; Publicity: Edgar Pavia; Tickets: John P. Fernandez.

The following is a list of prizes, the winners and the donors.

GOLF PRIZES

President's Flight	Prize No	Description	Donated by
74 Dave Stewart	57	Silver Bowl	F. W. Macdonald
Members Gross Prizes			
77 1st. Henry Armatis	63	Silver Tray	Equitable Equipment Co.
81 2nd Bob Drueding	5	Waring Blender	Avondale Marine Ways
82 3rd Sam Philips	7	Deep Fat Fryer	Lester F. Alexander Co.
Guest Gross Prizes			
83 1st Hemp Maxwell	2	Coffee Maker	Harry B. Henderlite
83 Jimmy Thibaut	35	Silver Compote	R. P. Farnsworth & Co

Member Net Prizes

62 1st John Dugan	1 Silver Bowl	W. Horace Williams Co.
64 2nd Andy Solbert	9 Elec. Grying Pan	Frank J. Matthew
65 3rd Ken Manson	13 Silver Pitcher	Gulf Engineering Co.
66 4th Don Schell	12 Knife Set	Pittsburgh Testing Lab.
67 5th R. H. Earl	15 Grill & Waffle Iron	Geo. S. Dinwiddie
67 6th J. F. Vogt	16 Toastmaster	Am. Creosote Works
67 7th Van Purinton	18 Light Meter	Haag & Trammel Co.
67 8th Geo. Hammett	21 "Candlewick" Clock	R. E. Gosa
67 9th John Manson	17 Doz. Golf Balls	Pan-Am Southern Corp.
68 10th Ben Louviere	61 Doz. Golf Balls	King & Co.

Guest Net Prizes

54 1st Mike Calvin	34 Silver Bowl	Ole K. Olsen Co.
59 2nd L. Amoss	39 Set Thomas Clock	Taylor Seidenbach, Inc.
69 3rd W. G. Prechter	56 Doz. Golf Balls	Lone Star Cement Co.
Closest to Hole No. 7		
Cliff King	4 Arvin Radio	W. D. Taulman & Assoc.
Closest to Hole No. 14		
J. A. Commagere	6 Camera & Case	Ayers Materials
Members High Gross		
Fred Baehr	31 Travel Clock	United Gas Pipe Lines

HORSESHOE PITCHING PRIZES**SINGLES**

Bill Horrell

SINGLES—Runner Up

Francis Taylor

DOUBLES

Francis Taylor

A. E. Bigler

DOUBLES—Runner Up

John M. Jenny

C. J. Loupe

Participation Prizes

Chas. Kerr

H. H. Douglas, Jr.

A. W. Durning

M. M. Gilkeson

3 Philco Portable

8 Rem. Elec. Shaver

10 Knife Set

11 Knife Set

42 Lamp

43 Lamp

37 Portable Mixer

67 Knife Sharpener

54 Westinghouse Toaster

Pressure Cooker

N.O. Blue Print &
Dietzgen

Eustis Engineering

Allan J. Harris Co.
Bedell & NelsonBartley & Binnings
Geo. J. Glover Co.Shilstone Testing Lab.
Lionel F. Favrot Co.
Petroleum Gas Co.
Freeport Sulphur Co.**ATTENDANCE PRIZES — MEMBERS**

65 Barbeque Pit	Woodward, Wight & Co.	B. P. Babin
68 Elec. Cooker & Grill	Mason Guillory	R. N. Crews
59 20" Window Fan	Reed Unit Fan, Inc.	C. M. Solberg
73 4-5ths Liquor	J. Ray McDermott Co.	Harold Morris
19 70 lb. Ice Chest	James M. Todd & Asso.	H. V. Ford
14 Set Dishes	Byron Jackson Co.	M. R. Guell
22 Revere Cook Set	The Flintkote Co.	M. E. Youngs
32 Knife Holdster Set	Orleans Materials	Jim Box
23 Spinning Rod	E. G. Boh Forest Product	R. H. Earl
25 Spinning Reel	Edgar Murray Supply Co.	John Horton
24 Spinning Rod	A. M. Lockett & Co.	Dave Stewart
26 Spinning Reel	Boh Bros. Const. Co.	S. V. Massimini
29 Tackle Box	Allis Chalmers Co.	J. Fernandez
30 Travel Iron	General Electric Co.	Ben Louviere
20 70 lb. Ice Chest	Dixie Machine Co.	A. J. Loup, Jr.
36 Scale	John H. Carter Co.	F. W. Macdonald
44 Doz. Golf Balls	Chase Brass Co.	John Dugan
60 Wheelbarrow	Fletcher Equip. Co.	W. K. Bankston
72 Westinghouse Iron	Maritime Elect. Co.	E. J. Dantin
45 Doz. Golf Balls	Sou. States Equip. Co.	R. E. Bailey
71 Juice-a-matic	Eagle Asbestos Co.	W. B. Gurney
40 Steam Iron	Frank P. Fisher Co.	E. L. Gish
46 Table Lighter	The Texas Co.	O. V. LeBlanc
48 Alum. Water Jug	C. G. Cappel	W. M. Larkin
50 Kitchen Clock	Betz Engr. Sales Co.	Ben H. Bell
51 Silent Butler	Moloney Elec. Co.	A. E. Bigler

49 Alum Water Jug	J. K. Woolf	P. F. Osweld
62 Set Spark Plugs	Melville Engr. Co.	Tom Alexander
58 25 ft. Garden Hose	Crane Co.	G. J. Trammell
52 Brownie Camera	John Riess	Bill Johnston
53 5th Bourbon	F. L. Alcus	Fred Baehr
64 5th Scotch	E. J. Welsch & Co.	Ken Manson
55 5th Bourbon	Louis N. Goodman	S. G. Dinkel
56 5th Scotch	N. O. Cement Prod.	V. A. Tirri
69 3 sks. Crescrete	Jahnke Service	Claude Kelly
70 3 sks. Crescrete	Jahnke Service	Jack Groh
5th Liquor	J. Ray McDermott Co.	W. L. Sutton
5th Liquor	J. Ray McDermott Co.	H. Schaeffer
5th Liquor	J. Ray McDermott Co.	R. E. Torregrossa
5th Liquor	J. Ray McDermott Co.	J. R. Rombach
5th Liquor	J. Ray McDermott Co.	Harry Tormey
5th Liquor	J. Ray McDermott Co.	J. T. Knight
5th Liquor	J. Ray McDermott Co.	Don Schell

ATTENDANCE PRIZES — GUESTS

5th Liquor	J. Ray McDermott Co.	E. F. Henderson
5th Liquor	Committee	Henry Lehmann
5th Liquor	Committee	Ted Ducos
5th Liquor	Committee	John S. McCormick
5th Liquor	Committee	R. C. Root
41 Knife Sharpener	J & L Steel Corp.	Chas. E. Witcher
27 Casting Rod	Standard Supply Co.	T. E. McConnell, Jr.
28 Shakespeare Reel	C. W. Nussbaum Elec.	E. R. Lucas, Jr.
38 Ice Crusher	Boland Mfg. Co.	Stanby Sutherland
47 Lamp	Anaconda Wire & Cab. Co.	F. Glenz, Jr.

And Lives Were Saved With the increasing industrialization of the New Orleans area, the subject of industrial accident prevention is becoming more and more important. For the past few years, a number of local firms have participated in the industrial safety contest of the Metropolitan New Orleans Safety Council.

Our L.E.S. member, Arthur J. Naquin, is Chairman of the Industrial Safety Section of the Council. He regularly publishes monthly results of the 62 firms now participating in this contest. It is heartening to read that 12 have received top award plaques; 29 certificates of achievement. In the 1953-54 period 56,000,000 man hours of work was achieved by competing organizations. It might be of interest that other safety organizations are: American Society of Safety Engineers, N. O. Chapter; Delta Safety Society; Louisiana Safety Association.

* * * *

Past President W. Stone Leake has been appointed Apparatus Sales Manager of the New Orleans Office, General Electric Co. Stone has been with General Electric since his graduation from Tulane's School of Engineering in 1924. His territory covers a large part of Louisiana and Mississippi. His many friends wish him continued success in his new position.

* * * *

We have received word that John H. Bernhard, a Life Member of L.E.S. has invented and patented a Barge Tipple. The patent number is 2,669,210.

The Air Force urgently needs Civilian Electronic Engineers and Physicists. If you have experience or training in Electronic Research and Development or in the installation and maintenance of fixed plant facilities, apply now! Salaries range from \$3410 to \$9600 per annum. Free On-the-Job Graduate Degree Training is offered by Syracuse University College of Engineering. Address Professional Recruiting Officer, Griffis Air Force Base, Rome, New York.

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Lights Diamond Jubilee 1879 - 1954—Under sponsorship of the Electrical Association of New Orleans, a booklet, "Selling Electric Service, 1879-1954", has just been published as a contribution to Light's Diamond Jubilee celebration. All seem to agree that here we have a unique and unusually interesting account of an important phase of electric industry progress.

Written by W. E. Clement of New Orleans Public Service Inc., a former president of the local Electrical Association, the 72 page brochure, illustrated with more than 40 old-time pictures, is largely concerned with the inspiring story of the sales and business-development problems that faced the industry during its early years, and how they were solved.

Much interest is being shown in this factual story of the old and newer days, and orders for same should be addressed to the Electrical Association of New Orleans, Inc., 921 Union Street, New Orleans 13, La.

New Members—

For Member

SAMUEL L. ADAMS, Baton Rouge; age 41. Endorsed: H. L. Landry, A. H. Demers, J. H. Derr. Texas A & M College, B.S.E.E. 1937. Gulf States Utilities Co., 1943-date, now Electrical Mtce. Supervisor, La. Power Station. Registered E.E., Texas. Member AIEE.

THOMAS M. BEAMON, Baton Rouge; age 28. Endorsed: W. C. Gaddy, C. H. Hall, H. J. Hall. Virginia Polytechnic Institute, B.S.Ch.E., 1949; M.S.Ch.E., 1950. Esso Standard Oil Co., La. Div., Process Engineer, Technical Div., 1950-date.

CHARLES A. BELL, Lafayette; age 69. Endorsed: J. E. Jarman, H. B. Myers, L. M. Odom. Case Institute of Technology, Cleveland, O., B.S.C.E. 1907. Member A.S.C.E.(N.Y.) 1942. Registered, La. Newburg & S. Shore Rwy., Cleveland, Asst. Engineer, 1907-11. Myles Salt Co., La., Engr., Supt. in charge operations, 1911-33. Works Progress Admin., District Engr., 1933-35. Soil Conservation Service Co., Lafayette, Drainage Engr., 1935-41. La. Dept. Public Works, District Engr., Lafayette, 1941-54.

JOSEPH H. BENTON, Baton Rouge; age 30. Endorsed: R. Meyer, R. W. Ammon, W. C. Gaddy. University of S. Carolina, B.S.C.E., 1944. U.S. Naval Academy, B.S. 1947. U.S. Navy, Instructor, U.S. Naval Academy, 1948-49; Instructor, U.S. Naval School (CEC Corps Officers) (1949-52; Asst. Public Works Officer and Shops Engineer, U.S. Naval Station, Green Cove Springs, Fla., 1952-54.

JOHN H. BROWNE, JR., Monroe; age 35. Endorsed: A. T. Givens, T. R. Henry, A. D. Williams. La. Polytechnic Institute, B.S.M.E., 1941. Registered M.E., La. Columbian Gasoline Corp., 1941-date, draftsman, engineer, Supervisor Eng. Dept.

ROBERT J. BUJOL, Baton Rouge; age 33. Endorsed: R. Meyer, F. A. Hannan, Jr., F. S. Houghton. La. State University, B.S.Ch.E., 1943. Jr. Mbr. AICChE, 1947. Esso Standard Oil Co., Process Engr., 1946-date

- JOHN C. COURTNEY, Shreveport; age 36. Endorsed: H. N. Brown, J. H. Ellis, E. M. Gillen. La. Polytechnic Institute, Mech. Engineering, 1934-35. Member La. Hwy. Engrs. Ass'n. Registered C.E., La. (Public Employee). U.S. Army, overseas service, 1941-45. U.S. Corps of Engrs., Inspector, 1946-47. Standard Wood Preservers, Treating Engr., 1947-48. La. Dept. Highways, 1948-date, now Resident Mtce. Engineer.
- LEE VAN CUNNINGHAM, JR., Baton Rouge; age 34. Endorsed: R. Meyer, T. J. Innes, Jr., G. L. Yousko. La. Polytechnic Institute, B.S.M.E., 1941. Illinois Institute of Technology, M.S.M.E., 1947. Associate Member Sigma Xi, Member Tau Beta Pi. Registered M.E., E.E., La. Esso Standard Oil Co., July 1943-date, Group Leader, Mech. Eng. Dept.
- LOUIS J. DAIGRE, JR., Alexandria; age 38. Endorsed: T. C. David, C. C. Edwards, Jr., H. L'Heureux. Louisiana College, 1934-35. La. State University, 1935-37. Member SAME. Registered Land Surveyor, La. City of Alexandria, Asst. to Rapides Parish Surveyor, 1937-39. Gravity Meter Exploration Co., Sr. Engineer, 1939-41. U.S. Geological Survey, Jr., Asst. Topographical Engr., 1942-43; Resident Hydraulic Engr., 1944-45. Rapides Parish Surveyor, 1946-date.
- ELVIN J. DANTIN, Baton Rouge; age 27. Endorsed: F. J. Germano, L. J. Lassalle, W. A. Wintz. La. State University, B.S.C.E., 1949; M.S.C.E., 1952. Jr Member ASCE. Registered C.E., La. Humble Oil Co., N.O., Instrumentman, summers 1950-51. E. Baton Rouge Parish, Civil Engr. II, Summers 1952-53. La. State University, Instructor, Asst. Professor C.E., 1949 to date.
- NORRIS L. FANT, New Orleans; age 30. Endorsed: H. W. Herbst, W. G. Leibe, E. H. Pavia. La. State University, B.S.M.E., 1948. Chase Bag Co., Asst. Supt. & Engineer 1948-51. Delta Match Corp., Eng. & Administrative Asst. to General Mgr., 1951-date.
- WILLIAM T. FIRESHEETS, Baton Rouge; age 32. Endorsed: L. Duclos, A. S. Jackson, S. A. Nasca. La. State University, B.S.E.E. 1950. La. Dept. of Highways, E.E., Bridge Design Section, 1951-date. Registered E.E., La.
- LOUIS S. FREEMAN, Baton Rouge; age 29. Endorsed: F. A. Hannaman, Jr., T. J. Innes, Jr., J. L. Price. Ga. Institute of Technology, B.S.M.E. 1945. Va. Polytechnic Inst., Ind. Eng., 1947-48. Clemson College, Instructor in M.E., 1946-47. Va. Polytechnic Inst., Instructor, I. E. Dept., 1947-48. Esso Standard Oil Co., La. Div., Project Engr., M.E. Dept., 1948-date.
- HARRY W. FRISTOE, JR., Monroe; age 34. Endorsed: O. E. Barron, R. C. Defreese, J. H. Drake. Tulane University, Electrical Engr., 1937-38. La. State University, Electrical Eng., 1938-40. Registered E.E., La. Southern Bell Tel. & Tel. Co., Telephone Exchange Engr., 1939-date.
- WALTER GULICK, Baton Rouge; age 39. Endorsed: F. A. Hannaman, Jr., L. J. Lassalle, S. A. Nasca. La. State University, B.S.M.E. 1942. Dupont Construction Co., Buffalo, N.Y., Office Supt., 1943-44; Louisville, Ky., Section Head, 1944-45; Baton Rouge, Orchem Div., Asst. to Works Engr., 1945-46. Ethyl Corp., Industrial Eng. Section, March 1945-date. Member Tau Beta Pi.
- WILLIAM E. HAINES, Baton Rouge; age 30. Endorsed: W. C. Gaddy, H. J. Hall, R. Meyer. Va. Military Institute, B.S.C.E., 1948. Jr. Member ASCE 1948. Registered C.E., Va. Esso Standard Oil Co., Technical Div., 1948-date.
- HARRELL A. HAIR, Minden; age 45. Endorsed: H. N. Brown, E. M. Gillen, L. B. Howe, R. H. Vaughan. Registered C. E., La. (Public Employee). Member La. Hwy. Engrs. Ass'n. La. Dept. Highways, Jr. Instrumentman, 1937-43. J. W. Kleinpeter Construction Co., Supt. Construction, 1943-45. La. Dept. Highways, Jr. Resident Engr., 1945-47; Jr. Project Engr., 1947-52; Sr. Project Engr., 1952; Resident Mtce. Engr., Shreveport, 1952-54.
- JOHN M. JENNY, JR., New Orleans; age 35. Endorsed: W. G. Leibe, H. A. Miller, P. F. Oswald. La. State University, B.S.M.E., 1953. Registered M.E., La. U.S. Army Corps of Engrs. active duty, Captain, 1941-45. Edwards Engineering Corp., Sales Engr., Industrial Marine Div., Oct. 1953-date.
- THOMAS H. KEEN, Lafayette; age 27. Endorsed: A. E. Faulk, R. M. Hetherwick, G. L. Marine. University of Texas, B.S.E.E., 1947. General Electric Co., Schenectady, Test Engineer, 1947-48. Graybar Electric Co., Sales Engineer, 1948-date.
- JAMES M. KIDD, JR., Baton Rouge; age 32. Endorsed: W. C. Gaddy, F. A. Hannaman, Jr., C.A. Menville. La. State University, B. E., 1942; M.S. Eng. Mechanics, 1950. Registered C.E., M.E. La. U.S. Army, active duty, Field Artillery Officer, 1942-46. La. State University, Instructor, Eng. Mechanics, 1946-48. Esso Standard Oil Co., Zone Engr., Project Engr., 1948-date.

- ELLIS M. KILLGORE, Ruston; age 30. Endorsed: B. T. Bogard, R. C. Duchesne, T. R. Henry, J. J. Thigpen. La. Polytechnic Institute, B.S.M.E., 1948. Ga. Institute of Technology, graduate M.E. work, 1948-49. Registered M.E., La. La. Polytechnic Institute, Instructor of M.E., 1949-52. Gulf Oil Corp., Jr. Engr., 1952-53. Columbian Carbon Co., Mech. Engr., summer 1953. La. Polytechnic Inst., Asst. Professor of M.E., Sept. 1953-date.
- KENNETH E. LUTZ, Baton Rouge; age 32. Endorsed: F. A. Hannaman, Jr., G. L. Yousko, T. J. Innes, Jr. University of Oklahoma, B.S.M.E. 1947. Registered M.E., La. Esso Standard Oil Co., 1947-date, Project Eng. Group Head, M.E. Dept.
- RALPH H. McCOLLISTER, Baton Rouge; age 30. Endorsed: R. W. Ammon, R. Meyer, W. P. Wallace. La. State University, B.S.C.E. 1949. Member ASCE. Registered C.E., La. Esso Standard Oil Co., Engr., 1949-date.
- JAMES R. McKINLEY, Monroe; age 50. Endorsed: O. E. Barron, R. C. DeFreese, T. J. Hogue, Jr., La. State University, B.E.E. 1928. Registered E.E., La. Southern Bell Tel. Co., Student, Fieldman, Jr. Engr., Exchange Engr., 1928-41. U.S. Army, Signal Officer, 1941-45. Southern Bell Tel. Co., Exchange Plant Engr., Dist. Engr., 1945-date.
- ROBERT W. MAESER, JR., Baton Rouge; age 30. Endorsed: L. Duclos, A. S. Jackson, L. V. Willey. Northwestern University, Ch.E., B.S. 1948. E. I. duPont de Nemours, Chicago Plant, Finishes Div., Coop. student, 1942 and 1947; Process Engr., 1948. Wm. B. Reilly & Co., N.O., Asst. Plant Mgr., 1949. Standard Coffee Co., Plant Mgr., 1950. Ethyl Corp., Operations Supervisor, 1950-date. Member A.I.Ch.E.
- PAUL G. MARTIN, Baton Rouge; age 57. Endorsed: J. B. Carter, L. Duclos, N. E. Lant. Kansas State College, B.S.C.E. 1926. Iowa State College, 15 hrs. graduate work in structures, 1928. Registered, Kansas, La. Member ASCE, Kansas Eng. Society, Topeka Engrs. Club, American R. W. Ass'n. Geary Co., Kansas, County Engineer, 1921-22. Salina, Kan., Asst. City Engr., 1922-23. Kansas Hwy. Commission, Asst. Bridge Engr., 1929, 1937. Iowa Hwy. Comm., Bridge Designer, 1926-29. Kansas Hwy Comm., Bridge Engr., 1937-39; Engr. of Design, 1939-47; Engr. of Highway Planning, 1947-53. Automatic Safety Foundation, Supervising Engr., 1953-date.
- MARION MOORE, New Orleans; age 59. Endorsed: W. C. Barnwell, E. L. Dennis, W. E. McFarland. La. State University, 1915-17, 1919-22, B. Sugar Eng. ASME, Student Mbr., 1920-22. Int. Society Sugar Cane Technologists, Associate, 1936-42. Registered Ch.E., La. U.S. Army Engineers, active duty, 1917-19. Belle Helene Sugar Factory, Geismar, La., Chief Chemist, 1919-22. Erath Sugar Co., Chief Chemist, 1922-23. Asst. Supt., Supt. of sugar refineries in Trinidad and Antigua, B.W.I., 1923-42. Audubon Sugar School, Associate Professor, 1943 (3 mos.), Vermillion Sugar Factory, Supt., 1945. W. T. Burton, White Castle, La., Chief Chemist, 1948. State of La. Dept. of Revenue, Petroleum Engr., 1949-date.
- CONRAD R. NEFF, JR., Baton Rouge; age 33. Endorsed: F. A. Hannaman, Jr., W. A. Whitaker, R. W. Ammon. La. State University, B.S.M.E. 1943. Esso Standard Oil Co., Project Engr., 1945-date.
- JAMES B. NORMAN, Shreveport; age 33. Endorsed: V. A. Lyons, J. S. Malahy, G. A. Marsalis, R. T. Sessums. La. Polytechnic Institute, B.S.C.E. 1941. International Correspondence Schools, Structural Engr., 1949-52. Registered C.E., La. U.S. Dept. Agriculture, Soil Conservation Dept., Engr., Head Survey Party, 1941-42. Monsanto Chemical Corp., Asst. Mtce. Engr., 1942-43. U.S. Navy Seabees, Eng. Design, 1943-46. Arkansas Fuel Oil Corp., and Ark.-La. Gas Corp., Construction Engr., 1946-date.
- WALTON R. OWENS, Port Allen; age 61. Endorsed: A. F. Fritchie, W. H. Mercier, D. W. Stewart. Ohio, 3½ yrs. Mechanical Engineering, did not graduate. Manhattan Rubber Mfg. Co., Chicago, design, development and application of material handling equipment, 1916-24. U.S. Rubber Co., design, dev. and application special mechanical rubber goods products for refining and production divisions of the petroleum industry, 1924-54. U.S. Coast Guard, Commander, Eng. Officer, 1942-45.
- SIDNEY L. POLEYNARD, Baton Rouge; age 37. Endorsed: L. Duclos, S. A. Nasca, W. P. Wallace. La. State University, B.S.C.E. 1946. Dunham-Wilson Co., Head, Eng. Dept., 1948-51. U.S.A.F., Air Installation Officer, 1951-52. La. Dept. of Highways, Sr. Bridge Designer, 1952-54. Registered C.E., La.
- JOE REGAN SMITH, Bossier City; age 29. Endorsed: E. M. Gillen, L. B. Howe, W. G. Mayer. La. Polytechnic Institute. B.S.C.E. 1949. Registered C.E., La. Petty Geophysical Engineering Co., San Antonio, Computer, 1949-50. La. Dept. Highways, Party Chief, Jr. Project Engr., Sr. Project Engr., 1950-date.

CHARLES B. SPENCER, New Orleans; age 46. Endorsed: E. A. McLellan, C. E. Reed, F. Riess, Tulane University, B.S.C.E., 1930. Cornell University, C. E. graduate work, 1931-32. Member ASCE. U.S. Engr. Corps, Inspector, heavy construction and hydraulic lab studies, 1930-36. Pittman Bros. Construction Co., Geo. A. Fuller Co., Weil and Moses, Construction Engr., 1936-39. Favrot & Reed, Office Engr., Wm. T. Nolan, Design Engr., 1939-41. Gervais F. Favrot, Estimator and Supervisor of Construction, 1941-46. Self-employed general contractor, 1946-date.

JOHN H. STINSON, JR., Shreveport; age 50. Endorsed: J. H. Ellis, H. N. Brown, E. M. Gillen, R. H. Vaughan. La. State University, Petroleum Engr., 1922-26. Member La. Hwy. Engrs. Ass'n. Registered C.E., La. (Public Employee). La. Dept. of Highways, Eng. Aide III, 1940-42. U.S. Army, Active duty, 1942-44. La. Dept. of Highways, 1944 to date, now District Maintenance Engr., Shreveport.

HUMPHREYS T. TURNER, Baton Rouge; age 32. Endorsed: F. J. Germano, L. J. Lassalle, W. P. Wallace, W. A. Wintz. La. State University, B.S.C.E., 1949; M.S.C.E., 1952. Jr. Mbr. ASCE. Registered C. E., La. State University, Instructor, Asst. Professor C.E., 1949-date.

KENNETH H. WOODWARD, Lafayette; age 45. Endorsed: M. G. Arnett, T. A. Bonnet, J. E. Reed, Oklahoma Natural Gas Corp., Chairman, Jr. Draftsman, 1926-29. Texas Pipe Line Co., Draftsman, Civil Engr., 1929-42. U.S. Navy Construction Battalion, 1942-45. Texas Pipe Line Co., Civil Engr., Statistician, 1945-46; Division Engr., Asst. District Supt., Asst. to Division Mgr., 1946-date.

For Transfer From Junior To Full Member

MACK ABRAHAM, Lake Charles; age 29. La. State University, B.S.M.E. 1948. Registered, La. Cities Service Refining Corp., 1948 to date, now Supervisor, General Engineering Dept., Butadiene Plant.

WENDEL G. LEIBE, New Orleans; age 31. Southwestern Louisiana Institute, B.S.M.E. 1948. Registered, La. Celotex Corp., Junior Engineer, 1948-50. N.O. City Planning and Zoning Commission, Draftsman III, 1950-51. Michoud Ordnance Plant, Chrysler Tank Engine Div., Mech. Engr. Plant Layout Learner, 1951-52. N.O. Dept. of Public Safety, Div. of Regulatory Inspection, Mechanical Plan Examiner, 1952-date.

ALLISON M. LEVY, Pensacola, Fla.; age 30. Tulane University, B.E. in M.E., 1944. Westinghouse Air Conditioning, 1 yr. W. R. Burk, Architects and Engineers, 2½ yrs. A. Hays Tonn, Architects and Engineers, 1 yr. Bodman, Murrell and Smith, 2½ yrs. deLaurel & Moses, 1 yr.

For Affiliate Member

ROBERT G. DUGUE, Baton Rouge; age 69. Endorsed: A. H. Douglas, W. A. LeBlanc, W. D. Poole, Woodward-Wight & Co., 23 years. Standard Supply and Hardware Co., 21 years. Murray-Baker-Frederic, Inc., 9 years. Southern Mill Supplies, 8 mos. Industrial Sales Engineering.

ELVOY LEROY GISH, Baton Rouge; age 33. Endorsed: L. Duclos, S. A. Nasca, J. T. Huey. La. Dept. of Highways, engineering artist, 1950 to date.

L. E. GUNTER, Alexandria; age 47. Endorsed: C. W. Cook, G. C. Adams, H. Y. Bordelon. La. Geodetic Survey, Party Chief, 1937-40; Glassell & Taylor, Airport Construction, Alexandria Air Base, 1940-42; U.S. Corps of Engineers, Party Chief, 1942-45; La. Dept. of Highways, Engineering Aide, 1945-47; City of Alexandria, Eng. Dept. Inspector, 1949-date.

GEORGE A. HOFFMAN, New Orleans; age 41. Endorsed: B. P. Babin, J. D. Malone, L. C. Ramon, Jr. Loyola University, 1930-33. Loyola University, Radio Engineering, 1940-41. International Correspondence Schools, Electrical Engineering. Ft. Wayne Correspondence School, Electric Watthour Meters. La. Power & Light Co., Meter Dept. Supt., 1934-45. Sangamo Electric Company, 1945-date, District Manager directing sales activity in La. Miss., Ark.

For Junior Member

PATRICK P. DONAHUE, New Orleans; age 28. Endorsed: T. E. Ernst, C. E. Cassagne, Jr., R. A. Hall. La. State University, B.S.M.E., 1951. Member SAME. Registered M.E., La. Chrysler Corp., Junior Engineer, 1951-52. City of N. O. Dept. Public Utilities, Engineer, 1952-53. Donahue & Schexnayder, Sales Engineers, 1954.

- AUGUST H. DOUGLAS, JR., New Orleans; age 25. Endorsed: R. H. Grehan, C. M. Kerr, P. J. Stouse. Tulane University, B.S.M.E. 1949. Registered. La. Member Society of Tulane Engineers; Student Member A.S.M.E. Cabirac Mechanical Contractors, Estimator, 1950-51. U.S. Coast Guard, 1951-53. American Creosote Works, Inc., Assistant Engr., Dec. 1953 to date.
- ADRIAN L. LONG, Shreveport; age 27. Endorsed: F. W. Grant, G. Marsalis, L. H. Roeger. Miss. State College, B.S.C.E. 1950. Registered C.E., La. Central Fabricators, Inc., Meridian, Miss., Engineer, 1950-53. Gulf Refining Corp., Southern Pipe Line Div., District Engineer, 1953-date.
- JAMES C. LORIO, Baton Rouge; age 23. Endorsed: L. Duclos, A. S. Jackson, S. A. Nasca. La. State University, B.S.E.E., 1951. La. Dept. of Highways, Electrical Engineer, 1952-date. Registered, La. Member AIEE.
- JOSEPH L. NANNEY, Baton Rouge; age 29. Endorsed: T. J. Innes, J. E. Langley, R. Meyer. University of North Carolina, B.A. Naval Science, 1946. Virginia Polytechnic Institute, B.S.C.E., 1951. Jr. Mbr. ASCE. Registered C.E., Va. Esso Standard Oil Co., Project Engineer, Group Head, 1951-date.
- EUGENE H. OWEN, Baton Rouge; age 24. Endorsed: W. A. Whitaker, R. Meyer, A. D. Johnson, Jr. Vanderbilt University, B.M.E. 1951. Student Member ASME, 1948-51. U.S. Marine Corps, 1st. Lt., Instructor Artillery Surveying, 1951-53. Esso Standard Oil Co., Project Engineer, 1951-date.
- FRANK J. PREHODA, Baton Rouge; age 26. Endorsed: H. J. Hall, T. J. Innes, Jr., R. Meyer. Georgia Inst. of Technology, B.M.E. 1954. ASME, Student Member, 1952-54. International Paper Co., Machinist Helper, 1944-49. Esso Standard Oil Co., Project Engineer, Dec. 1953 to date.
- STANLEY B. REYNOLDS, JR., Baton Rouge; age 26. Endorsed: W. C. Gaddy, T. J. Innes, Jr., W. B. Root. University of Michigan, B.S.M.E., 1951. Esso Standard Oil Co., Engineer, Eqpt. Inspection, 1951-date.
- HERBERT E. RUSSELL, Kelly, La.; Age 30. Endorsed: E. J. James, O. D. White, J. E. Ross. Member La. Hwy. Engrs. Ass'n., 1951-54. Registered C.E. (Public Employee). Associated Contractors and Engineers (Pipelines), Rodman, 1946-47. La. Dept. of Highways, Chief of Party, 1947-date.
- JOSEPH T. SIMMS, Jr., Alexandria; age 28. Endorsed: O. L. Hyde, P. E. Randol, W. W. Rogers. La. State University, B.S.E.E., 1949; B.S.M.E., 1950. Central La. Electric Co., Eng. Clerk, Aug.-Oct. 1950. U.S. Army Corps of Engineers, active duty. 1951-53. Central La. Electric Co., Cadet Engineer, Oct. 1953-date.
- VICTOR J. TUDURY, JR., New Orleans; age 30. Endorsed: W. K. Bankston, S. Ellis, A. H. Jensen, Tulane University. B.S.M.E. 1953. ASME, Student Member 1952. Registered M.E., La. Dixie Machine Welding & Metal Works. Welder and Shipfitter, 1941-43. Army Air Force, B-24 Pilot, 1943-45. Young-Elkins Oil Well Repair and Supply Co., Engineer, Shop Foreman, Jan.-July 1953. N. O. Public Service Inc., Mechanical Engineer, Power Div., Sept. 1953-date.
- WILLIAM G. VELTROP, Baton Rouge; age 24. Endorsed: T. J. Innes, J. E. Langley, R. Meyer. Missouri University, B.S.C.E., M.S.C.E., 1953. Jr. Mbr. ASCE, 1952. Member Sigma Xi, 1951. Registered C.E. in Training, Mo. U.S. Geological Survey, Trainee, June-Sept. 1950. U.S. Naval Ordnance Lab, Eng. Aide, June-Sept. 1951. Esso Standard Oil Co., Equipment Inspection Dept., June-Sept. 1952. University of Missouri, Asst. Instructor, 1952-53. Esso Standard Oil Co., Project Engineer, Feb. 1953-date.
- JOHN D. WINK, JR., Monroe; age 27. Endorsed: C. M. Dunlap, T. R. Henry, Jr., W. R. McCoy. La. Polystech Institute, B.S.M.E. 1949. Registered M.E., La. La. Power & Light Co., Gas Distribution and Corrosion Engineer, 1949-51. United Gas Pipe Line Co., Asst. Engineer Pipe Line Survey, 1951-53. Columbian Carbon Co., Mechanical Engr., 1953-date.

For Transfer From Student To Junior Member

- M. W. BOUDREAUX, Graduate in Electrical Engineering at Southwestern Louisiana Institute.
- NOLAN J. CALAIS, Graduate in Electrical Engineering at Southwestern Louisiana Institute.
- JOHN H. DUVALL, Graduate in Electrical Engineering at Southwestern Louisiana Institute.
- MARVIN L. FIRMIN, Graduate in Electrical Engineering at Southwestern Louisiana Institute.

- JOSEPH B. FOURNET, Graduate in Civil Engineering at Southwestern Louisiana Institute.
- GERALD D. HARRISON, Graduate in Chemical Engineering at Southwestern Louisiana Institute.
- USA L. LANDRY, Graduate in Civil Engineering at Southwestern Louisiana Institute.
- HALPHEN A. LATIOLAIS, Graduate in Chemical Engineering at Southwestern Louisiana Institute.
- LEROY E. LOPEZ, Graduate in Electrical Engineering at Southwestern Louisiana Institute.
- E. A. MAZOROL, JR., Graduate in Mechanical Engineering at Southwestern Louisiana Institute.
- ROBERT R. McBRIDE, JR., Graduate in Civil Engineering at Southwestern Louisiana Institute.
- RAYMOND W. MOORE, JR., Graduate in Mechanical Engineering at Southwestern Louisiana Institute.
- ROBERT R. OUBRE, Graduate in Chemical Engineering at Southwestern Louisiana Institute.
- JAMES L. PELTIER, Graduate in Mechanical Engineering at Southwestern Louisiana Institute.
- OTTIS B. PERKINS, Graduate in Mechanical Engineering at Southwestern Louisiana Institute.
- BILLY R. RENTROP, Graduate in Mechanical Engineering at Southwestern Louisiana Institute.
- EDGAR M. ROSTEET, Graduate in Mechanical Engineering at Southwestern Louisiana Institute.
- REGIS G. TRUMPS, Graduate in Electrical Engineering at Southwestern Louisiana Institute.

Junior Membership Awards

- LESTER H. ARBO, JR., Graduate in Civil Engineering at Tulane University.
- LLOYD E. CHIASSON, Graduate in Electrical Engineering at Tulane University.
- ROY P. CHILDRESS, Graduate in Civil Engineering at Tulane University.
- H. ALDEN DEYO, Graduate in Civil Engineering at Tulane University.
- WALTER T. HERMANN, Graduate in Electrical Engineering at Tulane University.
- WILLIAM LEE LEWIS, Graduate in Mechanical Engineering at Louisiana State University.
- ROBERT C. McCLURE, Graduate in Civil Engineering at Tulane University.
- WILLIAM P. OSTERHOLT, Graduate in Civil Engineering at Tulane University.
- GENE TYE, Graduate in Electrical Engineering at Tulane University.
- LOUIS R. VELASCO, Graduate in Civil Engineering at Tulane University.
- CLARENCE A. WETHERN, JR., Graduate in Civil Engineering at Tulane University.

OBITUARY OF LOUIS VILLERE CRESSY

With the death, on April 6, 1954, of Louis Villere Cressy, The Louisiana Engineering Society shares, with his devoted family, many friends and the engineering profession, a sincere and deep feeling of great loss.

Bill Cressy, as he was best known to his friends, was born in New Orleans, La. on May 7, 1900, the son of Louis Manuel Cressy and Jeanne Josephine Delpit. He was a graduate of St. Aloysius College and attended Tulane University.

He began his professional career in 1922 with Frank W. Chisolm, a well known consulting engineer of New Orleans, remaining with him through 1928. From 1928 to 1936 he was a sales engineer and manufacturer's agent, returning to Mr. Chisolm's staff in 1936 and for part of 1937. He returned to sales engineering in late 1937 continuing into 1939 when he became associated with Lewis S. Alcus. He continued this association until late in 1942 when he returned again to the field of sales engineering. In 1947 he became associated with the firm of James M. Todd and Associates, and remained with them until late in 1950. From that time on until his passing he was in business for himself in the consulting field of Mechanical Engineering.

He was a devout and life-long member of his church, and a member of The Knights of Columbus for many years. Other affiliations included membership in The Louisiana Engineering Society, The American Society of Heating and Ventilating Engineers and The American Society of Refrigeration Engineers. He was a past chairman of the local sections of the latter two organizations. He also belonged to The Engineers Club of New Orleans, The Pickwick Club, The New Orleans Athletic Association and a Carnival organization.

On April 4, 1929 he was married to Miss Nellie Marie Sarrat of New Orleans, and is survived by his wife and five children; Louis Villere, Jr., Ronald Peter, Gwendolyn Ann, David Sarrat and Susan Mary. Other survivors include his father, four sisters and three brothers.

Bill Cressy was a man of the highest integrity, conscientious in all his undertakings and was loved and respected by those who knew him.

It is fitting therefore that we honor the memory of Louis Villere Cressy by adopting the following resolutions:

BE IT RESOLVED, that The Louisiana Engineering Society adopt resolutions bearing out the facts as stated above.

BE IT FURTHER RESOLVED, that these Resolutions be spread upon the Minutes of The Society, published in its proceedings and copies be sent to his family.

JOHN L. PORTER
CARY B. GAMBLE
JOHN T. KNIGHT, JR.

ENGINEERING BRIEFS

Synthetic Mica Developed for Vacuum Tube Use. Since adequate quantities of high grade mica were difficult to obtain during the war, the Bureau of Ships, the Office of Naval Research, and the Signal Corps, began investigating the possibilities of assuring a domestic supply of electrical grade mica by a synthetic process.

One of the most promising materials developed is a hot-pressed synthetic mica with a composition similar to natural mica except that fluorine is substituted for the hydroxyl radical commonly found in the natural material. The chemicals used are readily obtainable and thus the final product is not strategic.

Because of the significance of its use as spacers and output windows in electron tubes, a study of the important characteristics of synthetic mica was undertaken by the Navy Research Laboratory. The mica used was the normal flour phlogopite which is one of the several synthetic micas available. It was selected because it seemed that this material will play a useful part in vacuum tube applications.

Details are available upon request to Navy Technical News, Office of Information, Navy Department, Washington 25, D. C.

* * * *

Phenolic Foam Replaces Balsa Wood. Phenolic foam, a remarkable bouyant plastic material which trnsforms itself from a liquid resin to an expanded lightweight cellular solid state in two or three minutes, is being used to replace balsa wood as a means of imparting bouyancy to ships. Phenolic foam is also being used for low temperature and acoustical insulations, structural reinforcements for tail sections of airplanes, and for packaging materials. The cost of the liquid resin (unfoamed) is about 50 cents per pound, making this material one of the least expensive foams available.

Details are available from Navy Technical News, Office of Information, Navy Department, Washington 25, D. C.

* * * *

Cancer Detected by Quick, Economical Test. Further evidence of the validity of the Penn-Seroflocculation test, a simple blood test that permits quick, economical detection of cancer, was announced recently by doctors at the University of California at Los Angeles and the Los Angeles Veterans Administration Center.

Tested on more than 10,000 individuals during six years of research, the procedure is capable of: (1) detecting cancer in a majority of cases; (2) helping to distinguish between benign and malignant tumors; and (3) indicating the response of cancer to treatment.

A solution of an inexpensive crystalline chemical is added to a blood sample. If the mixture remains murky, the test is considered negative, but if small particles form and the solution clears, a positive test is indicated.

Ninety per cent of the cancerous individuals tested have shown a positive result. The 10% missed included those in which cancer had not entered vital tissue but was still in microscopic stage. A negative result is considered to be a 10,000-to-1 assurance that the subject has no cancer.

Certain conditions such as arthritis and pregnancy give false positives, but further processing of blood samples will indicate in most cases whether the positive test is the result of cancer or other diseases.

The accuracy of the Penn-Serroflocculation test is said to be considerably higher than X-rays or any other clinical diagnostic approach. — *Aminco Laboratory News*.

* * * *

Air Blotter. It's not very airy on the inside of an x-ray tube or a TV picture tube. The vacuum in these tubes is as high as one billionth of the normal atmospheric pressure.

Ordinarily, getting rid of enough gases to achieve such a vacuum is a somewhat complicated process. But General Electric scientists have now developed a simplified air pump which does the job by using carbon plates as a sort of molecular "blotting paper."

The new method begins by partially exhausting the gases from a tube with an ordinarily mechanical pump. The air pump then takes over. A high-voltage circuit is switched on, causing an electrical gas discharge. Positive and negative charges of electricity go to work breaking up the gas atoms into molecular fragments called ions. These ions are attracted to carbon plates in the pump and are driven into these plates electrically and held there. Since they are thus removed from open space, gas pressure is reduced.

The carbon "blotting paper" can absorb at atmospheric pressure. The plates can be used over again, too. By simply heating the pump, the absorbed gases are driven out and the plates are ready to exhaust the next tube. — *General Electric News Digest*.

Criticism Invited. A display of competitive products, set up in the main plant and offices of an Ohio manufacturing concern, is encouraging employees to examine and compare their company's products with those of its competitors, *Factory Management and Maintenance*, McGraw-Hill publication, reports. Value, appearance

and quality are compared in both consumer and industrial products. The displays serve to remind company employees that the success of their company depends on everyone working to make a top-notch product at a competitive price.

* * * *

Example Cited of Size and Weight Barriers. A fully loaded truck going from Florida to Maine that attempts to comply with the laws of the States through which it passes would have the following experience. Keep in mind that this a 50-foot tractor-tandem-semi-trailer combination:

At the Georgia line cut off five feet and unload 8,650 pounds.

Reaching South Carolina add five feet and reload 8,650 pounds.

At the North Carolina line cut off two feet and unload 5,850 pounds.

When arriving at the Virginia line cut off three more feet and unload 8,800 more pounds.

At the District of Columbia line, add five feet and reload 14,650 pounds.

Reaching Maryland add five feet and reload 3,160 pounds.

At the Delaware line unload 5,000 pounds and cut five feet off the combination.

When reaching Pennsylvania cut off five feet and unload 15,000 more pounds.

At the New Jersey boundary maintain the 45-foot length but reload 15,000 pounds.

Reaching the New York State line add five feet of length but reload 3,750 pounds.

At the Connecticut line, cut off five feet and unload 3,750 pounds.

When crossing into Rhode Island add five feet and unload 10,000 pounds.

At the Massachusetts line cut off five feet from the combination's length and maintain Rhode Island's 50,000 pounds.

Reaching Vermont add the five feet cut off in Massachusetts and keep the 50,000-pound load.

At New Hampshire's state line again cut off five feet and maintain the 50,000-pound load.

No changes are need to cross the Maine boundary.

DEVELOPMENTS IN STEAM POWER PLANT EQUIPMENT AND DESIGN*

I have been asked to discuss in a general manner the improvements that have been made in recent years in central station equipment and design that make possible the high temperature, high pressure and high efficiencies being used today and contemplated for the future. Before discussing those details, however, a quick review of the growth of the utility industry may indicate to you the magnitude of utility operations and the increasing need for construction of larger plants designed for improved thermal performance.

Growth

I believe that the public utility industry which serves everyone of you both in your business activities and in your home, is a typical example of the unlimited potentialities of free enterprise. Recently articles have been written concerning past and projected future growth of the utility industry as a whole. However, a few observations culled from recent literature may be of interest. The total installed generating capacity of all stations including hydro, steam, diesel and others was about 50,000,000-kw in 1945 at the end of the war, 82,000,000-kw by the end of 1952, estimated to be about 91,000,000-kw in service at the end of 1953. It is estimated that the total installed capacity will be about 114,000,000-kw by the end of 1955 if all projects now authorized are carried to completion and about 198,000,000-kw by 1963 or ten years from now.

Annual gross generation was 222-Billion kw hour in 1945 and 398-Billion kw hour in 1952. While statistics are not yet available it is estimated that gross generation during 1953 was about 443-Billion kw hour, which is estimated to increase to an estimated 878-Billion kw hours in 1963.

It is interesting to note that as of the end of 1952 steam electric stations accounted for 72% of the total installed generating capacity and 73% of the total generation. The remainder for the most part represents hydro capacity and production. Thus there can be no doubt that steam power is the backbone of our utility industry and it is in the steam power field that the most significant improvements to the art have been developed in recent years.

Since 1900 electric power output has increased on the average of 10% a year or three times faster than the average growth of all

* By Frank A. Ritchings, Chief Mechanical Design Engineer, Ebasco Services Inc. Delivered at the Annual Meeting of the Louisiana Engineering Society, Jan. 8, 1954.

other industries. It is estimated that the average load growth will continue to be in the neighborhood of 7% compounded annually indicating almost a doubling of generation and a doubling of installed capacity from 1953 to 1963 to match the virtual doubling of capacity and generation from 1945 to date.

To accomplish this phenomenal increase in installed capacity, transmission and distribution the total of the private and government public utility industry invested 3.7-Billion Dollars in 1952, 4.2-Billion in 1953, will spend 4.5-Billion in 1954. Investment from 1953 to 1956 will be about 12-Billion Dollars and investment from 1953 to 1963 may be about 50-Billion Dollars. Annual capital expenditures are estimated to increase to the rate of 6.3-Billion Dollars by 1963 based on 1953 Dollars.

Of these capital expenditures the private investor public utilities accounts for 70% of the total. Investment from the end of the war in 1945 through 1955 by the private investor utilities will be about 22-Billion Dollars or 9-Billion (40%) more than their entire investment in plant and equipment at the end of 1945.

Gross revenues for the entire utility industry (public and private) were about 3.3-Billion in 1945, 6.1-Billion in 1952, 6.7-Billion in 1953 and are estimated to reach 12.2-Billion by 1963 based upon the present average gross revenue rate of (1.72-cents per kw hour). The great increase in revenues has in recent years been due primarily to increased energy sales; very little of the increase is due to increased rates; the greatest increase in energy sales being the residential customers. From 1947 to 1952 the energy sales to residential customers nearly doubled; energy to commercial customers increased by about two thirds and rural and industrial energy sales each increased by about one-half. It is particularly pertinent to note that although the utility industry is and has been faced with increasing costs of construction, material, labor and fuel on one hand and generally very modest increases in rates granted, the average overall cost of electric power is steadily decreasing. For example, the average revenue for all residential kw hour used was 6.03 cents in 1930; 3.84 cents in 1940; 2.88 cents in 1950 and 2.77 cents in 1952.

It is interesting to note that at present the utility industry in this country serves about 50,000,000 customers as compared to 34,000,000 in 1945 and that in 1953 approximately 25.5% of total revenue was obtained from residential customers as compared to 15.4% in 1945. It is expected that residential consumption will play an increasingly important part of utility operations in the coming years with residential consumption accounting for almost 30% of

total revenue by 1963. Although some decline in the date of construction is new homes and the rate of new family units is forecast (due to the low birth rate of the Thirties), there is by all of us an ever increasing acceptance of electric living. New appliances are constantly being developed which soon after their acceptance and appearance tend to become necessities in our every day life and in fact, the high standard of living we enjoy in this country depends in a very large measure on the use of electricity. At the end of 1952 the average residential customer was billed for slightly in excess of 2,000-kw hr/year, however, by 1963 it is estimated that the average residential consumption will be close to 4,000-kw hr/year.

While total installed capacity and gross generation are expected to again almost double in the next ten years as they have in the past seven post-war years, the load factor is expected to remain about 60% as at present. The new appliances have in some parts of the country caused a decrease in annual load factor and in some cases have caused a shift from a former winter to a present summer peak. The growth of the industry from 1945 to date and the projected growth in the future is evidence of the courage, ingenuity, inventiveness and farsightedness of all who have had a part in the development. The vast growth within the past several years could not have been accomplished without new designs and new techniques.

While we in this country have always prided ourselves on new developments there is no doubt that the efforts of engineers, designers and manufacturers have been spurred or speeded up by the ever increasing demands of the consumer public. In our economy there can be no thought of not supplying the electric power demand. It is taken for granted that electric power will always be available to us at the "flick of a switch". Thus the huge expansion program must continue and further the equipment installed must be of such quality and character that we will continue to enjoy the high availability which we now take for granted.

Costs and Rates

The private investor utility industry has been and is caught generally in a "sequence" by the increasing costs of labor, fuel and material on one hand and less than comparable increases in rates they can charge for service. Thus they have had to stretch the dollars available for new construction and operation. Published data indicates that from the end of 1945 to date the cost of equipment and labor for heavy construction appear to have doubled (94%). For example, shop labor rates in the iron and steel in-

dustries have increased 77%, skilled construction labor 81%, turbine generator and steam generator prices have advanced 100%, switch-gear 80%, fabricated piping 90%, cable 54% and pumps 146%. The pattern is the same for all material and equipment entering into power plant construction.

While unit costs of providing new facilities to meet the ever increasing power demand have just about doubled, the rate increases granted the public utilities have generally been much more modest and in many cases negligible.

One of the major factors contributing to increasing revenues in face of greatly increased costs of labor, material and fuel and only nominal rate increases is the great technological advances made in recent years in producing plants of increasing thermal efficiency to reduce operating costs and of simplified design to reduce construction costs.

The advancement made in recent years would have been impossible if the required equipment was not made available by the manufacturing industry. As larger equipment designed for higher pressure and temperatures had been demanded by the utility industry the manufacturers have never failed to produce equipment required to meet the demand. Thus it has required that manufacturers of major equipment undertake extensive research to resolve the many problems encountered in producing more complex equipment and to provide the larger equipment designed for higher pressures and temperatures with at least equal and generally better reliability than was expected in the past. A review of some of the manufacturers achievements will illustrate the designs and techniques employed to meet the demands.

Equipment Designs

As power and energy demands increase the utility industry is requiring larger sized equipment and it is not uncommon for new installations to be as great in capacity as can be effectively and economically used on the system. Economic factors require that utility plants provide for lowest overall annual costs for fixed charges on investment, operating and maintenance, labor and fuel. The trend is very definitely to increasing thermal efficiency achieved through higher pressures and temperatures and frequent adoption of the reheat cycle. A few comparisons may be in order between 1946 and 1953 conditions for the major items of equipment in units over 20,000-kw capacity.

During 1946 two manufacturers who produced the bulk of the turbine generator units, together built and shipped 21-units but in

1953 shipped 109-units or an increase of 400%. During those years the average size of unit increased from 40-Mw to over 80-Mw—an increase of 100% in average capacity; average throttle pressure increased from about 850 to 1450-psig—an increase of 75%; average throttle temperature increased from slightly less than 900-F to about 1000-F—an increase of 11% in total temperature. These are averages of nearly 90% of the units produced in those two separate years. The largest single shaft units produced increased during the 1946-1953 period from 60-Mw in 1946 to 150-Mw in 1953—an increase of 150%; maximum throttle temperature from 950 to 1100 or 16%.

Engineering research and development must always remain ahead of customer demand. That this has been and is the case today is demonstrated by the fact that no proposed central station project has ever been cancelled or even deferred by any inability on the part of industry to produce equipment required due to technological tardiness. While in 1946 the largest single shaft turbine generator produced was about 60-Mw, it would have been possible to produce a 100-Mw single shaft unit. The art has now advanced to the point where the manufacturers are capable of producing single shaft units up to 300-Mw and at least two 250-Mw units are on order.

In 1946 no reheat units were produced although some reheat units were placed into operation in the "Thirties" and the first of the modern type reheat units was shipped during 1949; however, during 1953 of 109 units shipped by the two major manufacturers, 55% were reheat and they accounted for nearly 70% of the capability. Of units now on order and yet to be shipped approximately 90% are reheat and the average of all those units is over 125-Mw—as contrasted to the 1953 average of 90-Mw and the 1946 average of 40-Mw.

From 1946 to 1953 the average net station full load heat rate has been reduced from about 11,600 to about 10,100 Btu/Kw hr assuming 88% boiler efficiency and 2-½ in. back pressure. That represents a reduction from .894 to .778 lb of 13,000 Btu coal/Kw hr or in this area where you are still fortunate in having an abundant source of natural gas, a reduction from 10.3 to 9.7 cf/Kw hr.

The improvement in station heat rate has been accomplished in successive steps which sometimes overlapped on a time basis. For example starting with a 40-Mw, 850-psig, 900-F unit (a unit frequently called for in the 1946 period; a 60-Mw, 1250 psig, 950-F unit provided a heat rate reduction of 4.2%; an 80-Mw 1450 psig, 1000F a further reduction of 4.3%; a 100-Mw, 1450 psig, 1000-F,

1000-F reheat another reduction of 5.2%; a 150-MW, 1800 psig 1050-F, 1000-F reheat another 3.2% and a 200-Mw, 2400 psig, 1100-F reheat yet another 3.3%; or a cumulative total of 20.2% from the 40-Mw unit average of 1946 to a 200-Mw 3600 rpm single shaft modern large size unit.

The industry, reaching always for higher thermal efficiency particularly in areas subject to high fuel costs is now actively exploring the region above critical, that is, above 3206 psia where the density of water and steam are the same.

At present there has been ordered a 120-Mw turbine generator designed for throttle steam conditions of 4500 psi, 1150-F primary, 1050-F first reheat, 1000-F second reheat. It is expected that the thermal efficiency of this project will be around 40%. Above the critical pressure the water in the steam generator will pass immediately into superheated steam. There will be no apparent change of phase involved; that is no "bubbling" or vaporization such as would be experienced at any pressure below the critical; hence the steam generator will be of the forced circulation "once through" type, without a steam drum, in which the feedwater will be pumped into one end and superheated steam will be delivered at the other end. Thus the steam generator will in effect be a continuous tube.

The use of pressures and temperatures higher than those previously used in a commercial installation requires new concepts of design for major items of equipment and successful resolution of many major problems. To date only little has been published by the equipment manufacturers as to the character of equipment being developed and no details are available as to the details of design. No doubt much will be published during this year as engineering and design of that project go forward.

It is expected that the net station heat rate with this supercritical installation will be in the neighborhood of 8500 Btu/Kw hr.

There have obviously been many developments that have contributed to the ability to produce larger units, designed for higher pressures and temperatures and with improved internal efficiencies. One of the most significant has been the development of larger low pressure turbine blading, particularly on the 3600 rpm units. At the end of the war the largest blade available for 3600 rpm was 23 in. on a 42 in. wheel with a top speed of about 1380 ft/sec arranged in a double flow exhaust. Today many of the larger units are provided either with that same 23" blade but arranged in a triple flow exhaust or alternatively 26 blades on a 46" in. wheel having a top speed of about 1540 ft/sec and arranged in a double flow exhaust. For the very large units—those of 250-MW—it would

be possible to arrange either a quadruple 23" or triple 26" blade exhaust end. Development of these larger blades has required extensive research extending over a long time period due partly to the tremendous increase in centrifugal forces requiring careful analysis of materials, root design and blade vibration. No doubt the manufacturers are today continuing their development of even larger blades for the 300-Mw or 400-Mw or larger units that will possibly be required by the utility industry in the foreseeable future. This is of course a justifiable surmise since no information is available as to their research programs.

Some new alloy steels have been developed since the war for casings, rotors, bolting, etc., but in a large measure the post-war improvements have been possible by increased knowledge of materials, improved control of material production, greater "know-how" and skill in handling these materials in fabrication of machinery parts and probably most important an ever increasing knowledge—based both on actual experience with units in operation and laboratory tests—as to the behavior of materials with time under elevated temperature conditions.

Coupled with ever increasing experience with materials—permitting extension of their earlier application limits with no reduction in factor of safety is the continual advancement and development of welding procedures permitting fabricating techniques not possible in 1946 or earlier.

Methods of testing materials and fabricated parts have improved so that all materials are today subjected to more rigorous testing procedures than were previously possible; resulting in more highly refined quality control and ever increasing assurance that equipment is free of hidden flaws—thus increasing assurance of adequate equipment which will provide the high availability and low maintenance necessary to a utility system.

In addition shop production facilities have been expanded and new tools have been developed so that today the turbine generator shop capacity is more than doubled and is probably three times greater than at the end of the war permitting production of at least double the number of units per year and even more kilowatt capability due to the increasing size of units.

Another development of recent years which promises to contribute greatly to the ability to produce larger size single frame generators is the direct cooling principle.

The output capability of any generator in MVA is in a large measure dependent upon how much heat loss can continuously be

taken away from the machine without temperatures of the insulation and mechanical parts exceeding safe value for reasonable insulation life and for allowable expansion and contraction of the parts.

Techniques have been developed whereby it is possible to bring the coolant, at present, hydrogen gas under pressure, directly into contact with the current carrying windings without a sacrifice of dielectric strength of the insulation. This permits the losses which are ultimately in the form of heat, to be transmitted directly from the windings to the coolant by conduction and convection without the high thermal drop that previously occurred across the insulation.

By means of direct cooling, that is direct contact between the hydrogen coolant and the conductor, physically smaller generators can be provided for any given rating or conversely for a given physical size a generator can be built for a greater capability. At present there are two direct cooled generators in service of about 120 MVA rating and there have been ordered a total of about 13 generators of that type totalling approximately 3200 MVA for operation up to 1956.

With direct cooling a dense cooling medium is required to provide proper gas flow through the conductors, hence the normal hydrogen pressure within the machine may be 30 psig in lieu of 0.5 psig for a conventional generator, with about 25% overload Kva capacity available at 60 psig in lieu of 30 psig on a conventional machine. Recent improvements in the design of shaft seals makes the use of these higher pressures no more hazardous than the lower pressures used on conventional generators.

The post-war development of steam generators has been no less noteworthy than for the turbine generators.

Obviously the trend of steam generator development has paralleled that of the turbine generators. Information provided by the two largest boiler manufacturers who account for probably 85% of the total steaming capacity over 200,00 lb/hr indicates that in 1946 the average size unit was under 400,000 lb/hr and that average capacity had increased to over 700,00 lb/hr by 1953. Total capacity shipped by these two manufacturers increased from about 15,000,000 lb steam per hour in 1946 to 83,000,000 in 1953 or 450% while the number of individual units increased from 40 to 125 or about 200%—indicative of increased acceptance of the single boiler—single turbine or “unit” principle.

In 1946 the largest unit the manufacturers would have considered building on a reasonably “rush” program which allowed

only nominal engineering and design time would have been less than 1,000,000 lb/hr 2000 psi 1000-F/1000-F reheat, however, the art had at that time reached a point where had some additional time been available for resolution of design details a 1,500,000 lb/hr single furnace suction type unit could have been produced. Today, however, for units below the critical pressure the industry could produce a single unit having a capacity of over 2,000,000 lb/hr 2600 or 2700 psi, 1100-F/110-F reheat. The limitation on capacity is at present dictated by present knowledge of combustion conditions, heat absorption, etc., and would require a divided furnace. Pressure of 2700 psi as a reasonable upper limit is dictated by static head requirements of a natural or controlled circulation unit below the critical pressure where a steam drum is required to effect separation of steam bubbles from water and water wall circulation is in whole or in part determined by the difference in density of steam and water. The 1100 or 1150-F limit on superheat and reheat temperature is indicated by present knowledge of materials and fabrication techniques.

Among the engineering or design developments of steam generators that may be considered of importance during this period, are the development of the divided furnace permitting much higher capacities without excessive space requirements, improved methods of steam temperature control, and the development of metals and their use factors for high temperatures. The ability to weld dissimilar metals has decreased the cost of manufacture considerably and the methods of attaching tubes, including rolling, seal welding and full pressure welding have undergone many advances. Improved techniques in starting procedures decreasing stresses throughout the unit have permitted advances in sizes, pressure and temperature. The development of fuel additives has assisted greatly in oil firing and promises to be of assistance with other fuels, both in obtaining continuity of operation and lower exit gas temperatures.

The increased experience with units in operation has provided for continued improvement in availability and reliability firmly establishing the single boiler, single turbine arrangement. Experience has also taught us much about keeping surfaces clean as well as requirements of various fuels as far as furnace exit gas temperature is concerned.

Improvement and expansion of production facilities has provided not only more floor space but a better arrangement of equipment in new plants to provide an economical flow of material together with increased productivity per manhour.

There have been many improvements in welding, expanding, X-ray, and the addition of new press equipment has provided for more economical handling of heavy plate and a reduction in the number of girth welds required.

The increased use of completely tangent tube furnaces has been brought about by the need of reduced furnace maintenance, lower costs, and higher inputs per sq ft of furnace surface. This construction is essential for the use of skin casing for pressurized firing.

Some changes have developed in superheated tube spacing leading to more efficient use of this surface with closer spacing. Wide spacing was required for some time to prevent slagging and to permit cleaning. Closer control of furnace exit gas temperature together with more efficient cleaning equipment may now permit a trend in the other direction to provide a more efficient use of the surface; however, it is still too early to make this a prediction for the future.

Steam separator design has remained essentially the same with some minor changes leading to increased capacity per separator. Tests being conducted today with washers are promising.

With the increase in temperature and pressure in both primary steam and reheat steam 50 to 60 per cent of the heat put into a unit is now being absorbed in superheaters and reheaters calling for high entering gas temperatures and close control of these temperatures. Designs are approaching the point where more and more of the work must be done in the superheater and reheater with less in the furnace and other heat traps. This may gradually revise present day ideas regarding heat release and heat available.

Another important development was the pressure furnace; that design has now "come of age" with more than 50 units now in operation and many more on order for installation within the next year or two.

Considerable success has been achieved with tangential or furnace corner firing of gas, liquid and solid fuels and the cyclone furnace of another manufacture is proving its ability to handle difficult coals satisfactorily.

So as to provide optimum plant performance by maintenance of superheat and reheat temperatures over a reasonable load range, the utilization of automatic steam temperature control is now the usual practice. Several methods have been developed including tilting burners to control furnace exit temperature and temperature of gases flowing over the surfaces; gas recirculation by the use of

fans and gas bypassing or gas proportioning by means of dampers, all to control mass flow of gases over superheaters and reheater surfaces; spray or direct type desuperheaters and condenser type desuperheaters to reduce steam temperatures to required upper limits: and others have all found wide application. Which type is used on a given installation is a matter of study in each specific project.

I am indebted to several manufacturers who have furnished me with data on turbine generators and steam generators, particularly GE, Westinghouse, Babcock and Wilcox and Combustion Engineering, all of whom have made my task easier by their co-operation and assistance.

PLANT DESIGN REQUIREMENTS

It is the responsibility of the design engineer to produce plant designs of lowest cost consistent with the requirements. Following are some of the considerations of the design engineers.

Many of the public utilities, faced with increasing costs of labor, material and fuel require that new station designs be limited to the equipment and structures essential to the production of power.

Reasons for Outdoor Design

The question is often asked as to why modern plants so frequently incorporated outdoor or semi-outdoor features in their design. Many factors are involved, but the compelling urge is an economic one. For private public utilities, as you know, the rate of income is generally fixed by regulatory authority, hence there is a strong desire to reduce annual costs to a minimum, while still maintaining the character of service required and expected by the public. Thus, the majority of private public utilities desire capacity at the lowest cost consistent with the factors involved, which would include amongst others, expected load factor, foundation conditions, climatic conditions, water and fuel facilities, degree of isolation of plant, local political and public relations considerations. This latter is often of no minor concern. For example, a plant located near residential areas, possibly to reduce distribution costs, may require a more handsome and aesthetically pleasing appearance than an isolated plant, or may require more extensive facilities to reduce flue gas or noise nuisance.

Annual operating costs of steam electric stations, whether for a public utility or an industrial application are made up principally of fixed charges on investment, fuel, operating labor and maintenance.

Fixed Charges

Fixed charges are a fixed and continuing burden and a direct function of initial investment. They remain constant regardless of plant usage, that is, they remain constant whether the plant is shut-down or operated continuously. Once the investment has been made, no amount of effort on the part of the operating organization can change it. Hence, to achieve lowest annual costs, the capital investment should be held to a minimum, consistent with all requirements. Experience has shown that outdoor design, to the extent desirable for any given situation, will provide for lowest investment. In addition to the economy of structures resulting from outdoor design, experience has been that for outdoor plants there is an incentive to simplicity and compactness, so that there results further substantial savings in piping, conduit, lighting, heating, ventilating, etc. Also, with a fully enclosed plant, the geometry of the installation often results in extra space and there is a natural tendency to utilize the additional volume made available for potentially desirable, but not necessarily essential, functions. Aside from the economic factor involved, we were for some time in a period of extensive defense preparedness, during which time both manufacturing facilities and raw material supplies were severely taxed. Outdoor design, with its reduction in requirements of steel products, including structural shapes, piping conduit, reinforcing steel, etc, will, no doubt, remain the preferred construction in many instances.

Operating Labor

As a result of extensive experience with outdoor type plants, it is our considered opinion that the operating cost for such a plant will be about the same as that for a fully enclosed plant, with the cost of "housekeeping" being somewhat less for the outdoor plant. It is not possible to cite directly comparable figures, because while the trend for the past several years has been more and more to outdoor type construction, the trend has been also to simplification, centralization of controls, practically universal acceptance and installation of completely automatic combustion control, etc, all of which factors have tended to reduce operating personnel.

Maintenance

The trend to outdoor installation of equipment has provided manufacturers with the incentive to re-analyze their equipment and make such modifications as are necessary so that often equipment of one design is now suitable for either indoor or outdoor installation. Much work has been done by industry in that connection. However, much still remains to be done, and is subject to

continuing study. Our experience has been that with equipment properly designed for outdoor service and installed with proper regard to the climatic and other conditions obtaining, the maintenance requirements are no more than would be the case with corresponding equipment in a fully housed plant. It is accepted, however, that maintenance, would, if done during inclement weather, cost more than if equipment were installed indoors, and some inconvenience will result. Experience has, however, justified these factors when compared to the substantial reduction in investment possible with the outdoor design.

While maintenance of equipment is about the same for fully housed or outdoor plants it is considered that maintenance of structure will be more for a fully housed station. The structure itself must be kept clean, painted and otherwise maintained as must the heating and ventilating system and other extensive building service facilities.

Outdoor Construction

Thus many utilities have omitted non-essential structures and have adopted "outdoor construction" to a degree compatible with climatic conditions and character of community. While fully enclosed or "indoor" type plants still predominate it is significant that at present over 30% of the units now under design or construction in the country will be in stations incorporating outdoor design to some degree. My Company has been in the lead in advocating omission of non-essential structures and of 4,489,000-Kw now under design for 44 units, 100% will incorporate omission of non-essential structures, hence, will be of outdoor construction to the extent considered practical in each instance. Plants in the south are frequently almost of complete outdoor design with all major equipment exposed to the elements. Many stations have only one enclosed area in the plant—that being the central control room containing all instrumentation and controls required for normal plant operation. In addition there would usually be a separate one story building, inexpensively constructed to house necessary offices, locker rooms, shops, etc. Many articles have been written about outdoor plants and many of you have no doubt read them. The farther north the plant location, the greater degree of enclosure or protection of equipment is required. However, it is the responsibility of the design engineers where approved by the Client to provide only such enclosures as are essential to proper operation of equipment and comfort of operating personnel.

One plant in Billings, Montana is now in its third winter of operation. In that case the steam generator is outdoors, faced

against a firing aisle enclosure constructed of uninsulated transite. The turbine generator is outdoors but provided with a "walk-in" housing over the front end of the turbine to house the starting controls and instruments and a similar housing is provided over the exciter. The plant is enclosed below the operating floor level within walls constructed of concrete block. Reports from that station indicate complete operator acceptance of that design even though winter temperatures of minus 40-F have been recorded and minus 20-F is a normal occurrence. In fact, reports from the operating company indicate that after a few years of operation the operating force in the station has expressed a preference for the outdoor design over a fully enclosed plant.

It is a fact that contrary to early fears that operating personnel usually prefer the outdoor construction and I know of no utility, once accepting a degree of outdoor design, ever returning on later plants to a greater degree of enclosure. The utilization of outdoor construction to a degree compatible with local conditions has been accepted to such an extent that it is now generally considered "conventional". Obviously the trend to outdoor plants has required new techniques and modification to former equipment designs.

Operating Features

The fact that operating experiences with outdoor stations has been as satisfactory as with indoor design is due in some measure to the attention paid to the details of operating requirements, location of controls and valves, protection against freezing, driving rains, etc, during the design period. It must be emphasized that these features must be kept in mind by the design engineers from the very beginning of design. It is not sufficient to design a project and then near the completion of the engineering, go back over a completed design and attempt to add weather protection features, if a completely satisfactory result is to be achieved. The inclusion of necessary features is a fundamental requirement. The features incorporated into the design of any project must be developed for the conditions at that station and must provide adequate protection for equipment, piping, etc, both when the equipment is in service and out of service. Of prime importance is the utilization effectively of such enclosed or protected areas as are provided for the installation of instruments, controls, valves, traps, etc. Following are some of the features to be considered.

Steam Generating Unit

The modern steam generating unit is generally completely steel cased and no protection is required by the steam generating unit itself when in operation or when out of service in freezing weather

for periods less than that required to cool the pressure parts down to the freezing point. For outages of longer duration, it is considered advisable to keep one burner in operation and to maintain the unit at a reasonable pressure as recommended by the manufacturer, say 100 psig, so as to keep all of the pressure parts warm and to maintain a circulation through the unit. The alternative is to completely drain the unit, but that is often not desirable unless adequate storage capacity is available to retain the drained water and in any case, draining of a unit would not be entirely satisfactory unless the unit were of the completely drainable type without pendant superheater loops. Obviously for outage of long duration during freezing weather if the station is completely isolated from all outside power sources, the unit must either be drained or alternately kept warm by means of a wood or other natural draft fire built in the furnace.

Fans for outdoor units, have, within the past few years, been provided with air cooled sleeve bearings, so as to avoid the difficulties previously experienced with water cooling, particularly when the unit is out of service. More recently it has been possible to provide air cooled bearings for rotary or regenerative type air heaters.

Whether steam or air operated soot blowers are installed, the blowing steam or air piping must be completely and automatically drainable at the completion of each blowing cycle, and the control air should be supplied through automatic regenerative driers. If dry air is used for control, not only of soot blowers but all other air operated equipment such as combustion control, superheat control, instrumentation transmission, operation of control valves, desuperheaters, etc, the experience to date indicates that no insulation or other protection is required for the air control piping. Experience as far North as Ohio where sustained temperatures below zero were experienced indicates that regenerative air driers of high commercial quality will provide adequate protection to prevent freezing of bare control air piping. In contrast, experience even in some parts of the South has proven that freezing can, and does occur in bare control air piping where no drying medium is used.

Water columns and gage glasses must be completely protected so as to avoid glass breakage or uneven expansion due to rapid temperature changes. In some cases, the water columns and gage glasses are completely enclosed within sheet metal enclosures, having removable sides for maintenance access and in many cases, the water columns and gage glasses, as well as safety valves and other instruments and controls at the end of the drums, are located within a walk-in enclosure built around each end of the main

stream drum. It has not been found necessary to cover or otherwise protect the safety valves except in the more rigorous climates.

Instrument and control piping from various parts of the steam generating unit to the gage boards must be protected, not only to prevent freezing, but also to prevent errors due to wide temperature variations. It has been found entirely practical to install instrument piping, such as for water level recorders, water level regulation, steam pressure, draft, etc, within a "blister" on the steam generating unit casing, so that all of that tubing is kept at a reasonably uniform temperature.

TURBINE GENERATOR UNIT

Usually, no special protection is required for the turbine generator unit, other than the waterproofing provided by the manufacturer. Manufacturers have done an excellent job of sealing openings and providing turbine generator designs entirely suitable for outdoor service. The degree of acceptance of outdoor weatherproofed turbine generator installations is indicated by the fact that the added cost of such weatherproofing is now included by the manufacturers in their current standard price books. Some of the features incorporated by the manufacturers include, as required, either a walk-in housing around the front turbine standard or a so-called "skin-tight" housing, if an enclosed area for starting is not desired, or if the unit and its controls are arranged to provide for complete remote starting. Hoods are provided for the control valves to protect the mechanism from the weather and to prevent development of excessive temperatures at the control mechanism.

Between the turbine exhaust hood and the inboard end bell of the generator, a housing is usually provided over the turning gear. The exciter housing may itself be made weatherproof, or more frequently, a walk-in housing is provided over the exciter. The walk-in housing is the more generally accepted design since it permits the safe adjustment of brushes during operation in inclement weather.

Where the turbine generator unit is to be installed in severe climatic conditions, the generator stator can be insulated and during outage, hot water can be circulated through the hydrogen coolers.

PIPING AND EQUIPMENT PROTECTION

Where required by climatic conditions all exposed piping must be protected against freezing. Large piping such as main steam, boiler feed, extraction steam, condensate, etc, are designed so as to

be drainable during extended outage. Piping having little or no flow during operation must be protected against freezing both during operation and during outage and piping not completely drainable must be protected during outage. In many outdoor industrial installations, as for example an oil refinery, the piping is often traced with a small diameter steam tracer. That system is simple and practical if it is possible and economical to exhaust the steam or condensate at the end of the tracer line. If an attempt were made to collect the condensate and return it to the system there would result, in a steam central station, multiple parallel piping systems and we have considered that it would be possible to have no flow, and hence no heating, from those tracer lines of the greatest length and friction. To exhaust the steam or condensate, however, would require continuing and possibly excessive makeup to the steam generating unit.

Most recent Ebasco projects have employed heating cable to provide the necessary protection.

When installed on piping normally cold in service, the cable is wrapped around the bare pipe and the piping is then covered with heat retention insulation. When installed on piping normally hot in service the piping is first insulated to protect the wire, then wire wrapped, then wrapped with aluminum foil as a heat spreader and finally covered with a heat retention insulation.

Experience has indicated that best conduction along a pipe cannot be depended upon for freezing protection of a strater line, that is a line with no flow during operation. A specific example was a blow off valve located 5 ft from a water drum operating at about 1450 psig, 590-F. No protection was provided other than standard weight heat retention insulation and the valve froze tight and could only be opened after being heated by a torch. Additional insulation and heating cable had to be added.

Equipment such as heaters, evaporators or other vessels having water storage can be protected against freezing by immersion electric heaters. Another method of protection sometimes employed is to provide a hot water heater and circulating pump to pump hot water during periods of outage, through the piping and heaters to maintain above freezing conditions, thus eliminating the need of immersion heaters on the equipment or heating cable on that piping.

Regulators, control devices, diaphragm valves, etc can be protected by installing them in such enclosed areas as are available,

or if they must be in the open there can be provided inexpensive housings or covers of sheet metal, transite or similar material with heat provided by strip heaters or incandescent lamps.

HEAT INSULATION

Some difficulty has been experienced with heat insulation. Insulation installed on outdoor piping is lagged to make the assembly weatherproof and various materials have been used for that purpose such as sheet steel or aluminum, roofing felt, hard finish cement, etc. If the lagging is applied with proper care it will prevent the entrance of rain; however, unless the lagging were hermetically sealed there will be an air flow in or out as the piping temperature changes. Moisture in the air will condense and wet the thermal insulation, particularly when the piping is out of service and cold. There have been cases where when wet the binder used in molding the preformed insulation has caused corrosion of the piping and in one extreme case was sufficient to cause rupture of a 1 in. line operating at 1400 psig.

It is probably not possible unless at very high cost to make the lagging hermetically tight so that the most practical solution would seem to be:

- a) To use a type of heat insulation that will not cause corrosion when wet.
- b) To use an insulation material that will retain its form when wet; which will absorb a minimum of moisture and which will have its original insulation characteristics when dried out.
- e) Install a lagging over the insulation, properly installed and lapped to prevent entrance of rain but which will not be so tight as to prevent the outflow of moisture when the piping is heated. The most effective and satisfactory material for this purpose seems to be roofing felt.

Recently there has been placed on the market a reflective insulation commercially named "Hunter" insulation, consisting of a series of concentrically spaced, shop fabricated sheets of aluminum which provides a dead air and reflective insulating jacket around the pipe.

This material shows promise since it is non-absorptive and is easily adaptable to anti-freeze protection.

So much has been written about outdoor plants that I will not go into the subject further. However, substantial moneys are saved by providing only those enclosures required to the production of power. The difference in initial investment between a fully housed and fully outdoor plant is variable depending upon location, size of equipment, etc. The writer's Company seldom today prepares comparative investment estimates on this phase of design since outdoor construction of a degree compatible with local conditions is now so much taken for granted.

Unit Design

Since the war the design and construction of steam generators has improved to such a point where they are now considered equally as reliable as a turbine generator. The present general and almost universal practice is to provide only one steam generator for each turbine generator, with no cross connection to other steam generators or turbines in the station. For a 100,000 kw unit the reduction in investment by providing one in lieu of two steam generators of outdoor construction and for gas or oil firing would be in the neighborhood of \$6.00 per kw or about 20% of the total steam generator cost installed, and the omission of cross connections to other steam and turbine generators would provide a further substantial saving. Operating experience with the single turbine-single boiler "unit" installation justifies that design and that principle is today being utilized on the largest installation now being made.

Central Controls

So as to reduce operating labor to a minimum with no impairment to plant operations it is now general practice to locate all steam generator-turbine generator and frequently transmission line controls for the unit in one central control room and generally controls for two or more units are located in the same room. The other factor influencing the trend to centralization and automatic controls is the greater capacity and increasing pressure and temperature of the modern central station; events occur with considerable rapidity and corrective measures must be taken more quickly than could be done manually. Of course, investment in controls, instruments, tubing and wiring is increased over that required for separate control boards located near each major piece of equipment but one highly qualified operator per shift would take the place of two or more operators per shift. A reduction of only one operator per shift will reduce the plant force by at least four men. The increased cost of instrumentation and controls is small compared to the reduction in the cost of operating labor. Further, the increased size of equipment, higher pressure and temperatures and the generally

more critical nature of modern plant equipment makes it desirable that major operating functions be under the control of one highly qualified operator. Many of the newer plants in your area are functioning with only three operators per shift exclusive of office and maintenance personnel.

Interlocking

In line with the efforts to reduce operating personnel to a minimum by centralization of instruments and controls to provide for maximum attainable efficiency with greatest degree of safety for both equipment and personnel, the present plant designs include an increasing amount of automatic equipment. All plants today are provided with automatic combustion control to provide both for maximum steam generator efficiency on fluctuating loads and greatest assurance of steam being available in accordance with turbine demand by reducing manual operating functions to a minimum and thus reducing potential "human error". Extensive but essentially simple automatic electric, pneumatic and hydraulic interlocking systems are provided for several purposes.

One major purpose is to prevent damage to equipment or hazard to personnel by preventing equipment from being started or stopped in the incorrect sequence. Another purpose is to remove equipment from service when it fails to operate properly and sometimes to automatically place corresponding standby or spare equipment in service. A third purpose is to take the unit or the station off the line when required by mal-operation of major equipment in the station or when system disturbances, external to the station require it, and under those circumstances to take individual pieces of equipment out of service in the proper sequence.

Functional Control Board

Today it is common practice to locate in one central control room all of the instrumentation and controls essential to the normal operation of at least two units and many plants have been designed with one central control room for four units. The increasing capacity, pressure and temperature of present day units, however, with their increasing importance as the base loaded units of the system at least for several years may make the two unit control room the more popular in the future. That would be in the direction of reducing the possibility of fire or other trouble from creating complete plant outage.

With centralized control of two or four units the ability of a few operators to quickly scan all control boards has been enhanced by the development of a combined boiler-turbine-generator control

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board which contains in about 8 ft of length all of the instrumentation, control and alarm equipment essential to the normal operation of a single unit—of almost any size, pressure and temperature; reheat or non-reheat, gas, oil or solid fuel fired. Those instruments and controls required for operation are located on the front of the board with recorders, watt-hour meters and relays that do not have to be in view of the operator located on the rear panel. Boards of that type are about one-fourth the length of conventional boards thus facilitating operations and assisting in reduction of manpower requirements.

Of greatest importance in an emergency is the ability of the operator to have a comprehensive grasp of the entire plant performance and the ability to carry out rapidly and in the proper sequence the necessary manipulations with a minimum of movement.

Compactness has been achieved by use of small sized instruments and controls—carefully selected for ease of readability and manipulation—and the adoption of the re-transmission principle, particularly for the mechanical instruments. All high pressure primary elements are located elsewhere in the plant with the impulses to the instruments and controls on the board being transmitted either electrically or by low pressure air, filtered and dried.

Thus these smaller sized control boards also provide an added degree of safety since no high pressure steam, water, oil or gas is piped into the control room.

This type control board is, for central station use, an entirely post-war development. The degree to which this type board has been accepted is indicated by its use by Ebasco on 61 boiler-turbine units totalling 6,700,000 kw in nameplate capability.

For one of the stations here in Louisiana a further reduction in size has been developed and for a 125-Mw reheat unit installation the overall length of the board was developed by the Louisiana Power & Light Co. and details of design, arrangement and equipment have been prepared by Ebasco. The reduction in size has been accomplished by omission of space for control and instrumentation for future solid fuel (these would later be on a separate panel); use of miniature electrically actuated indicators for mechanical and electrical instrumentation; extensive use of 3 in. strip chart recorders and the use of telephone toggle type switches in lieu of the conventional power plant type switches. In addition certain indicators not considered absolutely essential to normal operation have been omitted and scanner type recorders have been provided on the rear of the panel.

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Results hoped for with this 4 ft board are lower initial investment and a very compact arrangement possibly permitting one control operator to ultimately handle two units. Experience with that board, expected to be placed into operation early 1955, will be watched with interest by the industry.

Low Set Construction

In line with the trend to outdoor construction there has been a great, but not universal, acceptance of "low set" construction with the turbine operating deck as close to grade level as practical so as to both reduce construction cost and provide for ease of operation. This was accomplished initially by dividing the required condenser surface into two parts and providing two-half-size condensers on either side of the turbine pedestal, connected to each other and to the turbine single bottom exhaust by means of a tee piece. That design has been widely used in the south and southwest and to a lesser extent in the north. That design has been economic since reduction in cost of construction of the turbine generator pedestal, other structures, piping, cable and wiring etc was greater than the very slight increase in cost of condensers including the tee piece. With that design the operating deck for a 60 or 80-MW non-reheat unit would be about 16 ft above the grade level as compared to about 25 ft required for a single shell condenser set cross-wise under the turbine.

A further reduction in height of structures has been accomplished by utilization of a side exhaust turbine and use of two half-size condensers, one on each side of the turbine, connected to the turbine exhausts by means of short connecting ducts. With that design the operating deck for a 60 or 80-MW non-reheat unit could be about 11 ft above the grade level.

At present we are re-examining those two designs in light of new developments and on a few of the more recent projects the design has reverted to the former conventional single cross-condenser design with a relatively high set pedestal. The reasons for the apparent change in design philosophy are interesting. The twin condenser design has been used where it has been economic to do so, however, changing conditions including adoption of larger size units, desire to provide for even larger units in the future, and increasing operating experience with those designs require that for each situation the matter be evaluated on its own merits.

Further the twin shell condenser design lends itself very well to non-reheat unit installations. Although that design increased the distance between the steam generator and turbine generator the cost per foot of main steam and boiler feed piping, conduit and

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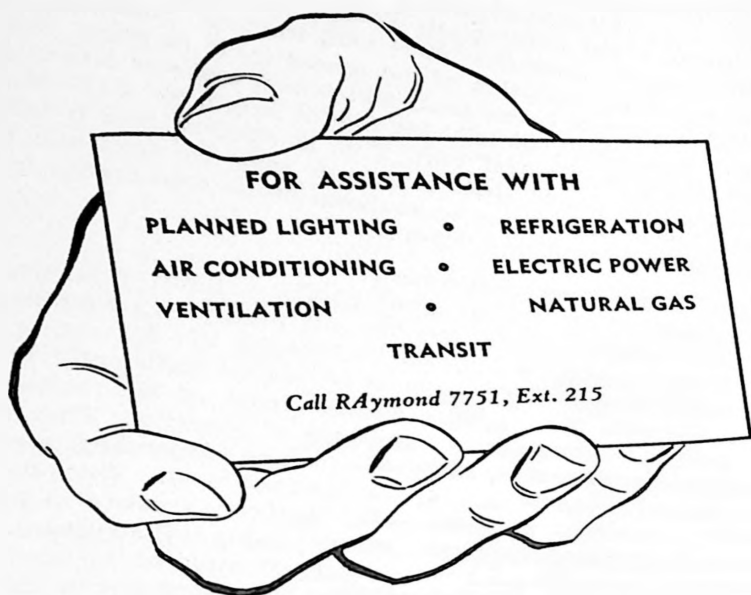
cable, etc was not substantial. Today, however, with increasing capacity, higher pressures and temperatures requiring higher alloy material and adoption of the reheat cycle in many cases the cost of main stream, boiler feed, cold reheat and hot reheat piping alone can be about \$1,000 total per foot of length for a 150-Mw 1800 psig, 1000-F/1000-F reheat unit. This is another reason why re-adoption of the single shell condenser may be economic today, however, each project must be analyzed on its own merits so as to achieve the most economic layout.

Deaerator vs Condenser Deaeration

For outdoor gas and oil fired plants, without extensive fuel storage and handling structures, the only high steel structure other than the steam generator, would be that for the deaerating feed-water heater which would have to be placed sufficiently high to provide adequate net positive suction head at the boiler feed pump suction for all normal conditions of operation. That would require a structure possibly 50 to 80 feet high (depending upon turbine extraction position and other considerations). With the low set plants previously described there has been a desire to further reduce costs by eliminating that one remaining tall structure. That has been accomplished by the large scale adoption of the condenser deaerating cycle in which oxygen removal is provided in the surface condenser in lieu of by a separate deaerating contact type feedwater heater. In that case the usual deaerator is replaced by a conventional shell and tube heat exchanger.

This is optional design that has found merit in many instances.

Operating experience has shown that oxygen removal is satisfactorily accomplished in the deaerating type condenser. In that cycle there are many precautions to be observed to prevent oxygen contamination of the condensate between the condenser and the steam generator. At loads where extraction heater operating shell pressures reduce to about 5 psig the drains from those heaters must automatically be shifted to discharge into the main condenser instead of into the condensate stream; heater vents must be provided with ejectors to effectively remove non-condensable gases. Since there is no water storage between the condensate and boiler feed pump must be interlocked electrically with its paired condensate pump so they operate as a unit. Generally interlocks are provided to prevent starting of a boiler feed pump until adequate pressure is established both on its suction and the discharge of its paired condensate pump and to stop a feed pump when either of those two pressures drop below predetermined safe values and at the same time to automatically start a standby pair of feed and condensate pumps in the proper sequence and timing.



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Recently we have had a suspicion that with increasing complexity of equipment due to requirements of larger capacity, higher pressures and temperatures, closer running tolerances, etc that the reduction in investment to be realized by omission of the deaerator and its supporting structure may be almost equalled by the special design provisions required by condenser deaeration. This matter is now being studied and while today no conclusions have been reached by my Company, there is a possibility that there may come about a lessening of the use of condenser deaeration and increasing use again of deaerators. Again the change, if it comes, will be the result of changing conditions and again an indication of the degree to which design engineers must ever be alert to changing conditions so as to all times provide the most plant for the fewest dollars.

Future Solid Fuel

Most plants in this area, where you now enjoy natural gas at relatively low rates, are designed for future conversion to solid fuel firing if cost of solid fuel should become less than cost of gas or oil; or when gas or oil become unavailable in the quantities and rates required. It has been the general custom to leave a space in front of the steam generator to provide for the future installation of coal bunkers, pulverizers, feeders, coal conveying equipment and certain other accessories that would be required at the time of conversion. With the advent of ever increasing capacities, pressure, temperatures the cost of piping, cable, etc between the turbine and steam generator increases. Hence it may in some cases be desirable to locate the steam generator as close to the turbine generator as possible. As mentioned before this can be accomplished in part by use of a single shell condenser in lieu of the twin shell design. A further compactness is being achieved on some of the more recent designs (Ninemile Point No. 3 is an example) by providing an area at the side or rear of the steam generator for the future addition of solid fuel equipment. Admittedly the cost of conversion may be increased slightly by the need at that time for longer runs of fuel piping, however, such added cost as may then be incurred is relatively insignificant compared to the total added investment at that time and the substantial economy of investment achieved initially.

Grade Level Plants

An increasing number of plants are being designed to spring from a slab at ground level instead of having a basement below ground level. Each project must of course be evaluated on its own merits to determine the economic balance between fixed charges on construction cost and operating fuel cost. This is particularly

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true where a plant is located on natural water such as a river, lake, bay or artificial pond. In those cases the possible increased fuel costs resulting from circulating water static head from top of condenser to water level exceeding a conservative siphon head—may result in creased pump operating cost for a slab type plant compared to a plant having a below grade basement. Siphon considerations do not of course affect a plant designed for use of cooling towers.

In many cases the reduction in construction cost results in annual differential fixed charges reduction much greater than the increased annual pumping power cost even taking into account the value of net plant capability resulting therefrom indicating the slab type plant to be the economic choice. In those cases, or in the case of a plant having a sooling tower, the slab type construction without a basement will shorten the construction period; provide for simplification of construction and finally provide for simplification of later plant maintenance, removal and repair of equipment.

Summary

These comments are intended to indicate to you the responsibility on the part of the plant design engineers to continue to produce plants of ever increasing efficiency and reliability at lowest cost consistent with high availability, adequate measures for safety of equipment and personnel, lowest investment and lowest operating cost for both fuel and labor. Obviously the designs developed must frequently be a compromise amongst these features. Engineers must have an unbiased and flexible approach to the multiple problems that frequently present themselves on every project and his decisions must be based on careful consideration on all factors involved and all elements of each project must be carefully considered and evaluated.

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MINUTES OF THE MEETINGS AND BUSINESS OF THE SOCIETY

Minutes of Meeting of the Board of Direction held on May 3, 1954

The meeting was called to order by President Macdonald with Messrs. Abraham, Kelly, McLellan, Nelson, Seago, Wallace and Fernandez present. Mr. Robert Grehan, Assistant Secretary, also was present. Mr. Seago moved that minutes of the preceding meeting be accepted as read, seconded by Mr. McLellan and carried.

A letter from Mr. C. Glenn Cappel, Chairman, Special Activities Committee, was read in which he requested to be relieved of this chairmanship because of ill health. Mr. Abraham reported that the work of the committee had been nearly completed, including the faculty salary survey, and moved that Mr. James M. Todd be appointed to head the committee. Motion second by Mr. Nelson and carried.

Correspondence between President Macdonald and Mr. W. B. Fox, President, Board of Commissioners, Port of New Orleans, concerning the naming of the new grain elevator in honor of the late J. A. McNiven was read.

A letter from Mayor Morrison was read, stating that his administration had made it a practice in dedicating public structures to recognize the engineers involved in their construction and regretting the oversight in failing to do so at a recent dedication.

A letter from Howard-Tilton Memorial Library, thanking the Society for its courtesy in bringing to their attention a collection of Panama Canal publications that is available.

A letter of appreciation from the late L. V. Cressy's family was read.

Upon the recommendation of the Board, President Macdonald appointed Mr. Frank Riess to serve as General Vice-Chairman of the 1955 Annual Meeting, and Messrs. Wm. J. Drawe, Jr. and Joseph R. Mooney as Co-chairmen for Engineers Week, 1955.

Mr. Seago moved that Mr. Wallace P. de Mux be reinstated to membership in the society, seconded by Mr. Abraham and carried.

Mr. Nelson moved that the resignations of Messrs. Paul J. Tarantolo and William Wenner be accepted with regret, seconded by Mr. Seago and carried.

In accordance with the constitution, Mr. McLellan moved that the following members who have not paid 1953 dues be dropped; motion seconded by Mr. Wallace and carried: H. I. Abboud, L. J. Aucoin, W. D. Beisner, J. H. Bradley, R. G. Brannon, L. E. Broders, O. L. Buhls, E. A. Burke, W. M. Crawford, B. R. Denham, E. J. Dragon, G. O. Edelen, E. E. Ford, D. D. Fullmer, E. M. Furby, Jr., W. A. Gehrke, L. L. Hines, W. H. Huckaby, W. B. Jordan, C. N. Kahn, Jr., W. E. King, E. J. LeBlanc, S. J. Lembine, K. N. McIntosh, R. A. Matherne, J. D. Midwikis, A. S. Mijalis, J. J. Picarazzi, A. S. Pincus, H. H. Ray, W. O. Ray, Jr., G. W. Robert, J. W. Rodgers, J. D. Russell, N. E. Simes, J. H. Wagner, F. Weiser, W. J. Weishaupt, J. D. Wilkinson III, R. S. Wynn.

President Macdonald appointed Messrs. Frank M. Ritchie and T. Baker Smith to prepare the obituary of the late Paul T. Seashore.

There being no further business, the meeting adjourned.

JOHN P. FERNANDEZ, Secretary-Treasurer

Minutes of Meeting of the L. E. S. held on May 3, 1954 in the Jackson Room,

St. Charles Hotel

The meeting was called to order by President Macdonald with approximately 150 members and guests present. President Macdonald welcomed those in attendance. Professor Steinmayer moved that the reading of minutes of the preceding meeting be dispensed with, seconded by Mr. Blessey and carried. The secretary then read minutes of the April meeting of the Board of Direction.

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Mr. Charles M. Kerr read an obituary honoring the late past president of the Society, John A. McNiven, after which a moment of silence was observed in his memory.

Mr. T. Carr Forrest, President, National Society of Professional Engineers, then addressed the society, outlining the aims and objectives of his organization.

Mr. Charles E. Cassagne then introduced the principal speaker of the evening, Captain Neville Levy, who gave a most interesting and instructive talk on the Mississippi River Bridge.

Following the usual question period, the meeting adjourned with a rising vote of thanks to the speaker.

JOHN P. FERNANDEZ, Secretary-Treasurer

Minutes of Meeting of the Board of Direction July 13, 1954

The meeting was called to order by President Macdonald with Messrs. Abrahm, Innes, Kelly, McLellan, Nelson, Wallace and Fernandez present. Messrs. Randall Meyer, J. T. Knight, Jr., and Chas. J. Knost also were present by invitation. Minutes of the Board's meeting held in May were accepted as read upon motion by Mr. McLellan seconded by Mr. Innes.

The secretary reported that 326 ballots were cast in the June membership election and that all candidates were elected to their respective grades. A copy of the ballot is attached hereto.

The treasurer presented a semi-annual financial report and the auditor's report for 1953.

Mr. Knost, Chairman, Vocational Guidance Committee, gave a report on his committee's activities and read a report from his sub-committee on a study and investigation of junior engineering training for schools, commonly referred to as "JETS". Mr. Abram moved that the Vocational Guidance Committee consider the JET program and take steps to activate same. Motion seconded by Mr. Nelson and carried. Mr. Wallace moved that \$150.00 be budgeted for the next school year to finance the JET program on a pilot experimental basis. Motion seconded by Mr. Innes and carried.

The secretary reported results of the canvass regarding location for the Society's annual meeting to be held in January 1956, which were as follows:

Votes received from	In favor of Baton Rouge	In favor of New Orleans	Others	Total
New Orleans	156	111	6-either, 1-mixed	274
Baton Rouge	132	3		135
Lake Charles	26	10	1-either	37
Shreveport	30	14	1-rotating sections	45
Monroe	38	6		44
Lafayette	35	7	1-either	43
Alexandria	22	4	1-Alexandria	27
Other	32	5	1-other plan	38
	471	160	12	643

The secretary reported that only 35 persons had applied for matriculation in the refresher correspondence courses, whereupon Mr. Innes moved that, due to lack of interest on the part of the membership, this educational program be abandoned. Motion seconded by Mr. McLellan and carried.

Correspondence between the secretary and the Division of Regulatory Inspection, City of New Orleans, regarding enforcement of State Act No. 73 and Article 2 of the New Orleans Building Code was read. Mr. McLellan moved that Messrs. F. N. Billingsley, Chairman, B. M. Dornblatt and Cary B. Gamble be appointed a committee to represent L.E.S. if and when an appeal is made by the American Institute of Architects to the Board of Building Standards and Appeals. Motion seconded by Mr. Nelson and carried.

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A letter from the National Society of Professional Engineers acknowledging receipt of the Society's report on Engineers Week was read.

A letter from Mr. Leo Odom was read in which he requested that the L.E.S. consider establishing a division of consulting engineers within its organization. Mr. McLellan moved that the letter be referred to the Committee on Civic, Industrial and Professional Affairs headed by Mr. Arthur J. Naquin. Motion seconded by Mr. Wallace and carried.

Correspondence and report of the Special Activities Committee was read. Mr. Nelson moved that Messrs. L. J. Cucullu, Vice-Chairman, and M. C. Abraham be appointed to assist Mr. Todd, Chairman of this committee, and that Mr. Todd be authorized to appoint additional members at his discretion. Motion seconded by Mr. Kelly and carried.

Mr. Kelly then described the difficulty faced by the New Orleans Sewerage and Water Board in obtaining and holding engineer employees. It was described that President Macdonald would write to this Board offering the society's services to determine equitable salary rates.

Mr. Innes moved that the resignation of James T. Taylor be accepted with regret, seconded by Mr. Abraham and carried.

Mr. McLellan moved that Joseph F. Courtney be reinstated to full membership grade, seconded by Mr. Innes and carried.

Upon the recommendation of the Board, President Macdonald appointed Messrs. Charles M. Rogers and D. W. Stewart to prepare the obituary of the late Leroy L. Newman, recently deceased member of the society.

President Macdonald reported on the society's activities in preventing House Bill No. 1113 from leaving committee during the recent session of the state legislature. Mr. Abraham moved that Messrs. Calvin Watts and Roy Sessums be commended for their service in this connection. Motion seconded by Mr. Innes and carried.

Mr. Innes reported that the revised constitution and by-laws of the Baton Rouge Section had been voted upon and the count was 121 for and 1 against. Mr. Abraham moved that, since the results of the vote are indicative of the wishes of the majority, the revised constitution and by-laws of the Baton Rouge Section approved by the Board of Direction be now in effect. Motion seconded by Mr. McLellan and carried.

The secretary advised that a count of registered engineers holding membership in the Society had been tabulated by Mr. Henri Molaison from the 1953 membership list, as follows:

Voting Members	1,010
Registered Voting Members	671
Percent registered	66.4
Junior and Affiliate Members	394
Registered Jr. and Affiliate Members	183
Percent registered	46.4

There being no further business, the meeting adjourned.

JOHN P. FERNANDEZ, Secretary-Treasurer

Minutes of Meeting of the Lafayette Section LES, March 9, 1954

The March meeting of the Lafayette Section of the Louisiana Engineering Society was a dinner meeting and was held at Poor Boy's Riverside Inn at 7:30 P. M. on March 9, 1954. The meeting was called to order by President Boudreaux.

Mr. H. R. Mason moved that we dispense with the reading of the minutes of the February meeting. The motion was seconded by Mr. J. E. Jarman and carried.

There being no old or new business to discuss the chair was turned over to Mr. H. R. Mason who introduced the guest speaker of the evening, Dr. Paul S. Delaup, Professor and Head of the Department of Physics at Southwestern Louisiana Institute. Dr. Delaup gave a very interesting and informative

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talk pertaining to the "Creation of the Universe". Following a question and answer period, President Boudreaux thanked the guest speaker on behalf of the society.

Mr. J. R. Gaugler moved that the next meeting be a dinner meeting to be held at Poor Boy's Riverside Inn. The motion was seconded by Mr. F. Consterdine and carried.

President Boudreaux announced that the Louisiana Academy of Science would be held March 19 and 20 at Southwestern Louisiana Institute.

Mr. H. R. Mason announced that the next speaker would be Mr. Fred Bates of Bates and Cornell, Oil Geologists.

There being no further announcements the meeting was adjourned.

ALFRED W. SCHOEFFLER, Secretary-Treasurer

Minutes of Meeting of the Lafayette Section, LES, April 13, 1954

The April meeting of the Lafayette Section of the Louisiana Engineering Society was a dinner meeting and was held at Poor Boy's Riverside Inn on April 13, 1954.

After the dinner, the meeting was called to order by President Boudreaux. The guests were introduced.

Mr. H. R. Mason moved that we dispense with the reading of the minutes. The motion was seconded by Mr. J. Neef and carried.

A discussion relative to a Tri-Section Meeting was held. Also discussed was the suggestion by the chair that the Lafayette Section invite the graduating seniors in the College of Engineering at Southwestern Louisiana Institute to the May meeting. Mr. J. E. Jarman moved that each member present sponsor one senior to the May meeting and that the wives of the seniors be sponsored by the society. This motion was seconded by Mr. C. J. Russell and carried.

The members present were as follows: A. Bonnet, F. Boudreaux, R. Cambre, F. Consterdine, S. Elberson, E. Domingue, R. Elliot, H. Dula, A. Faulk, E. Guillot, J. Herpin, R. Hetherwick, J. Hoge, J. Jarman, W. Johnson, R. Jenkins, T. H. Keen, F. Larue, H. Mason, G. Marine, M. Mose, J. Neef, D. O'Rourke, W. Robert, C. Russell, R. Stevens, J. Troxler, W. Vincent, C. Woodward, J. Reed, A. Schoeffler.

There being no further business to discuss the chair was turned over to Mr. H. R. Mason. Mr. Mason announced that the scheduled guest speaker, Mr. Fred Bates, of Bates and Cornell, was unable to attend the meeting because of serious illness. Mr. Mason then introduced the alternate speaker of the evening, Professor G. G. Varvaro of the Department of Geology at Southwestern Louisiana Institute. Professor Varvaro gave an interesting talk pertaining to the drilling operations of an oil well. After a very informative discussion period, the chair was resumed by President Boudreaux.

President Boudreaux thanked Professor Varvaro on behalf of the society.

ALFRED W. SCHOEFFLER, Secretary-Treasurer

Minutes of Meeting of the Lafayette Section, LES, May 13, 1954

The May meeting was held at Poor Boy's Riverside Inn at 7:30 P. M. on May 13, 1954. This was the Annual Ladies' Night and there were 91 persons present.

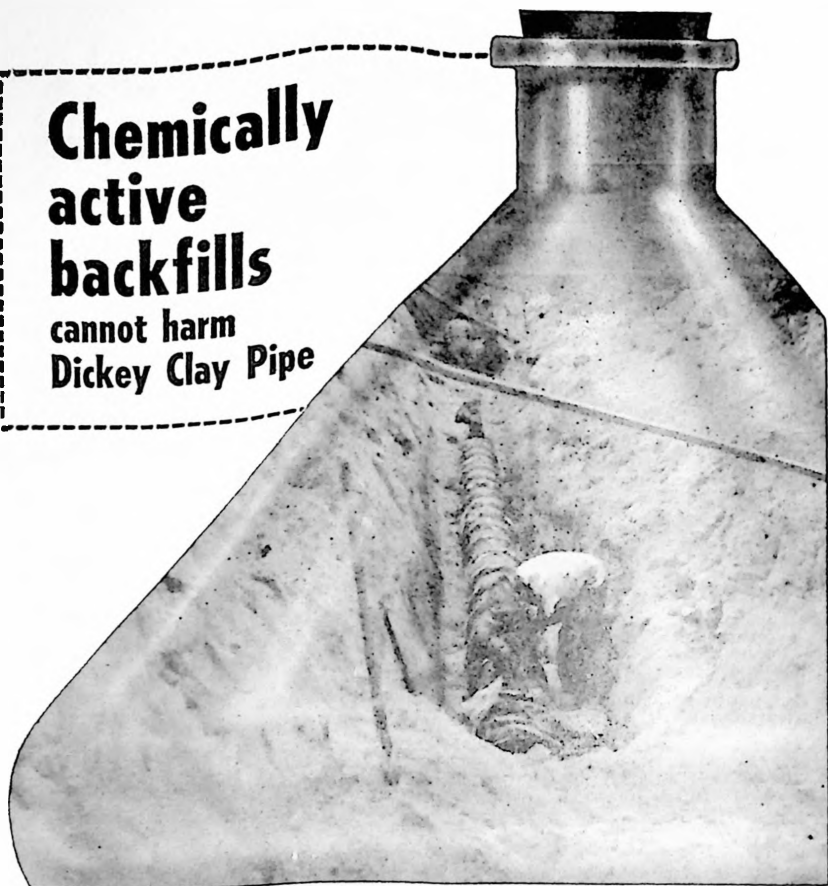
After the luncheon the meeting was called to order by President Boudreaux. Due to the large number of guests present the introduction of guests was dispensed with.

Mr. F. Larue moved that we dispense with the reading of the minutes. The motion was seconded by Mr. H. R. Mason and carried.

Mr. J. E. Jarman moved that we dispense with the reading of the annual treasury report. That motion was seconded by Mr. C. J. Russell and carried.

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The chair was relinquished to Mr. J. R. Troxler who reported on the selection of candidates by the Nomination Committee. The following names were submitted:

President: C. J. Russell, J. R. Gaugler,
1st Vice President: R. J. Cambre, L. C. Landry.
2nd Vice President: R. M. Hetherwick, J. E. Reed.
Secretary-Treasurer: J. Neef, A. W. Schoeffler.

Mr. H. R. Mason moved that the nominations be closed. The motion was seconded by Mr. F. L. Larue and carried.

Mr. J. R. Troxler distributed ballots to all members present. Mr. Troxler suggested that the meeting continue as it would take some time to count the ballots.

President Boudreaux then introduced the guest speaker of the evening, Mr. L. D. McIntyre, who enlivened the evening with a clever and witty talk which brought to mind much of our local color by using "Cajun" Dialect. Mr. Boudreaux thanked Mr. McIntyre on behalf of the Society.

The president then called upon Mr. Troxler to report the results of the ballot count. The following were elected:

C. J. Russell, President
R. J. Cambre, 1st Vice President
R. M. Hetherwick, 2nd Vice President
A. W. Schoeffler, Secretary-Treasurer

Retiring President Boudreaux thanked the members for helping make the year a successful one and then turned the meeting over to President-Elect Russell, who made a brief acceptance speech.

The meeting was adjourned with a rising vote of thanks to the retiring president.

ALFRED W. SCHOEFFLER, Secretary-Treasurer

Minutes of Meeting of the Monroe Section, LES, July 1, 1954

This Section met at Bernstein Park in Monroe for the annual Bar-B-Que meeting.

The only business discussion was that of this Section's participation in the state wide hook-up of the telephone round table. This section voted to participate.

Mr. Sidney Gill gave a report on the meeting in New Orleans when the proposed new registration law was discussed.

F. W. ADAMS, Secretary-Treasurer

Minutes of the Meeting of the Shreveport Section of the LES Socity held at the Bossier Parish Police Jury Camp on Lake Bisteneau on June 5, 1954

The annual fish fry was held at the above place on the afternoon and evening of June 5, 1954. Approximately 75 members and their families and friends attended. It was enjoyed by all present. No business was transacted.

This meeting was in lieu of the one scheduled for June 1, 1954.

MILLARD P. SNYDER, Secretary-Treasurer

Minutes of the Meeting of the Shreveport Section of the Louisiana Engineering Society held August 2, 1954

The meeting was called to order by President Hadra in the Garden Room of the Captain Shreve Hotel at 07:00 p. m. Approximately 35 members and guests were present. This meeting was held jointly with the local section of the American Society of Civil Engineers.

Each person present introduced himself to the group, gave his job affiliation and membership in which society.

President Hadra explained the nature of the speeches by Messrs. Bisso, Sessums, Mitchell, and Foster after which President Sorenson of the A.S.C.E. local section introduced Messrs. Mitchell and Foster to the local meeting and Mr. Van Lyons gave some background information about Mr. Bisso.

Secretary Snyder read the list of new members and the letter from the Louisiana Engineering Society concerning awards.

President Hadra announced that Mr. Frank Macdonald, President of the Louisiana Engineering Society, would be here on September 8, 1954, to discuss the registration law for engineers in the State of Louisiana. Mr. Gillen moved that the local sections of the A.S.C.E., A.I.E.E., and A.S.H.V.E. be invited to attend the meeting. Mr. Grant broadened the motion to include all other groups of engineers subject to the licensing law. The motion as amended was seconded and carried unanimously.

The four (4) speeches concerning public works were thoroughly enjoyed by all present.

There being no further business the meeting was adjourned.

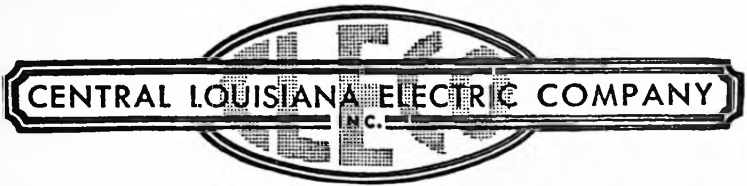
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June 18, 1954

Board of Direction,
Louisiana Engineering Society,
New Orleans, Louisiana.

Dear Sirs:

I have audited the accounts of the Louisiana Engineering Society for the year ended December 31, 1953 and submit the following:

Balance sheet, December 31, 1953 (Cash receipts and disbursements basis) (Exhibit "A")

Statement of Income and Surplus For the Year Ended December 31, 1953

(Cash receipts and disbursements basis) (Exhibit "B")

The cash on Deposit at December 31, 1953 in the regular checking account and in the various homesteads was verified by certification obtained from the depositaries and the U. S. Savings bonds were inspected by me in the Society's bank box.

My examination was made in accordance with generally accepted auditing standards and included such tests of the accounting records and such other auditing procedures as I considered necessary in the circumstances.

In my opinion, the accompanying balance sheet and statement of income and surplus fairly present, respectively, your financial condition at December 31, 1953, and the results of your operations for the year ended that date.

C. J. GRIMADER
Certified Public Accountant

EXHIBIT "A"

LOUISIANA ENGINEERING SOCIETY
BALANCE SHEET, DECEMBER 31, 1953
(CASH RECEIPTS AND DISBURSEMENTS BASIS)

ASSETS

CASH:

Checking account—Whitney National Bank of New Orleans	\$ 3,750.80
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UNITED STATES SAVINGS BONDS, SERIES F (Maturity Value—\$6,000.00)—redemption value	\$ 5,189.00
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INVESTMENTS—HOMESTEADS: (at cost)	
Columbia Homestead Association	374.60
Commonwealth Homestead Association	306.72
Greater New Orleans Homestead Association	1,861.26
Security Building and Loan Association	500.00
Sixth District Building and Loan Association	500.00
Union Savings and Loan Association	500.00

Total investments—homesteads	\$ 4,042.58
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Consulting Engineers

ADLOE ORR, JR. & ASSOCIATES

Consulting Engineers

315 St. Charles Ave.

New Orleans, U. S. A.

FROMHERZ ENGINEERS

Structural — Civil — Sanitary

Design, Supervision of Construction, Appraisals, Reports
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New Orleans

DAVID W. GODAT AND ASSOCIATES

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New Orleans 12, La.

Magnolia 6484

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Consulting Engineers

Municipal — Structural — Industrial

2922 Metairie Road

Phone CEdar 7155

New Orleans 20, La.

PALMER & BAKER, INC.

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Harbor Structures — Vessels, Boats and Floating Equipment

Soils, Material and Chemical Laboratories

427 National Bank of Commerce Bldg.
New Orleans, La.

P. O. Box 346
Mobile, Ala.

A. W. THOMPSON & ASSOCIATES

Consulting Civil Engineers

411 Cotton Exchange Bldg.

New Orleans, La.

T. EDWARD ERNST, C. E.

Consulting Engineer

822 Perdido Street
New Orleans 12

RAYmond 6672

BEDELL & NELSON

Engineers

840 Union Street
New Orleans 12, La.

Telephone RAYmond 6195

PROPERTY:

Lapel emblems on hand	\$ 700.00
Furniture, Fixtures, Equipment and Books— nominal value	1.00
Total property	\$ 701.09
TOTAL ASSETS	\$13,683.47

LIABILITIES

SURPLUS (Per Exhibit "B")	\$13,683.47
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EXHIBIT "B"

LOUISIANA ENGINEERING SOCIETY

STATEMENT OF INCOME AND SURPLUS (ON CASH RECEIPTS
AND DISBURSEMENTS BASIS) FOR THE YEAR ENDED
DECEMBER 31, 1953

INCOME:

Dues collected (less rebates to Sections, \$1,435.50)	\$ 7,265.20
Advertising revenue (less rebates to Sections \$66.00) ..	755.73
Income from investments and savings accounts	262.00
Miscellaneous—net profit sale of certificates, proceedings. etc.	73.16
Total Income	\$ 8,356.09

EXPENSES:

Salary — secretary-treasurer	\$ 2,400.00
Cost of publishing proceedings	2,270.80
Cost of annual meeting (receipts under disbursements) ..	34.34
Expenses paid in advance—succeeding year's annual meeting	71.32
Cost of annual outing (receipts under disbursements) ..	169.37
Refreshments etc. at meetings (less pro rata receipts receipts from joint meetings held)	524.95
Printing, stationery, and postage	1,228.96
Present to retiring president	61.50
Floral offerings	41.20
Library expense—porter	48.00
Social security tax	39.75
Auditing	140.00
Scholarship awards	225.00
General expenses	221.28
Total Expenses	\$ 7,476.47

NET INCOME FOR THE YEAR	\$ 879.62
SURPLUS AT BEGINNING OF YEAR	12,803.85
SURPLUS AT END OF YEAR	\$13,683.47

The St. Charles Hotel

NEW ORLEANS, LA.

ROOMS WITH BATH FROM \$3.00

The St. Charles Bar is famous from coast to coast for its delicious, old-time mixed drinks. Everything in the bar has been modernized, EXCEPT the bartenders—they're old-timers!

Make the St. Charles your home in New Orleans for comfort, convenience, refreshing sleep, modern service.

The St. Charles Hotel

JOHN J. ("MIKE") O'LEARY, Vice-Pres. and Mgr.

Direction

DINKLER HOTELS COMPANY, INC.

CARLING DINKLER, President

OPERATING:

TUTWILER
Birmingham, Ala.

JEFFERSON DAVIS
Montgomery, Ala.

ANSLEY
Atlanta, Ga.

ANDREW JACKSON
Nashville, Tenn.

ST. CHARLES, New Orleans, La.

SAVANNAH
Savannah, Ga.

O. HENRY
Greensboro, N. C.

PROCEEDINGS

OF THE

LOUISIANA ENGINEERING SOCIETY

Vol. 40

DECEMBER, 1954

No. 4

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PRESIDENT'S MESSAGE

It was my pleasure during the summer to attend Section meetings of the Society which were held in Monroe, Shreveport, Alexandria and Lake Charles. These meetings gave me an opportunity to meet the officers and members of the Sections and to discuss the activities of the Society during the past year.

The Louisiana Council of Engineers, at its meeting held in New Orleans on Tuesday, October 12, 1954, agreed to sponsor amendments to the engineering registration law of Louisiana that will include the following:

- a) Require four years of experience for those applicants registering as professional engineers who are graduates from approved engineering curricula.
- b) Establish an "Engineering in Training" classification for those applicants who are graduates from approved engineering curricula but who have not yet acquired the four years of experience required for registration as professional engineers.

The Louisiana engineering registration law is the only one in the United States that does not require some years of experience

in granting registration on the basis of graduation. The lack of this requirement makes it very difficult to establish reciprocal registration with other State Boards, and is causing considerable hardships on applicants from Louisiana applying for registration in other States.

The Council feels that these proposals are needed greatly to strengthen our Louisiana engineering registration law and urges the engineers of the State to give their full support to have the amendments passed at the next session of the Legislature.

The 1955 Annual Meeting will be held in New Orleans. Headquarters will be the St. Charles Hotel.

Thursday, January 13

- 10:30 a. m. Conference of University Engineering Students.
- 1:30 p. m. General meeting of L.E.S. Keynote address by R. L. Ropp, President, Louisiana Polytechnic Institute: "The Engineer Looks Ahead"
- 8:00 p. m. General Interest Program. Address by Louis C. Bisso, Director-Secretary, N. O. City Planning Commission: "Comprehensive Planning—A Guide to the Future Growth of a Community"

Friday, January 14

- 9:30 a. m. Technical Session sponsored by AIEE. Address by W. R. Harris, Mgr. of Industry Engineering, Westinghouse Electric Corp.: "Future Use of Electrical Energy"
- 10:45 a. m. Technical Session sponsored by ASME. Address by Donald H. Vance, Vice-Pres. and Executive Engr., The Korfund Company, Inc.: "Vibration, Shock and Noise Control for Industrial and Air Conditioning Equipment"
- 2:00 p. m. Industrial Inspection Trips: Lane Cotton Mills, N. O. Port Facilities

Saturday, January 15

- 9:30 a. m. Technical Session sponsored by ASCE. Address by T. L. Jackson, Commander, USN, Assistant Public Works Officer, 8th Naval District: "Problems Encountered in the Construction of Alvin Callender Airfield"
- 10:45 a. m. Technical Session sponsored by AIChE. Address by Donald L. Katz, Professor of Chemical Engineering, University of Michigan: "Developments in Atomic Energy for Peacetime Uses"
- 7:00 p. m. Cocktail Hour and Annual Banquet

New Members. We welcome the following new members into the Society:

For Member

RAYMOND V. BAILEY, New Orleans; age 30. Endorsed: Jesse Coates, L. H. Johnson, Jr., F. M. Taylor. La. Polytechnic Institute, B.S.Ch.E., 1944; L.S.U., M.S.Ch.E., 1948, Ph.D. Ch.E., 1949. Mbr. AIChE, American Chemical Society, Gamma Sigma Epsilon. Registered Ch.E., La. Polytechnic Institute, Asst. in Chemistry, 1941-44. Cities Service Refining Corp., Chemist, 1944-45. Sixth Army Regional Lab, Chemist, 1945-46. La. State University, Graduate Asst. in Ch. Eng., Lab. and Research, 1946-48. Oak Ridge National Laboratory, Research and Development Engr., summers 1949 thru 1953. University of Mississippi, Associate Professor of Chemical Eng., 1948-51. Tulane University, Professor and Head, Chemical Eng. Dept., Head, Eng. Research Institute, 1951 to date.

ANTHONY J. BARTLETT, New Orleans; age 28. Endorsed: W. K. Bankston, H. N. Ford, J. R. Rombach. Tulane University, B.S.E.E., 1949. Associate, AIEE, 1951. Registered E.E., La. Todd-Johnson Dry Docks, Inc., Asst. Plant Engineer, 1949-50. N.O. Public Service Inc., Relay and Communications Engineer, 1950-date.

PAUL C. BOUDREAUX, Baton Rouge; age 30. Endorsed: L. J. Lassalle, A. J. Loup, Jr., S. A. Nasca. La. State University, B.S.Arch.Eng., 1951; B.S.C.E., 1954. Associate Mbr., Am. Institute of Architects, 1953. Registered Architect, C.E. and Land Surveyor, La. Wilson's Map Service, Chief Draftsman, 1947-49. Architect, 1951-52. Greater Baton Rouge Port Comm., 1952-53. City and Parish of E. Baton Rouge, Acting Planning Engr., 1953. La. Dept. of Highways, Civil Engr., Road Design Section, June 1954-date.

THOMAS S. BROYLES, New Orleans; age 37. Endorsed: H. M. Andreas, W. C. Lehigh, Wm. H. Rhodes. Southern Methodist University, 1½ yrs. undergraduate work in civil engineering. Texas Bitulithic Co., 1943 to date; present position, estimating engr. on highway and heavy construction for states of Ark., La., Miss. 1943-45, Asst. Supt. and Office Engineer; 1945-47, Office Engineer, estimating; 1947-50, field engineering, construction of dams, highways, street paving.

JAMES C. CRAWFORD, Monroe; age 41. Endorsed: B. T. Bogard, R. T. Sessums, A. D. Williams, Jr. La. Polytechnic Institute, B.S.C.E. 1936. Registered C.E., La. Carter Oil Co., Field Engr., Dist. Pipe Line Engr., 1936-44. State of La., District Petroleum Engr., 1944-date.

HERBERT B. DAY, Alexandria, age 36. Endorsed: G. A. deWolf, D. V. Cresap, H. E. McDowell. Miss. State College, B.S.C.E., 1939. Registered C. E., La. Pan American Airways, Field Engr., 1941-43. U.S. Navy, active duty, 1944-46. State of La. Dept. of Public Works, Resident and Area Engr., Asst. District Engr., 1946-date.

FRANCIS J. FAVALORO, New Orleans; age 30. Endorsed: J. R. Rombach, Jr., R. M. Seago, W. K. Bankston. Tulane University, B.S.E.E., 1950. Associate Mbr. AIEE, 1951. Mbr. Society Tulane Engineers, 1954. Registered E.E., La. U.S. Navy, Mach. Repair Officer and Eng. Officer, 1942-46. N.O. Public Service Inc., Power Plant Electrician, 1946-50; Electrical Engineer, 1950-54.

ROSCOE J. FINKE, New Orleans; age 32. Endorsed: W. C. Ellis, R. N. Bruce, Jr., G. F. Stevenson. Purdue University, B.S.C.E. 1948. Junior Mbr. ASCE, 1948; Registered C.E., La. Registered Land Surveyor, Ind. Indiana State Hwy. Commission, Asst. Project, Project Engr., 1948-51. U.S.A.F., Air Installations Officer, 1951-52. Farmsworth & Chambers Co., Inc., Construction Engr., 1952-date.

ROBERT B. GIEZENTANNER, Shreveport; age 40. Endorsed: E. M. Freeman, E. C. Mishou, A. D. Strange-Boston. Eastern Okla. College, Engineering, 1932-34; Oklahoma A & M College, 1935-38, B.S.M.E. Member Nat'l Society Professional Engrs., 1949. Registered M.E., C.E., Okla. Registered M.E., La. Commonwealth Edison Co., Trainee, 1938-39; Auxiliary Operator, Generating Stations., 1939-40; Jr. Engineer, 1940-41. The Carter Oil Co., Engineering Trainee, 1941. Oklahoma Pipe Line Co., (now Interstate Oil Pipe Line Co.) Draftsman, Design Engr., 1941-42; Sr. Engineer, 1942-43. War Emergency Pipe Lines, Inc., Design Engr., 1943. Oklahoma Pipe Line Co., Dist. Engr., 1943-48; Dist. Foreman, 1948-51; Oil Measurement Engr., 1951-52; Section Head, 1952-date.

- ELBERT F. HARRIS, Alexandria; age 33. Endorsed: O. E. Barron, H. L'Heureux, L. J. Melancon. La. State University, B.S.Ch.E., 1946. Mass. Institute of Technology, Advanced Meteorology, 1942-43. Registered C.E., La., Miss. Engaged in consulting and general engineering partnership with Howard L'Heureux since 1946.
- WILLIAM K. HARRIS, Monroe; age 39. Endorsed: F. W. Adams, B. T. Bogard, M. L. Hargus. Centenary College, A.B., 1939. La. Polytechnic Institute, B.S.M.E., 1950. Registered M.E., La. United Electric Service Inc., Sales Engr., 1950-51. Pogue-Atkins Co., Inc., Sales Engineer, Air Conditioning and Heating, 1951-54. United Gas Corp., Eng. Air Conditioning Sales, March 1954-date.
- EDWARD T. HEARD, JR., Monroe; age 45. Endorsed: B. T. Bogard, S. S. Gill, H. E. Dickard. Mississippi State College, B.S.M.E., 1931. University of Okla., Gas Measurement Course, April 1940. LaSalle Extension University, Accounting, partially completed, 1931-32. United Gas System, various company sponsored courses completed. Registered M.E., La. Member A.P.I., 1942-54; Student Member ASME, 1930-31. Supreme Instrument Corp., Chief Draftsman, 1931-32. U.S. Govt. Cotton Acr. Committee, Member, engineering duties: measurement, computations, liaison work, 1933. Miss. Highway Dept., Mixer Inspector, 1933. City of Shreveport, Engr. for State Parks Development, 1934. United Gas Corp., Draftsman, Instrumentman, Engineer Trainee, Laboratory Head, 1934-36. Gaylord Container Corp., Eng. Dept., various duties, 1936-37. State of La. Dept. of Revenue, Professional Engr. assigned to Severance Tax Division, 1938-54.
- JOHN E. HEARD, Shreveport; age 70. Endorsed: E. M. Freeman, E. M. Gillen, J. P. McCullough. La. State University, B.A., 1906. Licensed C.E., 1908. Private practice, 1907-13. Standard Oil Co. of La., Field Engineer, 1913-14. Private practice, 1915. Standard Oil Co. of La., Civil Engr., 1916. La. Rwy. & Navigation Co., Pilot Engr., 1917-18. The Texas Co., Civil Engr., 1918-19. Standard Oil Co. of La., Lou-Ark Production Co., The Carter Oil Co. (all subsidiaries of Standard, N. J.) Chief Engineer, 1919 to 1949. Since retirement, engaged in land surveying and staking of oil well locations.
- VICTOR C. HICKS, New Orleans; age 32. Endorsed: C. G. Cappel, R. G. Cappel, O. V. LeBlanc, H. J. Lane, Jr. Alabama Polytechnic Institute, B.S. Aeronautical Eng., 1943. Bechtel McCone Corp., Birmingham Modification Center, engineering staff member, 1943-45. W. Horace Williams Co., Engineer, all phases of general construction, 1946-date.
- DAVID H. HOVEY, Baton Rouge; age 51. Endorsed: C. C. Barnard, H. N. Ogden, H. L. Landry. Correspondence and home study in Civil, Electrical and Mechanical Engineering subjects. Registered P. E., Miss. Registered E.E., La. Miss. Power Co., 1925-41, last position Local Manager. Various engineering firms as engineer, designer, with responsible charge of military and naval projects in Gulf Coast area, 1941-44. R. G. LeTourneau Co., responsible charge development and design of complete control system for dirt moving equipment, 1944-46. Private practice, engineering studies, design and construction, 1946-51. J. G. White Eng. Corp. Electrical design, Baton Rouge Plant of Solvay Process Div. A. C. & C., 1951-53. Private Consulting Engineering Practice, Sept. 1953 to date. Member AIEE.
- C. PALMER JONES, New Orleans; age 36. Endorsed: A. W. Betz, L. J. Lassalle, E. A. McLellan. La. State University, B.S.M.E., 1949. A.S.M.E., Jr. Mbr. 1949. Registered M.E., La. Allis-Chalmers Mfg. Co., training course, 1949-50. R. J. Tricon Co., Estimating Power Transmission, Conveying and Elevating Equipment, Design and Sales, 1950-54. McLellan Equipment Co., same as above, 1954-date.
- MARSHALL F. KULL, Monroe; age 35. Endorsed: F. W. Adams, O. H. Atkins, S. E. Huey. Newark College of Engineering, B.S.M.E., Jan. 1943. Jr. Member ASME, 1942-43. Jr. Member Society for Advancement of Management, 1942-43. Registered M.E., La. M. W. Kellogg Co., Piping Engineer, 1945-48. Smith & Padgett, Architects, Monroe, Mechanical Engineer, Architectural Draftsman, 1948-date.
- RICHARD H. LAWTON, SR., Baton Rouge; age 53. Endorsed: R. J. Robertson, J. H. Derr, Jr., A. H. Demers. Pensacola Electric Co., Watch Engineer, 1922-25. Gulf States Utilities Co., Operating Engineer, Station Supt., 1925-53. Supt. La. Station, Baton Rouge, complete charge of all plant functions, 1953 to date.
- HUGH A. LILES, New Orleans; age 29. Endorsed: R. D. Allen, A. M. Hill, D. W. Stewart. Tulane University, B.E. in M.E., 1948. Member ASME. Registered M.E., La. Alabama Dry Dock & Shipbuilding Co., Expediter, 1948. Marine Welding Scaling & Sales Co., Inc., Sales Engineer, 1948-51. U.S. Navy, Engineering Officer, 1951-53. Allied Sales & Service Co., Owner, sales engineering and manufacturer's agent, Feb. 1954 to date.

BENJAMIN F. NORMAN, New Orleans; age 50. Endorsed: F. B. Blackston, I. E. Hanson, W. S. Nelson. Texas A & M College, B.S.M.E., 1929. Harvard Business School, Business Management, 1954. Member N.O. Section, ASME. 1937. Member N.O. Engineers Club, 1952. Registered M.E., La., Tex. Freeport Sulphur Co., 1929 to date: Test Engineer, Design, Ch. Eng. Consultant, Asst. Power Plant Supt., Supt. Power Plant, Supervising Engineer, Garden Island Bay Project, Asst. to Vice-President, engineering research and development, management consultant.

JAMES P. OHLSEN, JR., age 28. Endorsed: F. M. Chatry, W. E. Douglas, Jr., J. P. Fernandez. Tulane University, B.E. in E.E., June 1945. Registered E.E., La. U.S. Corps of Engineers, N.O. District, Electrical Engineer, Design Branch, 1946-52. U.S. Navy, Electronics Officer, 1952-54. District Public Works Office, 8th N/D, Electrical Engineer in Mtce. Eng. Division, Feb. 1954 to date.

ROBERT C. OVERALL, Baton Rouge; age 29. Endorsed: Louis Duclos, R. H. Hudson, Jr., R. B. Richardson. Tulane University, B.E. in C.E., 1949. La. Section, ASCE, Jr., Mbr., 1949. Registered C.E., La. N.O. Union Passenger Terminal Committee, work on layout and construction of terminal facilities, 1949-50. U.S. Army, Engineering Officer, Construction Battalion, 1950-52. Forcum-James Co., Engineer, Estimator, highway construction, 1952-date.

GEORGE S. PATRICK, Baton Rouge; age 34. Endorsed: R. H. Hudson, Jr., R. E. Lee, F. D. Richards. Georgia School of Technology, B.Ch.E., 1947. Esso Standard Oil Co., Engineer, 1947 to date.

GEORGE P. PEAGLER, New Orleans, age 29. Endorsed: M. C. Abraham, W. C. Fush, J. F. Vogt, Jr. Georgia School of Technology, B.S.C.E. 1945. Registered C.E., La. Boh Bros. Construction Co. & Ebasco Services Inc., Engineering Aide, Office Engineer, Field Engineer, Resident Engineer on construction of steam electric generating plants for N.O. Public Service Inc. and La. Power & Light Co.

JOHN A. PRESTON, Baton Rouge; age 30. Endorsed: C. C. Barnard, D. A. Donald, C. A. Petty. Georgia Inst. of Technology, B.I.E., Sept. 1948. Jr. Mbr. Florida Eng. Society, 1948-53. Radar Engineering Co., Miami, Draftsman, Asst. to Resident Engineer, 1948-50. U.S. Army Corps of Engrs., Jacksonville, Engineer, Construction Management, 1951. E. I. du Pont de Nemours Co., Area Engineer, Contracts Engineer, 1951-53. Empire Gas Engineering Co., Atlanta, Engr., Projects Mgr., 1953. Cal-Metal Pipe Corp. of La., Sales Engineer, Nov. 1953 to date.

ROBERT E. ROBINSON, Shreveport; age 53. Endorsed: O. J. Dykes, Jr., C. M. Hadra, J. S. Malahy, Jr. Stevens Institute of Technology, Pre-Eng., 1916-17. U.S. Army, 104th Engineers, 1917-19. Robt. A. Crain, Attorney, Shreveport, Oil & Gas Law Course, 1920-26. Home courses in various engineering subjects. Member Independent Petroleum Ass'n. of America, Producer, 1954. La. Independent Producers & Royalty Owners Ass'n., 1954. Registered Petroleum Engineer and Geologist, La. C. A. Meek & Son, Walter Chambers et al, Consulting Petroleum Engineer, 1928-36. L & M Land & Mineral Corp. and Greenland & Mineral Corp., Chief Consulting Engr. & Geologist, 1937-50. Inland Oil Company, President, 1950-51. Trans-American Petroleum Corp., President, 1951-54.

DAVID C. ROSSER, Baton Rouge; age 31. Endorsed: W. C. Gaddy, B. E. Crawford, B. B. Graves. Louisiana State University, B.S.E.E. 1947. Allis-Chalmers Mfg. Co., Milwaukee, Sales Engineer, 1947-52. Esso Standard Oil Co., Baton Rouge, Project Engineer, 1952-date.

JAMES H. SIMPSON, JR., Baton Rouge; age 30. Endorsed: D. A. Donald, R. E. Lee, G. E. Templet. Rice Institute, B.S.M.E., 1944. Member ASME, Am. Institute Chem. Engrs., Instrument Society of America. Registered M.E., La., Tex. Goodyear Aircraft Corp., Estimator, Jr. Engineer, 1944-45. Goodyear Synthetic Rubber Corp., Mechanical Engineer, Plant Eng. Dept., 1945-48. Stone & Webster Eng. Corp., Instrument Engineer, 1948-49. Fischer & Porter Co., Instrument Sales & Service Engineer, 1949-53. Fitch & Simpson, Consulting Engineers, Partner, July 1953-date.

DAVIS E. SPEEG, New Orleans; age 33. Endorsed: D. J. Carville, J. R. Horton, L. J. Lassalle. Louisiana State University, B.S.Ch.E., Aug. 1948. Mass. Institute of Technology, Lubricating Eng., 1951, received diploma. Jr. Mbr. American Railway Engrs. Ass'n., 1948-53. Member Nat. Ass'n Railway Engrs. of Tests, 1949-53. Registered Ch.E., Texas. Texas & Pacific Rwy. Test Laboratory, Inspector, lubricating engr. and water conditioning, 1948-53. Coastal Engineering Corp., Industrial Water Consultants, 1953-date.

WILLIAM G. STEWART, JR., Baton Rouge; age 38. Endorsed: C. H. Hall, F. A. Hannaman, Jr. Mississippi State College, B.S.M.E., 1938. La. State University (night) Reinforced Concrete & Steel courses, 1945-46. Miss. State Highway Dept., Traffic Recorder, Party Chief, Field Survey, 1938-40. Bureau of Aeronautics, Jr. Inspector, Inspector of aircraft instruments and engine equipment at Bendix Aviation Corp. Plant, 1940-44. Copolymer Corp., Baton Rouge. Engineering Draftsman, Mechanical Engineer, Asst. Chief Engineer, Acting Mtce. Engineer, Asst. Mtce. Engineer, 1944 to date.

WALTER L. SUTTON, Baton Rouge; age 37. Endorsed: S. G. Dinkel, F. G. Hornsby, W. S. Nelson. Alabama Polytechnic Institute, B.S.E.E., 1938. Associate Member AIEE, 1946-52. Alabama Water Service Co., Asst. District Engineer, 1938-40. U.S. Army Air Force, 1940-45. General Electric Co., Sales & Application Engineer, 1945-date. Present assignment, Manager, Apparatus Sales Div., Baton Rouge.

PAUL WALMSLEY, JR., Baton Rouge; age 30. Endorsed: T. J. Innes, Jr., R. Meyer, R. W. Williams. University of Cincinnati, B.S.Met. Eng., 1949. Member American Society for Metals, 1948. Member Nat'l Society of Corrosion Engineers, 1950. The following positions held in conjunction with co-op engineering program at University of Cincinnati: Matheison Alkali Works, Research Asst., 1942-43. National Gypsum Co., Development Engineer, 1946-47; Hamilton Foundry & Machine Co., Development Engr., 1948-49. Since graduation in 1949, employed at Esso Standard Oil Co., Baton Rouge Refinery, Group Head, Equipment Inspection Dept.

For Transfer From Junior to Full Member

D. RALPH CAFFERY, Liberty, Texas; age 29. Southwestern Louisiana Institute, B.S.C.E., 1949. Registered C.E., Texas. Farnsworth & Chambers Const. Co., Layout Survey Party Chief, 1949-51. Gulf Refining Co., Area Construction Engineer, 1951 to date.

HAROLD N. FORD, New Orleans; age 33. Southwestern Louisiana Institute, B.S.E.E., 1949. Registered E.E., La. N.O. Public Service Inc., Student Engineer, 1949-50; Electrical Mtce. Engineer, A. B. Paterson Steam Electric Generating Station, 1950-date.

WAYNE C. RANDALL, Pensacola, Fla.; age 32. Southwestern Louisiana Institute, Electrical Engineering, 3½ years, 1947-49. Randall Electric Co., Apprentice Estimator, 1939-41. U.S. Air Force, Radio Mech, Radar and Electronics Specialist, 1941-45. Randall Electric Co., Lighting design, estimator of wiring, power layout design, 1945-47. Gregory-Salisbury Co., Engineering Salesman, 1949-51. de Laoreal & Moses, Electrical Engineer & Inspector, Aug. 1951 to date.

For Affiliate Member

CHARLES A. BRAGG, New Orleans; age 35. Endorsed: J. B. Eustis, J. I. Hebert, Jr., C. M. Shilstone. Mississippi State College, Engineering, 1936-37. U.S. Waterways Experiment Station, Laboratory Technician, 1938-42. U.S. Army, Chemical Warfare Corps, 1st Lt., 1942-46. U.S. Waterways Experiment Station, Laboratory Technician, 1946. Globe Slicing Machine Co., Salesman, 1946-48. Eustis Engineering Co., Partner, perform and supervise laboratory tests, drilling operations for soil test borings, engineering analysis for subsoil and foundation investigations, 1948-date.

DONALD G. SNOW, New Orleans; age 45. Endorsed: R. N. Bruce, Jr., W. C. Ellis, G. F. Stevenson, H. H. Tormey. Tri-State College, Angola, Ind., Highway Engineering course, Jan.-July 1928. Geo. A. Fuller Co., Asst. Field Engineer on large construction, 1936; Asst. Field Engineer, layout on superstructure of Charity Hospital, N.O., 1937-39. R. P. Farnsworth Co., Chief Field Engineer, 1939-41; Asst. Construction Supt., Supt., 1941-49. Farnsworth & Chambers Co., Member of firm and Construction Supt., air-base, dam clearing, S. Claiborne Overpass, 1949-date.

For Junior Member

W. M. BABINGTON, JR., Bogalusa; age 23. Endorsed: M. R. Guell, C. J. Mayeux, V. A. Tirri. Louisiana State University, B.S.M.E., 1951. Armstrong Tire & Rubber Co., Tire Design Dept., 6 mos. E. I. duPont Co., Engineering Dept., 2½ yrs. Gaylord Container Corp., Engineering Dept., present position.

JAMES B. BOULET, Lake Charles; age 28. Endorsed: W. M. Davis, V. E. Sicks, G. B. Wooster. Southwestern Louisiana Institute, B.S.E.E. 1950. Cities Service Refining Corp., Junior Engineer, Dec. 1952 to date.

JOHN W. HAMILTON, JR., Monroe; age 30. Endorsed: C. M. Dunlap, T. R. Henry, A. D. Williams, Jr. Louisiana Polytechnic Institute, B.S.M.E. 1950. Registered M.E., La. U.S. Navy, Torpedoman Tech., 1943-45, 1950-52. Columbian Carbon Co., Engineer, 3-3-52 to date.

HARVEY J. MARTIN, New Orleans; age 24. Endorsed: R. M. Seago, J. R. Rombach, B. H. Bell, W. K. Bankston. Tulane University, B.S.E.E., 1951. U.S. Marine Corps, Sgt., Radio Repairman, 1951-53. N.O. Public Service Inc., Electrical Engineer, 1953 to date.

ANTOINE I. ORY, JR., New Orleans; age 25. Endorsed: W. K. Bankston, A. H. Jensen, R. M. Seago. Louisiana State University, B.S.M.E., Jan. 1952. U.S. Army Ordnance Corps, 1952-54. N.O. Public Service Inc., Asst. Mechanical Engineer, 1954-date.

JACK J. TARTO, New Orleans; age 30. Endorsed: W. K. Bankston, A. H. Jensen, R. M. Seago. Louisiana State University; B.S.E.E., 1950. AIEE, Associate Member, 1948. U. S. Navy, Active duty, 1943-46. U.S. Navy, Industrial Mgr. Div., Power & Control Electrical Engineer, 1950-51. Friede & Goldman, Inc., Electrical Engineer, 1951-53. J. F. Pritchard & Co., Electrical design, 1953. N.O. Public Service Inc., Electrical drafting and engineering, 1953-date.

Junior Membership Awards

GENARO F. PENA, Baton Rouge, graduate in Civil Engineering at Louisiana State University, June 1954.

ROBERT E. BAILEY, Bogalusa, graduate in Mechanical Engineering at Mississippi State College, June 1954.

OUR PROGRAM OF AUGUST 2, 1954

Our Telephone Meeting. On August 2 the annual "telephone meeting" was held. Alexandria, Baton Rouge, Lake Charles, Monroe and Shreveport meetings were linked with our New Orleans meeting by telephone. Col. Marcel Garsaud was moderator.

Moderator's Remarks

By Colonel Marcel Garsaud

The selection of the southern part of the United States by industrialists for the location of new enterprises, or the expansion of existing ones, has too great momentum to be appreciably decelerated by minor dips of national production or prolonged periods of adjustments in the economic cycles.

The population of the South, and especially of certain areas, is increasing; the general standard of suburban living has been raised, thereby increasing plant tributary consumption; the efficiency and contentment of southern labor is being demonstrated.

Industrial investors and planners, heretofore slow to understand the South, its people, particularly its labor, and to analyze its advantages, discovered during World War II that a potential giant in our national economic structure was just awakening. The southern people, and particularly its industrial, banking, and political leaders, began to understand the true position the South must occupy in our national production of goods needed by this country and by the rest of the world.

The population of the South having increased, the employment of labor being at a high level, the South's purchasing power has consequently increased tremendously, and these factors have contributed materially to the economic solution of the distribution problem.

The contentment and efficiency of our skilled and unskilled labor have reduced direct manufacturing costs, and greater understanding of the banking needs of industry by Southern investors has reduced overhead costs.

All of these factors have inspired confidence in the South and the part to be played by Public Works, particularly at local and state level, and with Federal assistance, is recognized by our National and local leaders.

**Responsibilities of the Public Works Engineer
For Municipal Planning**

By Louis C. Bisso*

Thank you, Mr. Chairman, members of the Louisiana Section of the American Society of Civil Engineers, and the Louisiana Engineering Society.

A term that is more frequently being heard throughout the state of Louisiana now is "municipal planning." As public works engineers you have no doubt been exposed to this term from a state level and perhaps down into the parishes and no doubt municipalities. Municipal planning not only deals with problems that must be solved by the public works engineer, but also takes into consideration many features that individually are seldom considered by the public works engineer. The effects of a grade separation or similar project upon such factors as traffic movement, public convenience, and a municipality's expenditure program are only part of the many facets on our way of living that would be affected by such construction.

The sociological, cultural, aesthetic and general welfare factors involved from such construction might not always be considered in proper perspective. It is through municipal planning that these other factors are incorporated along with the engineering details on a municipal-wide scale to effect what is known as "comprehensive planning."

The responsibilities of the public works engineer are ever increasing and with the recognition and acceptance of municipal planning they will become even greater. By this I mean the public works engineer, in most instances a specialist in a particular field of engineering, can no longer ignore the other associated problems that must be dealt with in municipal planning. Roads and highways can no longer be built for the sole purpose of moving private vehicles from one location to another. They must be planned to provide adequate transit service which ultimately will become here in Louisiana the major means of transporting people. Further, the location of neighborhood units, which ideally would be surrounded and not bisected by major streets, must be considered thoroughly in the layout of street systems so that the needs of the community are fully met by ideal location of neighborhood facilities such as shopping centers, schools, parks and churches.

I might say here that no persons or groups of persons can claim

* Delivered at the joint meeting of the Louisiana Section of the American Society of Civil Engineers and the Louisiana Engineering Society, August 2, 1954. Mr. Bisso is Director-Secretary, City of New Orleans Planning Commission.

a monopoly on comprehensive planning. Since everyone has a share in his community's future, it is logical to assume that everyone has a responsibility for building and shaping it, particularly the public works engineer. When you begin to realize the amount of energies that are utilized and expended in municipal planning you will soon see the necessity for two things: (1) a centralized agency to channel these energies, and (2) the development of a coordinated scheme so that the greatest number of persons possible can share in deciding their own destinies.

Insofar as a centralized agency is concerned—this is the job of the Planning Commission which in most communities is the only legalized agency to prepare and adopt a comprehensive plan.

Insofar as a coordinated scheme is concerned—it is the job of the Planning Commission to create a Citizens Planning Committee on one hand and on the other hand to create some kind of Planning Advisory Committee to be composed of all department heads of government (and independent agencies if possible) in order that the technical phases of planning can be evaluated and resolved.

The public works engineer, therefore, must realize that whatever he may be called upon to design and build, regardless of size, he must understand that what he is actually designing and building is only a small part of a much larger community. This becomes obvious when you realize that every public building, street, bridge, overpass, etc. that is constructed is in actuality only a piece of a large jigsaw puzzle, the final picture of which the foresighted community has a photograph, while the backward community is still looking for the camera. Stated differently, the engineer must have two plans before him—one the specific blueprint of the specific project, and the other the general blueprint of his community's future, and he must thoroughly understand the relationship that the former bears to the latter.

Now, let's analyze this relationship. Planning for a community's future is divided into three phases, i.e., background, recommended improvements, and implementation. In engineering vernacular this would be called reconnaissance, survey, and construction.

Let's analyze the first phase—BACKGROUND (or what you have). Every community has a background and citizens. There should definitely be a Citizens Planning Committee organized to understand the planning processes and familiarize themselves with the planning reports designed to plan for progress without destroying his background. Public works engineers should be represented on this committee from the various agencies and societies such as the Louisiana Section of the American Society of Civil Engineers and the Louisiana Engineering Society. I am happy to say that

our Citizens Planning Committee in New Orleans has such representation. It is through this medium that you become acquainted for the first time with the overall problem. We should never forget that planning is **FOR** the people but it will never be successful unless it is done **WITH** the people.

Now, the second phase—**RECOMMENDED IMPROVEMENTS** (or what you want). These usually consist of plans for major streets, highways and expressways to move traffic conveniently and safely; recommendations for parking garages or areas to solve the ever-increasing parking problem; land use and zoning studies in order to provide for future growth in an orderly manner; school and recreational studies in order to assume an economically sound school and playground system; a transit system for moving people from one neighborhood to another neighborhood and from all neighborhoods into and out of the central business district; a transportation system to move products in and out of the city by air, rail, water, and trucks; a housing plan to improve the substandard conditions and to eliminate the slums; subdivision regulations to insure that the vacant areas will be developed with desirable growth, and a plan for centralization of public buildings, all of which taken together give you some idea of the magnitude of municipal planning. The blueprint is now beginning to take shape and the public works engineer should have his "say" in what the final product is going to look like. He does this by assisting the centralized agency in evaluating the importance of the various schemes, getting the overall plan adopted concerning all the individual phases, and requesting that it be kept up to date and properly administered with reasonable procedures and policies that can only be developed as time goes along. There is no formula that magically assures good city planning. Planning has been said to be a daily process of government and is only as good as the people in the community want it to be. Although the planning field is not limited to engineering, the fact remains that the engineering profession has furnished the field with some of our greatest planners and I hope it will continue to do so.

Now, let's analyze the third phase—**IMPLEMENTATION** (or what you can pay for). Having studied the background, and determined what exists, and then having surveyed the needs of the city during the primary period, it is now necessary to translate the plan into a good community—from paper to ground with the taxpayers' dollar. Here is where coordination becomes extremely difficult and here is where the public works engineer has the greatest responsibility. I am happy to say that in New Orleans we have organized a Planning Advisory Committee, composed of all departmental heads, which is operating very successfully in ironing out many of the individual conflicts that inevitably develop

when piecemeal planning is chosen over comprehensive planning. Here is where the public works engineer begins to realize that there is a difference between mechanical order and orderly environment; that there is a difference between a house and a home; that there is a difference between hysterical action and sober reasoning; and that the only choice other than comprehensive certainty is piecemeal uncertainty.

By daily contacts with the planning agency of your community there is no limit to what you can accomplish together in developing the blueprint of your communities' future and wisely spending funds to accomplish it. We meet once a week in New Orleans and thrash out every problem whether it be one of street voiding or the building of a Mississippi River bridge. The materialization of the comprehensive plan becomes everybody's problem and not only that of the Planning Commission.

In conclusion, I would like to say that when the public works engineer has a voice in municipal planning he is beginning to fulfill his responsibility to his community. He becomes qualified to serve as a member of the team that is working so hard to see that his community develops along orderly lines when he can honestly pledge to himself—"In the building for tomorrow, I will attempt to preserve those things that makes my community different from all other communities—those things that we call beauty, charm and uniqueness. I will not allow my community to be transformed into one of cement and stone. I concede that progress is inevitable—but I will insist upon 'planned progress' to produce harmony instead of 'unplanned progress' that will result in chaos."

* * *

The Status of the Fluoridation of Public Water Supplies

By Charles B. Foster*

Since 1943 when it was found that the incidence of dental caries was substantially less in consumers of public water supplies which contained approximately 1.0 p.p.m. of fluorides or more than in those consumers whose public water supply was free of the element—the flouridation of public supplies has become more and more important to water drinkers—and I assume most of you drink at least some water.

So, for the time allotted to me, I should like to bring to you the best that I can the present status of fluoridation from the local level—local, that is, as far as Shreveport is concerned—on up

* A talk given at a joint "telephone meeting" of the Louisiana Section of the American Society for Civil Engineers and the Louisiana Engineering Society Aug. 2, 1954. Mr. Charles B. Foster is Engineer of Water and Sewer Department, Shreveport, La.

through the national level. I most certainly do not intend to take sides as to whether or not fluoridation is good or bad although I have heard both sides enough that I believe I could argue either side.

We in the water department here in Shreveport decided to take the stand that has been taken and recommended by the American Water Works Association. That stand very quickly is this: If and when in a given community the local Dental Association, local Medical Association, local Board of Health, and at least a good cross section of the population recommended and request fluoridation of the public water supply, the local water department will take the responsibility of adding it to the water in the recommended amount but, not being dentists or doctors, we will take no responsibility for the effects of the fluoridation of the water either good or bad.

In the beginning, we in Shreveport heard only from those who advocated fluoridation. Those advocates included the dental association, medical association, and several civic clubs and groups and the approval of the local board of health was received. Feeling that the people of Shreveport then desired fluoridation, the money was set aside for the purchase of the necessary fluoridation equipment and we went so far as to advertise for bids for this equipment.

When we got this far, we were promptly enjoined from spending this money and when taken to court locally, the judge held in sustaining the injunction—and this is not an exact quote—that while he believed that the city had the right to treat the water to make it fit to drink, he did not believe that we had the right to treat the water in order to treat the people who drank it—that this would be, he felt, mass medication and therefore unconstitutional.

His decision was appealed to the State Supreme Court where the decision was reversed. This happened very recently and as recent as two or three weeks ago, local opponents of fluoridation announced that they would take the case to the United States Supreme Court; so, Shreveport's fluoridation question will receive national attention and will be most interesting to watch. However, it is my belief that even though the U. S. Supreme Court should rule favorably on fluoridation, it will be brought to a popular vote in deciding what to do.

From the national viewpoint, the situation is this: fluorides were first added to a public water supply in Grand Rapids, Michigan in January, 1945. In this regard, I was fortunate enough to attend the American Water Works Convention a little over a year ago in Grand Rapids, where I went through their water plant and observed their fluoridation set up at first hand. At the convention, I heard a member of the Michigan State Board of Health speak very eloquently in favor of fluoridation and later from the same rostrum,

I heard some opponents of fluoridation say some nasty things about it.

As of March 5, 1954, there were 927 communities serving 17,064,729 consumers who were fluoridating their water supplies. 373 additional communities serving 13,815,133 consumers have approved fluoridation and are preparing to put it into effect. Thus by the end of 1954, even if there should be no new adoptions, 31 million people or about one-third of the total American population served by public water supplies will be receiving fluoridated water. If the present accelerated rate of adoption continues, however, that number would be closer to 40 million.

The list of large cities fluoriding their water includes among others San Francisco, Washington, Milwaukee, Indianapolis, Pittsburgh, and in the south, Baltimore, Charlotte, Nashville, Norfolk, Richmond and Miami.

Fluoridation has been approved by the following national professional or civic organizations:

- The American Medical Association
- The American Dental Association
- The National Research Council
- The American Public Health Association
- The United States Public Health Service
- The State and Territorial Dental Health Directors
- The American Association of Public Health Dentists
- The Association of Casualty and Surety Companies
- The Inter-Association Committee on Health
- The National Council of Parents and Teachers
- The United States Junior Chamber of Commerce

The Progress of Fluoridation has not been altogether peaceful. Individuals in several local communities have banded themselves together to oppose fluoridation. In instances where the question of whether or not to treat the public water supply has come to a popular vote, 49 communities have approved fluoridation and 48 have rejected it. Tyler, Texas, at first approved it and later rejected it.

There is organized opposition to fluoridation all over the United States whose most important arguments are that it is mass medication and that while it does help to prevent dental cavities, it might very well have damaging effects on other parts of the body.

There very definitely then are two sides to the question of fluoridation.

In summary then, it seems that the box score on this important question favors those who advocate fluoridation of public water supplies. However, it is my belief that it is a local question and that it should be decided on a local level after presenting both sides of the question to the public as fully and as impartially as possible.

Street Paving Financing and Street Maintenance

By H. Lane Mitchell*

All of our paved streets that would come within the first-class category are financed and paid for under one of three State Paving Acts:

One is by petition from the abutting property owners, having at least 60% of the front footage represented on the petition. This act is where the entire cost is paid for by the abutting property owners. At least 75% of our paving is done under this act.

Another act is by petition, with the same front footage requirements, whereby the City may or may not participate up to one-third of the cost; and the other paving act is where the paving is ordered by the City and the City pays one-third of the entire cost, and the balance is assessed to the abutting property owners.

We have approximately 220 miles of first-class paved streets in Shreveport, consisting of all concrete, with a thickness of from 6 to 8 inches, or a concrete base varying from 5 to 7 inches with a 2-inch asphalt topping.

Also, the City has approximately 45 miles of gravelled base streets with penetration asphalt cement topping. The thickness of this base will vary from 3 to 9 inches.

We also have approximately 110 miles of graded dirt streets with a fuel oil surfacing. The primary motive of this oil surfacing is a dust preventative; however, this treatment acts as a water proofing and maintains a very good year-round surface for light traffic. This oil treatment is applied once a year.

Our first class streets are maintained from the proceeds of a one mill street improvement tax, which nets approximately \$190,000 appropriation, which last year amounted to approximately \$220,000.

STREET MAINTENANCE — In maintaining a large portion of our first-class streets, as well as those of a gravelled base with penetration topping, we have adopted a method of seal-coat treatment, which consists of several construction stages. Of course, we first correct all of the base failures and also level up any major irregularities in the old surface, before starting our seal-coat treatment.

In this seal-coat treatment, we first apply a hot application of RC-1 Asphalt. This is applied through a regular asphalt distributor, usually at a temperature of about 225 degrees, in an amount of approximately .2 of a gallon per square yard of surface.

* Commissioner, City of Shreveport. Given on the telephone program of August 2, 1954.

After this is seriated for several hours, we then cover this area with a crushed limestone rock, ranging in size from $\frac{3}{8}$ " down, in an amount of approximately 30 pounds per square yard—this is thoroughly rolled, then another application of hot liquid asphalt is applied, having a penetration of not more than 120, in an amount of approximately .3 of a gallon per square yard. This is covered with precoated crushed limestone rock asphalt, in an amount of approximately 25 pounds per square yard, then thoroughly rolled.

The precoating of the cover material on this last application is to prevent a very undesirable, dusty condition that will exist from rolling this limestone material.

We have had very good luck with this type of street maintenance. We have even applied this to some of our downtown streets. Thi sapplication leaves a resurfacing job of about 1 inch thickness, costing approximately 30c per square yard.

While this type of resurfacing would not favorably compare in appearance to a plant mixed resurfacing job, we have found it to be very durable and stands up well under our heavy trolley bus type of traffic.

We first tried this plan of street rehabilitation in 1935, during the depression, and it has been so successful that we have continued its use, with improvements from time to time.

We have a small asphalt plant, approximately 25-ton capacity, from which we produce hot and cold asphalt topping. This we use occasionally.

Shortly after assuming my present position, about 20 years ago, I discovered a street condition which was very unsatisfactory, caused by the continuous settling of street cut replacements. We finally had to adopt a City Ordinance requiring all trenches to be replaced by tamping back-fill in 1 ft. layers, and the concrete cut back, after back-fill, 1 or 2 ft. beyond the edge of trench, and concrete poured over the entire sub-grade with a thickness varying from 8 to 9 inches, with concrete extending a few inches under the edge of old concrete base, to act as a shoulder to support the possible fractured or shattered edges of the old base. This method is slightly more expensive for the plumber or the utility company but it is a big saving for the taxpayer.

(Mr. Roy T. Sessums also participated in the panel discussion, but at the time of going to press, his comments were not available. They will be published at a later date.)

OBITUARY OF LEROY L. NEWMAN

With the passing from our midst on June 3, 1954, our fellow member, Leroy L. Newman, will be sadly missed both in the engineering field, in civic affairs, and as an example to younger engineers who may follow in his wake.

Mr. Newman, a native of Magazine, Arkansas, was graduated from the University of Arkansas at Fayetteville, where he received a bachelor's degree in electrical engineering in 1901. He joined Public Service on March 15, 1923 as superintendent of the Electric Distribution Division and held this position until July 15, 1952, when he was named electrical research consultant. Prior to coming to Public Service, he had worked with the Pennsylvania Railroad and the Birmingham Electric Company, where he was chief engineer.

Active in community affairs, Mr. Newman was a member of the Chamber of Commerce, the Electrical Association of New Orleans, the Kiwanis Club and the Round Table Club, and participated in Community Chest, American Red Cross and Boy Scout Activities. He was a member of numerous professional organizations, including the Edison Electric Institute, the American Institute of Electrical Engineers, and the Louisiana Engineering Society.

He is survived by his wife, the former Mary Jane Hammond, and two sons, Leroy Jr., and Dr. W. Hammond Newman.

Therefore, be it hereby resolved and spread upon the minutes of this meeting of the Louisiana Engineering Society, that we do hereby acknowledge with deep sorrow and affection his passing and extend our sincerest and heartfelt sympathy to his wife and family.

D. W. STEWART
CHAS. M. ROGERS

. . .

OBITUARY OF PAUL THEODORE SEASHORE

Paul Theodore Seashore passed away at the early age of 55, in Carmel Hospital at Carmel, California. Born of hardy pioneer stock at Grand Forks, North Dakota, on July 5, 1898, the son of Theodore Sashore and Anna Paulson died on April 11, 1954.

After completing his preparatory education, Mr. Seashore served until June, 1919, in the Air Service of the U. S. Army. He then entered the University of Texas where he studied civil engineering until January, 1923. During this period, Mr. Seashore was also Assistant in Geology of the Bureau of Economic Geology and Technology of the University of Texas at Austin, and Assistant Geologist of the Texas State Reclamation Department during the Texas-Oklahoma boundary dispute.

Leaving the University of Texas voluntarily in the early part

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of 1923, Mr. Seashore made a geological reconnaissance in the Sierra Madre Mountains in Mexico, prospecting for silver, copper and gold, and later returned to Texas as Hydrographer of the State Board of Water Engineers and the U. S. Department of Agriculture.

The month of March, 1924, saw Mr. Seashore take his first big step in the climb to the high position which he occupied later in life. At that time he became Geologist and Petroleum Engineer, and later Petroleum Engineer and Superintendent of Production, of the Humphreys Corporation in Houston, Texas. In these capacities, his activities covered the oil field operations in West Texas, on the Balcones Fault Line, East Texas, the Gulf area, and Barbers Hill, Sour Lake, Blue Ridge and Pierce Junction salt domes. He engaged in numerous wildcat tests in East and West Texas with the early cable tools, as well as the later rotary drilling equipment.

In November, 1927, Mr. Seashore became Superintendent of The Louisiana Land and Exploration Company (then known as Border Research Corporation) under Doctor F. W. DeWolf who was then Vice President of that Company. Upon the retirement of Doctor DeWolf in May, 1930, Mr. Seashore became Vice President and General Manager. In that capacity, he had charge of the Louisiana, Texas, New Mexico, North Dakota, South Dakota, Montana and Mississippi operations of The Louisiana Land and Exploration Company. And, he saw the Company grow from a small one, owning raw-lands and remote water bottom leases, into a large institution in the southeast coastal region of Louisiana, in the midst of a veritable forest of marine and marshland oil drilling operations.

After becoming First Vice President of the Company in July, 1952, Mr. Seashore retired on June 1, 1953, and moved to Carmel, California, where he lived and made his home until he was stricken on December 16, 1953, with the illness from which he died.

Mr. Seashore married Carolyn Bunch, who predeceased him in April, 1938. There were no children.

Always giving unsparingly of himself in the problems of his friends and business associates, Mr. Seashore had a place in their esteem and affections that cannot be adequately filled by others. Those who knew him intimately appreciated his absolute integrity, his remarkable ability, his high standing as a man and a true friend. He was kind and generous in a marked degree and was possessed of great personal charm.

In recognition of the record of his accomplishments and of the high esteem in which he was held by the Louisiana Engineering Society, it is proper that this tribute to the memory of Paul Theodore Seashore be entered upon the records of the Society and that a copy be sent to his next of kin.

FRANK M. RITCHIE
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ENGINEERING BRIEFS

Over-Zealous Magnet. Drivers on the 64 miles of roads serving a chemical concern's plants in Texas now are protected against nail-punctured tires by a mobile magnetic broom, according to Chemical Week, McGraw-Hill publication. Although efficient in removing metal hazards to automobile and truck tires, the machine must be guided around manhole covers, since the non-discriminating magnet snatches them up too.

—Aminco Laboratory News.

* * *

New "Atomic Clock" Actuated by Fluorescent Flashes. An "atomic clock" developed by Dr. James R. Arnold, University of Chicago, can measure the age of 44,000-year-old objects to within 37 years of their actual age. The "clock" measures the strength of radioactive carbon 14 as the first step in determining the age of the object. Carbon 14, normally found in all living things, decays at a definite rate—a fact which makes it useful as a tool for dating ancient objects.

The new "atomic clock" uses two photomultiplier tubes to detect tiny flashes in a fluorescent solution containing a dissolved sample of the specimen to be dated. When the tubes detect bursts of light in the solution, they amplify the energy of the light and translate it into electrical impulses which are proportionally strong to the intensity of the light flashes.

Through an electronic system, the impulses are sorted out. Only those at the energy level of the radiation given off by carbon 14 are counted.

The new "clock" is an improvement on the original technique worked out in 1949 by Dr. Willard F. Libby of the University of Chicago. Dr. Libby's method could not measure the age of objects as old as those measured by Dr. Arnold, nor could it measure the age with the accuracy of the new technique. Dr. Libby's method was reliable to about 25,000 years with a possible error of 120 years. Dr. Arnold has pushed the time back to 44,000 years with an accuracy of 37 years. Dr. Arnold stated that his method has a potential accuracy of 17 years.

Dr. Arnold's technique so far has not been applied to the dating of archeological relics or items of geological interest, but he pointed out that his method holds promise for industry in investigations dealing with rusting, gasoline processes, and nutrition.

—Aminco Laboratory News.

* * *

Interlingua Vocabulary Published. Interlingua, the new international language by means of which scientists are given a new



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medium of communication, is discussed in a recent publication entitled *Interlingua a Prime Vista* (Interlingua at First Glance).

The new book, which uses simple drawings to teach the vocabulary and grammar of Interlingua, is published by Storm Publishers, New York 3, N. Y. Price, \$2.00 per copy.

The purpose of Interlingua is to give scientists a means of knowing the work done in other countries and reported in languages with which they are not conversant.

Publications in Interlingua include *Spectroscopia Molecular* published by Dr. Forrest F. Cleveland, professor of physics at the Illinois Institute of Technology, Chicago 16, Ill., and *Scientia International*, a monthly edition of *Science News Letter* published by the Interlingua Division of Science Service, New York, 3 N. Y.

—Aminco Laboratory News.

* * *

New Method Developed for Preparing Alkylated Compounds.

A method for making many alkylated substances that may have practical uses has been developed for the U. S. Department of Agriculture by scientists of Tulane University, New Orleans, La. headed by David A. Shirley.

The Tulane researchers developed procedures for altering the molecular structure of such varied organic types as phenols, mercaptans, alcohols, amines, salts, and benzene through introducing the long-chain alkyl group of *n*-octadecyl *p*-toluenesulfonate. These modified products may have a future in a number of fields, and the method of alkylation may be found helpful in preparing various useful materials, including lubricants, additives, plasticizers, insecticides, therapeutic agents, and surface-active agents.

The Tulane researchers did not produce the alkylated compounds in quantity, but their methods, reported in four publications, are available to those wanting to make these and similar products.

Phenols and mercaptans alkylated were thiophenol, *p*-nitrothiophenol, *o* and *p*-thiocresol, *n*-butyl, decyl, dodecyl, and octadecyl mercaptans, and 1,2-ethanedithiol. Alcohols treated were ethylene glycol (to form *n*-octadecyl and di-*n*-octadecyl ethers); 2-octanol, 1-butanol, 1-octanol, 1-octadecanol, benzyl alcohol, and beta-hydroxyethyl mercaptan. Amines treated were aniline. *m*-chloroaniline, *n*-butylamine, *p*-toluidine, *p*-nitroaniline, beta-naphthylamine, and diphenylamine.

Papers describing the work are:

Alkylation with Long-chain *p*-Toluenesulfonates. II. Reaction of *n*-Octadecyl *p*-Toluenesulfonate with Mercaptans and Thiophenols; *J. Am. Chem. Soc.* 73: 4885, 1951.

Alkylation with Long-chain *p*-Toluenesulfonates. IV. Alkylation of Alcohols and Amines with *n*-Octadecyl *p*-Toluenesulfonate; *J. Org. Chem.* 18: 378-81, 1953.

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Alkylolation with Long-chain p-Toluene Sulfonates. V. Anionic Displacement Reactions of n-Octadecyl 1-Toluene Sulfonate; J. Org. Chem. 18: 1591-3, 1953.

Alkylolation with Long-chain p-Toulene Sulfonates. VI. Friedel-Crafts Reaction of n-Octadecyl p-Toluene Sulfonate and Benzene; J. Am. Chem. Soc. 75: 6333-4, 1953.

Copies of these papers may be obtained gratis by writing David A. Shirley, Department of Chemistry, University of Tennessee, Knoxville, Tenn., or Suothern Utilization Research Branch, U. S. Department of Agriculture, 2100 Robert E. Lee Blvd., New Orleans, La.—*Aminco Laboratory News*.

* * *

Public Works Can't Do the Job. With post-election talk of unemployment still in the headlines, the old argument of public works vs private works rages anew. Here are a few facts to offset the fallacies:

It takes about \$12-thousand of capital, on the average, to create a job for one man. Last year, American industry poured about \$28-billion into new plants and facilities. Presumably, that maintained and provided employment for some 2.3-million people who would otherwise be out of work.

Let us suppose, for the sake of illustration, that private industry had not been able to obtain from any source the funds which it spent last year on those capital improvements. Suppose the government had had to provide all those jobs through a public works program. Where would it get the \$28-billion?

There's a widely accepted belief that this could be done very simply by merely "soaking the rich" some more. To test that belief, the Tax Foundation in New York was asked this question:

"If the federal government had to raise \$28-billion in new revenues, and if this money were to be taken from the highest possible income brackets—without raising the rates on the lower-bracket taxpayers—who then would pay . . . and how much?"

And the incredible answer is this: If the federal government were to take from every taxpayer in this country every penny of his taxable income above \$2,000 a year, it still wouldn't get the \$28-billion!

To repeat: Each taxpayer—after claiming his usual exemptions and deductions—would still pay a 20% income tax on his first \$2,000—just as he does now; and then he would pay 100% on everything over \$2,000. That means that no man or woman in America would be permitted to keep more than \$1,600 of taxable income a year. And the government would still be \$3-billion short of raising the money it would need if it tried to take over the private works program!—*Chamber of Commerce News Bulletin*.

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In response to the tremendous interest in Instrumentation and its application to industrial process control, the School of Engineering at Louisiana Tech held its Third Annual Instrumentation Conference on Thursday and Friday, November 4th and 5th, 1954. The registration for this Conference included one-hundred thirty-five engineers, technical and sales personnel representing some fifty industrial enterprises.

The two day program featured eight papers, all pertinent to the field of industrial instrumentation and presented by men well qualified in their fields. These presentations proved to be of great interest to the personnel of the industries of this area. In addition to these papers, exhibits of seventeen national manufacturers and distributors of industrial instrumentation and control equipment were on display for the benefit of the registrants.

On Thursday evening, November 4, 1954, the annual banquet was held in Adams Cafeteria on the Tech Campus with Mr. Art Briese, "America's Knight of Satire," from Hot Springs, Arkansas, the principle speaker. Good fun and good food were enjoyed by all.

The papers and speakers for the two day program following the call to order by Dr. Virgil Orr, Conference Chairman, comments by Ben T. Bogard, Dean of the School of Engineering at Louisiana Tech and the welcome address by Mr. R. L. Ropp, President, Louisiana Tech were: "Problems Involved in the Measurement and Regulation of High Pressure Natural Gas," Mr. Bernie Welenzick and Mr. O. J. Hamm, Olin Gas Transmission Corporation, Monroe, Louisiana; "Instrumentation for Light-Ends Fractionation," Mr. L. E. Stark, The Foxboro Company, Dallas, Texas; "Development in Final Control Devices," Dr. Don P. Eckman, Case Institute of Technology, Cleveland, Ohio; "Use of Graphic Panel Instrumentation in the Modern Pulp Producing Mill," Mr. E. A. Andrews, Minneapolis-Honeywell Regulator Company, Philadelphia, Pennsylvania.

"Combustion Controls," Mr. J. T. Moore, Southwestern Gas and Electric Company, Shreveport, Louisiana; "Principles and Features of a New Electronic Process Control System," Mr. Jack L. Gates, Manning, Maxwell, and Moore, Stratford, Connecticut; "Digester Controls," Mr. M. W. Bates and Mr. Willard Toney, Crossett Paper Mills, Crossett, Arkansas; "Vapor Pressure Controller," Mr. Melvin White and Mr. A. J. Johnson, Arkansas-Louisiana Gas Company, Shreveport, Louisiana.

The Program Committee for the Conference was as follows: Mr. J. J. Thigpen, Chairman, Louisiana Polytechnic Institute; Mr.

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Exhibitors at this Conference were: Black, Sivalls, and Bryson, Inc. (Climax Controls Division), The Bristol Company, Fisher Governor Company (John H. Carter Company), Fischer and Porter Company (C. W. Dean & Associates), The Foxboro Company, General Electric Company, Hudson-Rush Company, Leeds & Northrup Company, Lyman C. Reed, Inc., Magnetrol Inc. (Eggelhof Engineers Inc.), Minneapolis-Honeywell Regulator Company, Moore Products Co., Price Engineering Sales Company, Taylor Instrument Company, Ray Moody Co., Hammel-Dahl Co., Daniel Orifice Fitting Company.

The Conference Proceedings are being prepared for mailing to all conference registrants.

The Fourth Annual Instrumentation Conference will be held on the Louisiana Tech campus November 3rd and 4th, 1955.

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NEW ORLEANS

MINUTES OF THE MEETINGS AND BUSINESS OF THE SOCIETY

Minutes of Meeting of the Board of Direction held on Monday, August 2, 1954

The meeting was called to order by President Macdonald with Messrs. Abraham, Freeman, Kelly, McLellan, Nelson, Seago and Fernandez present. After reading of minutes of the preceding meeting, Mr. Nelson moved that they be approved as amended.

The secretary gave an interim report on the annual outing, including attendance for each activity.

A letter from Mr. A. Hiram Sturges, Patent Lawyer, was read. It was decided to refer same to Professor Hill, Editor of the Proceeding.

Discussion followed regarding selection of nominees for vacancies on the State Board of Registration for Professional Engineers and Land Surveyors. After some discussion Mr. Nelson moved that a standing committee be named by the board, to consist of the immediate past president, first and second vice-presidents; said committee to maintain a panel of seven names of eligible persons from which the Board may select five candidates whenever it may be called upon to do so. Motion seconded by Mr. Freeman and carried.

Mr. Abraham reported briefly for the Special Activities Committee, stating that the outlook for placing engineering faculty personnel in private industry during the summer months was very encouraging.

Mr. Seago moved that Mr. A. W. Brodtman and Mr. J. D. Russell be re-instated to the grades of Member and Junior Member respectively, seconded by Mr. McLellan and carried.

Discussion followed concerning a proposed city ordinance for licensing those engaged in the installation and maintenance of refrigerating and/or air conditioning units in New Orleans. Mr. Nelson moved that the matter be referred to Mr. Alvin Fromherz, the Society's representative on the Greater New Orleans Code Committee, to study and make recommendation to the Board at its next meeting. Motion seconded by Mr. Freeman and carried, whereupon President Macdonald appointed Mr. Nelson to assist Mr. Fromherz in making this study.

President Macdonald announced his itinerary for September, when he expects to visit the Monroe, Shreveport, Alexandria and Lake Charles Sections.

The secretary announced that nominations were now in order for recipients of the Society's two medal awards and urged the board to consider possible candidates for these honors.

There being no further business, the meeting adjourned.

JOHN P. FERNANDEZ, Secretary-Treasurer

Minutes of Meeting of the Louisiana Engineering Society Held Jointly With The Louisiana Section, A.S.C.E. On Monday, August 2, 1954

The meeting was called to order by President Macdonald with approximately 65 in attendance. The president welcomed members and guests. Mr. Buja moved that minutes of the preceding meeting be dispensed with, seconded by Mr. Cassagne and carried.

Mr. John L. Porter read an obituary honoring the late member L. Villere Cressy, following which the audience rose and observed a moment of silence in memory of the deceased.

The meeting then was turned over to Mr. L. J. Buja, President, Louisiana Section, A.S.C.E., who introduced Colonel Marcel Garsaud, Moderator for the meeting. Since there was time available before the state-wide telephone hook-up was scheduled to begin, the secretary read minutes of the Board of Direction's meeting of July 14.

Mr. Frank Fromherz inquired whether plans for the refresher courses in engineering subjects had been completely abandoned, whereupon President Macdonald informed him that it was with reluctance that the Board had been forced to abandon this project due to the small number of members who had applied for the courses; however, if a sufficient number of applications were received the courses could still be given.

Telephone connections then were made with Alexandria, Shreveport, Monroe, Baton Rouge and Lake Charles and a discussion on "Public Works Activities" began. Speakers at the various locations included:

Mr. Louis C. Bisso, Director of New Orleans City Planning Commission, speaking from New Orleans.

Mr. Lane Mitchell, Commissioner of Parks and Streets, Shreveport, and Mr. Charles B. Foster, Engineer for Water and Sewerage, Shreveport, both speaking from that city.

Mr. Roy T. Sessums, Director of Public Works, State of Louisiana, speaking from Baton Rouge.

Following the discussion the chair was returned to President Macdonald, who thanked Colonel Garsaud, Messrs. Buja, Cassagne and Bisso and all those who had assisted with the program.

The meeting then adjourned.

JOHN P. FERNANDEZ, Secretary-Treasurer

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Minutes of Meeting of the Board of Direction Held On Monday, Sept. 13, 1954

The meeting was called to order by President Macdonald with Messrs. Abraham, Freeman, Nelson, McLellan, Seago and Fernandez present. Messrs. Robert H. Grehan, Assistant Secretary, Arthur J. Naquin, Chairman, Professional, Civic & Industrial Affairs Committee, and Alvin M. Fromherz, L.E.S. Representative on the Greater New Orleans Code Committee also were in attendance.

Minutes of the August meeting were accepted as read, after which the President informed the board of the activities of the Monroe, Shreveport, Alexandria and Lake Charles Sections that he addressed on a recent visit to those cities. He also advised that a meeting of the Louisiana Council of Engineers would be held on October 12 to discuss proposed changes in the Engineering Registration Act and a constitution and by-laws for the Council.

Mr. Alvin M. Fromherz, L.E.S. Representative on the Greater New Orleans Code Committee, reported that the proposed city ordinance for licensing those engaged in the installation and maintenance of refrigerating and/or air conditioning units was defeated. However, he recommended that the board write to the Committee on Safety and Property, City of New Orleans, opposing the adoption of this or any similar ordinance, along the lines of a draft submitted by him. Mr. Seago moved that Mr. Fromherz's recommendation be adopted and that the president write to the Safety Committee expressing the views of the board. Motion seconded by Mr. McLellan and carried unanimously. A copy of the president's letter is attached to these minutes.

Mr. Naquin, Chairman of the Committee on Professional, Civic and Industrial Affairs, reported that his committee had met with a considerable number of consulting engineers to discuss Mr. Leo Odom's suggestion to establish a Consulting Engineers' Division within the Louisiana Engineering Society. Mr. Naquin stated that his committee concluded that the establishment of such a division would be contrary to the Society's objective of bringing all branches of the profession together as one for mutual cooperation and benefit. He further stated that the consulting engineers contacted were unanimously not in favor of such a proposal. Mr. McLellan then moved that the recommendation of the Committee on Professional, Civic and Industrial Affairs be accepted and that the secretary notify Mr. Odom of this decision. Motion seconded by Mr. Freeman and carried.

The secretary reported that all receipts and expenditures for the annual outing had been recorded and that the occasion had resulted in a profit of \$152.02. All of the credit for the outing's success is due to the efforts of the Outing Committee under the direction of Mr. Sydney Ellis, Jr.

A letter from a group of Chinese engineering students, soliciting the support of the society in helping them secure permission to return to their homeland, was read. Since none of these students are in Louisiana, the board decided to take no action.

A letter from the New Orleans Electrical Association concerning Lights' Diamond Jubilee celebration was read, and the secretary was instructed to inform them that the L.E.S. would be glad to have their speaker address its next meeting on October 4. There being no further business, the meeting adjourned.

JOHN P. FERNANDEZ, Secretary-Treasurer

September 13, 1954

(COPY)

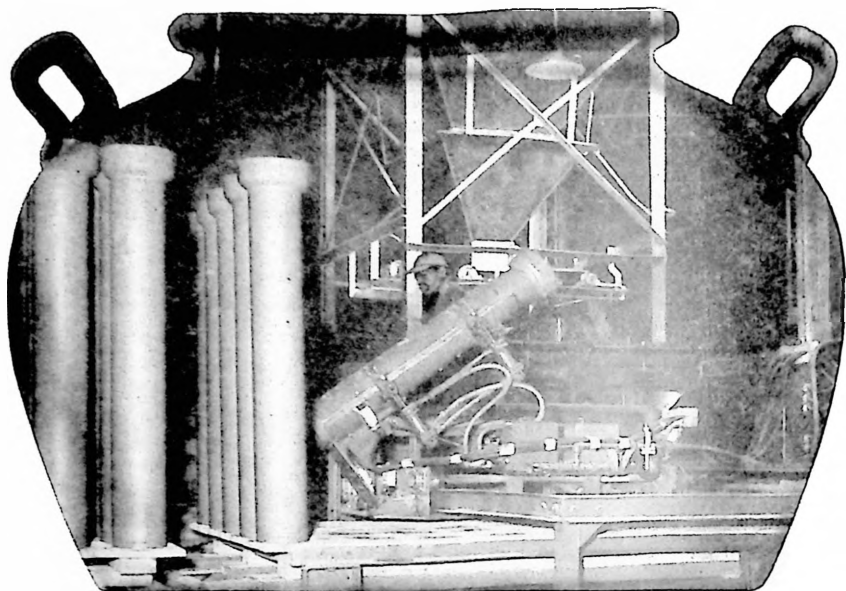
Honorable Victor H. Schiro, Chairman,
Honorable Paul V. Burke, Member
Honorable Fred J. Cassibry, Member
Committee on Safety and Property,
City of New Orleans, Louisiana

Gentlemen:

The Louisiana Engineering Society is an organization of professional engineers of all branches of engineering in the State of Louisiana, with a membership of 1,500. The Board of Direction of the Louisiana Engineering Society has been appraised of a proposed ordinance "licensing those engaged in the safe design, construction, installation, alteration, inspection, testing, and maintenance of refrigeration and/or air conditioning systems and appurtenances thereof in the City of New Orleans, State of Louisiana", and has examined a copy of the proposed ordinance as revised and distributed July 19, 1954 by the Division of Regulatory Inspection.

Upon due consideration at a regular meeting of the Board of Direction of said Society and upon resolution adopted at this meeting held on September 13, 1954, the Board of Direction of the Louisiana Engineering Society opposes the adoption of this or any similar ordinance for the following reasons:

1. The proposed ordinance purports to license those engaged in the design of engineering installations and thereby conflicts with the State Professional Engineers License Law, Act 3 of 1950, State of Louisiana. State of Louisiana.



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2. The proposed ordinance conflicts with the function of existing boards established by City Charter providing for the licensing of electricians, operating engineers, gas fitters and plumbers presently under competent administration by the Board of Electrical Examiners, the Board of Mechanical Examiners, the Board of Examiners for Operating Engineers, and the Sewerage and Water Board.
3. Additional licensing is not required since the above boards adequately and safely exercise control over the construction and operation of electrical and mechanical installations, including refrigerating equipment and air conditioning equipment.
4. The proposed ordinance would impose severe hardship on the established and recognized labor organizations of the community by conflicting with the established and recognized requirements and prerogatives of journeymen mechanics and apprentices in the various trades such as pumbing, pipefitting, insulating, sheet metal working, and electrical work.
5. The proposed constitution of the Board of Refrigeration and Air Conditioning Examiners is undemocratic in that four members of the eight member board are all proposed to come from one organization, the Masters Refrigeration and Air Conditioning Association, thus this one organization to exercise complete control over the Board's actions.
6. The method of collecting fees and disposition of fees is improper and dangerous. Quoting from the proposed charter "Section 6. Examination Fee. The fee for each examination and re-examination for all licenses shall be Ten (\$10.00) Dollars.

The Certification Fee shall be twenty-five (\$25.00) dollars.

The initial and yearly renewal registration fee for all licenses shall be fifteen (\$15.00) dollars.

The examination and re-examination fees shall be paid to the Board of Refrigeration and Air Conditioning Examiners at the time of application. The examination fee and re-examination fee referred to above shall be divided equally amongst the members of the Board of Refrigeration and Air Conditioning Examiners who are present at the time of each examination.

... There shall be no limit to the number of examinations a person shall be allowed to undergo."

Such methods of collecting and disbursing fees, if not actually illegal, would tend to corrupt a governmental function and may lead to dishonest practices.

7. The creation of such a licensing board and system of licensing appears to conflict with provisions of the City Charter and should be examined by the City Attorney in this respect.
8. The provisions for safety of life and limb and protection of the public welfare insofar as refrigeration and air conditioning installations are concerned, are clearly defined by existing codes and standards adopted by the American Standards Association, the National Board of Fire Underwriters and similar organizations. The law of the State of Louisiana requires all such refrigeration and air-conditioning installations to be made to the designs and specifications and under the supervision of a registered professional engineer and such control is sufficient to protect the public welfare.

Now, therefore, the President and Board of Direction of the Louisiana Engineering Society go on record as opposing the proposed ordinance creating a Board of Refrigeration and Air Conditioning Mechanical Examiners and instituting licensing of refrigeration mechanics.

Respectfully,

(Signed) FRANK W. MACDONALD, President

Minutes of Meeting of the Louisiana Engineering Society Held on Monday, September 13, 1954, In the Jackson Room, St. Charles Hotel

The meeting was called to order by President Dacdonald with approximately 100 members and guests present. Mr. Grehan moved that the reading of the minutes of the preceding meeting be dispensed with, seconded by Mr. Seago and carried, after which the secretary read minutes of the August Board meeting.

The secretary read obituaries of the late members Paul T. Seashore and Leroy L. Newman, after which a moment of silence was observed in memory of the deceased.

Mr. Daniel Vliet then introduced the speaker of the evening, Mr. C. J. Sperry, Assistant Professor of Electrical Engineering at Tulane University, who gave a most interesting talk on "Artificial Moonlight", a research project being conducted by university faculty members.

Following the usual question period, the meeting adjourned with a rising vote of thanks to the speaker.

JOHN P. FERNANDEZ, Secretary-Treasurer

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Minutes of Meeting of the Board of Direction Held on Monday, October 4, 1954

The meeting was called to order by President Macdonald with the following members present: Messrs. Freeman, Kelly, McLellan, Nelson, Seago, Wallace and Fernandez. Mr. Robert Grehan, Assistant Secretary, and Dr. F. W. zurBurg of the Lafayette Section also were present by invitation. Mr. Seago moved that minutes of the preceding meeting be accepted as read, seconded by Mr. Nelson and carried.

The secretary announced that all applicants for membership named in the September ballot had been elected to their respective grades.

A letter from Professor Donald Derickson, Chairman, State of Registration for Professional Engineers and Land Surveyors, was read, in which he informed the society that a vacancy on said board would be created upon the expiration of the term of Dr. Jesse Coates on November 11. Mr. Seago, a member of the committee appointed to submit names of engineers qualified for membership on the State Board, announced that this committee (headed by Mr. M. C. Abraham) had investigated the qualifications and contacted a number of engineers who agreed to serve on this board if appointed. Mr. Freeman moved that the following names be submitted to the Governor: Frederick N. Billingsley, Dr. Jesse Coates, Lionel J. Cucullu, Waldemar S. Nelson, H. Nash Ogden.

The motion was seconded by Mr. McLellan and carried, with Mr. Nelson abstaining from vote.

A letter from the Union Pacific Railroad offering to present a travel program at a meeting of the society was read. The secretary was instructed to forward same to Mr. Charles E. Cassagne, Chairman of the Technical Paper Committee.

A letter from Dr. W. A. King, Chairman, Speakers' Bureau, Greater New Orleans Educational Television Foundation, was read and the board decided to accept their offer to have a speaker address the Society's next meeting. The secretary was instructed to inform Dr. King that their speaker would be welcome to deliver a five-minute talk at the Society's meeting on November 1.

A letter from Mr. Arthur C. Thigpen, Chairman, Publicity Committee, regarding the Third Annual Instrumentation Conference to be held at Louisiana Polytechnic Institute on November 4th and 5th, was read. It was agreed that announcement of the conference be made at the society's regular meeting following this board meeting.

A letter from Mr. Tom C. David of Alexandria was read, in which he endorsed the establishment of a Consulting Engineers' Division within the Society proposed by Mr. Leo Odom. The secretary was instructed to reply to Mr. David and enclose copy of the letter written to Mr. Odom on this subject.

A letter from Mr. Charles P. Knost, Chairman, Vocational Guidance Committee, was read in which he advised that Mr. J. T. Knight, Jr., Chairman of the sub-committee for "JETS" (Junior Engineer Training Schedule) had requested that high school students participating in the JET program be invited to a general meeting of the L.E.S. Mr. Nelson moved that the May meeting be dedicated to the JET program and that every effort be made to have as large an attendance as possible and to secure a speaker and topic that would appeal to the young JET pilots. Motion seconded by Mr. Wallace and carried.

Upon the recommendation of the Board, President Macdonald appointed Messrs. M. C. Abraham, Chairman, W. Stone Leake and F. N. Billingsley to form a committee to nominate officers for 1955.

After some discussion the secretary was instructed to proceed with preparation of a certificate to be presented to all former presidents on Presidents' Night, the cost of same not to exceed \$150.00. Motion by Mr. Nelson, seconded by Mr. Wallace and carried.

Mr. Freeman moved that the president appoint a committee to recommend a recipient for the society's Certificate of Appreciation for 1954. Motion seconded by Mr. Kelly, whereupon President Macdonald appointed Messrs. Kelly, McLellan and Grehan to serve on this committee.

President Macdonald advised that he had contacted a professional public relations man who agreed to handle publicity for the 1955 Annual Meeting. Mr. Freeman moved that the president be authorized to enlist the services of a professional publicity man for the meeting at a cost not to exceed \$250.00; also, that he investigate the possibility of having similar publicity for the regular monthly meetings. Motion seconded by Mr. Wallace and carried.

The secretary announced that Light's Diamond Jubilee Committee had requested that publicity data be circulated among the L.E.S. membership. The board was agreeable to this provided all material would be furnished by the committee.

There being no further business, the meeting adjourned.

JOHN P. FERNANDEZ, Secretary-Treasurer

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Minutes of Meeting of the L.E.S. held Jointly with the New Orleans Section, American Institute of Chemical Engineers on Monday, October 4, 1954

The meeting was called to order by President Macdonald in the Jackson Room, St. Charles Hotel, with approximately 145 members and guests present. The president welcomed members of A.I.Ch.E., after which Mr. Nelson moved that the minutes of the preceding meeting be dispensed with. Motion seconded by Mr. Richard Graham and carried. The secretary then read minutes of the September meeting of the Board of Direction.

Mr. I. Gordon Isaacson then addressed the society in behalf of the United Fund Campaign for Greater New Orleans and urged everyone to give his fair share.

President Macdonald then read an announcement of the Third Annual Instrumentation Conference to be held at Louisiana Polytechnic Institute on November 4th and 5th. He also announced that National Employ the Handicapped Week was being observed on October 3-9 and called attention to its worthy purpose.

The chair then was relinquished to Dr. Francis M. Taylor, Chairman, AIChE, and following the business of that organization Mr. Paul Besse, Assistant Construction Engineer, The California Company, was called upon to address the gathering. Mr. Besse delivered a most informative and interesting lecture on "Gulf of Mexico Drilling and Production Operations".

The chair then was returned to President Macdonald, who thanked the American Institute of Chemical Engineers for its exceptionally fine program.

Mr. John Burke then announced the program for "Lights' Diamond Jubilee" and the meeting adjourned with a rising vote of thanks to Mr. Besse for his excellent presentation.

JOHN P. FERNANDEZ, Secretary-Treasurer

Minutes of Meeting of the Baton Rouge Section, Louisiana Engineering Society

The meeting was held on May 19, 1954 at 7:30 p. m. in the Agricultural Engineering Auditorium, Louisiana State University. The following officers were present: T. J. Innes, president; Wiley D. Poole, 1st vice-president; F. G. Hornsby, 2nd vice-president; and Randall Meyer, secretary-treasurer.

Mr. Innes presided with fifty-eight members and guests present. During the short business session, it was decided that the section should have two representatives on the local Chamber of Commerce. During 1954 these will be Messrs. Innes and Poole.

Mr. Innes introduced General S. G. Henry of the Ethyl Corporation who made an extremely interesting presentation on the integration of industries in Baton Rouge, and explained why the area has such a high concentration of petrochemicals production. Mr. James Gill, also of Ethyl Corporation, then told the story of Ethyl's background and development, and explained the basic Ethyl process. Mr. Gill and General Henry further talked about the large part which engineers have had, and are continuing to have in Ethyl's success.

Refreshments were served following adjournment.

RANDALL MEYER, Secretary-Treasurer

Minutes of Meeting of the Baton Rouge Section, Louisiana Engineering Society

The meeting was held on June 5, 1954 at 1:30 p. m. at Harry Cloud's Camp. The following officers were present: T. J. Innes, president; Wiley D. Poole, 1st vice-president; F. G. Hornsby, 2nd vice-president; and Randall Meyer, secretary-treasurer.

The annual joint summer meeting of the Baton Rouge Section with other State Sections and the parent society was held at Harry Cloud's Camp with some seventy persons attending. Following the usual afternoon of horseshoe pitching and other entertainment, barbecue was served. Mr. Innes presided at a short business session, and introduced a number of guests from other sections and from New Orleans, including President Macdonald.

Adjournment followed awarding of a large number of attendance and horseshoe pitching prizes.

RANDALL MEYER, Secretary-Treasurer

Minutes of Meeting of the Baton Rouge Section, Louisiana Engineering Society

The meeting was held on August 2, 1954 at 8:00 p. m. in the Agricultural Engineering Auditorium, Louisiana State University. The following officers were present: T. J. Innes, president; and F. G. Hornsby, 2nd vice-president.

Thirty-five members and guests assembled in Baton Rouge for the state-wide telephone forum, "Public Works Activities." Mr. Roy T. Sessums, Director of Public Works for the State of Louisiana was present and took part in the panel discussion.

RANDALL MEYER, Secretary-Treasurer

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Minutes of Meeting of the Baton Rouge Section, Louisiana Engineering Society

The meeting was held on October 13, 1954 at 7:30 p. m. in the Gulf States Utilities Company Auditorium. The following officers were present: T. J. Innes, president; F. G. Hornsby, 2nd vice-president; and Randall Meyer, secretary-treasurer.

Eighty persons attended this joint meeting with the AIEE, as guests of Gulf States Utilities Company. Mr. Innes introduced Mr. John Elder of AIEE. After short business sessions for each group, the meeting was turned over to Mr. Hornsby, representing Gulf States. Mr. W. L. Sutton of General Electric spoke briefly on the 75th anniversary of the electric light and showed a color film on the subject. Mr. R. H. Lawton of Gulf States discussed the Louisiana (generating) station and Mr. Austin Mary explained Gulf States' Baton Rouge area distribution system. The group was taken on conducted tours of the Government Street substation and the Louisiana Station.

Refreshments were served and adjournment was at 10:15 p. m.

RANDALL MEYER, Secretary-Treasurer

**Minutes of Meeting of the Lafayette Section, Louisiana Engineering Society,
October 12, 1954**

The October meeting of the Lafayette Section of the Louisiana Engineering Society was held at Poor Boy's Riverside Inn on Tuesday, October 12, 1954.

The evening was begun with a supper, after which the business meeting was called to order by President Russell.

Mr. F. L. Larue moved that we dispense with the reading of the minutes. The motion was seconded by Mr. E. Guillot and carried.

President Russell greeted the new members and guests on behalf of the section.

After a discussion pertaining to having a meeting honoring past presidents of the section, Mr. J. O. Herpin moved that the December meeting be held for this purpose. The motion was seconded by Mr. E. Domingue and carried.

Mr. H. R. Mason suggested that the section have a joint meeting with the S.L.I. Student Chapter of the Louisiana Engineering Society. The motion was seconded by Mr. J. O. Herpin and carried. All members present volunteered to sponsor a student. Mr. R. E. Jenkins suggested that the student paper to be presented at the state meeting be presented to the section at the student night meeting. President Russell appointed Messrs. D. J. O'Rourke, R. Jenkins and E. Domingue to coordinate this meeting with the Student Chapter.

President Russell appointed the following members to the following committees:

Program Committee: Zachariah L. Loflin (Chairman), Ed Guillot, Frank B. Sonnier, J. E. Reed, L. C. Landry.

Publicity Committee: R. M. Metherwick (Chairman), Godfrey L. Marine, Joseph R. Troxler.

Vocational Guidance Committee: Felix J. Boudreaux (Chairman), D. J. O'Rourke.

Membership Committee: William J. Johnson (Chairman), J. C. Stephenson, Daniel L. Winters, Warren Hollier, Francis B. Sessums, Magee J. Moss.

Greeting Committee: Joseph E. Jarman, John R. Gaugler, Raymond F. Jenkins, George M. Arnett, Robert F. Helms.

President Russell appointed Mr. H. R. Mason Contact Representative. There being no further business the meeting was adjourned.

ALFRED W. SCHOEFFLER, Secretary-Treasurer

**Minutes of Meeting of the Lafayette Section, Louisiana Engineering Society,
November 9, 1954**

The November meeting of the Lafayette Section of the Louisiana Engineering Society was held Tuesday, November 9 at 7:30 p. m. at Poor Boy's Riverside Inn.

The evening was begun with a supper, after which the meeting was called to order by President Russell.

The guests were introduced.

Mr. F. Boudreaux moved that we dispense with the reading of the minutes. The motion was seconded by Mr. J. R. Gaugler and carried.

Mr. R. E. Jenkins was called upon to report the findings of his committee. Mr. Jenkins reported that the February meeting would be the best time to hold a joint meeting with the S. L. I. Student Chapter of the Louisiana Engineering Society.

Mr. F. Boudreaux moved that an expenditure of \$35.00 be used for the purpose of purchasing a prize to be presented to the student whose paper will be presented to the section at the February meeting. The motion was seconded by Mr. J. Reed and carried. President Russell appointed Mr. R. E. Jenkins in charge of the expenditure.

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The chair was turned over to Mr. J. Reed who introduced the guest speaker, Mr. Robert E. Chappuis. Mr. Chappuis gave an informative and interesting talk pertaining to the "Design and Construction of a 50,000 K. W. Station in the Teche Chain".

After a lively question period, President Russell thanked the guest speaker on behalf of the society.

Mr. F. Boudreaux moved that the December meeting be a dinner meeting. The motion was seconded by Mr. L. Larue and carried.

There being no further business to discuss the meeting was adjourned.

ALFRED W. SCHOEFFLER, Secretary-Treasurer

**Minutes of Meeting of Monroe Section, Louisiana Engineering Society
September 7, 1954**

The meeting was called to order in the Virginia Hotel in Monroe at 7:45 p. m. The regular meeting of the members was held in the Ball Room while the wives of the members met with Mrs. Macdonald, of the New Orleans Section Auxiliary, in the Cameo Room.

The reading of the minutes of the previous meeting were dispensed with.

A letter from Mr. Calvin Watts, chairman LES Legislative Committee, was read wherein he requested recommendations with regards to changes in the Engineering Registration Act be submitted around the middle of September. No action was taken on this because of the short time involved.

The meeting was then turned over to State President, Mr. Frank Macdonald, who reviewed some of the accomplishments of the Society and announced that Engineer's Week will be February 20 through 26 in 1955. He also pointed out that we need to submit, immediately any names of engineers who are to be considered for the LES Civic Activities Medal or the LES Technological Accomplishment Medal. He also pointed out that a Consulting Engineers Section of the Proceedings was being developed and that any interested consulting engineers could purchase a space approximately the size of a calling card or one-eighth page for the price of twelve dollars per year.

The main topic of Mr. Macdonald's talk was concerning proposed changes to the present Engineer's Registration Act. During the discussion period, it was suggested that the recommendations of the recent committee be printed in the Proceedings so that all interested engineers would be able to read and offer their suggestions and comments. Mr. Macdonald said that he would look into this and see if it were possible.

F. W. ADAMS, Secretary-Treasurer

**Minutes of the Meeting of the Shreveport Section of the Louisiana
Engineering Society held September 8, 1954**

The meeting was called to order by President Hadra at 8:00 p. m. in the auditorium of the Science Building at Centenary College of Louisiana. This meeting was conducted jointly with various other engineering societies of the Ark-La-Tex area.

Past President Gillen presented a scroll to Mr. E. M. Freeman honoring him for his many services to the Shreveport Section.

Mr. Freeman introduced Prof. Frank W. Macdonald, President of the Louisiana Engineering Society, who gave a summary of the projects being undertaken by the Louisiana Engineering Society. He then gave the history of the licensing laws for professional engineers in Louisiana from their inception in 1908 to the present time, discussed the licensing laws for professional engineers in other states, and explained Louisiana's present law, its weaknesses, and proposed changes particularly as regards engineers in training.

Prof. Macdonald invited those present to make suggestions for civic and technical awards.

A brief discussion followed Prof. Macdonald's most interesting speech after which the meeting was adjourned.

MILLARD P. SNYDER, Secretary-Treasurer

**Minutes of the Meeting of the Shreveport Section of the Louisiana
Engineering Society held September 30, 1954**

This meeting was the annual barbecue and shrimp boil held at Camp Soda through the courtesy of Mr. J. H. Ellis and the Caddo Parish Police Jury. Thirty-five members and guests attended in spite of inclement weather. All had a good time, enjoyed in particular the excellent meal that Mr. Ellis prepared.

No business was transacted.

MILLARD P. SNYDER, Secretary-Treasurer

THE PROCEEDINGS OF THE LOUISIANA ENGINEERING SOCIETY

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