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Society

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PROCEEDINGS
OF THE
LOUISIANA
ENGINEERING SOCIETY

VOL. IV. 1918

PUBLISHED BI-MONTHLY
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PROCEEDINGS OF THE LOUISIANA ENGINEERING SOCIETY.

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LOUISIANA ENGINEERING SOCIETY

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Treasurer, OLE K. OLSEN, 822 Perdido Street

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President, JOHN KLOSER.

PROCEEDINGS OF THE LOUISIANA ENGINEERING SOCIETY

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EDITORIAL NOTES AND COMMENT

Our New President. At the annual meeting of the Society, held January 12, 1918, Mr. John Klorer was elected President. Mr. Klorer was born in New Orleans, November 25, 1874, and received his secondary school education in the Tulane High School, which was then operated as a part of Tulane University for the preparation of students for its higher courses. His engineering education was received at the Collège of Technology of Tulane University, from which he graduated in 1895 with the degree of B. E. in Civil Engineering.

Mr. Klorer's first practical experience was obtained with the United States Engineer Department, whose service he entered immediately upon leaving college, acting in the capacity of rodman, computer, inspector and surveyor until 1901. In 1901 he entered the employ of J. P. McDonald & Co., Engineers and Contractors, of New York; and was engaged upon examinations and surveys for a proposed graving dry dock in Vera Cruz harbor. He also did some work upon the sewerage and water system of the City of Tampico. For a portion of the year 1902 he was in the service of the Mexican Government, running surveys for the improvement of the Panuco River. While engaged upon this work he was forced to return to the States on account of illness.

Re-entering the service of the United States Engineer Department as Junior Engineer in the latter part of 1902, Mr. Klorer was assigned to the duty of making purchases of engineering supplies and was also placed in local charge of the improvement of the smaller streams in Louisiana. From 1907 to 1912 he was assigned to levee construction in the Fourth Mississippi River District, during which period he introduced the use of the re-inforced concrete levee revetment as a means of protecting embankments from wave-wash and of reducing seepage.

In October, 1912, Mr. Klorer was appointed by Governor Hall as a Member of the Board of State Engineers and placed in charge of the Lafourche, Lake Borgne, Buras and Grand Prairie Levee Districts. He was reappointed to this same office in 1917 by Governor Pleasant. It was through the efforts of Mr. Klorer that the Lafourche Levee Board was induced to purchase a levee building machine, the operation of which was placed under his charge. The use of this machine has demonstrated that with it levees can be constructed at a great saving in cost over the older methods.

Mr. Klorer has been a member of the Louisiana Engineering Society since its foundation in 1898 and has always taken an active interest in its affairs. He was appointed Treasurer in 1916 to take the place of Mr. Hunter Coleman, who had enlisted in the Washington Artillery and been sent to the Mexican Border. He was elected a Director for 1917, and this was followed

by his election to the position of President for 1918. The thing that has kept this society a going and prosperous institution in this community while many similar ones have fallen by the way has been the spirit of co-operation and support which the members have always shown the officers, and we feel sure Mr. Klorer will receive this same support in all his efforts for the welfare of the organization.

The Smoker. Thanks to the indefatigable enthusiasm and efforts of Mr. Ole K. Olsen and his assistants, Mr. Riess and Mr. Scott, we were able to enjoy another of those pleasant affairs called a "smoker" at which one eats a good supper, smokes a great deal, and drinks—beer. Following the usual custom, the smoker was held immediately after the adjournment of the Annual Meeting. The Cosmopolitan Hotel was the scene, and Mr. A. M. Lockett was the leader of the intellectual and spiritual side of the feast, having had conferred upon him, in keeping with the spirit of these times, the title of "Commandant and Chief Noise Maker." He was worthy of the title. It being a very cold night, a preliminary warming up was had by the help of an Ojen cocktail and a lock-step march around the table to the tune of that classic which conveys the information in words of fire that we don't care so long as the "gang's all here." As the retiring president, Mr. Dusenbury, reviewed briefly the activities of the Society during his administration, and then Mr. Klorer, as the president-elect, expressed his appreciation of the honor bestowed upon him and bespoke for himself the same degree of co-operation and support that the Society has always shown its officers. The toasts were all strictly impromptu and the various gentlemen called upon responded graciously and gracefully. Mr. Lockett's few attempts to be really serious were each time somewhat rudely interrupted by the "semi-pro" entertainers who had been called in to lighten the hearts of the engineers. But everything goes with a crowd of good fellows like the Louisiana Engineers and their guests and generous applause was given all the entertainers—the blonde lady of willowy form with a contralto profundo worthy of *any* man, the legerdemain artist who was really clever, and the little girl who

was so fascinated with singing to the bald-headed papas of our company that she did not want to go home at all. After this last statement the Committee on Publications deems it the better part of wisdom not to publish a list of members and guests who were present on this joyful occasion. Again we take off our hats to Ole K. He is the man that can make a smoker "smoke up."

A Communication From Mr. Welman Bradford. In connection with the very interesting paper read by Mr. Bradford before the Society on "Louisiana Waterways and Their Industrial Possibilities," one of the members, not present at the meeting, expressed the opinion that the main canal and feeders of this system would be liable to very considerable sedimentation. In a letter to the Editor, Mr. Bradford submits the following statement as to the point raised:

"I notice a reference on page 235 in which some member of the Society who was not present had some doubt as to the accumulation of the sedimentary deposits, etc. That would be very easily taken care of, but I did not mention it in my article, as the other features took up so much space that I did not care to weary the members present.

"For nearly fourteen miles the upper reaches of Cane River would have to be dredged in order to remove the sediment now deposited there, beginning at the upper end with an excavation of fourteen feet, getting less and less to the end of the fourteenth mile, where the sediment seems to have disappeared. The bed of the stream all the way down to the location for the concrete dam and spillway has a width of generally 300 feet and an increasing depth from the end of this proposed excavation to this latter site, where the bed is thirteen feet below the bottom of the proposed 'gravity canal.' This large basin, extending the entire length of the river, 64 miles, would accumulate the heavier silts, composed principally of sand, in the bed of the stream until the same would have become filled up to the bottom of the gravity canal.

"The swamps on either side of Cane River being not very far from the stream would make it an easy matter to remove these sands by suction when the beds would have become filled. When once the waters would have reached the head of the canal proper, the current at the rate of three to three and one-half miles per hour would carry off all of the remaining finer silts, which contain the fertilizing elements, directly into the rice fields, where they would become incorporated into the cultivated areas. The cross section of Cane River being three to four times greater than the actual canal, would have less current than the canal, thus inviting the deposit of the heavier particles until the head of the canal would have been reached. There would likewise be a large escapement under the concrete dam near the mouth of Cane for the removal of portions of this deposit."

An Appreciated and Appreciative Advertiser. We are recently in receipt of a voluntary letter from Mr. Albert A. Martinez, who makes a specialty of Southern yellow pine in the form of Interlock Wood Sheet Piling, in which he requests us to increase his advertising space in the *Proceedings* from three-quarters page to a full page. He further states that as his business increases and develops he hopes to still further increase his advertisement in our journal. We wish to thank Mr. Martinez for his kind expression of appreciation and to express the hope that his business will continue to grow as it deserves. This is also a good opportunity to call the attention of our present and prospective advertisers to the fact that this journal affords the best kind of medium in this part of the country for reaching the wide-awake and progressive engineers of this state.

Pamphlet on Oil Burners. The firm of A. M. Lockett & Co. has recently gotten out a little pamphlet of about twelve pages giving instructions for installing and operating the Lockett Flat Flame Oil Burner. It is well illustrated and gives plans for installing the burners under all the ordinary types of boilers.

A. M. Lockett & Co. will be glad to send copies of the pamphlet to any engineers who may be interested in the subject.

An Appeal for Old Tracing Cloth. The Secretary of the Society has recently received a letter from the War Department appealing to engineers and engineering firms to go over their old files of tracings and to donate to the Red Cross any such tracings as may no longer be of use. It seems that the cloth is of a very excellent quality, very difficult to secure these days, and after the sizing and ink is washed out, can be used very effectively for certain purposes by the Red Cross. Please, therefore, look over your old files and turn in to the local Red Cross organization as much of the old tracing cloth as you may be able to spare.

New Members. Again our efficient Committee on Membership gives evidence of its activity in the following list of new members and transfers, whom we take great pleasure in welcoming into the Society and trust that they will co-operate with us by taking an active interest in all its functions:

RESIDENT MEMBERS.

Robert P. Hepinstall, 1217 Peters Ave., New Orleans.
Theo. O. Hotard, 320 Opelousas Ave., Algiers.
Edward S. Lanphier, 1430 Octavia St., New Orleans.
Clarence H. Robinson, 1908 General Taylor St., New Orleans.
Edwin J. H. Rodriguez, 1646 N. Dorgenois St., New Orleans.
Leon C. Weiss, 1731 Robert St., New Orleans.
James A. Young, 2504 Milan St., New Orleans.

NON-RESIDENT MEMBERS.

Edward A. Arpin, Florence, La.
M. A. Beranger, Estate San Isidio, Santo Domingo, D. R.
Lee A. Christy, 314 Hennen Building, New Orleans.
Adolph E. Hartman, Shreveport, La.
John Y. Snyder, Shreveport, La.

JUNIOR MEMBERS.

John Appleby, Jr., 1518 Melpomene St., New Orleans.
Andrew J. Wild, Jr., 1115 Crete St. New Orleans.

TRANSFER FROM STUDENT TO JUNIOR MEMBER.

David W. Wiedman, Port Arthur, Texas.

TRANSFER FROM JUNIOR TO RESIDENT MEMBER.

Edwin J. Fisher, 2316 Camp St., New Orleans.

Our Roll of Honor. Elsewhere in this issue on a special page will be found the list of our members who are in active service in either the army or navy branch of the Government forces. The list has been carefully revised according to the best information available, but there may be omissions, and doubtless there are some errors, especially in view of the fact that so many changes are being made all the time. You are earnestly requested, therefore, to read the list carefully and report any such errors or omissions to the Secretary or to the Editor. The Society has reason to feel proud of its record. Out of a total membership of 255 thirty-four men have gone into active service. This, of course, does not include many additional names of men who are in positions of responsibility and trust connected with the efficient prosecution of the war, but not classed as military service.

Attention should here be called to the fact that, in line with other organizations of like character throughout the country, the Society has passed a resolution remitting the dues of members in active service either in the army or navy for the duration of the war. This remission of dues is to date from January 1, 1918. Any dues which may be paid by members who have not been informed of this action will be returned, provided their correct addresses are known. Otherwise the amount will be credited to their accounts and be held subject to their orders.

Co-operation. During December, 1917, there was held in New York City a conference of the representatives of local sections of the American Society of Mechanical Engineers. One of the principal topics discussed at this meeting was the question of co-operation between the local section of the A. S. M. E. and the local engineering society where such existed in the different cities throughout the country. Through the courtesy of Mr. Henry Hutson the Editor has been furnished with a copy of the

minutes of this conference. The relations between the Louisiana Engineering Society and the local section of the A. S. M. E. have always been of the most cordial character, resulting in good to both parties. In view of which it may be of interest to our members to read the remarks of Mr. Louis C. Marburg on the general subject, portions of which are here quoted:

“The by-laws further suggest co-operation, co-operation mainly with other engineering groups like local sections of other national societies and local engineering societies, but also with other organizations of whatever kind for the furtherance of objects benefiting the engineering profession or the community at large. Co-operation with other engineering societies or sections, aside from being a necessity in communities where our sections are too small, lends variety to meetings, helps to secure better papers and avoids duplication of work in many instances. But mainly, it is to be recommended because engineers of different branches should come in closer touch, should know and understand each other better, each other's work and problems and difficulties. They should discuss more the joint interests of our profession, our aims and hopes and ideals. They should plan more for joint work, of which there is plenty. There is standardization, so far almost exclusively done by individual engineering societies. It seems that a great deal could be done by having national societies co-operate to establish national standards, instead of A. I. E. E. standards, S. A. E. standards, A. S. M. E. standards, and whatever they all may be. And do not let us stop at the national frontiers. Let us join with foreign engineers to establish international standards. We are learning much just now regarding the lack of international uniformity, when we are doing so much work for the European nations who have different standards, yes, who even have a different system of measurements. Some beginning has been made, and just now the International Aircraft Standards Board in Washington is doing useful work. But not only for war is such standardization desirable; it is important also in

the work of peace. We have entered into the class of nations that export industrial products to a large extent. Our weakness in manufacturing is special work; our strength quantity manufacture of standardized products. International standardization would be of greater benefit to us than to almost any other nation.

“Co-operation with the other engineers will also help us to increase and to exert the influence of the engineering profession. Strong local engineering societies, to which are affiliated all the sections of the national societies, are the best guardians of the engineer's local interests. Co-operation with non-engineering organizations will also increase the influence of engineers and will make available to the community their services and advice on subjects on which their knowledge is greater and their judgment better than that of the average citizen.

“How far a section or any engineering society should go in taking up subjects not closely related to engineering or the engineering profession, it is of course impossible to advise. When, however, an engineering society takes an official stand, it should be only on a matter affecting the engineer as such, but regardless as to whether it is engineering work or economic and social legislation.

“Hand and hand with co-operation goes the broadening of the engineer. Co-operation widens our horizon, and a wider horizon in turn enables us to co-operate better. I want to make a strong plea for a broader scope of the engineer's interests, for a broader education. I mean not only broader school and college education. I want to plead especially that the engineer, after graduation, continue not only study and interest in engineering subjects other than his own, but also in economic and social questions, which so vitally affect our work. The knowledge we acquire in college is valuable, but the best thing we can take with us from college into after life, as James Bryce once expressed it, is the taste for knowledge. Do not lose that, do not let the young man lose it when he comes from college and when he necessarily must specialize to a great

extent in order to get a start. No period in the world's history has been so under the influence of engineering work and development as the present; during no previous period has the engineer himself depended to such an extent on economic and social conditions as now. Is it then not logical to say that the engineer should and must now be in closer touch with the legislation and administration of country, state and city than ever before? The world is moving just now. When we are fixing prices of food, of fuel, of raw and partly finished products, when we consider control and even operation of our railroads by our government, we certainly have adopted economic ideas not in favor heretofore. When the Conference of Organized Labor is addressed by the President of the United States, and when the executive council of this same organized labor files a resolution outlining a foreign policy for the nation and insisting upon participation in the peace conference by labor delegates, certainly changes are taking place in our country. And with it all, these changes seem but small compared with those across the ocean. Any class of men so vitally affected by economic and labor conditions as the engineers must study these developments, anybody but him who lives in dreamland must reckon with them. Do not deceive yourselves by thinking that except for the one great revolution the changes going on are not so vital and that things may get back to where they were before. Try to compare today with yesterday. If you can discover a milestone in the past, ten or fifteen years ago, which indicates conditions as they were, compare and you will realize the journey we have taken. You are so accustomed to plotting curves. Plot, so to speak, your curves of economic and social changes with the abscissa time. See how they changed from past to present and try to divine where they will lead in future.

"The question of the standing enjoyed by our profession will solve itself if we but broaden and co-operate. In the past the engineer has specialized, and with ability and strenuous effort he has succeeded in doing great things.

But too often it has been someone else who co-ordinated and directed and interpreted his efforts and who, therefore, received, and perhaps to a considerable degree deserved, the credit for success in an enterprise. I am not one of those who believe that advertising the engineering profession is the panacea for these ills. True, the general public has for a long time misunderstood the engineer's work; it has considered him quite generally a man without imagination. As to the general willingness, however, at this time, to concede the engineer a prominent place, there can be little doubt. The war has furnished all the advertising necessary for the engineer."

Annual Reports. This issue of the *Proceedings*, being the first one of the New Year, forms a kind of year book of the activities of the Society. The average man does not read annual reports because they make rather dry reading, but there are some figures in this year's reports which must be of interest to all of us. It is gratifying, for example, to know that the close of the year 1917 shows in the General Reserve Fund a balance of \$1031.69, in the "Proceedings" Fund a balance of \$1226.47, in the Library Fund a balance of \$708.25. Of these reserves \$1500 is in the form of permanent investments, \$250 being deposited in each of four banks in the city on 3 per cent certificates, and \$500 being invested in Liberty 4 per cent bonds. The membership shows a net decrease of only five names from that of the former year in spite of the many changes and shiftings of men brought about by the war. The officers of the Society are to be congratulated on the very excellent showing.



OUR ROLL OF HONOR

- ARPIN, E. A., Cadet, 3rd. Detachment, Aviation Section, American Expeditionary Force, France.
- BATE, H. H., Second Lieutenant, E. O. R. C.
- BRES, E. W., Second Lieut., 114th. Engineers, Camp Beauregard, La.
- BERNARD, MERRILL, P.O.C. Battalion, Fort Leavenworth, Kansas.
- COLEMAN, E. H., Captain E. O. R. C., Camp Pike, Little Rock, Ark.
- COMMAGERE, J. A., Jr.
- CREIGHTON, W. H. P., U. S. Navy, New Orleans.
- DIETTEL, A. A., First Lieut., 114th. Engineers, Camp Beauregard, La.
- FORTIER, L. J., First Lieut., 17th. Field Artillery, Washington, D. C.
- GARSAUD, MARCEL, Major E. O. R. C., Camp Pike, Little Rock, Ark.
- GREGORY, W. B., Major, E. O. R. C., American Expeditionary Force, France.
- GREHAN, B. H., First Lieutenant, E. O. R. C., Camp Pike, Little Rock, Ark.
- GWINN, J. M., Jr., U. S. Aviation Corps, France.
- HAWKINS, E. C., Ensign, U. S. Navy, Pensacola, Fla.
- HORNOT, E. M., First Lieutenant, E. O. R. C., Camp Pike, Little Rock, Ark.
- HOTARD, N. A., First Lieutenant, E. O. R. C., Camp Pike, Little Rock, Ark.
- JOUBERT, C. E., Captain, E. O. R. C., Camp Pike, Little Rock, Ark.
- LEWIS, J. H., Captain, E. O. R. C., Camp Pike, Little Rock, Ark.
- MANLEY, R. S., U. S. Navy, New Orleans Naval Station, New Orleans.
- MULLER, J. F., Officer's Training Camp, Aviation Section, Fort Omaha, Neb.
- NOLTE, R. W., First Lieutenant, Seventh Engineers, Fort Leavenworth, Kansas.
- O'BRIEN, J. A., Second Lieutenant, 117th. Engineers, American Expeditionary Force, France.
- O'NEILL, J. H., Captain, Sanitary Corps, 37th. Division, Camp Sheridan, Ala.
- SHAW, A. M., Major, E. O. R. C., Washington, D. C.
- SILSBEE, J. A., First Lieutenant, S. C. A. S., Wilbur Wright Field, Fairfield, Ohio.
- SPRAGUE, F. E., First Lieut., Ordnance Dept., Fort Hancock, N. J.
- STEM, C. H., Second Lieut., E. O. R. C., American Expeditionary Force, France.
- DE TARNOWSKY, JACQUES, Captain, 350th. Engineers, Camp Travis, Fort Sam Houston, Texas.
- WHITE, THOS. M., Second Lieutenant, C. A. R. C., Fort Casey, Washington.
- WILSON, M. H., Lieutenant.
- WILSON, VENNARD, Second Lieutenant, E. O. R. C.
- WYLER, C. J., Second Lieutenant, Coast Artillery, Fort Pickens, Fla.
- YOUNG, SAMUEL, Captain, E. O. R. C., Camp Lee, Petersburg, Va.

PAPERS AND DISCUSSIONS

ADDRESS OF THE RETIRING PRESIDENT, A. T. DUSENBURY.

Delivered at the Annual Meeting, January 12, 1918.

At the Annual Meeting of our Society held last year, our then retiring President, Mr. Samuel Young, favored us with an interesting and very instructive paper entitled "Why the Engineer? Who Is He and What Is He?" and those of us who heard the address have, I am sure, been more than diligent in their efforts to educate the general public to know the engineer and properly appreciate the dignity of his profession.

At the same meeting we had the privilege of listening to Dr. Ira N. Hollis, President of the Worcester Polytechnic Institute, and also President of the American Society of Mechanical Engineers, who dwelt on the engineer's ideals, his duties and obligations, and if our members did not draw sufficient inspiration from these two addresses to enable them to properly appreciate themselves and thereby aid in the public's appreciation of the engineering profession, I sincerely trust that they attended the meeting of February 12 last and heard the splendid address delivered to us that night by Dr. Lester F. Breckenridge, Professor of Mechanical Engineering in the Sheffield Scientific School of Yale University, entitled "The Engineer, His Opportunity and His Obligations."

Having heard the splendid addresses of these three eminent gentlemen, the members of our Society should certainly feel that their profession is one of which they may well be proud and that they should do all they possibly can to advance it in the estimation of the public at large.

It is needless for me to tell you that the activities of our Society during the past year have been largely influenced by the terrible war now in progress. Early in the year a committee of engineers in each state was appointed, by authority of the Government, to make a survey and tabulate each state's industries, with the idea of ascertaining their possible value to the Government in case of war. This committee for Louisiana consisted of

A. M. Lockett and Arsene Perilliat, members, respectively, of the American Society of Mechanical Engineers and the American Society of Civil Engineers, and also members of the Louisiana Engineering Society, together with Mr. W. L. Howell, of the Louisiana Section of the American Chemical Society. This committee gave the work weeks of untiring effort and a splendid report was prepared by them and forwarded to Washington.

Immediately after the entrance of the United States into the European war, a special preparedness committee from our Society prepared and sent to the membership a blank form which, when filled out, would show the particular fitness of each member for some activity occasioned by the war, and also the member's willingness to serve the Government in the capacity that his respective ability made practicable. These blanks were filled out by a large proportion of our members and were duly sent on to the War Department, where they are available for reference as occasion demands.

At our April meeting Mr. A. M. Shaw, a member of our Society and now a major in the Engineer-Officer Reserve Corps, furnished us with a paper entitled "Preparedness of the Individual," which was very timely and greatly appreciated; and, at the same meeting, we had addresses and discussions by United States military and naval officers, who showed us how pitifully unprepared we as a nation were to enter the war, and those of us present who had always rested secure in our faith in the invincibility of "Uncle Sam" obtained food for most serious thought.

At the May meeting we had the privilege of listening to an illustrated lecture delivered by Prof. Albert G. Van Hecke, Professor of Civil Engineering, University of Louvain, at Louvain, Belgium, on "Life in the Belgian Refugee Camps in Holland." Prof. Van Hecke was in Louvain at the time of the capture and pillage of that beautiful city by the German army, and he was afterwards selected by the Belgian Government to take charge of its refugee camps in Holland. He showed us how these unfortunate people are housed in the camps; how the children are taught and how all are occupied in work which will keep them physically and mentally fit to return to their own country and aid in its rehabilitation after it shall have been restored to them.

He came to us with first-hand information of a very high order, and we who heard him did so with great profit and left the meeting better citizens and better men.

During the year we have also had papers and interesting discussions on the following widely diversified subjects: "Louisiana Waterways and Their Industrial Possibilities," "The Manufacture of Paper from Southern Pine Pulp," "The Manufacture of Cane Sugar," "The Electrification of Steam Railroads," "Ship Construction, with Particular Reference to Local Conditions."

Throughout the past year all our meetings have been exceptionally well attended, but I regret that older members of our Society have not attended as regularly as they might. These older members have had the years of experience in many lines of engineering endeavor that fit them to enter into the evening's discussions and speak with authority on many subjects, and our younger members may thus be given the advantage of this experience to which, as members of this Society, I feel they are entitled. I sincerely hope the coming year will show a better attendance on the part of these older members and that they will feel that, by their attendance and counsel, they can be of inestimable value to our Society at large and to the younger membership in particular.

On account of the war our Society thought best last summer to dispense with the annual outing, which for years past has been such a notable feature of our year's activities. I feel that this omission was a mistake and that there would have been no impropriety in holding the outing as usual. These annual outings afford an opportunity for closer acquaintance among our members which spells so much for the success of an organization such as ours, and at the same time is the means whereby many of our members and their families visit parts of our surrounding country that they never have seen before and perhaps would never see otherwise. This terrible war may and should have a tendency to curtail our frivolities, but it should not deprive us of educational advantages, and I feel that most of our past outings have been of exceptional educational value.

We as a Society may well be proud of the fact that to date the war has called into our country's service nearly 15 per cent of our entire membership, including resident, non-resident, associate, junior and student members, and all of these men are now commissioned officers in the army and navy. A number of them were what I might term our "regulars," men who always attended meetings and whose faces we surely miss at our meetings now, and it may be that before peace is finally declared many more of us will be called upon to assist in such manner as we best can. This war must and will be fought to a glorious finish and the American engineer is, I firmly believe, the greatest factor in this attainment. His energy, initiative, inventiveness and fearlessness now have the supreme opportunity for exemplifying these traditional attributes, and I am sure that America and the whole civilized world will not fail to accord to the American engineer all the praise and glory that are due him, and I further believe that, as a result of his activities in this war, his status will be greatly enhanced and that he will occupy the position in the public's estimation he so rightly deserves.

MEMBERSHIP LIST.

HONORARY MEMBER.

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- STILLMAN W. WHEELOCK, (1914), Manager of Sales, Carnegie Steel Co., 1030 Maison Blanche, New Orleans.

NON-RESIDENT ASSOCIATE MEMBER.

- EDWIN C. BROWN, (1915), Traveling Salesman, 1105 Linwood Blvd., Kansas City, Mo.

RESIDENT JUNIOR MEMBERS.

- JOHN APPLEBY, JR., (1918), 1518 Melpomene St., New Orleans.
- JOHN A. BROOKSHIRE, (1913), Engineer, with Sewerage and Water Board of New Orleans, 1217 St. Roch Ave., New Orleans.
- JAMES J. BULLIUNG, (1915), Draftsman, N. O. Ry. & Lt. Co., 201 Baronne St., New Orleans.
- ASHLEY CALONGNE, (1914), Engineer, with S. A. Calongne & Sons, Paving Contractors, 403 Hibernia Bldg., New Orleans.
- A. HAROLD DELBERT, (1913), 4730 Prytanla St., New Orleans.
- A. M. FROMHERZ, (1915), Engineer, with Fromherz & Drennan, Architects and Builders, 1133 Fourth St., New Orleans.
- H. L. GILBERT, (1917), 8323 Sycamore St., New Orleans.
- H. M. HAYNE, (1914), 3222 Prytanla St., New Orleans.
- FRANK L. HOLT, (1915), Chief Draughtsman and Asst. Engineer, Tract. Dept., N. O. Ry. & Lt. Co., New Orleans.
- E. M. HORNOT, (1912), 1st Lieut., U. S. R. Home address, 1526 Harmony St., New Orleans.
- SAMUEL D. JACKSON, (1916), Estimator, A. M. Lockett & Co., Ltd., 533 Baronne St., New Orleans.
- WILHELM EMILE KOCH, (1913), Engineer, with Julius Koch, General Contractor, 2627 Colliseum St., City.
- R. B. KOHNKE, (1911), Civil Engineer, with John Bless, Contractor, 818 Third St., New Orleans.
- WALTER B. MOSES, (1912), General Manager, A. Marx & Sons, 1645 Tchoupitoulas St., New Orleans.
- SHEPARD F. PERRIN, (1915), General Contractor, 3804 Chestnut St., New Orleans.
- ROBERT A. PIERPONT, (1915), 1036 Napoleon Ave., New Orleans.
- CLIFFORD H. STEM, (1914), 2d Lieut. of Engineers, U. S. R. Home address, 7933 Poplar St., New Orleans.
- ANDREW J. WILD, JR., (1918), 1115 Crete St., New Orleans.
- DAVID W. WIEDMAN, (1917), Port Arthur, Texas.

NON-RESIDENT JUNIOR MEMBERS.

- GEORGE O. ALLAIN, JR., (1916), Inspector of Hulls, U. S. S. B., Hodge Ship Co., Moss Point, Miss.
- G. C. BADGER, (1913), Engineer, with General Fire Extinguisher Co., 1511 W. 38th St., Chicago, Ill.
- F. R. DUVIC, (1916), Engineer, with U. S. Engineer Office, Q. & C. Bldg., New Orleans.
- WILLIAM F. EBLEN, (1916), Civil Engineer, Houston Ltg. & Power Co., Houston, Texas.
- RALPH EARL, (1913), care Morris Knowles, Inc., 1200 Jones Law Bldg., Pittsburg, Pa.
- JACOB F. MULLER, JR., (1912), Officer's Training Aviation Section, Balloon Division, Fort Omaha, Neb. Home address, care United Gas and Electric Engineering Corporation, 2100 First Ave., Birmingham, Ala.
- HERBERT P. NATHAN, (1913), Flying Boat Designer, Curtiss Aeroplane and Motor Corporation. Residence, 117 Highland Ave., Buffalo, N. Y.
- CARL SCHNEIDER, (1916), Assistant Engineer of Mechanical Plant, Bureau of Standards, Washington, D. C.
- LUCIEN J. TROXLER, JR., (1915), 11 Willoughby Ave., Brooklyn, N. Y.
- HORACE M. WHITE, (1915), Asst. Engineer, Louisiana & Arkansas Railway, P. O. Box 112, Stamps, Ark.

STUDENT MEMBERS.

- H. HESTER BATE, 2d Lieut. of Engineers, U. S. R. Home address, 7901 Poplar St., New Orleans.
- EARLE A. BERRY, 3721 D'Hemecourt St., New Orleans.
- JOHN CALLAN, 1712 Baronne St., New Orleans.
- WALTER COOKE, 1025 Alvar St., New Orleans.
- JOSEPH M. GWINN, JR., 7405 Burthe St., New Orleans.
- E. C. HAWKINS, Ensign U. S. Navy. Home address, Tulane University, New Orleans.
- JOSEPH W. JOACHIM, 626 Second St., New Orleans.
- ALBERT J. LEGETT, JR., 1429 Frenchmen St., New Orleans.
- JOHN A. O'BRIEN, E. O. R. C., 117th Regt. Engineers, American Expeditionary Forces, France. Home address, 809 Canal Bank Bldg., New Orleans.
- L. EMILE STOUSE, Resident Inspector, U. S. Shipping Board, 153 Church St., Mobile, Ala.
- FRANK A. TURNER, 4491 Carondelet St., New Orleans.
- VENNARD WILSON, 2d Lieut. of Engineers, U. S. R. Home address, 1221 Constantinople St., New Orleans.
- ALLAN L. WOLFF, 1522 Aline St., New Orleans.
- CHARLES J. WYLER, Lieut. Coast Artillery, Fort Pickens, Fla. Home address, 530 Jackson Ave., New Orleans.

Membership List

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SUMMARY.

Honorary Member	1
Resident Members	129
Non-Resident Members	70
Associate Members	11
Non-Resident Associate Member	1
Junior Members	19
Non-Resident Junior Members	10
Student Members	14
Total	255

PAST OFFICERS.

Presidents.

Sidney F. Lewis.....	1898	C. W. Wood.....	1908
Thos. L. Raymond.....	1899	J. T. Eastwood.....	1909
Henry J. Malochee.....	1900	W. B. Gregory.....	1910
Frank M. Kerr.....	1901	Jas. C. Haugh.....	1911
Alf. F. Theard.....	1902	D. S. Anderson.....	1912
Alf. Raymond.....	1903	A. M. Shaw.....	1913
J. F. Coleman.....	1904	W. H. Williams.....	1914
W. B. Wright.....	1905	L. C. Datz.....	1915
W. H. Hoffman.....	1906	Samuel Young	1916
G. W. Lawes.....	1907	A. T. Dusenbury.....	1917

Vice-Presidents.

C. H. Chamberlain.....	1898-1899	John Riess	1909
Alf. F. Theard.....	1900	John Riess	1910
J. F. Coleman.....	1901	A. M. Lockett.....	1911
W. B. Wright.....	1902-1903	A. M. Lockett.....	1912
W. T. Crofts.....	1904	Wm. H. Williams.....	1913
J. M. Ordway.....	1905	Ole K. Olsen.....	1914
G. W. Lawes.....	1906	Samuel Young	1915
C. W. Wood.....	1907	A. T. Dusenbury.....	1916
J. T. Eastwood.....	1908	John Klorer	1917

Secretary and Librarian.

J. F. Coleman.....	1898-1899	L. C. Datz.....	1909
Gervais Lombard	1900	L. C. Datz.....	1910
John F. Richardson.....	1901	L. C. Datz, Jas. M. Robert.....	1911
G. W. Lawes.....	1902-1903-1904-1905	James M. Robert.....	1912
Marcel Garsaud	1906	James M. Robert.....	1913
L. C. Datz.....	1908	W. T. Hogg.....	1914-1915-1916
J. M. Robert.....	1917		

Treasurers.

Alf. F. Theard.....	1898-899	J. C. Haugh.....	1908-1909-1910
Walter H. Hoffman.....	1900-001	Jas. M. Robert, Ole K. Olsen.....	1911
R. E. DeBuys.....	1902	Ole K. Olsen.....	1912-1913
W. H. Hoffman.....	1903-1904-1905	E. H. Coleman.....	1914-1915-1916
J. C. Haugh.....	1906-1907	John Klorer	1916
Ole K. Olsen.....		1917	

Directors.

Thos. L. Raymond.....	1898	W. B. Gregory.....	1909
A. C. Bell.....	1898-1899	Marcel Garsaud	1908-1909-1910
F. T. Llewellyn.....	1898	J. W. Armstrong.....	1909-1910
Frank M. Kerr.....	1899-1900	A. M. Lockett.....	1910
Henry J. Malochee.....	1899	A. M. Shaw.....	1911-1912-1914
T. H. Tutwiler.....	1900-1901	L. C. Reed.....	1910-1911-1912
Ernest D. Ivy.....	1900-1901-1902	D. S. Anderson.....	1911-1913
Alf. Raymond	1901-1902	W. B. Gregory.....	1912-1913-1914-1915-1916
John M. Ordway.....	1902-1903-1904	L. C. Datz.....	1912-1913-1914-1916
A. C. Duval.....	1903-1904-1905	A. T. Dusenbury.....	1913-1914
W. McCorkindale	1903	Ole K. Olsen.....	1915-1916
C. W. Wood.....	1904-1905-1906	W. H. Williams.....	1915
E. L. Jahneke.....	1905-1906-1907	R. S. Manley.....	1916-1917
John Riess	1907-1908, 1917	Samuel Young	1917
J. M. Robert.....		1917	

DECEASED.

CHARLES H. DICKINSON, C. M., December 13, 1898.
 EDGAR L. LAMBERT, R. M., March, 1901.
 H. BOLIVAR THOMPSON, C. M., July 10, 1901.
 THOS. L. RAYMOND, C. M., November 15, 1901.
 GEO. A. LEDERLE, R. M., March 27, 1905.
 JOHN T. NORTON, R. M., July, 1905.
 FRANCIS V. PELLERIN, R. M., March 31, 1908.
 JUDGE JOHN CLEGG, Assoc. M., October 5, 1908.
 JOHN MORSE ORDWAY, Hon. M., July 4, 1909.
 HENRY B. RICHARDSON, C. M., August 22, 1909.
 CHARLES W. WOOD, R. M., April 3, 1911.
 BENJAMIN MORGAN HARROD, C. M., September 7, 1912.
 JOHN D. WHITE, N. R. M.
 JAMES C. HAUGH, R. M., July 6, 1913.
 J. C. HENRY, N. R. M., December, 1914.
 REINIER SWART, N. R. M., August, 1917.
 FOSTER OLROYD, R. M., October, 1917.

MINUTES OF MEETINGS AND BUSINESS OF THE SOCIETY.

Meeting of the Board of Direction, December 10, 1917.

The meeting was called to order with President Dusenbury in the chair and the following members present: Messrs. Klorer, Olsen, Riess and Robert. The following applications were ordered passed to the ballot subject to the approval of the Membership Committee—Resident members, E. S. Lanphier and James A. Young.

A letter from the Federal Tax Collector was read stating that the membership of the Society was not liable for War Tax upon dues.

The resignation of Mr. G. A. Seaver was referred to Mr. Olsen with a view of having Mr. Seaver withdraw the same. The application of Mr. P. G. Jeffries to transfer from Non-Resident to Resident was granted, to take effect January 1, 1918. The application of Mr. J. F. Coleman to transfer from Resident to Non-resident was granted to take effect January 1, 1918.

A letter from the Ross-Gould Co., making a proposition to secure free advertisement in the Proceedings was respectfully declined.

The following bills were approved for payment:

D. S. Anderson, Aug., Oct., and Dec. issues of Proceedings.....	\$150.00
M. Clay Le Jeune, reporting Sept. meeting.....	12.50
J. M. Robert, Nov. Salary and incidentals.....	33.50

Upon motion of Mr. Olsen, seconded by Mr. Klorer, the Board of Direction recommended to the Society that commencing with January 1, 1918, the dues of all members who have entered the Military Service be remitted for the duration of the war. It being understood that this applies only to such members who have entered the service or entered a branch of the service which requires the wearing of the Army or Navy uniform.

There being no further business, the meeting adjourned.

J. M. ROBERT, Secretary.

Regular Meeting of the Society, Dec. 10, 1917.

The regular meeting of the Society was called to order with President Dusenbury in the chair and twenty-eight members and guests present. The minutes of the previous meeting were read and approved. The report of the committee appointed to draft resolutions on the death of Mr. Foster Olroyd was read by Mr. E. F. Delery. These resolutions were adopted and are made a part of these minutes.

The recommendation of the Board of Direction with reference to the remission of dues for members in the Military Service was adopted upon motion of Mr. Burwell, seconded by Mr. Carr.

Upon motion, duly seconded, it was decided to have a Smoker after our Annual Meeting, and the President was authorized to appoint a committee with power to act in the matter.

A letter from the War Department was read requesting that old tracings be forwarded to the Red Cross Headquarters. It was decided to publish this letter in the Proceedings.

Nomination of officers for the year 1918 was then held, with the following results:

For President—	1st Ballot
John Klorer	13
John Riess	1
Henry Hutson	1
J. M. Robert	1

For Vice-President—	1st Ballot	2nd Ballot
R. S. Manley	5	9
Henry Hutson	3	1
E. W. Carr	1	7
John Riess	5	---
J. M. Robert	1	---
O. K. Olsen	1	---

For Secretary—	1st Ballot
J. M. Robert	17
F. A. Muth	1

For Treasurer—	1st Ballot
Ole K. Olsen	16
John Riess	2

For Director (to serve 3 years)—	1st Ballot
E. F. Delery	2
Henry Hutson	9
D. S. Anderson	3
John Riess	1
E. W. Carr	1

The exercises of the evening consisted of an interesting talk by Lieutenant J. F. Ward, Officers' Reserve Corps, detailing his experiences in training camp. The talk was very interesting and enjoyed by all present. At the conclusion, a vote of thanks was tendered Mr. Ward.

There being no further business, the meeting adjourned.

J. M. ROBERT, Secretary.

New Orleans, La., Dec. 10, 1917.

To the President and Members of the Louisiana Engineering Society,
New Orleans, La.

Gentlemen:—

The undersigned committee, appointed to draft resolutions upon the death of Mr. Foster Olroyd, a member of the Society, beg leave to submit herewith a short sketch of his life and work.

It is recommended that a copy of this Memorial be sent to his family.

Yours Respectfully,

THOMAS L. WILLIS,
EUGENE F. DELERY,
ALFRED RAYMOND,

Committee.

FOSTER OLROYD.

Mr. Olroyd, the son of Francis Olroyd and Jane Hannah, was born in New Orleans on September 20th, 1861. His father was an Englishman who came to America in 1829.

Mr. Olroyd's early education was very meager. He reached school age just two or three years after the close of the Civil War, and was sent to the public schools, which, it may be said, were very poor at that time. He attended these schools until he was about thirteen years of age, when his father died. In order to help support his widowed mother and his younger brother and sister, the boy, with remarkable manfulness, left school at once and obtained a position in a gun store. Later he obtained employment in the Western Union Telegraph Company in the construction department, and his position afforded him his first opportunity of learning something of the science of electricity. He possessed an exceptionally quick mind and a most retentive memory and he soon acquired a more than ordinary knowledge of the art of telegraphy as known in the seventies and early eighties. In 1878, his younger brother died of yellow fever, so that the whole burden of the support of his mother and sister was now upon him, a lad of only seventeen years of age.

In 1889 he obtained a position in the power house of the old Edison Electric Illuminating Company, which at the time was located on Baronne Street, opposite the present De Soto Hotel. In 1894 he was made Superintendent of the shop of the Southern Electrical Manufacturing and Supply Company. In 1898 he was made Superintendent of the Algiers Water Works and Electric Light Company, and also the Algiers Ice Plant. These plants he operated with distinct success. In 1900 he was appointed City Electrician, which office he held up to the day of his death on October 8th, 1917.

Mr. Olroyd's work as City Electrician is known to many. He did much towards standardizing safety methods in electrical work in this city, and he was uniformly just in all his dealings with construction men. During the last three years, his time was devoted largely to the new lighting system for New Orleans. In spite of failing health, he gave himself up to this work with a zeal and energy that was truly remarkable, never sparing himself, often working far into the night, and only giving up when his malady had completely robbed him of the strength to go to his office. He knew he could not live, but this did not deter him from spending the last bit of strength remaining to him in order to complete the work he had undertaken to do.

In his death this city has lost a good citizen and a faithful and useful public servant. He became a member of the Society in 1901.

Mr. Olroyd was married in 1888 to Miss Florence Krapp, who with eight children survive him.

Regular Meeting of the Board of Direction, Jan. 12, 1918 .

The regular meeting of the Board of Direction was called to order with President Dusenbury in the chair and the following present: Messrs. Dusenbury, Manley, Klorer and Robert.

Ballots for new members were opened and the following were elected to membership:

Resident Members—Robert H. Hepinstall, Theo. O. Hotard, Edward S. Lanphier, Clarence H. Robinson, Edwin J. H. Rodriguez, Leon C. Weiss, James A. Young.

Non-Resident Members—Edward A. Arpin, M. A. Beranger, Lee A. Christy, Adolph E. Hartman, John Y. Snyder.

Junior Members—John Appleby, Jr., Andrew J. Wild, Jr.

Transferred From Student to Junior—David W. Weidman.

Transferred From Junior to Resident—Edwin J. Fisher.

The resignation of Mr. French was accepted.

The membership of Mr. Fred E. Smith was ordered transferred from Resident to Non-Resident grade.

A letter from Mr. Thos. White resigning because of his having entered the army was read and the Secretary was directed to notify Mr. White that he will be carried on the roll of the Society without payment of dues for the duration of the war.

The Annual Reports of the Secretary and Treasurer were read for the information of the Board. There being no further business, the meeting adjourned.

J. M. ROBERT, Secretary.

Regular Meeting of the Society, Jan. 12, 1918.

The regular meeting of the society was called to order with 15 members and guests present.

The Annual Reports of the Secretary and Treasurer were read.

Mr. Henry Hutson made an informal report on his recent meeting with the Power Test Code held in New York.

Ballots for officers for the ensuing year were then opened. Messrs. Barelli and Williams were appointed tellers. As a result of the ballot, the tellers announced the following results:

For President:

Mr. John Klorer.....	46
Mr. Ole K. Olsen.....	1
For Vice-President, Mr. R. S. Manley.....	48

For Treasurer:

Mr. Ole K. Olsen.....	48
Mr. John Klorer.....	1

For Secretary, Mr. James M. Robert..... 48

For Director, Mr. Henry Hutson..... 47

There were 48 formal ballots and 18 informal ballots.

There being no further business, the Society adjourned to the Cosmopolitan Hotel for the Annual Smoker, which was an event enjoyed by all present.

J. M. ROBERT, Secretary.

ANNUAL REPORT OF THE SECRETARY.

Year 1917.

January 12, 1918.

To the Board of Direction, Louisiana Engineering Society.
Gentlemen:—

As Secretary of the Society, I beg to submit the following report for the year 1917:

The duties of the Secretary were filled by Mr. W. T. Hogg for the first half of the year, and upon his resignation, the undersigned was elected.

During the year the Board of Direction held 9 regular and 2 special meetings with an average attendance of 5. The Society held 10 regular meetings with an average attendance of 47, maximum 96, minimum 25.

GRADE—	On Roll Jan., 1917.	Elected.	Reinstated.	Transferred To.	Transferred From.	Dropped.	Resigned.	Died.	Present Roll.
Resident	133	10	0	7	9	8	3	1	129
Non-Resident	65	7	0	7	2	4	2	1	70
Associate	12	0	0	0	0	1	0	0	11
Non-Res. Asso.	1	0	0	0	0	0	0	0	1
Junior	20	3	0	2	4	2	0	0	19
Non-Res. Junior.....	10	0	0	1	0	1	0	0	10
Student	19	0	0	0	4	1	0	0	14
Totals.....	260	20	0	17	19	17	5	2	255

During the year, Col. Sidney F. Lewis, our first President, was elected an Honorary Member, bringing our present membership to 255.

It is with regret that we report the deaths of Mr. Foster Olroyd, Resident Member, and Mr. Reinier Swart, Non-Resident Member.

Submitted separately is the Treasurer's Report, which shows a balance January 1, 1918, of \$625.21. Add to this checks received since January 1 and not yet transferred to the Treasurer, \$87.91, and the total cash on hand is \$713.12.

During the year \$250.00 was deposited in each of the following banks for investment: Hibernia Bank and Trust Co., Metropolitan Bank, New Orleans National Bank and Interstate Trust and Banking Co. \$500.00 was invested in Liberty Bonds, bringing our investment account to \$1500.00.

Attached hereto are statements showing the operating results of the General Fund, Proceedings Fund, Library Fund, a Cash Statement showing receipts and expenditures, and a statement of the financial condition of the Society:

The following technical exercises were held:

Feb. 12, 1917—"The Engineer, His Opportunity and His Obligation," by Prof. L. P. Breckenridge, of Yale University.

March 12, 1917—"Manufacture of Cane Sugar," by Mr. Edgar Stream.

April 9, 1917—"Preparedness of the Individual," by Mr. A. M. Shaw.

May 14, 1917—"Life in the Belgian Refugee Camps in Holland," by Prof. Albert G. Van Hecht, of Louvain University.

June 11, 1917—"Electrification of Steam Railroads," by Mr. John Seaman.

Sept. 10, 1917.—“Notes on Ship Building,” by Mr. F. J. French.

Oct. 8, 1917.—“Louisiana Waters and their Industrial Possibilities,” by Mr. Welman Bradford.

Nov. 12, 1917.—“Initiation of the Paper Making Industry from Southern Pinewood,” by Mr. R. E. Hartman.

Dec. 10, 1917.—Lt. J. F. Ward gave a detailed account of his experiences in the Officers' Training Camp.

Your Secretary desires to thank the officers and members of the Society for their kind co-operation during the past year. It has been an honor and a privilege to serve you and I thank you.

Respectfully submitted,

J. M. ROBERT, Secretary.

FINANCIAL CONDITION OF THE SOCIETY, JANUARY 1, 1918.

Assets.

Cash on hand.....	\$625.21	
Membership accounts receivable.....	655.75	
Advertisers accounts receivable.....	456.82	
Investments	1,500.00	
Total assets.....	\$3,237.78	\$3,237.78

Liabilities.

Credit balances in advertisers' account.....	\$ 50.02	
Credit balances in Membership account.....	22.75	
Library Fund.....	708.25	
Proceedings Reserve Fund.....	1,226.47	
Accounts payable.....	198.60	
Total liabilities.....	\$2,206.09	\$2,206.09

Balance in General Fund.....	\$1,031.69
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General Reserve Fund.

Balance from 1914.....	\$ 165.00
Balance from 1915.....	189.15
Balance from 1916.....	377.45
Balance from 1917.....	299.49
	\$1,031.69

Proceedings Reserve Fund.

Balance from year 1915.....	\$ 112.20
Balance from year 1916.....	546.13
Balance from year 1917.....	568.14
	\$1,226.47

PROCEEDINGS FUND.**Results of Year 1917.****Revenues—**

Advertisements	\$1,496.02
Subscription, membership	507.01
Sales of Proceedings.....	2.45

Total revenues.....	\$2,005.48
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Expenses—

Salary of Editor and Secretary.....	\$ 360.00
Printing and mailing Proceedings.....	901.94
Stenographers' fees	122.50
Miscellaneous expenses	52.90

Total expenses	\$1,437.34
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Net revenue 1917.....	\$ 568.14
Add revenue 1915.....	112.20
Add revenue 1916.....	546.13

Balance in Proceedings Reserve Fund.....	\$1,226.47
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GENERAL FUND.**Results for Year 1917.**

Revenues—	
Dues, membership	\$2,277.75
Entrance fees, membership.....	204.00
Banquet or smoker.....	210.00
Total revenues.....	\$2,691.75
Expenses—	
Subscription to Proceedings.....	\$ 507.01
Library Fund appropriation.....	480.00
Salary of Secretary.....	300.00
Printing and postage.....	227.85
1917 Smoker expense.....	279.91
Miscellaneous expenses	42.20
Refreshments	45.55
Exchange	8.85
Losses on members dropped.....	128.90
Dues cancelled during military service.....	6.00
Dues refunded	66.50
Total expenses	\$2,092.77
Net balance, 1917.....	\$ 598.98
One-half appropriated to Library Fund.....	\$ 299.49
One-half credited to General Fund.....	299.49
Total.....	\$ 598.98

ANNUAL STATEMENT OF LIBRARY FUND, JANUARY 1, 1918.**Revenues—**

Jan. 1, 1917. Balance.....	\$.01
Revenue from membership fines.....	.40
Revenue from General Fund.....	480.00
One-half of balance General Fund, 1917.....	299.49

Total revenues..... \$ 779.90

Expenditures—

Feb. 17. Sub. Engineering and Contracting.....	\$ 3.00
Feb. 17. Sub. Municipal Engineering.....	2.00
Feb. 17. Sub. American Architect.....	8.00
Feb. 17. Sub. Railway Age Gazette.....	5.00
Feb. 17. Sub. Engineering Index.....	3.00
Mch. 14. Missing magazines	.70
April 7. Sub. Electric Railway Journal.....	3.00
July 7. Owen Gernon, binding magazines.....	16.75
Oct. 5. Hole's Distribution of Gas.....	7.50
Oct. 5. Sub. American Ry. Engineering Assn.....	6.50
Nov. 15. Library cards	1.20
Dec. 19. Miss Freret, work in library.....	15.00

Total expenses \$ 71.65

Balance in Library Fund..... \$ 708.25

ANNUAL STATEMENT OF CASH ACCOUNT.

Receipts—		
1917 Dues, membership.....	\$1,577.70	
1917 Entrance fees, membership.....	174.00	
1916 Balances, membership.....	417.94	
1917 Banquet assessment, membership.....	192.00	
Miscellaneous membership account.....	2.40	
Smoker expense	2.00	
Advertisers in Proceedings.....	1,308.34	
Other payments to Proceedings.....	2.45	
Miscellaneous payments	.10	
Total receipts, 1917.....	\$3,676.93	\$3,676.93
Deduct exchange charges.....		8.85
Net receipts		\$3,668.08
Add Treasurer's balance, 1916.....		937.18
		\$4,605.26
Total warrants issued this year.....	\$3,981.55	
Less check returned.....	1.50	
		3,980.05
Balance Jan. 1, 1918.....		\$ 625.21
Add collections Jan. 1 to date.....		87.91
Cash on hand Jan. 12, 1918.....		\$ 713.12

ANNUAL REPORT OF THE TREASURER.

Year 1917.

New Orleans, January 11th, 1918.

To the President, Louisiana Engineering Society, City:

Dear Sir:

As per requirements of Article No. 4 of the Constitution, I have the honor to submit the following report covering receipts and disbursements for the period January 8, 1917, up to and including January 10, 1918:

Received from Secretary—			Deposited Citizens Bank.	Deposited Bank of Orleans.	Ex- change Charged
Feb. 6th.	Memo 1 to 5.....	\$ 464.05			\$.35
Feb. 6th.	Memo 6 to 8.....			249.23	1.30
Feb. 26th.	Memo 9 to 11.....	196.40			.45
Feb. 26th.	McGraw Hill	.35			
Mch. 12th.	Memo 12, 13.....			196.56	.10
Mch. 20th.	Memo 14, 15.....	167.74			.30
April 11th.	Memo 16 to 18.....			239.25	.10
April 18th.	Memo 19 to 23.....	301.00			1.45
May 8th.	Memo 24 to 26.....			210.80	.30
June 12th.	Memo 27 to 29.....	186.84			.30
July 24th.	Memo 29-A			72.64	.05
July 24th.	Memo 30 to 33.....			218.44	.70
Aug. 29th.	Memo 30 to 33.....	39.50			.60
Oct. 30th.	Memo 34 to 37.....			332.73	.90
Oct. 30th.	Memo 38 to 42.....	282.21			1.15
Nov. 28th.	Memo 43, 44.....	85.17			.35
Dec. 14th.	Memo 45 to 47.....	93.38			.20
Dec. 11th.	Memo 45 to 47.....			164.97	.10
Jan. 4th.	Memo 48, 49.....	178.27			.25
			\$1,993.91	\$1,684.62	\$8.95
Total received Feb. 6th, 1917, to Jan. 4th, 1918.....				\$3,678.53	
Less exchange				8.95	
				\$3,669.58	
Balance on hand as per Treasurer's Report, Jan. 8,					
1917.....				937.18	
					\$4,606.76

Disbursements from January 26th, 1917, to January 1st, 1918.

No.		
1.	M. C. LeJeune.....	\$ 31.00
2.	Tulane University Press.....	172.35
3.	Tulane University Press.....	78.25
4.	American Railway Eng. Assn.....	17.50
5.	Professional memoirs	19.00
6.	American Society for Testing Materials.....	8.80
7.	Fabacher's New Rathskeller.....	12.90
8.	W. T. Hogg.....	38.50
9.	Cosmopolitan Hotel	156.30
10.	M. C. LeJeune.....	29.00
11.	Robert H. Scott.....	8.50
12.	Tulane University Press.....	31.75
13.	Engineering & Contracting.....	3.00
14.	Engineering Publishing Co.....	2.00
15.	American Architect	8.00
16.	Railway Age Gazette.....	5.00
17.	Industrial Management	3.00
18.	W. T. Hogg.....	32.50
19.	Tulane University Press.....	211.35
20.	Tulane University Press.....	50.60
21.	Ole K. Olsen.....	94.76
22.	Fabacher's New Rathskeller.....	6.25
23.	W. T. Hogg.....	33.20
24.	Hibernia Bank & Trust Co.....	250.00
25.	Metropolitan Bank	250.00
26.	New Orleans National Bank.....	250.00
27.	Interstate Trust & Banking Co.....	250.00
28.	Electric Railway Journal.....	3.00
29.	Frank Norman	1.20
30.	Tulane University Press.....	29.80
31.	W. T. Hogg.....	32.50
32.	Tulane University Press.....	140.10
33.	Tulane University Press.....	62.20
34.	M. C. LeJeune.....	55.00
35.	Fabacher's New Rathskeller.....	6.25
36.	James M. Robert.....	6.50
37.	W. T. Hogg.....	33.50
38.	Bank of Orleans.....	250.00
39.	Citizens Bank & Trust Co.....	250.00
40.	W. T. Hogg.....	32.50
41.	M. C. LeJeune.....	5.00
42.	D. S. Anderson.....	150.00
43.	Owen Gernon Co.....	16.75

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44. Fabacher's New Rathskeller.....	16.40
45. Tulane University Press.....	178.79
46. James M. Robert.....	7.50
47. James M. Robert.....	30.00
48. Fabacher's New Rathskeller.....	7.05
49. D. Van Nostrand & Co.....	7.50
50. Tulane University Press.....	4.75
51. Fabacher's New Rathskeller.....	9.60
52. American Ry. Eng. Assn.....	6.50
53. James M. Robert.....	60.00
54. M. C. LeJeune.....	10.00
55. Library Bureau	1.20
56. Tulane University Press.....	260.20
57. James M. Robert.....	38.50
58. D. S. Anderson.....	150.00
59. M. C. LeJeune.....	12.50
60. James M. Robert.....	33.50
61. Miss C. T. Freret.....	15.00
	\$3,977.80
May 21st. Check from E. J. Levy returned.....	3.75
	\$3,981.55
Total receipts	\$4,606.76
Total disbursements	3,981.55
	\$ 625.21
Check account in Bank of Orleans, Jan. 12, 1918.....	\$ 188.83
Check account in Citizens Bank, Jan. 12, 1918.....	436.38
	\$ 625.21
Deposit on 3% Certificate, Hibernia Bank.....	\$ 250.00
Deposit on 3% Certificate, N. O. National Bank.....	250.00
Deposit on 3% Certificate, Interstate Bank.....	250.00
Deposit on 3% Certificate, Metropolitan Bank.....	250.00
Five 4% Liberty Bonds at Citizens Bank.....	250.00
Five 4% Liberty Bonds at Bank of Orleans.....	250.00
Total balance.....	\$2,125.21

Respectfully submitted,

OLE K. OLSEN, Treasurer.

The Proceedings of the Louisiana Engineering Society

Published bi-monthly, February, April, June, August, October, December,
under the auspices of the Committee on Publication.

DOUGLAS ANDERSON, Editor.

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New Orleans, La.

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PROCEEDINGS OF THE LOUISIANA ENGINEERING SOCIETY

VOL. IV

APRIL, 1918

No. 2

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EDITORIAL NOTES AND COMMENT

The Industrial Canal. Mr. Lockett's interesting paper, supplemented by the discussion of Mr. Parker and members of the Society and published in this issue of the *Proceedings*, constitutes a valuable addition to the general discussion of this very important project. The idea of a canal connecting the Mississippi River with the waters of Lake Pontchartrain is a proposition that has come up periodically for discussion for many years. The old idea, however, was to have a waterway simply for purposes of navigation in order to bring the lake traffic directly to the wharves along the river front. With the advent of the war and the increased interest in shipbuilding the project has become greatly enlarged, and the problem of transferring the lake traffic into the river has become of somewhat minor importance in comparison with the great possibilities of the canal as a location for the establishment of new industrial enterprises. This idea is embodied in the name we now give it, The Industrial Canal.

For reasons that are stated in Mr. Lockett's paper the river front in New Orleans is not available for the establishment of private industrial enterprises, such general use being distinctly precluded by the Civil Code of Louisiana. Furthermore, the use of the Mississippi River at New Orleans as a location for shipyards for the construction of large vessels presents to the minds of many prominent engineers almost insuperable difficulties on account of the physical conditions arising from the yearly rise and fall of the water level of the river.

The Industrial Canal will solve both of these problems and, furthermore, give the very greatest impetus to the development and establishment of many other industrial and manufacturing enterprises along its banks.

Too much credit cannot be given to the men who have worked so arduously and consistently to secure for New Orleans this great development, among the very foremost of whom is Mr. Walter Parker. He long ago saw the possibilities of such a canal in all its varied phases and it must, therefore, be a source of gratification to him to see the beginning of the realization of his plans and ideas.

The Society Pledges Its Co-operation. Closely connected with the development of the Industrial Canal is the problem of making New Orleans a prominent shipbuilding center. The Society places itself on record in its desire to co-operate in every way in the solution of this problem through the following resolution passed at a special meeting of the Board of Direction, held February 13, 1918:

"Whereas, A serious and determined effort is being made by the New Orleans Association of Commerce and other representative commercial and civic bodies, and by a committee of New Orleans' citizens to induce the United States Shipping Board to select or designate New Orleans as a shipbuilding site, and

"Whereas, It is a well recognized fact that one of the most potent factors governing the selection of a location for such an enterprise is the available supply of technical

men as well as of trained and skilled labor obtainable in New Orleans and vicinity.

"Be It Resolved, That the Louisiana Engineering Society records its hearty approval of this effort and tenders its assistance and support as a Society to the above committee and citizens, in the furtherance of their object, and,

"Be It Further Resolved, That the Secretary of this Society forward with these resolutions a complete list of the members of the Society for the information of those interested, as indicative of the engineering and technical talent that can be drawn from, in the event that favorable action is taken by the United States Shipping Board."



OUR ROLL OF HONOR

APPLEBY, JOHN, Location unknown, Maybe in France.
ARPIN, E. A., Cadet, 3rd. Detachment, Aviation Section, American Expeditionary Force, France.
BATE, H. H., Second Lieutenant, E. O. R. C.
BRES, E. W., Second Lieut., 114th. Engineers, Camp Beauregard, La.
BERNARD, MERRILL, P.O.C. Battalion, Fort Leavenworth, Kansas.
COLEMAN, E. H., Captain E. O. R. C., Camp Pike, Little Rock, Ark.
COMMAGERE, J. A., Jr.
CREIGHTON, W. H. P., U. S. Navy, New Orleans.
DIETTEL, A.A., First Lieut., 114th. Engineers, Camp Beauregard, La.
FORTIER, L. J., First Lieut., 17th. Field Artillery, Washington, D. C.
GARSAUD, MARCEL, Major E. O. R. C., Camp Pike, Little Rock, Ark.
GREGORY, W. B., Major, E. O. R. C., American Expeditionary Force, France.
GREHAN, B. H., 1st Lieut., E. O. R. C., Camp Pike, Little Rock, Ark.
GWINN, J. M., Jr., U. S. Aviation Corps, France.
HAWKINS, E. C., Ensign, U. S. Navy, Pensacola, Fla.
HORNOT, E. M., First Lieutenant, 312th Engineers Camp Pike, Little Rock, Ark.
HOTARD, N. A., 1st Lieut., E. O. R. C., Camp Pike, Little Rock, Ark.
JOUBERT, C. E., Captain, 312th Eng's Camp Pike, Little Rock, Ark.
LEWIS, J. H., Captain, E. O. R. C., Camp Pike, Little Rock, Ark.
MANLEY, R. S., U. S. Navy, New Orleans Naval Station, New Orleans.
MULLER, J. F., Officer's Training Camp, Aviation Section, Fort Omaha, Neb.
NOLTE, R. W., First Lieutenant, Seventh Engineers, Fort Leavenworth, Kansas.
O'BRIEN, J. A., Second Lieutenant, 117th. Engineers, American Expeditionary Force, France.
O'NEILL, J. H., Captain, Sanitary Corps, 37th. Division, Camp Sheridan, Ala.
SHAW, A. M., Major, E. O. R. C., Washington, D. C.
SHUTTS, FRED N., Lieutenant First Artillery Corps Park, Camp Jackson, S. C.
SILSBEE, J. A., First Lieutenant, S. C. A. S., Wilbur Wright Field, Fairfield, Ohio.
SPRAGUE, F. E., First Lieut., Ordnance Dept., Fort Hancock, N. J.
STEM, C. H., Second Lieut., E. O. R. C., American Expeditionary Force, France.
DE TARNOWSKY, JACQUES, Captain, 350th. Engineers, Camp Travis, Fort Sam Houston, Texas.
WHITE, THOS. M., Second Lieutenant, C. A. R. C., Fort Casey, Washington.
WILSON, M. H., Lieutenant.
WILSON, VENNARD, Second Lieutenant, E. O. R. C.
WOLFF, ALLAN L., Engineer Corps, U. S. A.
WYLER, C. J., Second Lieutenant, Coast Artillery, Fort Pickens, Fla.
YOUNG, SAMUEL, Captain, E. O. R. C., Camp Lee, Petersburg, Va.

PAPERS AND DISCUSSIONS

THE NEW ORLEANS INDUSTRIAL CANAL.

By A. M. LOCKETT.

Read before the Society March 11, 1918.

As I am not in any way connected with the engineering of this project, I shall not attempt to discuss the design or the construction of the canal itself.

I am interested in this project more particularly as the chairman of the Industrial Department of the Association of Commerce, and it is rather in the guise of the business man than the engineer that I appear here tonight.

I shall undertake to contribute some additional information to what is generally known on the following topics:

1st—The reasons for this canal.

2nd—The history of the project.

3rd—The industrial advantages which the canal will afford New Orleans.

Since the canal is to be constructed and operated by the Board of Port Commissioners, it might be interesting to furnish some information with reference to the functions of the Board of Port Commissioners, or the "Dock Board," as it is commonly known.

For a long period prior to the year of 1896 the river front of New Orleans was in the hands of a private corporation operating under certain restrictions imposed by the State and under the supervision of officials appointed by the parishes embraced in the limits of the port.

In the year 1896, by Act No. 70 of the Legislature, the Board of Port Commissioners was created. The reason for such board, as stated in the act, was because "the supervision and control of an intelligent Board of State Commissioners could consolidate the services of Harbor Masters and Wardens, Wharf Superintendents and Wharfingers of three parishes into one set of competent employees, and could, at a reduced expense, better operate and improve the wharves and other terminal facilities in the interest of commerce."

Under this act the Board of Commissioners of the Port of New Orleans shall consist of five members who must be citizens of the United States and reside within the port limits of New Orleans in the parishes of Orleans, Jefferson or St. Bernard, and at the time of their appointment must be prominently identified with the commerce or business interests of the port of New Orleans.

Under the original act one of these commissioners was appointed for the term of three years, one for four years, one for five years, one for six years and one for seven years.

At the expiration of their terms their successors were appointed by the Governor for a period of five years.

This arrangement as to term of office has since been modified, and at the present time the members of this Board can be removed at the will of the Governor.

It is, in my opinion, not out of place here to express the hope that at the next term of the State Legislature the provision of the original act governing the tenure of office of members of the Board be restored, for reasons which are quite obvious.

This Board has most comprehensive powers. As stated in the act and confirmed by constitutional amendment, the Board of Commissioners have the power to regulate the commerce and traffic of New Orleans in such a manner as may in their judgment be best for its maintenance and development. They enjoy all the rights, powers and immunities incident to corporations and they are empowered to do almost anything which in their judgment is necessary for the good of the commerce of the port.

The members serve without compensation.

Appointment upon this Board is justly considered a very high honor, and so far in the history of this important organization there has been no instance where a member has failed in any respect to faithfully and efficiently perform the duties assigned to him.

It has been the consistent policy of the Board of Port Commissioners to encourage in every way not only the growth of the overseas and river commerce of the port, but its attitude toward industrial establishments has been to afford every privilege consistent with the full protection of the rights of the public.

It is generally understood by citizens of Louisiana that for

some reason the river fronts are not available for industrial uses, but the reasons therefor are not very clear.

In order that I may give absolutely dependable information on this subject, I interviewed Mr. Jas. Wilkinson, Attorney for the Board of Port Commissioners, and am pleased to set forth here what Mr. Wilkinson had to say on the subject:

"Under Article 455 of the Civil Code of Louisiana, the banks of all navigable rivers are public and the public has there a servitude of use, although ordinarily the naked ownership of the land is in the riparian proprietor. The riparian proprietor (as decided by the Supreme Court of Louisiana in *Ruch vs. the City of New Orleans*, 43 Louisiana Annual Reports, Page 280), never acquires a complete dominion over the river front, but holds the property *sub-modo*, that is, subject to this right of public use.

"This rule has descended to us from the earliest settlement of Louisiana, all French and Spanish grants having been made with this reservation.

"In all municipalities of over 5,000 population this rule in Louisiana is, by Article 290 of the Louisiana Constitution, made much more stringent, requiring that before the riparian proprietor can erect any structures on the river front he must secure the joint consent of the Levee Board and the governing authority over the public wharves, which, in New Orleans, is the Board of Port Commissioners.

"The rule here stated applies to the frontage of all navigable streams, and while the Supreme Court has sanctioned a private lease of the river front in one or more instances in New Orleans and also in Baton Rouge, it specifically stated that the use was temporary in its nature and was justified as being in the aid of commerce.

"The proposed industrial canal, however, will not be subject to this restriction, since the very *raison-d'être* of the canal is for industrial purposes which will require long time leases."

The conditions with respect to the river fronts of Louisiana as here stated by Mr. Wilkinson are facts passed upon by the highest court, so that any plans for the industrial development of Louisiana must of necessity include recognition of these conditions.

Since nearly all large industrial institutions require water front sites, the practical operation of the law has been to prevent the selection of New Orleans as suitable location.

There can be no question about the wisdom of these laws with respect to water-borne commerce, but there is ample reason for the belief that these laws have been a very great handicap in the general industrial development of New Orleans.

New Orleans has been placed in the novel position of being compelled to reject offers of large industrial establishments to locate here because those establishments have insisted upon the actual fee simple ownership and unrestricted use of the river front, which privilege cannot be conceded under the law.

This situation has prevailed notwithstanding the fact that we have here many miles of river front not needed now by the commerce of the port and not likely to be needed for many years to come.

As a general proposition the people of the community had become reconciled to this situation and consoled themselves in the thought that while this public ownership of the river front might prevent the location here of some manufacturing plants, the great advantages to us of public ownership of the wharves would more than offset these disadvantages, and the subject had been practically dropped by the public.

As bearing upon the need of the industrial canal it should be said here that the location of a manufacturing plant upon the Mississippi River at New Orleans must take into consideration many serious physical difficulties, and even had there been no laws standing in the way the industrial development on the banks of the river would have carried a heavy handicap.

A few of the physical objections to the location of an ordinary manufacturing plant upon the Mississippi River I might enumerate as follows

The danger of overflow.

The danger of actual loss of plant and property by encroachment of river.

The expense of handling materials over long distances due to the fact that the plants must be back of the levee and wharves well out to the front of the levee.

The cost of maintaining wharves subjected to the strain of the swift current of the river and of the drift wood borne on its surface, not to mention the constant danger or injury to wharves due to unmanageable ships in swift currents.

The practical difficulties of protecting suction pipes on pumps from drift wood, accumulations of sand and mud, and also the difficulty of pumping water over the levee which is necessitated by the rule of the government which forbids running pipes through the levee.

The inconvenience of loading and unloading water craft due to the great range of level of the water in the river.

While the physical objections above referred to apply to a serious degree in the case of almost all plants, it is generally conceded by people familiar with the requirements of the ship-building industry that it is entirely impracticable to operate that kind of plant on the banks of this river with any hope of financial success.

The desire of New Orleans to participate in the great work of building ships for the winning of the war was the incentive which may be properly said to have brought this canal project into universal favor.

I desire now to say a few words bearing upon the history of this proposition.

We have in our town a man who is gifted with what I am pleased to call telescopic sight in economic matters.

This man appreciated fifteen years ago all the reasons for this canal which are now believed by the public in general and suggested the construction of this canal at that time.

I refer to Mr. Walter Parker, who, as a private citizen, proposed, advocated and worked for so many projects having for their purposes the public good that the citizens of this city have placed him in charge of the Association of Commerce.

Mr. Parker conceived this canal scheme as a method of securing the advantages of private ownership of water front for industrial purposes without relinquishing any of the advantages of public ownership of water front for shipping purposes.

He has consistently and continually drummed into the ears of the business men, the members of the Dock Board, the city officials and the members of the Association of Commerce, the vital importance of putting this project through to an early completion.

With an intimate knowledge of the part which Mr. Walter Parker has played in this great enterprise, I wish to express the hope that on any monument or tablet which may be erected to commemorate the opening of this canal that Walter Parker's name be there as the originator of the scheme and a potential element in its final success.

No men in New Orleans appreciated more fully than the members of the Dock Board the effect upon the industrial development of New Orleans that was brought about by the restrictive laws having reference to private ownership of river front property, and this Board was, therefore, in a very receptive mood when it was suggested by Mr. Walter Parker several years ago that the solution of this particular obstacle in the way of industrial development lay in the construction of an industrial canal to connect the river and the lake.

Therefore, when this matter was suggested to the Board the attorney for the Board was instructed to prepare a suitable bill to cover the needs as explained by Mr. Parker, and in due course this bill was written in the laws of the State.

As having a bearing upon the form of contract which the Dock Board will be able to make with people who plan to locate on this canal, I will take the liberty of inserting here the bill as enacted:

ACT No. 244.

HOUSE BILL No. 359.

By MR. MANION.

JOINT RESOLUTION.

Proposing an amendment to the Constitution of the State of Louisiana giving the power to the Board of Commissioners of the Port of New Orleans to dig, build, erect and operate or acquire and operate a navigation canal, and the necessary locks, slips, laterals, basin and appurtenances thereof, in the City of New Orleans, to connect Lake Pontchartrain and the Mississippi River.

Section 1. Be it resolved by the General Assembly of the State of Louisiana, two-thirds of all members elected to each House concurring, that the Board of Commissioners of the Port of New Orleans is hereby authorized to dig, build, erect and operate or acquire and operate a navigation canal in the City of New Orleans, together with necessary locks, slips, laterals, basins and appurtenances thereof, and other structures necessary therefor, to connect Lake Pontchartrain and the Mississippi River, in aid of commerce. The location of said canal shall be fixed and determined by the Commission Council of the City of New Orleans, and shall be constructed under plans and specifications to be first approved and ratified by the Board of Commissioners of the Port of New Orleans and by the said Commission Council, and to be further approved and ratified by the Board of Levee Commissioners of the Orleans Levee District and by the State Board of Engineers of the State of Louisiana; the concurrence of all these bodies being necessary to the adoption of said plans and specifications.

Section 2. Be it further resolved, etc., that for the digging and building of said canal, locks, slips, laterals, basins and appurtenances thereof, the said Board of Commissioners of the Port of New Orleans shall have the right to expropriate any property necessary for that purpose, and to pay for the same and the necessary works and improvements thereon by issuing mortgage or mortgages, bond or bonds, to be paid out of the net receipts of said canal and appurtenances thereof; said mortgage or mortgages, bond or bonds, to be paid out of the net receipts of said canal and appurtenances thereof, after the payment of operating expenses; and that the said Board of Commissioners of the Port of New Orleans are empowered to fix charges for tolls in said canal and for charges to all vessels mooring against the banks of said canal.

Section 3. Be it further resolved, etc., that the foregoing sections are self-operative, and the Board of Commissioners of the Port of New Orleans and the City of New Orleans shall, by ordinance or otherwise, carry the same into effect.

Section 4. Be it further resolved, etc., that at the congressional election to be held in this State on the first Tuesday fol-

lowing the first Monday in November, 1914, the foregoing amendments to the Constitution of the State shall be submitted to the electors of the State: that on the official ballot to be used at said election shall be placed the words "For the Board of Port Commissioners' Canal Amendment," and the words "Against the Board of Commissioners' Canal Amendment," and every elector shall indicate his vote on the proposed amendment, as provided by the general election laws of this State.

L. E. THOMAS,

Speaker of the House of Representatives.

THOMAS C. BARRET,

Lieutenant-Governor and President of the Senate.

L. E. HALL,

Governor of the State of Louisiana.

A true copy:

ALVIN E. HEBERT,

Secretary of State.

Due to the necessity for the most mature deliberation upon the details of the proposed plans of construction and of operation, the public has not yet been advised as to the precise manner in which the use of property upon this canal can be acquired, but the general impression is that, while the Dock Board will very properly not part with the ownership, it will make leases for such a long term of years as will be practically equivalent to ownership.

Immediately after the passage of the law by the Legislature the Dock Board employed the firm of Ford, Bacon & Davis to make a thorough study of the entire project and present to the Board the results of this study together with actual plans of the proposed canal.

Messrs. Ford, Bacon & Davis went into this work in minute detail and in due time submitted to the Board a most comprehensive report.

This report, consisting of three large folios, constitutes a monument of engineering insight and thoroughness embracing all the fundamental facts contributing in any way toward an estimate of the commercial benefits to be derived from this proposed canal.

Due to the fact that the Dock Board was engaged in the construction of a large cotton warehouse and a grain elevator, and not seeing its way clear to the financing of this particular project in addition to those already undertaken, the canal project has, for the past two years, been "sidetracked," although Mr. Parker, the author of the original idea, has made himself considerable of a nuisance to the members of the Dock Board and to all other citizens who were willing to listen to him in the effort to revive and put through the actual construction of this important work.

During the past few months New Orleans has been rudely awakened to the fact that while we have clamored for the location of shipyards on the banks of the Mississippi River near New Orleans, none of the people who seem to know anything about the requirements of shipyards have regarded us seriously, and the consensus of opinion has been that New Orleans could not hope to have located here any of the shipyards which are now being constructed to supply the needs of the country.

It has been pointed out by experts that while the building of ships upon the banks of the Mississippi River at New Orleans is not practicable, the proposed industrial canal would not only be entirely suitable for a shipyard, but would present extraordinary advantages.

It appears, therefore, that had New Orleans gone ahead and constructed this industrial canal when the Dock Board was first authorized to do so we would today probably have a dozen shipyards under full headway, employing many thousands of workmen with the consequent general benefit to the community, not to mention the numerous other institutions which would have made use of this great facility.

When the people became thoroughly convinced of this fact there was a general "getting together," headed by the Mayor, and within a period of a very few weeks the project was threshed into shape, the bond sale provided for, the approval of the Government obtained and actual construction awaits only the completion of the engineering plans.

The history, therefore, of this project begins with its conception, about fifteen years ago, by Mr. Walter Parker; the many years of personal effort by him to bring it to the attention of the

public; the passage of the act in July, 1914, authorizing and empowering the Dock Board to construct the canal; the employment immediately thereafter of Ford, Bacon & Davis, Engineers; the submission by that firm in June, 1915, of complete preliminary report with tentative plans; the revival of the project within the past six weeks and the getting together of the whole of New Orleans in one concerted effort to put it over, and the actual putting it over.

To industries now located in New Orleans I would like to say that while they will derive great benefit, in some cases directly and in other cases indirectly, from the many new enterprises which will be located on this canal, to reap the full benefit they should re-locate their plants upon the banks of the main canal, or one of its laterals.

If I were planning to secure a site upon the banks of this canal the following advantages would seem very clear to me:

1st—Cheap cost of pig iron, coal, coke and steel due to water transportation from Alabama to my own wharf and bunkers.

2nd—Cheap transportation by lighter direct from my wharf to the ship's side in all export shipments.

3rd—Ample free water supply for fire protection, condensing, boiler feed and other purposes where fresh water is required.

4th—Water transportation to the various industries on the canal having interchangeable needs.

5th—Switch track from the Belt Railroad in the rear, giving me every convenience for railway shipments.

I believe there is no point in the United States where such ideal economic conditions as these exist.

I believe that there is not the slightest doubt that if this canal project is carried out in a general way along the lines indicated by the preliminary plans prepared by Ford, Bacon & Davis, the success with respect at least to the creation here of a large ship-building industry will be instantaneous, and I have no fear but that within a reasonable time the banks of the canal will be a beehive of industry.

The report of these engineers describes five possible locations, but with the recommendation that only two of the five be seriously considered.

This firm is no longer connected with the Dock Board and has no part in the present plans for this work, but it is generally understood that the canal will connect with the river at a point near the Ursuline Convent, which is in the district recommended by Ford, Bacon & Davis as the most desirable one.

In the report to which I have referred the following are some of the advantages to manufacturers suggested:

1st—It allows of private ownership of land on private slips in the harbor of New Orleans for the location of manufacturing and shipping plants.

2nd—It concentrates harbor facilities, including warehouses and manufacturing lofts, minimizing the length and expense of haul in trans-shipment.

3rd—It can be indefinitely extended.

4th—It can be completely constructed, including masonry, wharves and similar structures, before the water is allowed to enter, thus both enormously reducing the cost of submarine construction and improving the quality of the work.

5th—It can be developed into transverse wharves and slips, thus insuring the distinct advantage of this type of construction, which is not practical along the Mississippi River front.

6th—It allows of ample land space at moderate costs.

7th—It is a feature of harbor equipment adopted, or in process of adoption by nearly all the progressive harbors of the world.

In the summary of this very interesting report the following appears:

1st—The Port of New Orleans has advantages actual and potential which justify its complete development.

2nd—An industrial terminal, which is essential to a complete port, has not been successfully established in any port except on land having ocean harbor riparian frontage owned unconditionally or leased for long periods and occu-

pied by individuals and corporations operating the industries. This ownership is now impracticable within the harbor limits of New Orleans on the banks of the Mississippi River.

3rd—Nearly all the progressive harbors of the world including Liverpool, Manchester, Hamburg and Bremen in Europe, and especially New York, Boston, Baltimore, Seattle, Los Angeles and Houston in the United States, have, or are now in process of obtaining, extensive areas of industrial terminals as a feature of harbor equipment. Even though these developments in some of these ports are not successful financially, they are considered necessary on account of the great benefits to the general port, the State and the section.

These words are interpreted by me as being a complete endorsement of the proposed canal.

People who are in position to undertake the creation of new enterprises, or the moving to New Orleans of establishments already in operation, should note with interest the favorable location of New Orleans with respect to such raw materials as sulphur, salt, petroleum, cotton, rice, wood, lumber, sand and gravel, all of which are produced in great quantities by Louisiana, as well as iron, coal, phosphate, kaolin, zinc, lead, etc., which are obtained in neighboring states. They should also give due weight to the advantage possessed by New Orleans with reference to those raw products which are imported from Mexico, Central and South America.

Now that the geological survey of the gas fields of Louisiana has been completed by the government expert recently sent here and a most favorable report made, we have practically the positive assurance that within the next few months an ample supply of natural gas will be available.

A paper upon the subject of this industrial canal would not be complete without reference to the possibilities of this canal in connection with the establishment here by the Government of a "Free Port."

The best conditions for a "Free Port" require that the area to be included shall be capable of being enclosed in such a way

that ingress and egress, both of ships and persons, can be under the supervision of Government officials, and for this reason the river front of New Orleans is not suitable.

On the other hand, the industrial canal offers an absolutely ideal location, and this fact has already been brought to the attention of the Government.

Manufacturers who make use of imported raw materials can locate in the free port, carry on their business, and on all goods exported no duties need be paid, the import duties being paid only on those goods which are for domestic consumption.

So far as I know, there are at present no free ports in the United States, although several cities have made application to the Government for this facility.

DISCUSSION.

THE PRESIDENT: Gentlemen, I think we are all a unit in the opinion that we have listened to a very comprehensive and detailed statement as to how this industrial canal project started and what the possibilities are when it will be consummated; but I think that no discussion and no talk on the industrial canal is complete without hearing from Mr. Parker, and as it is our pleasure to have him with us tonight, I will ask Mr. Parker if he will not supplement with his own ideas the remarks or the talk given us by Mr. Lockett.

MR. PARKER: Mr. Chairman and Gentlemen: I understood from Mr. Hutson that I was expected to talk tonight on the Government's policy with relation to the use of the inland waterways. Was I mistaken?

THE PRESIDENT: I did not know just what the subject was, but if such is the understanding we will be glad to hear from you on both subjects.

MR. PARKER: Well, just a moment, then, on the canal, a thing that has just borne enormous fruit for the good of New Orleans.

Several years ago, Secretary Redfield, of the Department of Commerce, was in New Orleans for a day or two, and in this

process of making myself a nuisance on the subject to everybody that I had met, which Mr. Lockett has so ably described, I took Mr. Redfield into my confidence. I suppose he was about the millionth subject I had tried it on, and I explained this canal to him, and its purposes and possibilities and necessities. The result was that Mr. Redfield became as enthusiastic on the economic side of this canal, with relation to 41 per cent of the area of the United States, as I was.

The other day, when we asked the Capital Issues Committee at Washington to approve this bond issue, we found that the Capital Issues Committee was imbued with the spirit and desire to refuse all applications that could possibly be refused, because of the nearness of the Liberty Bond issue. They had evidently received instructions from higher up to let nobody get any money for any purposes that could possibly be avoided, in order that Liberty Bonds may enjoy a maximum sale. Mr. Redfield aided us very, very materially. He wrote a letter to Mr. McAdoo, and later another to Mr. Warburg, and he did other things which did not come out, which we will not talk about, but he was a very strong aid to us. Well, we got the bond issue through, anyway.

Now, I want to discuss another side of this matter, in its particular relationship to New Orleans, and that has a very direct bearing upon the water transportation of the whole country and particularly of the Mississippi valley. Shortly after the war broke out the Government began to reach the conclusion that the use of the waterways had become necessary. Some of us had reached the conclusion some years before: The Government, up to that time, had confined itself to the building of channels, but had not raised a hand toward the enforcement of the use of the waterways. We had some beautiful channels and no boats on them. So Secretary Redfield called me to Washington and asked me what I thought could be done, and I suggested to him that we outline a policy. That policy related solely to the creation of a proper sense of proportion in the public mind and in the governmental mind with relation to the waterways, and through that means to carry on a propaganda campaign that would awaken an understanding of the problem and how it could be solved. Mr. Redfield passed this policy up to General Black and through the

Cabinet and it was approved, and I then became one of the officers of the Government and undertook to work the question up, and here is about, just briefly, the policy that we outlined:

That first there was only the boat, the only means of transportation. It had a monopoly. It developed only those sections along the waterways, and having a monopoly, the spirit of enterprise necessary to make boat traffic truly economic failed to develop, as it usually fails to develop when there is an easy-going monopoly that people do not have to work for. It happened here on our river front long years ago—a hundred years ago.

So, when the railroads came along, they found that the cost of railroad transportation could not be reduced as low as the cost of water transportation. But because of the utter lack of economy in the handling of commerce to and from boats at river points, the railroads had a real opportunity. With economic facilities for the handling of rail traffic that would be convenient to the shipper, with "through" bills of lading and good business management, and the whole scheme worked out in an intelligent and cohesive fashion, the convenience to the shipper would be so great, and the saving in the handling of the commerce so great, that the lower per ton-mile water transportation cost would cease to be a drawing card. The railroads created such economies that in the course of time they acquired a practical monopoly of the transportation of the country. They put the boats out of business in the boats' own territory and kept them out of business. If the boat owner had seen the light and had attempted to reduce his traffic to an economic basis, he would have been estopped from doing so because of the rate-making system which applied to river towns, and for various other reasons.

In the meanwhile the railroads had developed the interior of the country, and in the course of time commerce began to develop more rapidly than railroad expansion. The originally great advantage that the railroads had in appealing to the investment class, including the one-time investor in the merchant marine ships who had found his profits too small in relation to a new country's opportunities for profit and had transferred his investments from the merchant marine to the new and more promising

method of transportation on land, the railroads, began to disappear because they began to lose caste. Some of the practices of railroads proved a boomerang on the railroad officials, and they ceased to be able to control the capital necessary for continued expansion.

Some five or six years ago James J. Hill published the statement that the railroads were then some five billions of dollars behind in the equipment that they needed to handle the then commerce of the country. They have fallen very, very much more behind since then.

So this monopoly that the railroads had built up for themselves at the expense of the boats, the railroads in turn lost, because they were unable to keep pace with the growing needs of the country, and so the third period of transportation economy of the country came around, that period requiring the co-ordinated use of the river and the rails, this time as a system working hand-in-glove, each feeding the other.

And so I began this campaign for Secretary Redfield. Just the other day the success of that campaign became complete with the appointment by the Director General of Transportation, Mr. McAdoo, of the working committee that is to have charge of the physical development of inland water transportation. So Mr. Redfield, in his letters to me recently, seems to feel, too, that the work of his department in this connection has been one hundred per cent successful—that we have accomplished all that we set out to accomplish.

Now, in the development of the water transportation there are some very, very fine distinctions that we must observe. For instance, there is a very large school of thought in this country which regards the depressed rates to water towns which the railroads have put in as unduly depressed in every case, and that they should be raised in order to encourage the boats. There *are* cases where these rates have been unduly depressed, but there are more cases where the depressed rate is a legitimately depressed rate, and the Government will cause serious injury if it arbitrarily forces the railroads to raise all of those depressed rates in blanket form. Take the Illinois Central Railroad, for

instance. This road competes with either actual water transportation or potential water transportation throughout its entire system. Almost every pound of freight that the Illinois Central carries is in competition with at least potential navigation. The Illinois Central's system of railroad rates is relatively low, but we would make a serious economic blunder if we arbitrarily declared all of those rates unduly depressed rates. The proof of that is this: The Illinois Central is one of the best managed, best equipped, most profitable, most efficient railroads in the country. It has developed the ability to operate at a low average rate in order to compete with potential navigation. Its rates were all made to compete with uneconomic boat traffic, there being not a single modern, economic boat terminal at any of those points, not a single system of economic boat transportation. Therefore, these depressed rates, which many people believed are unduly depressed rates, are really legitimately depressed rates to meet uneconomic boat transportation.

The thing that we are after is to create economic boat service, which will be entirely able to compete with the rate system this road has put in to compete with uneconomic boat traffic.

To put the boats on the river at this time, private enterprise cannot be expected to invest large sums in extraordinary costs of building, and before the terminal equipment has been put in.

The Government has in some cases, and probably will in others, build boat lines, and probably lease them or operate them, and after the war will probably sell them on a normal cost basis.

To make that traffic successful there must be co-ordinated terminal facilities which will permit easy interchange between boat and railroad, and which will permit storage at the local points to be served. At the port there must be terminal facilities that will permit a market of deposit and resale, and make easy the financing of commerce, in order that the slack between the period of production and period of consumption may be taken up and taken up easily.

This way, commerce may be gathered up when the producer desires to move it, and rest in ease and comfort and at low cost until the consumer is ready to use it.

Merely by way of passing illustration, take the case of cotton at New Orleans. Heretofore, the market for cotton, the market for deposit and for resale, has been Liverpool, because there were no facilities in this country where this kind of market could be established. With this modern terminal here which this city has erected, cotton will pass into the warehouse here instead of to Liverpool, and will rest here—it may be owned in China or it may be owned in Liverpool or Asia or anywhere else—until the consumer is ready for it. If the market's changes suggest resale, for instance to the New England States, for cotton that has been purchased for consumption in France, it can be sold to the New England States, because no ocean transportation will have been paid on it: it is a brand new thing; its parity is right, and so it can rest here ready to be moved whenever it is desired to move it, ready to be resold, or carried indefinitely at a low cost for money.

The low cost of money comes about in this way: The cotton warehouse, a State institution, issues a warehouse receipt with the sovereign power of the State behind it, on a world used commodity, held in a world market. The Commodity Exchange—the Cotton Exchange—supplies ledger and a certificate of inspection. These two pieces of paper, under these circumstances, form the highest type of commodity collateral known. There is not anything in the world of collateral that is better, and I do not know of anything that is as good. It is better than stocks and bonds, because stocks and bonds are not self-liquidating. This collateral is self-liquidating because it is against a world-used commodity, which must pass into consumption within a maximum of so many months. That means, then, that we have on that commodity a large supply of collateral which we can use against call money. That is the cheapest form of money in the world. That money arises from the fact that at certain seasons of the year every bank in the country has more money than its customers require. In one section that season is at one time of the year and in another section it is at another time of the year, dependent upon the movement of crops and commerce. With this supply of collateral we attract that money here. In normal times the only practicable market for that money has been New York. New

York is the country's call money market. That money was sold on the stock exchange every day against stocks and bonds which were not self-liquidating. The normal rate for that money is 1 and 2 per cent in New York. Suppose we pay 3, with a better type of collateral. We are going to get all of that kind of money that we want. Suppose the middle man, or the large dealer, the large handler, charges 1 per cent for his service and the actual handler of commerce pays 4 per cent for such money, we will be financing this commerce upon a basis of 4 per cent. It is not done so cheaply anywhere in the world. There is a lower rate than obtains generally anywhere in the world. Sometimes Liverpool gets money that cheap, but there are times when it does not.

The same service applies to grain, to copper and to other even running commodities in the port of New Orleans.

Industrial development here, which has been handicapped by our physical conditions and the conditions of control of our harbor front, becomes possible under more economic conditions than I have been able to discover exists at any other port in the world, with the opening of our lock and ship canal with its fixed level fresh water.

The intercoastal canal, which ultimately will connect Boston with the Rio Grande, will use our lock and canal. The Mississippi River, with its great arms all over the valley, reaching 41 per cent of the country with more coal and more capacity for agriculture than any other section, will be connected with it. All of these factors, with a deep channel to the sea and a railroad system that reaches every section of the country, combine in our favor. We can effect the interchange here, and with fixed level water and permanent terminal facilities, every wholesale grocer in New Orleans, located on one of these laterals, may have a boat come into his own warehouse, and with his own handling device and a Public Belt Railroad switch, may at will use any means of transportation.

There is no spot on earth where you can carry the refinements of economic transportation to the degree to which we can carry them with the added facility. Therefore, the revival of transportation will proceed along lines which have heretofore been

impossible because private enterprise could not function in this city as it has functioned in every other city in the building of the facilities for doing business. Private enterprise and private capital built the port of New York, they built the port of Hamburg, the port of Liverpool, the port of Amsterdam. They built them all except the port of New Orleans, because they could not function here on account of the form of our control. We have been denied that impetus ever since the port was developed.

In 1846 the merchants and steamboat owners at New Orleans besought the Legislature to give them the right to put a shed up on the river front to keep the rain off the commerce that was being ruined by the weather, and they were denied that right. That is the thing that put me to work on this canal. I read that story in 1902.

Because of that very condition, when the railroads came along, New Orleans having controlled the commerce of the valley by water, the railroads had no commerce in the valley to go after except along the waterways. There was none back in the interior, because there had been no transportation, and they had to get this boat traffic in order to live. They also had to have port facilities in order to make their operations economic. They could not get all the port facilities here they needed because they could not acquire harbor frontage, but they could, in fee simple ownership, secure what they wanted at Galveston, Mobile, Savannah, Baltimore and New York, and they did so.

Now there was another factor at work. The early exploiter of the railroad figured this, that New Orleans' power to initiate freight movement must be destroyed, otherwise if at any time economic boat traffic were developed the position of the railroads would be menaced, and so they planned the diversion of commerce. The Memphis & Charleston Railroad was built across Tennessee and north Mississippi and Georgia in order to avoid New Orleans, and many other things were done. The Erie Canal had a very potential effect in robbing New Orleans of commerce. Other canals and means of transportation were designed to tap the Mississippi valley and take from New Orleans some of the commerce that New Orleans had a monopoly over by reason of the boat lines. And so, gradually, practically everything that

was done dug into New Orleans' birthright to this monopoly that the old citizens had believed would belong to us forever, and the boat traffic died and that took from New Orleans its control of the Mississippi valley commerce.

In 1805 an attempt was made to build a little canal into the river. If that canal had been built, ultimately it would have been enlarged, the handicap of public ownership at that time, with no spirit of public development, would not have applied, and the boats would have put the terminal facilities on the banks of that canal. But the canal was never built into the river. If it had been, the boat traffic would not have died.

This industrial canal is going to permit any facility that any carrier of commerce requires, under an ideal condition. The merchant, the manufacturer, the shipper or anyone may always enjoy the privilege, without prejudice in any direction, of using any man's boat, any man's railroad, any man's ship. That is not in any other port in the world. This will be the only port where 100 per cent of freedom in the selection of the means of transportation will obtain, and I will tell you that is a wonderful advantage. That is one of the things that this canal will do. In the last analysis, it will remove the last remaining economic handicap on the port of greatest promise of the world. Does that mean anything to you?

Finally, we have 9,600,000 acres of alluvial wet land around the city of New Orleans. That land carries, I am told, from 2 to 4 per cent of nitrogen, the most valuable of plant foods. That land can all be reclaimed at a practicable cost. Its capacity for the production of food is so great that it sounds like a dream to say what it is, because there is not a single acre of it that cannot with ease produce more than one crop a year. Why, in corn alone, 75 to 80 bushels to the acre is not difficult at all, and when it is produced it comes into the market at the end of the marketing season and gets the benefit of a year's carrying charge, and then it is practically at shipside and gets another premium, a total of about 8 cents a bushel over the corn of Indiana. More corn can be produced per acre than in Indiana, and in addition to that you can get one or two more crops from that same land each year.

Food production and the capacity for delivery are the two big determining factors that are going to control during the period of readjustments after this war. We have both here at our doors. We have the ability to complete the system of both, and, gentlemen, that cannot mean other than that enormous construction work, factories, warehouses, reclamation projects, the building of a great port to serve the most capable valley and region that we know anything about in the temperate zone, will be necessary. Why, the number of millions and hundreds of millions of dollars that in the next generation will have to be entrusted to the engineers to invest in the structures and the buildings in this region is so big that we do not dare mention estimated figures. People would think we were crazy. But it is there.

Every port in the world exists merely to serve. It has a service to render to a hinterland. If that hinterland is great and prosperous and capable of being made more so, and the port serves it well and economically, the port thrives. We have got the hinterland. We have now got the basis to serve it economically and well. There is not anything on earth now that we cannot do, we cannot go into, and you men, you builders, you constructors, will be the men that will handle the great sums that will have to be invested in the production of these facilities and all of the angles that go to make up the development of a great port.

I thank you.

THE PRESIDENT: Gentlemen, I think we are pretty well agreed that Mr. Parker has given us a very interesting and instructive analysis of the commercial advantages of New Orleans, and I am free to admit, personally, that I have learned considerable from his talk. If there are any other of the members of the Society or any of the invited guests who care to discuss this question further or care to ask Mr. Lockett any questions or Mr. Parker any questions, we will be glad to hear from them.

MR. KEENAN: I would like to ask one question. Will there be a sufficient depth of water over the sill of the locks to permit fully laden vessels to enter the canal?

MR. PARKER: Why, the engineers have not announced their plans. The only thing that we could do would be to anticipate what is to be done by the economic need for that thing. I take it that whether they build a full-draft ship lock or not, it is only a question of time until they *will* build it, because of the advantage of the ship, itself, receiving, from the permanent structure of the warehouses, from the deposits that will take place here. Enormous quantities of commerce will rest on deposit here, both coming in and going out. We have never been a tramp ship port in the true sense of the word. We have been a liner port. When we have great stores lying here awaiting consumption, awaiting transportation, tramp ships from all over the world will know that they can come to New Orleans and always get a cargo for practically any part of the world that they would like to serve. Consequently, there will be great warehouses for full shipments on this canal ultimately, and from this we draw the inference that it is only a question of time until a full depth canal will be constructed.

MR. WILKINSON: I would like to call attention to one thing that I have not heard discussed by Mr. Lockett or anyone else, and that is the fact that this canal would be, to a certain extent, a safety valve. In the harbor, in the great storm of 1915, as well as in some previous storms, there have been enormous losses of floating property, coal—the coal loss alone in 1915 in Donaldsonville and New Orleans was over a million dollars, nearly half of the estimated cost of this canal. That storm had been warned about, spoken about, for four or five days. If this canal, with its lateral harbors, had been there, every coal boat in the city of New Orleans could have been taken and anchored inside of this canal and not a dollar's worth of that coal would have been lost. I saw ships, ferryboats, any number of small boats, battered to pieces all along the harbor here by that storm. There was at least two million dollars' worth of damage done in that one storm in this port to floating craft, including their cargoes, and the canal would have paid for itself in one year. New York has spent over a hundred million dollars on the Erie Canal in the last twelve years. Germany has spent two hundred and fifty millions on her canals. Holland has spent a hundred millions on

her canals—and it is about time, I think, for the South, and New Orleans in particular, to spend two or three million. When they have spent their hundreds of millions, I think the people here ought to be progressive enough to spend two or three millions. It has been a great need and a great want in the city of New Orleans.

MR. LOCKETT: The point that Mr. Wilkinson makes I admit has been overlooked, although I have thought of it often, and Mr. Hutson has discussed it with me. This paper was a little longer than I wanted it to be as it was, and there are many things that I would have liked to have mentioned.

MR. WILKINSON: It is, I think, an admirable paper, and I want to compliment Mr. Lockett on it and hope it will be printed in the public press; but that is one point, that I think the canal, as a harbor to the people of this section, would far more than pay the interest on the bonds.

MR. PARKER: Mr. Chairman, there is one thought which occurs to me that might be of interest to the meeting—the relation of the enforcement of the use of the waterways and this gateway.

After the war, foreign trade is going to be a far more important factor in the life of this nation than it ever has been before. This country will become efficient, because of this war, a hundred or two hundred years ahead of its normal times, while its resources are still largely intact, its resources of man-power and of minerals. Now, in the development of foreign trade, we are going up against a character of competition in Europe where the last penny in saving is to be effected. Germany is spending a great deal of money to extend its canal system. France has just built a great canal and bored a hole through a mountain to get past, for the purpose of getting barges to shipside at a minimum of cost. We will not be able to have any unnecessary and any uneconomic service and compete with those people. In other words, we won't be able to pay for steam coal to haul commerce over mountain grades when we have got water routes to shipside and compete. We have got to use those water routes. So important is that subject in the eyes of foreign trade developers that I

have been requested by Mr. James J. Farrell, President of the United States Steel Corporation, to address the National Foreign Trade Convention at Cincinnati on that very point next month.

THE PRESIDENT: Does anyone else wish to say something on the subject?

MR. RIESS: May I ask Mr. Parker what relative difference there is in the cost per ton-mile in hauling, and in arriving at this cost is a real, fair comparison made? For example, take the average railroad. Almost every two miles it is made necessary that they build some station house to accommodate freight, and every five or ten miles it is necessary that they maintain a station with an agent, and all of these are costs and are necessary adjuncts to this service. Now, I wonder, in making the comparison of the cost, I would like to have a statement made of just what the cost per ton-mile is in hauling with an efficient railroad, not over-watered, and the cost of the efficient and well-managed boat line that will give you like facilities.

MR. PARKER: I have in mind the figures, but I do not think we have got any tabulation that you could count on as being 100 per cent accurate that would lay down hard and fast the cost per ton-mile of railroad transportation and per ton-mile of water transportation. There isn't any water transportation except on the Great Lakes that is really economic. The cost on the Great Lakes is ridiculously low. I have seen the terminals work at Duluth. They have loaded a 12,000-ton ore ship completely with the work of five men in forty-five minutes. Now, that is going some.

MR. WILKINSON: And carry it a thousand miles for 50 cents a ton.

MR. PARKER: Yes, and probably haul little else. Then, when you come to the kind of a boat that you see out here, with a paddle-wheel, on the river front, carrying 300 tons of machinery, pushing it up and down, if they got a dollar a ton for moving that the length of the run they would make a profit. You have no real basis to work on, but just picture for yourself, however.

a thousand-ton barge lying at a wharf. You can go there and put your shoulder against it and move it. How many men would it take to move the twenty or more freight cars that would be loaded with that commerce? It would take probably a hundred of them to budge it. Therefore, it is clearly demonstrable that the movement of commerce, aside from all figures, is cheaper by water than by rail. Now, then, making the handling equally so, you are bound to have a very much lower cost by water than by rail.

THE PRESIDENT: There seems to have been a great lot of disappointment expressed over the announcement that the industrial lock will not be able to accommodate vessels exceeding eighteen feet. It follows that the maximum advantages expected of this project will not materialize on account of the limited depth over the sill. Obviously any vessel touching this port and already partly loaded with a cargo received at Mobile or Galveston will be deprived of the advantages of the economical "car-to-shipside" loading if this vessel already draws eighteen feet when it reaches here.

It has occurred to me, and I dare say it has occurred to others who have given some thought to this project, that the above handicap can be materially reduced by a comparatively inexpensive and simple device.

It is proposed to lock from a variable stage in the river to a practically fixed stage of lake level or gulf level in the canal. It is the depth of the water in the lower pool that fixed the available depth of the lock. Now as a general proposition, it can be safely said that for six or seven months of the year the river elevation is seven feet or over on the Canal Street gage; that is, for an average period of six or seven months of the year the river is at an elevation exceeding six feet above mean gulf level.

I take from the hydrographs for the past ten years the following list of such periods above referred to:

1908—Jan. 4th to Aug. 25th	7 months, 21 days.
1909—Feb. 21st to Aug. 18th.....	5 months, 27 days.
1910—Jan. 22nd to Aug. 10th.....	6 months, 18 days.
1911—Jan. 15th to June 7th	4 months, 22 days.

1912—Dec. 20th to Aug. 16th	7 months, 26 days.
1913—Jan. 18th to July 4th	5 months, 16 days.
1914—Feb. 14th to June 15th	4 months, 1 day.
1915—Jan. 7th to Nov. 7th	10 months.
1916—Jan. 1st to Aug. 14th	7 months, 9 days.
1917—Jan. 12th to Aug. 11th	7 months.

The idea that I had in mind is that if another lock of small dimensions be placed at the rear end of this canal, that is, just this side of where it connects with or crosses the city drainage outfall canal, it would be possible to have twenty-four feet of water over the sills of the river lock and a corresponding greater depth in that part of the canal for an average continuous period of six months out of twelve.

The length of canal that would be susceptible of this advantage would be about $1\frac{1}{8}$ miles, plus the length of such laterals or slips that it may be practicable to locate and construct between the lock and the aforesaid outfall canal. This presupposes that the river lock will not be beyond St. Claude Avenue.

Such a lock as is suggested need not be a very expensive affair. The difference in head to be taken care of would be only six feet, and the construction could be of timber throughout, since it is to be only a temporary device until we get the thirty-foot lock.

The cost would depend on the size of the structure, but I believe it could be kept inside of \$75,000 or \$100,000, and be large enough to accommodate all vessels and tows in the lake trade, as well as permit the hulls being built by the Jahneke and Salmen Ship Yards to come into the Mississippi River by the most direct and shortest route.

While this scheme is not practicable for getting the desired increased depth throughout the year, its principal merit lies in the comparatively low cost at which an increased depth of as much as six feet is obtained over the sills of the lock for a considerable continuous period of the year, and the consequent reduction of the period during which the eighteen-foot depth will prevail to only such weeks of the year that the Mississippi River is at Gulf level.

MR. HURSON: It seems to me that is a fine suggestion, particularly in view of the fact that I should think they would want a lock on the lake end of it anyhow, to keep the storms out; otherwise, those warehouses along the canal would have to be built above the storm level, or we would have levees along this industrial canal, as we have along the present navigation canal.

THE PRESIDENT: Of course, the levees along the canal would not be of any consequence. You would have to have a spoil bank anyhow, and the material there would be more than sufficient to elevate this bank up to the necessary height.

MR. HUTSON: There is one thing I had hoped to have brought up here tonight, and that is something about the time which would be necessary to put in this lock. I have not seen anything in the papers to show whether this industrial canal was to be considered as a war measure to enable us to build ships here in time for this war. Of course, we do not any of us know how long that is going to last, but it seems to me that New Orleans is an ideal place to build concrete ships, which we will probably have after the war if we do not have them during the war. But what I would like to see would be some company, or the Government, as they are the only ones in control of capital now, to start building concrete barges on some canal connecting with the city—on Harvey's or Lake Borgne Canal. If they started building those barges now, by the time this lock was finished, if there was still the need to build concrete ships, they would have labor trained in this concrete shipbuilding, and we could go right ahead building ships with people who are experienced in this work. The concrete barges do not seem to be an experiment; they are building them in any number of places. They are building one 4,500-ton concrete ship out on the Pacific coast, and if that design is good, it would seem that taking that design, and men experienced in the work, it could be rushed right along and concrete ships turned out at a very rapid rate. So it would seem that if this lock is going to require a year or more, that that is what the people of New Orleans and Mr. Parker's organization ought to bend their energies to.

Mr. OLSEN: As Mr. Hutson stated that it would soon be time to take up the question of concrete ship construction, it is probably timely to advise that concrete barges are already being built on the Mississippi River for use in the transportation of sand and gravel.

Mr. Scott of my office and myself designed a couple of concrete barges at the request of J. W. Thompson & Company, which barges are now being built for this company's account, but unfortunately it was not possible for us to get J. W. Thompson & Company to construct the barges at New Orleans, and it was a question of either building them at Anchorage, a couple of miles out of Baton Rouge, or not building them at all. The barges are now being built on the batture on a construction floor, and one of them is already poured, and as soon as the concrete has set long enough all forms will be taken off and used for a second barge, construction floor of which has already been placed.

After the barges are completed they will await rise in the river, and as soon as the river gets high enough they will float.

These barges are designed to carry deck load and have a total length of 130 feet, total width 30 feet, 7 feet 6 inches deep at center and 8 feet 6 inches at the rakes.

It has taken about forty days to complete the first one from the day we started on construction floor, and it will probably take less than three weeks to complete the second.

If these barges turn out to be a success, as it is expected, the firm of J. W. Thompson & Company will probably construct a whole fleet of them and gradually replace all wooden barges with concrete barges.

Mr. WILLIAMS: The proposition of building ships on the canals appealed so strongly to our firm that we immediately went to Washington and got the plans of ships. I believe the ship-building lends impetus to the canal, but if the question of building ships for the immediate needs of the Government were dependent on the locks only, it would not be forthcoming. We could not wait for the locks to be completed to build ships. The contract we expect to enter into, if we are successful in securing it, will stipulate that we must build the first ship, ready to go to

sea, equipped with everything in the line of machinery, bedding, toothpick holders, and the toothpicks, even, in eleven months: two months thereafter, another ship ready to go to sea, and then one every month. We are figuring on a ship which will draw, before the installation of machinery, a maximum of 9 to 9½ feet; after the installation of machinery, about 11 or 11½ feet aft. You could fill your water tanks and gain a foot on that draft, probably.

Now, it will be impossible to wait for the locks in order to get into the river. Probably it will be a year and a half or two years, I believe, before the final completion of the locks, but the way the canal is projected, as I understand, is to run through the Ursuline Convent property, or somewhere in that neighborhood, back towards Bayou Bienvenu, and that runs to the city limits, to Jourdan Avenue, and from there it goes into Lake Borgne, and we have near the outlet a navigable stream. In Lake Borgne we haven't enough water to float a boat of that size. In Lake Pontchartrain, however, there is usually about 14½ to 15½ feet of water, extending to within 32 feet of the shore. The project of building on this canal means you would have to take your boat out on Lake Pontchartrain, and therefore a branch canal, which is a small matter, would have to be built from Lake Pontchartrain to the industrial canal. The principal engineering difficulty there will be the cutting of the double line of the North-eastern Railroad, the Southern Railway.

MR. WILKINSON: The Louisville & Nashville?

MR. WILLIAMS: No. The industrial canal will miss the Louisville & Nashville by going to one side or the other. It is not going through the Louisville & Nashville. But we will have to cut the double tracks. That project should not take more than two months to complete. There are two draws over Lake Pontchartrain now. The south draw was built under pressure, to accommodate yachts. There is no reason why the south draw could not be closed. The railroad would be glad to do it, I believe, and move that draw somewhere along the lake front between Milneburg and Little Woods. On the project of building a ship, you do not need to wait for these locks. The Dock Board, or the

board that handles the matter, can start the dredges working at Lake Pontchartrain, cut through the embankment there and construct a slip 100 feet wide, say, at the bottom. It requires two and a half times the beam of the ship to launch, side-launching, and 100 feet will do it. And by the time the first ship is ready to launch in eleven months you will have a canal to launch it in. In three months you can start your first ship and in eleven months have your first ship completed.

business to come before the meeting, the technical exercises of the evening were proceeded with. Mr. A. M. Lockett read a most interesting discussion on the Industrial Canal. Mr. Walter Parker, manager of the New Orleans Association of Commerce, was present by invitation and made a most interesting address to the meeting upon the same subject. After several other discussions, a vote of thanks was tendered to Messrs. Lockett and Parker. The meeting then adjourned for the usual collation.

J. M. ROBERT, Secretary.

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DOUGLAS ANDERSON, Editor.

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PROCEEDINGS OF THE LOUISIANA ENGINEERING SOCIETY

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EDITORIAL NOTES AND COMMENT

City Planning. Great oaks from little acorns grow! And it is equally true that great cities, in the majority of cases in this country and abroad, have grown from small villages. In almost every great American city there may be found even to-day, with all the changes which may have taken place since the early beginnings, evidences of these original villages, in the crooked, narrow streets, the small open squares or commons and other physical characteristics of the village as distinguished from the great city. The one notable exception in this country of a city which was planned from the first along broad artistic and architectural lines is the city of Washington. City planning, therefore, as we think of it to-day, is concerned rather with the improvements in conditions of cities which have already

grown up and the co-ordination of these improvements with the future extension of the city in question. The problem is a very broad one, with many different aspects and angles, and consideration must be given to the utilitarian as well as to the aesthetic side. These varied phases of the problem require for their proper solution in any community the interest and co-operation of all classes of men, business men, architects, artists and engineers, in particular. As Mr. Favrot so well expresses it in his very interesting paper: "To-day, we are working on the theory of first making the city efficient, and after it is efficient, beautifying the efficiency, so that in the last analysis, the city beautiful follows the city efficient."

The subject of city planning is one of peculiar significance for New Orleans at the present time. It would appear from many signs that New Orleans was at last starting out to become the great city which its many advantages indicate that it should be. It is now a large city in point of superficial area, but only medium size in point of population and the development of its industrial resources. With the development of these latter must come naturally the increase in population, and the future city must be planned to be efficient and beautiful. To secure these two necessary and desirable qualities many changes must be made in the present arrangement of the streets and avenues. While New Orleans, according to the map, is built into the several graceful curves of the Mississippi River, yet at the same time it is quite a rectangular city. As a matter of fact, it did not have its early beginnings in the cow paths and lanes of New York and Boston, but was laid out in an exceedingly rectangular plan in what was known as the "Vieux Carre." And except for the curves of the river, which are long and gradual, with the consequent convergence of some of the cross streets, the city has maintained in its subsequent growth its ancient rectangularity. Further, if one refers to a map of the city, one will find that the outlying portions, as yet not built up, make up a series of absolute checker boards. Modern city planning contemplates as one of its features a getting away from this rectangularity in favor of lines of greater beauty and at the same time lines which will result in greater efficiency.

While Mr. Favrot lays no claim to being an expert on city planning, a perusal of his paper indicates very clearly that he has given the subject deep consideration and thought, and our Society is to be congratulated on being able to print his paper in full along with the many interesting points brought out in the discussion.

New Orleans has one feature which it would seem must fit well into any plan for its future growth and development, and that is its great abundance of broad avenues with their "neutral grounds," which are called usually parkways in other cities.

Producing Coal and Building Ships. This paragraph heading is so worded for the purpose of calling the attention of our readers to a paper which has just been received from the United States Shipping Board, and which we have decided to publish in this issue. The paper is the report of a speech delivered by Mr. Edward N. Hurley, Chairman of the United States Shipping Board, to the members of the National Coal Association at Philadelphia, May 28th, 1918. The subject of the paper is "The War as a Supreme Test of the Efficiency of Business Management and of Labor," but its arguments are applied largely to the problems of the coal producer and the shipbuilder. Of all the engineering problems connected with this great war, transportation is probably the most fundamental. And transportation spells *fuel*, coal, as well as its many other varied forms. In his address Mr. Hurley discusses the problems of getting the best results in coal mining and in shipbuilding, and there are set forth many valuable suggestions which may well be useful to any individual or organization which is concerned with large contracts for the Government in connection with the prosecution of the war.

Is Engineering a Profession? It seems ridiculous to even ask such a question, and yet in this country, where we are quite careless in our use of terms and titles, to the extent that we dignify with the name of *engineer* anyone from the man who runs the heater in an apartment house to the designer of the Brooklyn Bridge or the Mississippi Jetties, there may be some

excuse for the layman who fails to recognize that engineering is a profession, and one of the highest and noblest. If, therefore, it seems wise to the lawmakers of this State, now convened in Baton Rouge, to pass a bill exempting the professions from the occupational tax, by all means must the profession of engineering be included in its provisions. The following letter is republished here for the purpose of keeping your attention upon the matter in order that you may do all within your power to see that no injustice is done the engineers in comparison with other professions.

New Orleans, June 8, 1918.

To the Members of the Louisiana Engineering Society:

Gentlemen: There is a bill being introduced in the Legislature by Senator Aladin Vincent, exempting certain professions from occupational tax. The professions exempted, however, do not include the Engineering Profession. We believe that engineers, because of their pre-eminent public service in the present crises, are certainly entitled to the same professional recognition, and it would seem desirable that each member, individually, take up with the legislator from his locality the question of including the engineering profession with the others in the said bill. Time is short and immediate action is urged upon you. This measure is urged not as a matter of tax dodging by the engineers, but simply as a matter of recognition.

This notice is being sent to you under instructions of the Board of Direction. Respectfully,

JAMES M. ROBERT,
Secretary.

Another Appreciative Advertiser. The Editor is in receipt of a very pleasant letter from Mr. Kelly, of the Turnerized Roofing Co., calling his attention to the fact that the firm has recently contracted with the United States Government, through Major A. M. Shaw, for a large amount of roofing work. Major Shaw's attention was called to the Turnerized Roofing Co., through their ad. in this journal. The Company

has carried this ad. from the very beginning of the publication, and we appreciate their co-operation and interest in the work of our Society. It is particularly gratifying, therefore, to feel that their faith in our journal as an advertising medium has been vindicated.

A New Member of the Board of Direction. We take pleasure in calling attention to the recent action of the Board of Direction in the election of Mr. John S. Barelli to fill the unexpired term of Mr. Rufus A. Manley, recently elected to the Vice Presidency of the Society. Mr. Barelli has been an active member of the Society since 1908, and we are to be congratulated upon securing him for the Board of Direction.

An Appeal for Technical Papers. The following letter from Mr. Hutson calls attention to several important matters, and is, therefore, published in full in order that all our members may understand the questions there brought forth:

New Orleans, La., June 11, 1918.

Prof. D. S. Anderson,
Care Tulane University,
New Orleans, La.:

Dear Sir: As Chairman of the Committee on Papers, I wish you would announce in the Journal that this Committee would like suggestions from the membership as to subjects for future papers. We would also like the names of Engineers of both members of the Society and outside who have material available and would be willing to prepare papers for the Society.

Papers describing the war work being done by members of the Society who have offered their services to the Government would be particularly acceptable, but it seems difficult to secure such papers, due partly to government regulations in regard to publicity and partly to the fact that these engineers are particularly busy.

We should like also to have papers which will connect the activities of our Society with those of other organizations which are working for the betterment of the City

and State. It would seem proper for those of us who remain at home to keep in mind the fact that when the war is over, there will be a number of engineers, released from their present war work and looking for work in civilian capacity. We should therefore do everything to promote engineering work in this section and encourage the making of plans for future work, even though due to the war money and labor are not available for carrying them out at this time.

We know that the discussion by the members of our Society of Mr. French's paper on *Shipbuilding* was instrumental in pointing out the imperative need of the Industrial Canal if New Orleans was to become a shipbuilding center, and we believe if we can secure a series of papers on subjects of live interest to the State and Municipality, we can encourage engineering work in this vicinity.

Yours truly,

H. N. HUTSON,

Chairman.

New Orleans Section, American Society of Mechanical Engineers.



OUR ROLL OF HONOR

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BERNARD, MERRILL M., Lieut. 19th Infantry, Fort Sam Houston, Texas.
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CALLAN, JOHN, Ensign, U. S. Navy.
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CREIGHTON, W. H. P., U. S. Navy, New Orleans.
DIETTEL, A. A., First Lieut., 114th. Engineers, Camp Beauregard, La.
FORTIER, L. J., First Lieut., 17th. Field Artillery, Washington, D. C.
GARSAUD, MARCEL, Major E. O. R. C., Camp Pike, Little Rock, Ark.
GREGORY, W. B., Major, E. O. R. C., American Expeditionary Force, France.
GREHAN, B. H., 1st Lieut., E. O. R. C., Camp Pike, Little Rock, Ark.
GWINN, J. M., Jr., U. S. Aviation Corps, France.
HAYNE, H. M., Lieut., Co. D., 6th U. S. Engineers, Amer. Exped. Force, France.
HAWKINS, E. C., Ensign, U. S. Navy, Pensacola, Fla.
HORNOT, E. M., First Lieutenant, 312th Engineers Camp Pike, Little Rock, Ark.
HOTARD, N. A., 1st Lieut., E. O. R. C., Camp Pike, Little Rock, Ark.
JOUBERT, C. E., Captain, 312th Eng'rs Camp Pike, Little Rock, Ark.
KIRSCHNER, CHARLES.
LEWIS, J. H., Captain, E. O. R. C., Camp Pike, Little Rock, Ark.
MANLEY, R. S., U. S. Navy, New Orleans Naval Station, New Orleans.
MULLER, J. F., Officer's Training Camp, Aviation Section, Fort Omaha, Neb.

HONOR ROLL Continued

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- O'BRIEN, J. A., Second Lieutenant, 117th. Engineers, American Expeditionary Force, France.
- O'NEILL, J. H., Captain, Sanitary Corps, 37th. Division, Camp Sheridan, Ala.
- ROSE, E. A.
- SCOTT, ARTHUR M.
- SHAW, A. M., Major, Construction Quartermaster, Mech. Repair Unit No. 305, Fort McPherson, Ga.
- SHUTTS, FRED N., Lieut., First Artillery Corps Park, Camp Jackson, S. C.
- SILSBEE, J. A., First Lieutenant, S. C. A. S., Wilbur Wright Field, Fairfield, Ohio.
- SPRAGUE, F. E., First Lieut., Ordnance Dept., Fort Hancock, N. J.
- STEM, C. H., Second Lieut., E. O. R. C., American Expeditionary Force, France.
- DE TARNOWSKY, JACQUES, Major, 517th. Engineers, Camp Gordon, Georgia.
- WHITE, THOS. M., Second Lieutenant, C. A. R. C., Fort Casey, Washington.
- WILSON, M. H., Lieutenant.
- WILSON, VENNARD, Second Lieutenant, E. O. R. C.
- WOLFF, ALLAN L., 1st Repl. Reg. Engrs., Washington, D. C.
- WYLER, C. J., Second Lieutenant, Coast Artillery, Fort Pickens, Fla.
- YOUNG, SAMUEL, Captain, E. O. R. C., Camp Lee, Petersburg, Va.

PAPERS AND DISCUSSIONS

THE TECHNICAL MIND AND THE CITY PLAN.

By C. A. FAVROT.

Address before the Society, April 8, 1918.

PRESIDENT KLOSER: The technical exercises for the evening will consist of a paper entitled "The Technical Mind and the City Plan," by Mr. Favrot. Mr. Favrot, we will be glad to hear from you.

MR. FAVROT: Gentlemen, I will have to ask you to forgive me a little, because if I had appreciated fully what was going to happen from the time that I accepted Mr. Hutson's very kind invitation to appear before you, I would have put this off at least another month, or probably two months. The subject of city planning is so very extensive that unless one is an expert, he really does require a little preparation to make his subject interesting, and particularly when he is discussing it with gentlemen of your attainments and technical training. Not being an expert, I am placed a little at a disadvantage, without the opportunity of making the researches that the subject demands. However, there is so much to be said that with my poor preparation, I shall hope to give you some inkling as to what city planning means and what we can do in cities in order to materially improve our condition.

It is impossible to cover the whole subject of city planning in one evening, and I am not going to attempt it, but I will try to take up one or two points of the subject which I think will appeal to you most strongly, and then try to at least give you an appreciation of what interest ought to be taken in this subject, in order that when you are discussing the subject with your friends and acquaintances, you may spread the propaganda, so that when the movement is actually inaugurated in the city of New Orleans, we will find in you a ready means of spreading the doctrine.

I have selected the subject, "The Technical Mind and the City Plan." The purpose of doing that is to show that, after all, city planning, analyzed, is nothing but the workings of the technical mind. Probably architects have been selected above

all the other professions because of their eye for the beautiful; let it be said, however, that the theory of city planning experts is that city planning and the city beautiful belong to one another entirely, that is to say, one is dependent upon the other.

Today, we are working on the theory of first making a city efficient, and after it is efficient, beautifying the efficiency, so that in the last analysis, the city beautiful follows the city efficient.

City planning, in its strict sense, is the co-ordination of all of the activities of a city, in order that it shall grow efficiently from the point at which it is, or at which it starts, to the point to which it is working. We all realize that the cities of today have all made very, very serious blunders. They have grown without any thought-out plan; they have congested themselves; they have prevented themselves from growing efficiently to the extent that many of our cities in this country are expending now hundreds and hundreds of millions of dollars to correct the grievous errors that have been made, due to lack of forethought and the proper vision of what a city should be. The theory, then, today—and not only is it a theory, it is an actual practice—is to try to correct the defects that do exist, and then to lay out the future city and work so that as it grows there is never felt the congestion which our present cities are laboring under.

The growth of cities beyond the point where the city can take care of its expansion is beautifully illustrated, for instance, in the city of New York. I cite that as an instance, because it is so marked that it is almost impossible to overlook it. All of that downtown section of the city of New York, where there are enormous values, and where there were a great many manufactories, very soon became so congested that it was impossible for the manufacturers to get their productions to market at all. The streets were so congested that they could not move. So very soon, these manufacturers began getting out of these downtown sections and began moving uptown, where the traffic was not so heavy, in order that they could reasonably carry on their business. It became so alarming to the owners of property there that when an analysis was made by the experts selected for that purpose by the Commission of the City of New York, it was very soon found that real estate values in

all of the lower section of the city of New York had absolutely become valueless, that is to say, they had gone from a very high point to a very, very low point. These loft buildings could not be rented except immediately around Broadway. By the zoning system applied to the city of New York, those values have now been re-established. That is to say, they have formulated laws so as to take care of this congestion, by the building of underground traffic ways, taking care of foot traffic and permitting the hauling of tonnage traffic on the surface of the streets, so that the manufacturers can go back to these buildings, and do their work efficiently.

This was all the result of lack of thought and of haphazard growth. All these manufacturers were spreading out into residential and retail districts, where land values were high, but where there were at least some opportunities to carry on their trade. They were combining there the manufacturing business with the retailing and wholesaling. In the same way, the wholesaling was taking possession of a great many of the retail districts. The condition is comparable, very essentially, I should say, in your minds, in the matter of haphazard growth, to that of a manufacturing plant, an industrial plant of any kind, that starts out to meet the immediate needs of its present output without looking forward to an expansion of business. You might take, for instance, a small factory that starts out with a boiler in a certain position and power plant in a certain position; it has two floors in which to carry on its work, and does it very efficiently so long as it is a two-story building, but eventually the business increases and the plant develops laterally and up in the air, and becomes a five or six-story building. Still they transmit that power from its original point to all of this area. By taking into consideration the friction of drives, shafting and belting, the loss from that kind of an expansion would be absolutely enormous.

Now, it is exactly the same thing in haphazard city growth. The economic loss to the citizens of the community is absolutely alarming. We can appreciate what it means. In New York, it has meant to them a loss of very close to a billion dollars within the last twenty years. In the city of Chicago, it has been a matter of nearly five hundred millions of dollars of moneys

that have been expended in public improvements that have gained absolutely nothing for the community.

We must realize that this, to us, may be a new thing, but it is a thing that really comes right back to our duty as citizens. When you consider that we, living in a community, are dependent upon that community for a living, that we have made a living out of that community, and whatever we gain in this world is at the expense of the community, then we *should* consider the question of making that community as efficient and as happy as we possibly can, because that is where we get our increment of wealth. It is out of the community that we get it. Therefore, there is something that we owe back to that community for what we have gotten out of it. City planning, in its last analysis, just simply means that you are taking care of the whole of the city, the efficiency of the whole, in order that you can get the most out of it. Your city is a great big piece of machinery, as it were, and you want to get from every part of that machinery everything that the machine can possibly produce. I am employing eight or ten men. If I look to their happiness, if I help work my city out so that their transportation facilities are as convenient as possible, so that they can leave their houses at the latest possible hour in the morning to get to their work in the shortest time, and leave my office at the latest possible hour in the evening and get back as early as possible to their homes and families, I have conduced to their happiness. If I can throw around my employees by my endeavors such things as recreation parks and places where they can go to amuse themselves, and things that will contribute to their happiness, then I can expect from them a return which will redound to my benefit in the greater efficiency of my office. It applies to all kinds of labor, ordinary labor, expert labor, no matter what the nature of labor is, you are dependent upon that to gain all you can out of it. It is by the means of that help that you become successful in the community; therefore, you are absolutely dependent upon that community, and you owe it to the community to give back to it all you possibly can, because in that way you produce the greatest efficiency in your own business.

After all, we are nothing but a lot of stockholders in a great big corporation; that is all we are. Each citizen of a city or town or community of any kind is a stockholder in that community. We each have a share. It belongs to each individual one of us just as much as it does to the others, and it has been my experience that in every community a thing is just as good as the people in that community want it to be. You can speak about your political parties and your ring and all sorts of things that pertain to public business, but I want to tell you that it has been my experience that no public official is going to do any different than the public want him to do. The only reason why our public officials oftentimes may take advantage of us is because the public takes absolutely no interest in public matters, and, therefore, the public official uses his own judgment. He has no public policy defined and he is left entirely to his own judgment and discretion, and he uses it as he sees fit, and he gets, of course, many complaints from individual members of the community. If, on the contrary, each member of the community considered himself a stockholder or partner in this great big corporation and showed the public officials what he wanted and the public officials knew that it was sincere, that it was meant, the stockholder would get everything that he desired. I have never known a public official yet that would not give the public just what it wanted, provided he thought the public wanted it.

In city planning, we must not be pessimists. There must be an enthusiastic optimism. It is impossible to feel and to say that a thing cannot be done. You must go at it enthusiastically, believing that it can be done. You are going to have many a setback, many a throwback; you are going to be disappointed many a time, but you must keep on going. You are going to change your plans almost every year, possibly, because your needs are growing. You may find that your condition next year is not what it was the year before. You may make a determination today and next year change that for one that is entirely different. It is a thing that is constantly changing; therefore, you have got to go into it with enthusiasm, and persistency.

Some great man once said: "An individual never attains any great size, mentally or morally, except as he attached himself to a great idea, and that idea, being worthy, grows with him until the stature of the man becomes equal to the stature of the idea to which he has attached himself."

Now, that relates to us all, gentlemen, and particularly in this: There are so many of us in this world that live our lives through, probably happily, maybe unhappily, but once we are gone, we are forgotten; but if those of us who are sincere in wanting our community to succeed can attach ourselves to those community ideas that will make for a better community, at least we have attached ourselves so firmly to something that is large, that is big, that is going to succeed, that we might all be proud, then may we not be remembered as associated with that great big idea.

The health, happiness and general prosperity of a people are of far greater importance than the petty whims and bickerings of any class, or the selfishness of any individuals. This country, through excessive liberties, has grown to be a country of individualism. There are very few of us today who are approached on any subject, whose first question is: "What is there in this for me?" The ego comes out in almost everything we do. There are none of us who think in a communal way. We are all thinking of the individual.

Now, we cannot do that in city planning. We must all lose our individuality immediately, because everything we do is for the benefit of the community, the whole, for the people, and whether he be poor or whether he be rich, each man must profit by exactly the same amenities. We must give to the poor man everything he is entitled to and take from the rich man everything he is not entitled to; we must make a fair distribution so that each one may enjoy, as a part of a community, the amenities that belong to all.

I have repeated once or twice in little public talks of this kind, but I want to repeat again, that my close association with the forces of the Association of Commerce in the last two or three years has shown me that never, I suppose, since New Orleans has been in existence, have the eyes of the world been more turned in this direction. I do not believe that there is any

city in the United States today that is more spoken of than the city of New Orleans. I listened to a lecture given by Mr. Babson, the famous statistician, to the Society of Economics of Tulane University, I think it was last year some time, and there were one or two things that struck me particularly. One fact that he emphasized was this: In his lecture, he said: "Gentlemen, I want to call your attention to one thing. In 1950, the largest city in the United States will not be New York or Boston or Philadelphia or Chicago or St. Louis or any city on the western coast. The largest city in the United States in 1950 is going to be on the Gulf coast, and I can tell you that with the same certainty that I can tell you the number of men thirty-one years of age in the city of New Orleans that are going to die tomorrow. Now, I am not telling you that New Orleans is going to be that city, but I am going to tell you that there is a splendid opportunity for you to become that city."

That made a very lasting impression upon me. I have always remembered it, and I have thought of it on many occasions, and it seems to me, then, with that thought in mind, that this would certainly be the time for us to give very close attention to preparing our city in such a way that we are going to grow efficiently, that we justly encourage the industries that in all probability will come here and will stay here if we prepare the city properly to receive them.

Many of us are not following the trend of events in the world today and we do not realize the changes that are being made in the social fabric of the whole country. We do not realize that we are probably gradually getting nearer and nearer to a social democracy. Those of us who keep up with the conditions brought about by this great war and see what England has done, what England is doing today, how she is preparing herself to meet the conditions that will be forced on her after this war, will understand these changes. You would be absolutely astounded at the manner in which the doctrine of social democracy has grown in that country, to the point that England today has already spent seven hundred millions of dollars on the housing of working classes and the poor and has made appropriations of over one billion of dollars for the same pur-

pose. That is by act of Parliament, and under the Defense of the Realm Act.

To show how far that goes, I quote you here from what Mr. Babson said recently in a speech that he made, I think, in New York:

"My principal difficulty was in convincing manufacturers of the increase in cost of living to wage-earners and in the reasonableness of advancing wages. The manufacturers who are not complaining about paying advances for materials which they must use are strenuously objecting to paying a fraction of this advance in wages.

"In many ways manufacturers are more liberal than wage-earners. They cheerfully pay heavy taxes, give bountifully to the Red Cross and similar organizations, are willing to work in Washington for \$1.00 a year, but there is one thing which they will not do—give up one-sixteenth of the so-called 'inherent rights' of the employing class."

I wish to further read you a quotation from a speech made by Mr. Charles M. Schwab on this same subject:

"I am not one to carelessly turn over my belongings to the uplift of the nation, but I am one who has come to a belief that the workers will rule. The time is coming when the men of the working classes, the men without property, will control the destinies of this world of ours. We must look to the worker for a solution of the economic conditions now being considered. The sooner we come to a realization of this, the better it will be for our country and for the world at large."

Now, gentlemen, these are messages that go deep, and my only reason for drawing attention to them is that they show that we must turn our attention to communal efforts; that we must look to the betterment of the whole; we must forget our individualism, and we must get into communal interest, working towards the betterment as a whole and reaping the benefits from the communal effort.

On the same subject, I will quote you from a friend of mine, Mr. Ackerman, who has made a very close study of housing conditions in England and what England is doing today on this subject, and I will show you how it affects us:

"Thoroughly to grasp our problem, we must realize that the housing of workers is not a problem peculiar to ourselves or a result of war; it is, and for generations has been, a western world problem growing out of industrial systems, and practically the entire western world, with the exception of America, has recognized it as either a municipal or a federal problem demanding for solution more than restrictive legislation. We must be brought to recognize that the countries of Europe have had this problem to contend with for a much longer period and that their present methods represent the result of a long and painful period of experimentation. We must also recognize that there is a world tendency toward the amelioration of the conditions surrounding workmen; that the present tendency is born of a practical experience which has shown the tremendous value of physical environment upon industrial production. No longer is welfare work confined within the factory or to the region immediately adjacent; now it extends to the housing of workers, and with the housing of workers the inclusion of the amenities is given a dominating emphasis.

"However vaguely we may grasp the problems confronting us in the days of reconstruction to come, we are absolutely certain of these things: that nation which is most fully organized and wherein every element of its social and economic structure is conserved—that nation in which the vision of a great social and economic democracy is expressed in the broadest program of national organization and conservation—that is the nation which will achieve national prosperity, because it puts the welfare of the whole above the welfare of any individual or group. There is no other way to national stability."

There is no other way to national stability."

Now, gentlemen, those are the problems that we have got to face, and they are the problems that we have to solve before we go too far.

City planning is old. It is as old as the Greeks and the Romans. There was no city built in the olden times that did not have a civic center. The old Roman forum is an example of that. This place here, Jackson Square, designed by the French and laid out by the French, is the first civic center in America. It has that distinction. There is no city in the

United States that had a civic center previous to the city of New Orleans. It is a co-ordination of effort toward something orderly—something systematic.

I think one of the most remarkable instances of city planning is probably Chicago. I do not know of any city in the United States that has gone at it with exactly the same enthusiasm that Chicago has. It started in Chicago overnight. Mr. Burnham, a member of the Commercial Club of Chicago, got up one evening and began to talk about the necessity of stopping the congestion in the city of Chicago and planning Chicago for a future growth. He said: "Chicago is a very much larger city than it was, and unless the congestion is stopped and preparations made to meet the congestion as it grows and lay it out efficiently, Chicago will be lost." Somebody suggested in that meeting: "What will it take to do it?" Mr. Burnham said: "I do not know, but I judge it might represent \$175,000 to start it." The Commercial Club that night raised \$100,000, and two months after that, raised another \$75,000, and started the city plan of Chicago. They went at it in a systematic, orderly way. Mr. Burnham was given carte blanche, and employed the finest experts he could find in this country, and began the education of the public through the public press. They even went so far as to publish a treatise on city planning that could be taught in the public schools of Chicago, and it is taught today in the eighth, ninth and tenth grades in all the public schools of the city, and has been, I think, for the last eight years. The consequence is that everything that Chicago is doing today is along the lines of its approved plan. It has already spent millions of dollars on its municipal wharf, which I understand has not been the success they expected of it, but, at least, it is a move in the right direction, and it will probably be a success after a while. They have certainly cleared up all of their lake front. They are doing a wonderful amount of work there, to such an extent that they have been able to accept the gift of Mr. Field for the building of that splendid museum which is already started on that lake front.

They have widened Twelfth Street; they have widened Michigan Avenue. They have not yet expropriated the property for

the diagonal streets that will run from the civic center out to the four corners of Chicago, but the Planning Commission have so impressed the people of Chicago with their city plan, as studied out by the experts, that there is no question but that it will be carried out.

Another remarkable instance of city planning is the city of Sacramento. That was started by a ladies' club. Someone who had a smattering of the subject was asked to make a speech before a certain women's league out in Sacramento, and he made his little talk, and the women were so thoroughly impressed with what this gentleman said that they went down in a committee to the Commercial Club, or the Board of Trade, or whatever it was, and they began to start some little work in that direction; then they went to the city officials, and, of course, the city officials would not consider at all the question of a city plan; they could not quite grasp what it meant. They could not get a penny's appropriation from the city, but they managed to put it through by hook or crook. The Board of Trade gave them a little money, and they commenced publicity, and got Mr. Robinson, of Buffalo, down there, who made a report, and within a year they succeeded in getting the Commission Council of Sacramento to take up the question of city planning. They appointed a commission, which employed Mr. John Nolen to make a city plan of Sacramento, and since then they have been gradually working to the plan.

Furthermore, in city plan work, the courts are beginning to recognize the rights of the citizens. There is the famous brickyard case, in Los Angeles, by which the citizens, residents, tried to prevent a brickyard from operating immediately around the residences in a certain section of Los Angeles, and they took an injunction against them. It went to the California courts, who supported the contention of the citizens on the theory of the greatest good to the greatest number—that if it was objectionable to the greatest number of people in that neighborhood, the brickyard could not operate. The Supreme Court of California supported the decision of the lower court. It was carried to the Supreme Court of the United States, who again reaffirmed the decision of the Supreme Court of California, stating that the people had a right to designate how their

surroundings should be. The courts are recognizing that. In the billboard case of Chicago, recently, the same view was taken by the Supreme Court of the United States, supporting the decision of the Supreme Court of the State of Illinois that it was perfectly proper to regulate billboards by police power, and unless you had the consent of the people in a certain area in which billboards were placed, you could not place them there.

So we see in the courts a recognition of these fundamental principles.

It is impossible, as I say, to go into all of the activities of city planning, but I will take just one phase of it. We are talking about efficiency in the city of New Orleans. I want to show you just one line along which you can think, because your minds run in that direction. We have done some wonderful work towards city planning in the city of New Orleans, but we do not appreciate it. Our water system is one of the finest in this country—a very necessary activity in city planning work. The same is true of our sewerage system and drainage system. We have a splendid system of docks, which is an activity of city planning. We have a belt railroad as good, I believe, as can be found anywhere, publicly owned, which is one of the activities of city planning.

The trouble is that we have not co-ordinated those efforts, those particular activities, sufficiently to make them serve the purpose of the community to the greatest extent.

As an illustration, for instance, take industries growing in the city of New Orleans, small manufactories. What advantages have they for manufacturing and shipping their goods out? Suppose that you located a small manufacturer on Tchoupitoulas Street, and he shipped out only small quantities of goods—never in earload lots. He has to haul his product from there up to the Trans-Mississippi Terminal Station or out to the Illinois Central or way down to the Northeastern station or out to the Louisville & Nashville station. He has four points to which to haul small parcels of goods. He has to pay drayage on it, for it takes hauling to do it. Suppose that we had industrial terminals in the city of New Orleans for small manufacturers. Suppose that we encouraged them. Suppose that

the technical mind gave it thought and worked out these terminals so that a man could go in and put up a building that we will suppose would contain eight units of manufacturers, so that there would be eight tenants in that building. The advantages to those small manufacturers in that building would be, first, that they would have a better building than they could afford to put up themselves, because they would not have the capital to put in it. They would have better fire protection and necessary lower insurance rates.

If money could be put into an industrial terminal of this kind, by which eight or ten small manufacturers could go into it—locating it properly—the better class to go into them, and get better service out of it, and then immediately would follow freight distribution stations. There is no reason, with our public belt, why we should haul our products to the Union Station and to the Trans-Mississippi Terminal and Southern Pacific and Illinois Central and Northeastern. If we had these freight distribution stations fixed at certain points around our wholesalers, around our small manufacturers, or around our large manufacturers, then we would reduce our hauling to a minimum. Our public belt could take those cars from an interchange yard fixed somewhere, bring them in to be loaded with the different products, belt them out to the different roads and send them to their destinations, thereby relieving congestion in our streets as we grow greater and we need our streets more, because it takes an awful lot of wagon haul to bring our products from our present manufacturing points out to all of these stations, and congests a great many of our streets. We would save a great deal of that hauling. Now, what is the effect of this? It places the manufacturer in our city in a position where he can compete with any other manufacturer of his product, and probably by this process he can furnish it and sell it to the consumer at a considerably less cost.

I point this out to show just one angle of city planning related to one of our public activities that it seems to me could be developed into a very efficient activity for the city of New Orleans. It has been successfully done in other cities. Of course, it is nothing new, but I am showing you the haphazard way in which we, here, are trying to handle problems. No one

of you has any idea, unless he takes an account, of what we are wasting every day, hauling over these rough pavements, the horseshoes and iron tires, and wear and tear on those wagons, that all represent dollars and cents that have got to be paid by our wholesalers and manufacturers that we cannot get back. We cannot put ourselves in competition; we cannot sell our goods at a price to compete with St. Louis and the west, Cincinnati, Chicago or any other manufacturing point, because we have not the efficiency here to do the work economically. And all those things count in the expense of operation. We cannot expect to get anyone to come here unless we show them that we have something that will save in the cost of operation. The trouble with us in all these matters is that we are constantly passing laws to restrict, rather than educate, our people to constructive thought. That is to say, it is infinitely better to think constructively and do things that are for the good of all, than to restrict from doing things that are bad for all. We are always going at it in a negative way. We are constantly passing laws to prevent people from doing this, that or the other, instead of educating the people not to do it, and to do things right.

Now, another activity of city planning. I see Mr. Willis here. He belongs to the City Engineering Department, I believe. Now, take the question, for instance, of streets. Just think of the study that could be made of our streets in the city of New Orleans, so that our people would not spend a lot of money for paving that is unnecessary for the purposes for which that paving is to be used. In many of our residential districts, you may see immensely wide streets, paved for, generally, a few residences, with sometimes forty or thirty-foot roadways, when twenty would do. That is far from being economic. We are permitting vast expenditures of individual funds, and probably the city's in a great many instances, where there is no use for it. For a street that is being used entirely for residential purposes, except a very prominent street, a 22 or 25-foot roadway is ample. If, however, it becomes a highway by which you are reaching other sections of the city through that street, then, of course, another analysis is necessary.

I am showing how haphazard improvements and large sums of money have been spent inefficiently and without thought. This again is a study that the city planner takes into consideration. He studies the conditions and sees just exactly what traffic goes here and there and makes his width recommendations accordingly. The city planner goes further. He may see, for instance, a condition prevailing today in Girod Street in the city of New Orleans, where there is an outlet to many a railroad station. His first analysis will be that it is a very narrow street. It may serve the purpose of today, but eventually it must become only a one-way street, and must serve three times as much traffic as it does today, and it may even then become congested. Our laws, therefore, must be made to prevent any new buildings on Girod Street from coming within 10 feet of the property line. We must prepare for fifty years to come, because that street, instead of being 40 feet in fifty years, may have to be 80 feet, and, therefore, you cannot build within 10 feet of that property line with any new buildings which you construct. That is where the city planner comes in. He analyzes for the future. He does everything constructively now, so that when the time comes to apply the remedies for congestion, it is not an abnormal amount of money that has to be expended by the city in order to destroy improvements that are so costly as to make it almost abortive.

Now, the same thing relates to parks; the same thing relates to transportation lines, and to the development of small communities, suburbs and things of that kind. Those should all be correlated with the city in such a way as to get all the amenities possible for the people that live there and still not to change or destroy the realty values of other sections of the city.

A very interesting thing is a system of valuation. I have seen several valuation plans by which in a certain district, where the values of a front foot are so much, we will say where they are a maximum, they allow the maximum height of building. They establish that—say, ten stories on the maximum value of the lot, because that lot is worth so much that unless you build up in the air, you cannot get a fair return. Two or three blocks, or ten blocks, from there, we will suppose there

is another valuation per front foot of land, and immediately that is brought down to a basis of an eight-story building, and it is zoned out in that way, and as you decrease in the value of land, you decrease in the height of buildings, so as to give a maximum of air to the greatest number as you get away from those very concentrated points in the city.

However, those things change. Your valuations on a certain street today may be so much, but in two years from now you may have to change your valuation system. The city planner is going at that all the time. It is a constant work. It never ceases but has to be kept up all the time. Your developments change. One street may be absolutely ignored, or forgotten and not known today, and in a year from now, or two years from now, may become a very important thoroughfare. Developments of the people and conditions will change from year to year, and those have to be followed by the city planner always, to meet those conditions as they come in the future.

Now, I think I have kept you long enough, but I would just like to close by repeating the oath that the soldiers of old Athens used to take:

"We shall never bring disgrace to this, our city, by any act of cowardice, nor ever desert our suffering comrades in the ranks. We will fight for the ideals and sacred things of the city, both alone and with many. We will revere and obey the city's laws and do our best to incite a like respect and reverence in those above us who are prone to annul or to set them at naught. We will strive unceasingly to quicken the public's sense of civic duty. Thus, in all these ways, we will transmit this city not only not less, but greater, better, and more beautiful than it was transmitted to us."

Gentlemen, in closing, I want to say this: I succeeded this year in getting the Association of Commerce to appropriate \$7,500 towards a city plan. That, of course, is merely preliminary; it is impossible to accomplish anything with \$7,500. It was for the purpose of having an expert come to the city of New Orleans and make a tentative report of probably some conditions that he found particularly bad, in order that we might go before the public and show where improvements are

needed in the city of New Orleans, and where grave errors exist in the present conditions. Unfortunately, city planners are so taken up with the war activities that it has been impossible for me to get any of them to consent to come at the present time to the city of New Orleans. I have had it up with five or six, and all of them are practically in the employ of the Government today. The Government has so much to do in trying to house the people that are working in the war industries in the North that it has apparently commandeered the services of almost every man who has any capacity at all in that line. Besides that, many of our best men have gone to France to study the conditions there preparatory to restoring the villages and towns of France. So I have been very unfortunate in that respect, and I am afraid we shall probably have to delay this matter a little longer. I have, however, this thought, that if it is impossible, within the near future, to get some satisfactory advice from some of our best planners, it may be that it will be necessary for us, the architects of the city of New Orleans and the engineers of the city of New Orleans, to get together and work, ourselves, as best we can, so as to at least get data together. I do not think it will take any great amount of study on our part to learn how to get our data together, and I think there may be a great deal that we can accomplish, to turn over to our expert when we get him, and if we can at least accomplish that much, it is my purpose to do it, and I feel that you gentlemen, with your minds already analytical, can materially help us in getting this data together.

If there are any questions that you gentlemen wish to ask that I can answer, I will try to. I won't promise to, but I will try to.

PRESIDENT KLORER: You have heard Mr. Favrot's very interesting talk on a subject to which we probably do not give enough attention. We only realize what the future generations might be up against when we have a holiday season here, carnival times or Liberty Day parades, and then we meet the congestion problems that exist in the northern cities. But I think this talk of Mr. Favrot's has been very interesting, not only the practical points he has brought up, but also the philosophical sidelights that he touched upon, and he has asked you

gentlemen to ask him any further questions that you might want to clear up in your minds. We would like to hear from you. Give him the benefit of some discussion. Mr. Willis, would you like to defend yourself?

MR. WILLIS: I do not know that there are any particular questions I want to ask Mr. Favrot, but I certainly have enjoyed his talk, as I know we all have. The subject is surely a very important one and one in which some interest should be aroused just as quickly as possible, because it is a big problem and is getting larger all the time.

I have to say, though, that in the matter of street paving, we are going forward rapidly. It has probably only been in the last three or four years, probably four or five years, that we have gotten down to what you might call a system of street paving, and paving in a systematic manner. Before our present law became effective, the matter of selecting a type of pavement, and even designating the street that was to be paved, was left largely to the property owner. That, of course, brought in the selfish motive, and all kinds of short stretches of streets were paved that were of no real value to the community and of little value to the people who really footed the bill. Our present law I think has corrected that. The property owners may now petition for the paving of streets and by a certain percentage of the property frontage being represented in that petition that street will be paved, but the Council also has the right to force the paving of streets, and that is being done to much greater extent now than it ever has been before, and as a result you can see this lower section of the city here where we had the square granite blocks and cobble stones, every street between Canal and Esplanade and between the river and Rampart Street—all of those streets are now provided for; the paving has been done or will be done, and it is only a question of a short time until all the streets in the business section will be paved.

Of course, that is going to reduce the frightful cost of hauling over these streets. There is no question about our inability to estimate the enormous waste that is going on here daily—in fact, in every city, but probably here as much

as anywhere—in hauling over these rough streets that we had in the business section of the city, where the most heavy hauling is done.

Another advance I think we have made is in the selection of the type of paving. Up to a short time ago, the property owners selected the type of paving, and were governed by various motives, and oftentimes would get the type of paving least suited to the street for which it was going to be used. Now, that has been corrected largely. Still the property owner has a great deal to say in the selection of the type of paving, but under this act the City Council has the right to put down the paving they consider most suited, provided the city will assume the difference in cost between the pavement they consider best and the one the property owners have selected. The property owners often would select one that would cost least, but under this act it has been possible to put down the type of pavement in the business section suited to the type of traffic that is going to pass over it, and it, of course, has already greatly reduced the hauling costs in the city.

There is still much to be done, and it is going to be done as soon as it can be. If it had not been for the present war situation, we would be doing a great deal of paving now. Practically all of these streets in the section from Lee Circle to Esplanade and from the river back to Claiborne are either provided for or contemplated, so that we are going more rapidly, and if the war had not come on as it did, in three or four or five years the city would be well paved in the business section.

Another thing we are doing which is a step forward, is a more careful study of streets and their suitability,—that is, the width of street that would be most desirable for the particular traffic that is going to pass through it, and the plan of laying out the streets that are going to handle heavy traffic, or boulevard traffic. I do not suppose there are many cities in the United States that are better adapted to a scheme of city planning than New Orleans. We have a wonderful number of wide streets, all having a tendency to go in the

right direction. For instance, you go up St. Charles Avenue, or say you start at the river and go back from the river, and you come to St. Charles Avenue, Claiborne, Galvez, Broad—right on back,—all of those are wide streets that can be designed and are being designed to carry heavy traffic. Starting at Canal Street and going either up or down town for about two miles, you find wide streets. Of course, there is no question but that that is good city planning.

Another thing we have done is to fix the width of streets to effect just the saving that Mr. Favrot suggested. Twenty-two feet is our standard width of street in residential sections. Now, that is about as narrow a street as you can safely use, and still it is not too narrow. You take a vehicle standing next to the curb and possibly two other vehicles passing at the same point, and 22 feet is none too much. It is working out very satisfactorily and has been adopted as a standard, and has been a standard for probably eight or ten years now. Prior to that, whenever a street was to be paved, the property owner even designated the width of the street. There are lots of streets that have been paved much wider than necessary, but the property owner was largely responsible for that.

So I think in the matter of street paving, as soon as the money situation loosens up a little, that we are going to go forward rapidly, and I hope we shall do so in all other lines of city improvement.

MR. ROBERT: Mr. President, Mr. Favrot made a very interesting statement about, for instance, these cobble-stone pavements, where hundreds of dollars worth of rubber tires are being used up every day. Now, for the poor, downtrodden automobile owner who must ride to work in his automobile every day, I believe I voice the sentiment of all of them when I say they would like to see St. Charles Avenue paved with those cobble-stones. It would save a few tires.

Speaking of the automobile, though, seriously, it has become in recent years not so much of a pleasure car as it has been in the past. The automobile is being more and more recognized as a necessary part of a busy man's equipment, and to that end, he uses it to ride to work in every day and go home from work.

Now, that brings up the question of what he is going to do with that car downtown all day long, and I wanted to ask Mr. Favrot what has been the solution in very congested places, like New York. What have they done there?

MR. FAVROT: Why, in New York, as far as I know, every man has a chauffeur, and he is driven downtown and does not drive his own car. A man is either rich in New York or he is poor. Either he has an automobile and a chauffeur, or he has none. I believe that is the general rule. In the downtown section, there are a great many of the loft-buildings that are used as garages. Of course, everything is handled by elevators, and sometimes as many as fifteen-story buildings are used as garages, and you go right in and your car goes on an elevator and right up to the fourteenth floor, and there it is parked and stays there until you are ready for it, when you telephone for it and it will be sent down to you. But I think as a rule you will find that there are comparatively few owners of cars in New York who drive their own cars.

MR. ROBERT: As I see it, though, that is going to be a question later on in planning cities. These men of moderate circumstances, if they can ride to work in their car, it will probably cost them a quarter, or maybe a little more than that. If that will save them an hour or so in which they can make three or four dollars, it is good business policy, rather than ride in a street car. I mean the man of moderate circumstances, who has no chauffeur. The question of parking cars, or regulation of that kind of unregulated traffic—unregulated as far as it does not run on rails—is going to become a question in the planning of future cities, and it must be taken care of in some way. And I still say I wish St. Charles Avenue were paved with cobble stones. I would save money on tires.

MR. FAVROT: Taking up that question of traffic, it is just one illustration of how people can suffer from lack of planning. You take, for instance, as an illustration, every bit of the traffic that goes from the New Basin uptown, I would say that 85 per cent of that traffic goes up the Clio car line. The consequence is that all this brick, gravel, cement, lime, everything

that comes out of the warehouses along the Basin, the building materials, goes up that Clio car line. People living along that line have absolutely no use of it. You can hardly come downtown without a delay in the middle of the day. Usually there is a stalled wagon here or another one there. I do not think there is a single day on the books of the railways company that there is not a serious delay on that line anywhere from ten o'clock in the morning until four o'clock in the afternoon. Now, you are not affording the people of that district that are accommodated by the Clio car line the proper amenities; you are not giving them the privileges that they are entitled to have in a city that is reasonably efficient. In other words, there should be a traffic street. The city should force a traffic street to be established, in order to keep those wagons off of the car tracks. To begin with, you cannot maintain a car track with the heavy tonnage that goes over it in the way of hauling such as is done on that car line. You cannot maintain it. From the time you get on one of those cars, you cannot read a paper; you cannot do anything; it is just out of the question.

Now, there is a condition that has been existing for years and years. All that traffic, ever since the Clio line has been built, the entire traffic of the New Basin has been taken care of on the car track. The car line is worth very little to the people that are on it so far as getting really efficient service from it is concerned.

PRESIDENT KLOSER: Probably the reason is that there is no parallel street.

MR. FAVROT: Yes, sir, until you get to St. Charles Avenue, and of course, St. Charles is very much longer as you are getting to the outside of the curve.

MR. ROBERT: And when you get up in the uptown neighborhood, near Tulane University, for instance, there are only five streets that go through, Magazine, St. Charles, Freret, Willow and Claiborne. Claiborne is impassable, Willow and Freret practically so, and Magazine too far over, and that leaves St. Charles Avenue over which they haul their boilers and

machinery and everything else that goes up to the uptown neighborhood. You can see it passing there every day.

MR. FAVROT: That shows the angles that city planning turns to. It shows what angles and questions are discussed in city planning. Of course, city planning also effects the manner of building on blocks, the division of blocks with alleyways, with possible ingress and egress in case of fire. There are innumerable problems and questions that come up in city planning that are so essential to the real comfort of the community.

MR. LAWS: I would like to ask you, Mr. Favrot, what is your idea of alleys in squares. Are they an advantage or a disadvantage?

MR. FAVROT: They are an advantage in the congested districts, particularly in the event of fires. Not so much in the non-congested districts, but of course, they should be subject to very strict regulation, because they become immediately the reverse if they are not strictly regulated. But looking at it from a fire viewpoint, they are a great advantage in all congested districts. There should be accessibility to the inside of squares, in order to fight fires from different angles in congested districts, where the conflagrations are likely to be very serious.

MR. RIESS: I regard Mr. Favrot as doing missionary work in connection with all of this, and I think his suggestion, in view of the fact that he cannot at the present time secure the services of some expert along this line, that some definite preliminary plan be adopted through the co-ordinated efforts of the architectural and engineering professions here is an exceedingly good one, and I think the work properly belongs to the architects and the engineers of this city. I think that both should work along that particular line.

PRESIDENT KLOSER: What would you suggest, Mr. Favrot? In what way could he accomplish something definite, something concrete? First of all, we want to assure you of the spirit of co-operation which we feel in a matter of this character. We probably do not take the initiative in matters of that kind, but we are willing to fall in line. Is there anything that the En-

gineering Society could do, along any line you might suggest? If so, we will be glad to do it.

MR. FAVROT: I would suggest to you, gentlemen, that the time is not yet ripe, I think, for us to take up this question, because there are two or three of the experts who are considering the proposition of coming down here, who have not flatly refused, but have only delayed. I want to be perfectly candid with you that whatever we do, in my opinion, should be done under the supervision of an expert if we can get him. It is in the event of the expert not being able to get here that I feel as though we should not fall down entirely, but should at least start the collecting of data preparatory to a review by the expert when we can get him here. And there is where I think that the members of this Society, along with the architects, probably have the analytical mind that can best suit itself to the task of obtaining that data.

Now, of course, you understand that the activity of city planning lies with the Association of Commerce, belongs to the civic bureau of the Association of Commerce, but I know we are not going to find in that bureau a man who would be sufficiently expert to get the information or collect the data such as we would require for the expert, and it will be necessary for that bureau to go on the outside in order to obtain the necessary help. So there is where I think the architects and the engineers will be able to co-ordinate their efforts in collating this data. I do not think that any of us here are sufficiently expert to pass on it, even to inaugurate the thing in the proper way, unless some of us get right down to intensive study of the subject. We have not studied that subject and become experts. Others have, and of course, their experience will be worth a great deal to us. And this being a large city already, I think we require the services of a man of good, mature experience in that particular line. We cannot afford to make any mistakes,—less now than ever. We must have the very best that we can get. I still hope that we will have one of probably three experts to accept this commission for this year, although at the present time none have been able to answer positively. And if we cannot get them, it is my opinion that we should make some effort. We cannot

afford to fall down on what we have attempted to do. I cannot, anyway, because I have inaugurated the whole thing and I am not going to let my appropriation fail.

MR. OLSEN: I should like to ask Mr. Favrot's opinion, in the matter of city planning, about getting away from all these square blocks. Now, we have the whole city squared up in 300-foot blocks, 300 feet one way and 300 feet the other way. It seems to me could very easily get along with main streets 300 feet apart one way, or even less, and then cut out two streets the other way and have the cross streets 900 feet apart, or 600 feet. As it is, we have paved streets, and water lines and drainage lines and gas lines and everything else. If you cut out two out of each three cross streets, you secure an immense saving. I cannot see any real reason for having all those cross streets, especially in the residential sections, and it appears to me to be a very important question to take under consideration while the city is being planned, or will be planned.

MR. FAVROT: All those things will be taken into consideration. The only difficulty about that is that you are destroying so much that is already of value that it is a question of whether the community will be ready to pay for that destruction. And then you may make a mistake. Suppose you lay out your blocks long in one direction and narrow in the other and you should do like the city of New York did. They made the mistake of laying out their checkerboard in the wrong way. The consequence is now they have very few streets going up and down, the way the traffic is going, and a great many streets going across the city. They thought the cross streets were the necessary ones.

PRESIDENT KLOSER: Mr. Favrot, do you think the advantage of having radial avenues, you might term them, in the manner that Washington is laid off, would counterbalance the disadvantages of cutting up the squares into so many irregular parts?

MR. FAVROT: Yes, sir, absolutely. They pay many, many times over. It resolves itself into a treatment of the corner. After you have passed your corner, there is very little difficulty—it is just the corners. And see how Washington has

treated the corners. Chicago has done the same thing. Chicago has struck right out, cutting down twenty-story buildings, just to relieve the congestion and get from one point to another in the shortest reasonable space of time without having to go around, and then connecting by radial boulevards that touch these diagonals so that you can connect at any point. In almost all of the German cities they have studied that question, because they are far more advanced in city planning than any other nation in the world, and they have adopted the radial streets in almost every instance.

PRESIDENT KLORER: I could see where that would be a wise policy, having in mind the old days of transportation, but in these days, when a man can cover a mile in probably four minutes without any discomfort or danger, I do not know that the same reason would apply for having them, the same necessity.

MR. FAVROT: It probably would not be, but at the same time, when you consider that every day, four or five or six or seven times a day that man has to go three or four squares more to get to a certain point, the wear and tear on that machine, on the rubber, on the machine itself, the consumption of gas, all added together, at the end of the year, and suppose he has ten or twelve delivery wagons to figure on, it will go into thousands of dollars very easily in his expense account. And that is the crux of the whole thing—what he is saving. You see, it is like the penny saved, you know, about which I was trying to teach some little children in school on this war savings proposition. I showed them how a penny a day and two on Sunday would buy war stamps,—and how the sugar saved, if they would only stop eating candy, the sugar saved by the children of the city of New Orleans would put sugar in the three cups of coffee for 236,000 soldiers one day. It looks like a little mite, but it is when you put it together that the savings become apparent.

PRESIDENT KLORER: Does any other member want to ask Mr. Favrot any questions?

MR. ROBERT: Mr. President, I do not like to get up so many times, but I wish to say that it seems to me that about the time I came into this Society, about twelve years ago, they had on

then a technical discussion of city planning, the old model city. Don't you remember that, Mr. Laws?

MR. LAWS: Yes, sir.

MR. ROBERT: What ever became of those maps? They had maps laid out.

MR. LAWS: I think Mr. Wright was the instigator of that. I think he had all those maps.

MR. ROBERT: It shows that the idea of city planning is not a new thing with the Engineering Society, because they actually had maps way back twelve years ago.

PRESIDENT KLOSER: I think, Mr. Laws, if I remember correctly, it was with the idea of creating a civic center in New Orleans. I do not think it went further than that. It was just about the time the city of Cleveland had opened up their civic center at very great expense and had made quite an impression in the engineering world.

MR. FAVROT: There is not a city in the United States today that is not thinking of city planning.

MR. LAWS: Well, the city of New Orleans is already laid out radially. The question is whether the streets radiate in the right direction.

MR. FAVROT: Well, if you establish your civic center at the intersection of Carrollton Avenue and, I should say, somewhere around the New Basin, you would have the minimum of distance to go throughout the area of the city of New Orleans, if you radiated from that point. I think if you look at the city map you will find you strike a circle just around that point. I have forgotten exactly the point, but just work around from that and you will find you are just about in the center, and then you work out in a fan from the center.

THE WAR AS A SUPREME TEST OF THE EFFICIENCY OF BUSINESS MANAGEMENT AND OF LABOR.

Address delivered by Edward N. Hurley, Chairman, United States Shipping Board, before the National Coal Association, Philadelphia, May 28, 1918.

I am very glad to meet the members of the National Coal Association in their first annual meeting. I have had the pleasure of meeting many of you personally and discussing your trials and troubles while Chairman of the Federal Trade Commission and I must say that you had many troubles, over many of which you had no control. In endeavoring to solve your problems, you experienced what many other branches of business experienced in the past, the Government's objection to your meeting in Trade Associations in order to work out your economic problems. I have always been strongly in favor of Trade Associations and have always felt that they had a proper and legitimate field of activity that was not open to criticism. It is, therefore, particularly gratifying to me to know that the Government now recognizes that in order to meet promptly the crisis of war it is necessary for the coal men of the country, in an effective organization, to meet with the representatives of the Government and work out the problems of your industry in a practical way.

In the past, the American people have not appreciated coal. They have not known how fortunate they were in having immense supplies of the cheapest coal in the world. That was because there was always over-production. Neither the public nor you mining men realized the importance of your position in the nation's needs until last winter and it has been distinctly helpful to have your importance brought home to you and the public. It has broadened your vision of your position in this country's affairs. It has made you feel the responsibility which each of us must personally feel and accept today. This is one of the first results which an Association of this kind will bring to you. It will teach you men to think not in terms of your own little private business, but in terms of the National Coal Industry; in terms of the greatest coal industry of any country in the world. It will help to develop in your ranks those nationally recognized leaders which every industry is fortunate to possess at any time and which are supremely necessary today.

The experience of the past winter also taught the American people more about this industry than they ever knew before. They have a better understanding of the magnitude of undertaking to coal the United States of America. They know more about the difficulties which you men have had to overcome, but at the same time they have acquired a sharp conception of the fundamental importance of all you men and your work and for that reason they expect you to do your part in carrying on the war program of this nation. That expectation is more earnest since they understand more fully how vital your part really is.

It was absolutely necessary for the Government to step in and take over control of the coal industry. No man can say how long the Government may exercise its supervising control over the production and distribution of coal, but most all business men now appreciate that the Government is going to take an important part in our affairs hereafter. Therefore, we do not face the question of the old methods of doing business, but we must adapt ourselves to the new conditions that now prevail. We are all supremely interested in getting the best results. In my opinion, the only way to accomplish the best results is by co-operating with the Government in an intelligent and sympathetic way. Your association, from its inception, has taken precisely that position.

Whether you know it or not, every coal operator is enlisted in the service of the Government, in the production and distribution of coal, and the sooner you recognize that fact the better it will be for you and the Government. The United States Fuel Administration has placed the distribution of coal in the hands of practical coal men. If we are to obtain effective distribution of coal to serve the war needs of this nation, we must look to the practical men of this business to manage that distribution. That work is now in your hands. It is being directed by men chosen from your own numbers. We all believe that their work will be successful. In order to succeed, they must have the full co-operation and support of every coal man in the United States and in a whole-hearted patriotic way.

In past wars victory was thought largely a matter of purely military strategy. Under our highly organized system of today,

the whole weight of the nation must back up with its full resources military and naval action. Otherwise there can be no effective action. This means that everything of basic importance needed to carry on the war must be operated as a unit. Coal is a fundamental. Transportation for the carrying of coal and all other commodities is another fundamental. Our Government is fast going ahead with its process of co-ordinating railroad systems and inland waterways, lake, coastwise and ocean transportation. Railway equipment is being provided. Fleets of ships and vessels have already been speeded from our shipyards, and many more will follow.

Whatever the length of the war, we are preparing in good measure for present and future. We are doing it in a large way worthy of our great country. Not only for the war, but for the times after the war when we shall be called upon to do the immense work of rehabilitating devastated Europe. Other countries needed our coal before the war—nearly 21,000,000 tons of it annually. They have needed more of it since the war began. They will need it after the war. And we will not only have the vessels and other vehicles to carry on our inland and coast waters and on our railroads the millions of tons of coal used yearly in this country, but we shall have a great merchant marine of our own to carry coal and all other American products to other countries.

The distribution of coal is only one part of the problem. The coal requirements for the United States for the coming year are nearly three-quarters of a billion tons and if this nation is to run on a war basis during the next twelve months; the coal mines must produce at least seven hundred million tons of coal. That is an enormous tonnage that the nation calls on you to furnish. We understand that in the past your production has been limited by insufficient transportation. The fact is now well understood, but the railroads of the United States have been brought under the direct control of the government. We are told that one billion dollars will be expended this year in improving and expanding our railroad transportation facilities. With new locomotives and cars and with new tracks, bigger yards and better terminals and with centralized control, sooner or later the mines will

be furnished all the transportation needed to haul their output to the points of consumption. It will then be squarely up to you to produce the coal. In the meantime you will have suffered a progressive loss in the numbers of your employees and unless you have made preparation to get the utmost efficiency out of your mines and your organizations, we will fall far below coal production that we will need.

It seems to me that one of the most important things your association can do is to begin active preparations now to increase your efficiency so as to maintain the production of coal at the highest possible level. You have taken the first step in this direction by working out a uniform system of cost accounting and by organizing a Cost Accounting Department to assist mine operators to put their business on a sound basis. In every trade association the strong must help the weak and in most cases the weak are those who know the least about their own business. Accordingly, the first move to strengthen your industry is to teach those weak producers the facts about their own conditions. Coal should be mined at a profit, but no man can know whether he is really making a profit or not unless he knows his costs.

Profits are not all, however. No man can know whether his organization is really efficient or not unless he knows his costs and unless he has some standard of costs, either the average for his field or the figures of the lowest producer which he can use to compare with his own. It is vital to us all to develop the highest industrial efficiency of which we are all capable today. In one sense, this whole war is a test of industrial efficiency. Thorough going cost accounting is the very basis of efficiency in your business, as in every other business. Accordingly, it is especially gratifying for me to know that you have already begun this first great educational work which you must carry on among the coal producers of the United States in order to increase your efficiency.

In the next place, you should examine critically your own management. In my judgment, fifty per cent of the inefficiencies of coal production today are due to poor management. At this meeting your association should recommend that in each district a committee on efficiency be appointed and that they put

forth every effort to improve the management of the mines in that district. Many of your properties are well equipped and well managed and might serve as models for all the world. They set a splendid standard for the efficiency committee to measure up to, yet you know that there are hundreds of mines that are not well equipped; that are indifferently operated; that are loading poor coal, in short, that are poorly managed. They constitute a fertile field for your efficiency committee to cultivate. This is one way for you to show the government and the people that your association is really worth while. As long as you have inefficient management in any considerable part of the coal mining industry, this organization is necessary for the success of the coal mining business.

I have always thought that the mining of coal could be improved by the use of more supervision. The General Manager of a certain property once told me that in his mine he had a foreman to approximately every 200 men. The president of this company after looking into the matter, asked him to increase the number of foremen and assistant foremen to one to every 40 or 50 men. This was done and he found that the greater attention to detail, the better care of the property, the decrease in accidents and the general improvement of his organization resulted in a very definite increase in the production. We found the same fault in many of our shipyards when we had their management looked into. We found many had no competent foremen, no layout men, no supervision at all that modern industrial practice demands. We put a sufficient number of good superintendents and foremen into these yards and obtained surprising increases in the efficiency of production. Isn't it worth your while to make this kind of study of your own organization? When we found that we did not have sufficient foremen or layout men and that many of the men did not know the best methods of work, we established schools to teach the fundamentals of shipbuilding to the men and the superintendents.

When Mr. Schwab made his first trip to Hog Island he wanted to get in contact with the workmen, the foremen and the superintendents, instead of the president and vice presidents, and he said: "Hurley, if we are going to build these ships, I must meet

the workmen, foremen and the superintendents; they are the men that are going to finish this job for us." Your superintendents and foremen are running your mines while you are here in Philadelphia. You know that the superintendent out at the mine is on the job today and that everything will go all right as long as he is there. In addition to paying good wages to your workmen, pay your foremen and superintendents good salaries and encourage them with a bonus on your increased output.

If each industry in this country would have its superintendents and foremen get together, either through some auxiliary to their trade associations or through some school, to discuss ways and means to improve their methods of production and management they would materially benefit their industry.

Labor is playing a greater part in this war than in any other conflict which the world has known, and let me say here that in the United States labor as a whole is measuring up to its responsibility splendidly. The leaders of organized labor in Washington are men of the highest character, patriotism and honesty. All of us who are acquainted with Mr. Gompers' work know that he has endeared himself to the people of America and all of the Allied Nations by the position which he has taken in this war. He has about him other able men who are equally loyal and patriotic.

On the whole, however, labor as well as capital is not producing that degree of efficiency that it should produce in these trying times. If faulty management is responsible for fifty per cent of the inefficiencies in the production of coal today, inefficiency on the part of labor is responsible for the other fifty per cent.

The reports to the government show that from ten to twenty per cent of the men in the mines are not working as they should. In mines that are given sufficient car supply there are some employees who are not working as steadily as they should. Some of these men fail to work their full 8 hours when they do enter the mines. Others work only 3 or 4 days a week when they might work six. Under these conditions, it is not a question at present of increasing the number of hours the mine operates per day, but it is a question of the men working fuller time each day and working more days in the week.

You may say that this is primarily a matter for labor itself to deal with. In part that is true, but have you yourselves done all you can to remedy this condition? The president of one big western Pennsylvania coal mining company recently found that with a full run of cars, a certain number of the cars were standing over at the mines every night and were not being loaded. He took the matter up with his men in a meeting and explained to them something of the necessity to the nation at present of having increased coal production to carry on the war and brought home to them as best he could, their responsibility to mine the coal. After the meeting was over, some of the English speaking miners came to him and said that if the country needed the coal they were willing to stay overtime and get other men to help load the cars that were left over each evening. That incident serves as an illustration of the spirit that can be roused in your men if they are properly approached. They are just as patriotic as you or I. Their sons and brothers are going into the trenches.

They will do their part as earnestly as any of us if they understand clearly what their duty is, but it is first up to you, the presidents and owners of coal properties to do your duty by going to the mines personally and obtain first hand information and explain to your men the great need for increased production.

With full running time, the mine wage scales are remunerative and the man can make good earnings. Wages are based on the effort of the individual miner. Practically all of the coal in the United States is paid for on the piece-work basis at some rate per ton. Under these conditions, if the miner wishes to increase his earnings, he can do so by working more energetically and nearer full time. In getting increased efficiency from labor, therefore, there is no question of a fair day's pay for a fair day's work. The man can get his fair day's pay if he is willing to work.

I wish to express my admiration for the United Mine Workers of America as a great labor organization that recognizes the piece-work basis.

The United States Shipping Board Emergency Fleet Corporation has established a rule that any piece-work rate set by any shipbuilder must stay in force during the period of the war. The controversies between employers and employes over the question

of piece-work has been most serious and the employers in many cases have been chiefly to blame. Any manufacturer, whether he be a producer of coal or any other commodity, who sets a piece-work rate, finds he has made a mistake and then reduces that rate is doing a great injustice to the workman. A piece-work rate set by a manager, superintendent, or foreman, is a contract that should be kept in force for at least one year. Furthermore, if this piece-work rate is on a particular machine, and the man or the operator should leave or be dismissed, the man who succeeds him should receive the same rate. A law passed by the Government making it compulsory for a piece-work rate to remain in force for a given time from the date it is put into effect would be helpful to labor and industry.

It cannot be doubted that in many industries there will be a decided shortage of labor after the war, not only in this country, but in most of the countries of the world. That country will best succeed which protects its workers by improving their living conditions, by providing for insurance against accidents and protection for their families, and guaranteeing a fair return from their labor—all under conditions that will be helpful to make the worker a better citizen. The country taking these measures will be the country that will develop and produce the products most economically, and will be perfecting a world service by producing goods at prices that will be fair to other nations. Unless we have efficient management and efficient employes, our country will be at a great disadvantage compared to countries which establish these improved conditions.

It is true that labor itself must do its full share in obtaining increased efficiency from mine labor and if the operators have committees in each district to increase the efficiency of mine operation the United Mine Workers should appoint committees to take up this matter of fuller working time and better effort on the part of mine labor. In some effective manner mine operators and mine workmen should co-operate in democratic fashion in the common cause of winning this supreme struggle for democracy by obtaining increased production of coal.

Some of the problems that you are meeting in this industry we have had to meet in the building of ships, and a brief outline

of our efforts to overcome them may afford you some suggestions that will be of value in solving your own problems.

In the sphere of shipbuilding we built 91 new wood and steel yards since last July. Most of the organization that built these yards and many of those working on our great new merchant marine are men who had never before built ships. A vast force of men were put to work on yards and ships of all kinds. New foremen and new superintendents were engaged. Many obstacles such as develop in a new industry, turned up but we constantly tried to improve our knowledge about the building of ships. One particularly serious problem faced us. We found we did not have sufficient foremen or layout men. We started a number of schools to educate the men and teach the fundamentals of shipbuilding. Less than a year ago there were not 45,000 men employed in American shipyards—today we have 300,000 skilled mechanics and laborers in our shipyards, and 250,000 additional men are employed in making boilers, engines, winches, etc.

We have a Department of Education and Training, whose task it is to train workmen, foremen and superintendents. The training of the various kinds of shipbuilders in the yards is accomplished by putting the men to work on production jobs, under the supervision of a yard instructor. This yard instructor has full charge of gangs while they are learning. The jobs they do are selected for their educational sequence, but are all of them production jobs. The efficiency of a green gang under training will average about 80 per cent of a finished workman. Yard instructors are skilled mechanics to whom has been given a knowledge of teaching method. This knowledge is gained in a training center, which is designed to teach the skilled mechanics how to instruct. The mechanic is given an idea of instructional management, and how to get the instructions across effectively. The difference between a yard instructor so trained and a production foreman is that the former knows how to go about the job of teaching; whereas, the latter does not have that knowledge.

The first training center was established at Newport News. To it were sent skilled mechanics, selected from the yards. They were given a six weeks course of training, eight hours a day. During the last part of this course they were obliged to spend forty

hours in the actual handling of gangs of green men. Yard instructors are drawn from a variety of trades, such as riveters, ship fitters, ship carpenters, caulkers, etc. While each one teaches a different line, the instructor training which they get is essentially the same.

Twenty-two plants have sent men for training as yard instructors. 216 of these men have completed their training and 74 are now in training.

In addition to the training center established in Newport News, there are now several others established; namely, at Hog Island, at Chester, Pa., at the Submarine Yard at Newark, N. J., and two special centers for the training of electrical welders at Schenectady, N. Y., in the General Electric Company, and at New York in the Quasi Arc-Weltrode Company.

The training departments in the yards, which are responsible for the training of new men, are established as separate departments under the Director of Yard Training. He has under his direction a staff of yard instructors. So far, 13 yards have put in training departments. One yard instructor can train 150 men per year. The period of training for a green man varies from two to eight weeks. One yard has already trained enough yard instructors in the training centers to turn out weekly 300 skilled mechanics within the yard.

In addition to the training of green men, there exists the problem of taking men who are already skilled in allied trades, but have never worked in shipyards, and making them into shipbuilders. This is called a trade conversion course and consists essentially of determining what supplementary work a skilled mechanic from the allied trades must have in order to give him the necessary knowledge to do shipbuilding work. Careful studies of this conversion process and the instruction necessary have been made and special trade conversion instructors are employed in a number of plants to meet this situation.

If we could do this in the shipbuilding industry, if we could develop in a year the building of wooden ships which has been a long lost art, if our workmen in many yards have increased in efficiency more than 25 per cent through this method in the past few months, it can be done in other industries. We did

it by improving the management. Where we have efficient management we have efficient workers. You can't expect to have efficient workmen in an inefficiently managed shipyard nor can you expect good results.

Our shipyard workers generally are as fine a body of men as is engaged in any industry in this country. They are a patriotic, industrious group, and while in many yards they are not as efficient as we would like to have them, they are learning daily, and are increasing their output. When the history of our ship-building program is written, the American workmen, the men who really built the ships, will be the men deserving of any credit that may be due.

If we have thus been able to start anew the building of ships and in a year's time have organized a great new industry employing almost as many men as yours, if we are throwing away the old standards and setting up new ones, if we are breaking records every day, if we are devising new methods to improve our management and increase the effectiveness in the shipyards, I trust that you men will rouse yourselves to new efforts, will take a fresh view of your industry, and will obtain a sufficient production of coal, in spite of all the difficulties that may beset you, and will give the government your thorough going support in carrying on the war. These are the results that the nation will inevitably expect from you and I am sure that you will not disappoint the American people.

We are building ships not alone for the war, but for the future of world trade. Remember that once their part in the winning of the war is ended, a large number of them will be engaged in bringing back to home and industry the victorious soldiers, and in transporting to Europe the materials necessary for reconstruction of normal life freed from the menace of avacious autocracy. These vessels will serve the commerce of other nations equally with our own.

And we are going to have a vast fleet. Let there be no doubt about that. We have many men in our organization who know how to build ships—tireless, able workers, who have their heart in this job. And we have in our organization also another man—I wonder if you have heard of him? He is the master ship-builder of the world. I refer to Charles M. Schwab.

The building of ships, the mining and distribution of coal, the production and conservation of food products and other important war necessities are all vital to the nation's needs during these trying times. No great task can be undertaken, if quick action is to be obtained, without the making of some mistakes. We may make mistakes, but we are moving forward and getting results. We cannot go far wrong with the American people united and working for victory. If each of you will do your part, putting your country above everything else, we will win. We have a country worth working and fighting for, and we have a leader worthy of our best support—a great American—the commander-in-chief of the army and navy, Woodrow Wilson.

MINUTES OF MEETINGS AND BUSINESS OF THE SOCIETY.

Regular Meeting of the Board of Direction, April 8, 1918.

The regular meeting of the Board of Direction was called to order with President Klorer in the chair and the following present: Messrs. Manley, Dusenbury, Hutson, Riess and Robert. Upon motion, Mr. J. W. Fairlie was dropped from membership in the Society, having had no word from him for some time.

A letter from Lt. J. A. Silsbee was read, and the Board of Direction ordered that it be put into the form of a circular letter to all members.

Upon motion, duly seconded, it was decided to exchange privileges with the Engineering Association of Nashville.

Upon motion, duly seconded, the Secretary was ordered to send out a circular containing the Referenda Ballot sent us by the American Association of Engineers.

Upon motion, duly seconded, Mr. J. S. Barelli was chosen member of the Board of Direction to fill the unexpired term of Mr. Rufus S. Manley elected to the vice-presidency.

There being no further business, the meeting adjourned.

J. M. ROBERT, Secretary.

Regular Meeting of the Society, April 8, 1918.

The regular meeting of the Society was called to order with President Klorer in the chair and 26 members and guests present. The minutes of the previous meeting were read and approved.

Mr. Lawes read a letter from a member of the Library Committee and upon motion it was decided to accept this letter as a report from the Library Committee. Upon motion of Mr. Riess, seconded by Mr. Barelli, the report of the Library Committee was referred to the Board of Direction with a suggestion that the recommendation be carried out if found practicable.

The technical exercises of the evening were then proceeded with. Mr. Charles A. Favrot gave a very interesting address on "The Technical Mind and the City Plan." After considerable interesting discussion the meeting adjourned to the usual collation.

J. M. ROBERT, Secretary.

Regular Meeting of the Board of Direction, May 23, 1918.

There being no quorum present, no meeting was held for month of May.

J. M. ROBERT, Secretary.

Regular Meeting of the Society, May 13, 1918.

The regular meeting of the Society was called to order May 13th, with President Klorer in the chair and 37 members and guests present. The minutes of the previous meeting were read and approved.

The technical exercises of the evening consisted of an interesting and instructive address by Mr. T. F. Carlisle, British Consul, on "Britain and the War—The Last Twelve Months," and was presented under the following headings:

At Sea—The Submarine and Shipping.

On Land—The Western Front; Britain's Other Campaigns.

At Home—Food Shortage, Labor, Air Raids, Man Power, Ireland, United States and Great Britain.

The address called forth a great deal of interesting discussion.

Mr. Calvin W. Rice, Secretary of the American Society of Mechanical Engineers, who was a visitor at the meeting, made a few well chosen remarks.

There being no further business to come before the meeting, it was adjourned.

J. M. ROBERT, Secretary.

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PROCEEDINGS OF THE LOUISIANA ENGINEERING SOCIETY

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EDITORIAL NOTES AND COMMENT

Natural Gas for New Orleans. During the past few months the newspapers have been quite full of discussions concerning the use of natural gas in New Orleans and the problem of piping it from the Terrebonne Field. As set forth in the paper by Mr. Eggleston, the estimated consumption of gas in New Orleans, as a substitute for all the coal and fuel oil now used for domestic and industrial purposes, would be about 25% of the capacity of the wells now under control in the Terrebonne Field, provided these wells hold out for one year. One year would be a very short life for such wells. Another interesting viewpoint is the tremendous saving in transportation which could be brought about by the use of natural gas. To bring to this city its annual fuel supply in the form of oil and coal now requires the use of 195,960 car days, making use of 24,000 cars and 300 locomotives. The release of a large portion of this rolling stock would be a

great factor in the solution of the complicated problem of transportation now existing.

Just at the present time the great difficulty in the way of bringing the gas to New Orleans lies in the inability to secure the necessary supply of pipe of the proper size. Mr. Eggleston's paper contains a hint which in our opinion should be followed up. It is to the effect that no formal request has as yet been made to the Government for permission to purchase this piping, but simply an informal inquiry has been made. In fact the Government has intimated that if special reasons were given for the purchasing of the pipe, these reasons would receive the proper consideration.

An Important Phase of the Land Reclamation Problem. Mr. Chas. W. Okey of Nashville, Tennessee, but formerly of New Orleans, contributes to this issue of the *Proceedings* a paper upon a special phase of land drainage, which is important to Louisiana and also has a timely interest in connection with the problem of taking care of our returning soldiers after the war is over. Mr. Okey's paper points out that the complete solution of the land reclamation problem in the southern and southwestern parts of Louisiana will ultimately require the construction of main channels for carrying off the drainage water, or the improvement and enlargement of already existing natural channels. In connection with the technical side of this paper it will be of interest to reproduce here a letter from the Secretary of the Interior to Senator Ransdell.

Secretary Lane's Letter.

"My Dear Senator: I believe the time has come when we should give thought to the preparation of plans for providing opportunity for our soldiers returning from the war. Because this department has handled similar problems, I consider it my duty to bring this matter to the attention of yourself and Congress.

"Every country has found itself face to face with this situation at the close of a great war. From Rome, under Caesar, to France, under Napoleon, down even to our own Civil War, the problem arose as to what could be done with the soldiers to be mustered out of military service.

"At the close of the Civil War America faced a somewhat similar situation. But, fortunately, at that time the public domain offered opportunity to the home-returning soldiers. The great part the veterans of that war played in developing the West is one of our epics. The homestead law had been signed by Lincoln in the second year of the war, so that out of our wealth in lands we had farms to offer the millions of veterans. It was also the era of transcontinental railway construction. It was likewise the period of rapid, yet broad and full development of towns and communities and states.

"To the great number of returning soldiers land will offer the great and fundamental opportunity. The experience of wars points out the lesson that our service men, because of army life, with its openness and activity, will largely seek out-of-doors vocations and occupations. This fact is accepted by the allied European nations. That is why their programs and policies of relocating and readjustment emphasize the opportunities on the land for the returning soldier. The question then is, 'What land can be made available for farm homes for our soldiers?'

"We do not have the bountiful public domain of the sixties and seventies. In a literal sense, for the use of it on a general scale for soldier farm homes as in the sixties, 'the public domain is gone.' The official figures at the end of the fiscal year June 30, 1917, show this: We have unappropriated land in the continental United States to the amount of 230,657,755 acres. It is safe to say that not one-half of this land will ever prove to be cultivable in any sense. So we have no land in any way comparable to that in the public domain when Appamattox came and men turned westward with army rifle and 'roll blanket' to begin life anew.

"While we do not have that matchless public domain of '65, we do have millions of acres of undeveloped lands that can be made available for our home-coming soldiers. We have arid lands in the West; cut-over lands in the Northwest, Lake states, and South; and also swamp lands in the Middle West and South, which can be made available through the proper development. Much of this land can be made suitable for farm houses if properly handled. But it will require that each type of land be dealt

with in its own particular fashion. The arid land will require water, the cut-over land will require clearing, and the swamp land must be drained. Without any of these aids they remain largely 'no man's land.' The solution of these problems is no new thing. In the admirable achievement of the Reclamation Service in reclamation and drainage we have abundant proof of what can be done.

"Looking toward the construction of additional projects, I am glad to say that plans and investigations have been under way for some time. A survey and study has been in the course of consummation by the Reclamation Service in the Great Colorado Basin. That great project, I believe, will appeal to the new spirit of America. It would mean the conquest of an empire in the Southwest. It is believed that more than 3,000,000 acres of arid land could be reclaimed by the completion of the Upper and Lower Colorado Basin projects.

"It has been officially estimated that more than 15,000,000 acres of irrigable land now remain in the government's hands. This is the great remaining storehouse of government land for reclamation. Under what policy and program millions of these acres could be reclaimed for future farms and homes remains for legislation to determine. The amount of swamp and cut-over lands in the United States that can be made available for farming is extensive. Just how much there is has never been determined with any degree of accuracy. Practically all of it has passed into private ownership. For that reason, in considering its use, it would be necessary to work out a policy between the private owners and the government unless the land was purchased. It has been estimated that the total area of swamp and overflowed lands in the United States is between seventy and eighty million acres. Of this amount, it is stated that about '60,000,000 acres can be reclaimed and made profitable for agriculture.' The undeveloped swamp lands lie chiefly in Florida, in the states along the Atlantic and Gulf coasts, in the Mississippi Delta, and in Missouri, Indiana, Michigan, Minnesota, Wisconsin and California.

"What amount of land in its natural state unfit for farm homes can be made suitable for cultivation by drainage only

thorough surveys and studies can develop. We know that authentic figures show that more than 15,000,000 acres have been reclaimed for profitable farming, most of which lies in the Mississippi River Valley.

"The amount of cut-over lands in the United States, of course, it is impossible even in approximation to estimate. These lands, however, lie largely in the South Atlantic and Gulf States, the Lake states, and the Northwestern states. A rough estimate of their number is about 200,000,000 acres—that is, of land suitable for agricultural development. Substantially all this cut-over or logged-off land is in private ownership. The failure of this land to be developed is largely due to inadequate method of approach. Unless a new policy of development is worked out in co-operation between the Federal government, the states, and the individual owners, a greater part of it will remain unsettled and uncultivated. The undeveloped cut-over lands lie chiefly in the Pacific Northwest (particularly in Washington and Oregon), in the Lake states (Minnesota, Michigan and Wisconsin), and in the South Atlantic and Gulf coastal states (Virginia, North Carolina, South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana and Texas).

"Any plan for the development of land for the returning soldier will come face to face with the fact that a new policy will have to meet the new conditions. The era of free or cheap land in the United States has passed. We must meet the new conditions of developing lands in advance; security must to a degree displace speculation. Some of the defects in our old system have been described by Dr. Elwood Mead in these words:

"'Science (should) have gone hand in hand with the settlement of the arid and semiarid country, and all that science could give would have been utilized, first, in the creation of the conditions of settlement and then in aiding the settler in difficult tasks. Because nothing was done, these heroic but uninformed souls were bedeviled by the winds, cold, drouth, and insect pests. They wasted their efforts, lost their hopes and ambitions, and a tragic percentage left, impoverished and embittered. The tragic part of this history is that nearly all this suffering and loss could have been avoided under a carefully thought-out plan of development.'

“There are certain tendencies which we ought to face frankly in our consideration of a policy for land to the home-coming soldier. First, the drift to farm tendency. The experience of the world shows without question that the happiest people, the best farms, and the soundest political conditions are found where the farmer owns the home and the farm lands. The growth of tenancy in America shows an increase of 32 per cent for the twenty years between 1890 and 1910. Second, the drift to urban life. In 1880 of the total population of the United States 29.5 per cent of our people resided in cities and 70.5 per cent in the country. At the census of 1910, 46.3 per cent resided in cities and 53.7 per cent remained in the country. It is evident that since the war in Europe there has been a decided increase in the trend toward the city because of industrial conditions. The adoption by the United States of new policies in its land-development plans for returning veterans will also contribute to the amelioration of these two dangers to American life. A plan of land development whereby land is developed in large areas, subdivided into individual farms, then sold to actual bona fide farmers on a long-time payment basis has been in force not only in the United States under the reclamation act, but also in many other countries for several years. It has proved a distinct success. In Denmark, Ireland, New Zealand, and the Australian commonwealth it has completely changed the land situation. One of the new features of this plan is that holders are aided in improving and cultivating the farm. In a word, there is organized community development. Its beneficial results have been well described by the Canadian commission which was appointed to investigate its results in New Zealand in these words:

“ . . . The farmers have built better houses or remodeled their old ones, brought a larger acreage of land under cultivation that would otherwise be lying idle; have bought and kept better live stock; have bought and urged more labor-saving machinery on the farms and in the houses. . . . They keep more sheep and pigs and have so largely increased the revenue from their farms that they are able to meet the payments on the mortgages and to adopt a higher standard of living and a better one. Throughout the country a higher and better civilization is grad-

ually being evolved; the young men and women who are growing up are happy and contented to remain at home on the farm and find ample time and opportunity for recreation and entertainment of a kind more wholesome and elevating than can be obtained in the cities.

"It may be said that this country, outside of Alaska, has no frontier today. Of course, Alaska will still offer opportunity for a pioneer life. And of course Alaska likewise has yet unknown remarkable agricultural possibilities, but unless we make possible the development of this land by the men who desire their life in that field we will lose a great national opportunity.

"This is an immediate duty. It will be too late to plan for these things when the war is over. Our thought now should be given to the problem. And I therefore desire to bring to your mind the wisdom of immediately supplying the Interior Department with a sufficient fund with which to make the necessary surveys and studies. We should know by the time the war ends, not merely how much arid land can be irrigated, nor how much swamp land reclaimed, nor where the grazing land is and how many cattle it will support, nor how much cut-over land can be cleared, but we should know with definiteness where it is practicable to begin new irrigation projects, what the character of the land is, what the nature of the improvements needed will be, and what the cost will be. We should know also, not in a general way, but with particularity, what definite areas of swamp land may be reclaimed, how they can be drained, what the cost of the drainage will be, what crops they will raise. We should have in mind specific areas of grazing lands, with a knowledge of the cattle which are best adapted to them, and the practicability of supporting a family upon them. So, too, with our cut-over lands. We should know what it would cost to pull or 'blow out' stumps and to put the lands into condition for a farm home.

"And all this should be done upon a definite planning basis. We should think as carefully of each one of these projects as George Washington thought of the planning of the city of Washington. We should know what it will cost to buy these lands if they are in private hands. In short, at the conclusion of the war

the United States should be able to say to its returned soldiers: 'If you wish to go upon a farm, here are a variety of farms, of which you may take your pick, which the government has prepared against the time of your returning.' I do not mean by this to carry the implication that we should do any other work now than the work of planning. A very small sum of money put into the hands of men of thought, experience, and vision will give us a program which will make us feel entirely confident that we are not to be submerged industrially or otherwise by labor which we will not be able to absorb, or that we would be in a condition where we would show a lack of respect for those who return as heroes, but who will be without means of immediate support.

"A million or two dollars, if appropriated now, will put this work well under way.

"This plan does not contemplate anything like charity to the soldier. He is not to be given a bounty. He is not to be made to feel that he is a dependent. On the contrary, he is to continue, in a sense, in the service of the government. Instead of destroying our enemies, he is to develop our resources.

"The work that is to be done, other than the planning, should be done by the soldier himself. The dam or the irrigation project should be built by him: the canals, the ditches, the breaking of the land, and the building of the houses should, under proper direction, be his occupation. He should be allowed to make his own home, cared for while he is doing it, and given an interest in the land, for which he can pay through a long period of years, perhaps thirty or forty years. This same policy can be carried out as to the other classes of land. So that the soldier, on his return, would have the opportunity to make a home for himself, to build a home with money which we would advance and which he would repay, and for the repayment we would have an abundant security. The farms should not be turned over as the prairies were—unbroken, unfenced, without accommodation for men or animals. There should be prepared homes, all of which can be constructed by the men themselves and paid for by them under a system of simple devising by which modern methods of finance will be applied to their needs.

"As I have indicated, this is not a mere Utopian vision. It is, with slight variation, a policy which other countries are pursuing successfully. The plan is simple. I will undertake to present to the Congress definite project for the development of this country through the use of the returned soldier by which the United States, lending its credit, may increase its resources and its population and the happiness of its people with a cost to itself of no more than the few hundred thousand dollars that it will take to study this problem through competent men. This work should not be postponed.

"Cordially yours,

"Franklin K. Lane."

A Construction Corps for the Army. A bill now before the United States Senate provides for the formation of a Construction Corps in the Army for the purpose of taking over a considerable portion of the work now under the charge of the Quartermaster Corps. The text of the bill is given below, followed by a comment on the subject by a civil engineer. It is hoped that the publication of these will bring forth from our members some additional comment and discussion.

A Bill.

To amend an Act entitled "An Act for making further and more effectual provision for the national defense, and for other purposes," approved June third, nineteen hundred and sixteen.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That H. R. 12766, known as the national defense Act of June third, nineteen hundred and sixteen, be, and is hereby amended as follows: Immediately following section nine add a new section to be known as section nine a, as follows:

Sec. 9a. **THE CONSTRUCTION CORPS.**—There is hereby created in the Regular Army of the United States a Construction Corps, which shall consist of one chief of construction, with rank of major general, who shall be chief of said corps; ten colonels; ten lieutenant

colonels; sixty majors; two hundred and forty captains; one hundred and twenty first lieutenants; and one hundred and twenty second lieutenants. The total enlisted strength of the Construction Corps and the number in each grade shall be limited and fixed from time to time by the President in accordance with the needs of the Army and shall consist of construction sergeants, senior grade; construction sergeants; sergeants, first class sergeants; corporals; cooks; privates, first class; and privates. The number in the various grades shall not exceed the following percentages of the total authorized enlisted strength of the Construction Corps, namely: Construction sergeants, senior grade, two per centum; construction sergeants, six per centum; sergeants, first class, six per centum; sergeants, twenty-five per centum; corporals, ten per centum; cooks, two per centum; privates, nine per centum. Provided, that the rates of pay and allowances in the several grades of enlisted men shall be the same as those of similar grades now authorized by law for the Quartermaster Corps. Provided further, That all work pertaining to maintenance, construction, preparation of plans therefor in accordance with requirements of the several bureaus of the War Department, and repair for the Army now done by the Construction Division, shall be done by or under the direction of the Construction Corps, and all appropriations made for said maintenance, construction, and repair work under any corps, department, or bureau of the War Department, shall be available for the purpose for which made and disbursed through said Construction Corps; And provided further, That existing laws with respect to the Reserve Corps and the National Army that apply to the Quartermaster Corps shall have similar application to the Construction Corps. And provided further, That of the commissioned personnel for the Regular Army provided for the Constructoin Corps at least two-thirds thereof, if possible, shall be appointed from officers now serving in the Construction Division in the same grades now held by such appointees.

Why There Should Be a Construction Corps of the Army.

The rapid and economical construction of cantonments, hospitals, munition factories, repair plants, etc., is one of the prime factors which will contribute to the early winning of the war.

Practically all construction work of the Army (with the exception of that of Rivers and Harbors) has in the past been done by the Quartermaster Corps. This corps has expanded from time to time until it now takes in an almost inconceivable variety of duties. The "brief summary of the duties of the Quartermaster Corps" as printed in the Q. M. Manual contains over five hundred words. Following are a few random extracts which will illustrate the wide variety of duties performed :

"Pay of officers and enlisted men of the Army;

"Purchase of subsistence supplies for issue as rations to troops;

"Hot coffee for troops travelling - - ;

"Providing means of transportation of *every kind*;

"Fuel and engine supplies for the operation of modern batteries;

"Hire of laborers, clerks, interpreters, spies and guides;

"Shoeing of horses and mules;

And last but not least, "Attends to all matters connected with the military service which are not expressly assigned to some other bureau of the War Department."

The futility of operating according to peace time methods under a single corps encumbered with all these duties was recognized early in 1917, when the Cantonment Division was put into operation. Another improvement was made by the creation of the Construction Division, but the work is still carried on as a part of the Quartermaster Department and is seriously hampered by the precedent, established methods and the administrative personnel of a corps which is not fitted by training or experience to properly handle the questions involved, a department already loaded with multifarious specific duties as well as with all others "not expressly assigned to some other bureau - - ."

By drawing officers from the Engineer Corps and from civil life, a large number of exceptionally well qualified men have been secured for the construction work which has been carried out so

far, but it does not require an efficiency expert to realize that the work done was completed under what appears to have been an unnecessary handicap.

It is readily admitted that some excellent construction men have been developed in the Q. M. Corps, but from the manner of selection of the personnel of that corps, it is evident that such men may be expected to be the exception rather than the rule. Most regular officers are drawn at some time or another for their "tour" in the Q. M. Corps. They may look on this portion of their service as a sentence or as a reprieve, depending on their taste for the work to which they may be assigned or their feeling toward the environments from which they are drawn.

The logical method of handling the construction work of the Army would appear to be to turn it over to the Engineer Corps, as it is essentially an engineering job; but the Engineer Corps appears to be fully occupied and not disposed to seek additional burdens, so the next best plan which suggests itself is to organize a separate Construction Corps, following practically the organization of the present Engineer Corps. This new corps should draw its officers principally from those now in Construction Divisions, and these officers should be engineers and practical construction men of wide experience. They should be charged with carrying out the construction program of the country, leaving to the Quartermaster Corps paying and transportation of the Army, etc. as well as issuing the authorized "soap, candles, toilet paper, matches, vinegar and rock salt for public animals;" etc.

From the point of view of the engineer, whether he be a Regular appointed from the Engineer Corps or a Reserve Officer from civil life, the creation of a separate Construction Corps is especially to be desired. Under present conditions, many of the best engineers of the country have been assigned for duty in the Q. M. Corps after receiving commissions in the Engineer Reserve Corps and to receive any recognition have had to transfer into the corps in which they are serving, thus losing their status as engineer officers. There is no aspersion cast at the officer of the Q. M. Corps even though the engineer officer may feel that he has lost caste to a certain extent by trading his twin castles for the wheels, he simply feels that he is in the wrong pew, not a poorer

one. As a matter of fact, the Q. M. Corps demands and receives just as much ability, fidelity and loyalty as any other branch of the service, but a different type of ability is called for in administering the financial affairs connected with the pay of the army, in the apprehension of deserters and in the purchase of "flour for paste in target practice, huck towels for office use, ice and housewives," than is demanded in the construction and repair of "roads, walks, wharves, railways and bridges," as well as in the construction of many other things which were not contemplated as being necessary only a few years ago, but which are required for the operation and maintenance of the present day army.

If the country is to avail itself to the fullest possible extent of the services of its engineers and practical construction men, and if the engineering profession is to receive the recognition which is its due, a separation of the construction work of the army from that of the Quartermaster Corps should be made. This separation is provided for in a bill now before Congress, and it should receive the undivided and energetic support of all organizations of engineers.

Inspectors for Plants Using Fuel Oil. The Society is in receipt of a communication from the United States Fuel Administration, Oil Division, requesting that notice be given in our publication of the desire of the administration to secure combustion engineers to serve as inspectors. The letter is here printed in full, in order that any of our members who may be interested in the matter may take it up directly with the officers of the Fuel Administration.

UNITED STATES FUEL ADMINISTRATION
OIL DIVISION

WASHINGTON, D. C.

M. L. REQUA, Director.

July 17, 1918.

Gentlemen:

May we ask you to insert in your publication a brief notice to the effect the Bureau of Oil Conservation, Oil Division, U. S. Fuel Administration, is desirous of secur-

ing a combustion engineer for each of the following districts, who will act as an inspector visiting all plants within his district using fuel oil and natural gas: Boston, Providence, New York City, Philadelphia, Pittsburgh, Buffalo, Detroit, Chicago, Minneapolis, Tulsa, New Orleans, and San Francisco?

It is desirable to have these men act as volunteers where possible, but the Administration is prepared to pay a reasonable compensation for men who cannot afford to give their services to the Government. Only men who have had experience in fuel oil and natural gas combustion would be of value.

Very truly yours,
United States Fuel Administration,
Oil Division.

By W. Champlain Robinson,
Director of Oil Conservation.



OUR ROLL OF HONOR

APPLEBY, JOHN, JR., 7th U. S. Engrs., Amer. Exped. Force, France.
ARPIN, E. A., Cadet, 3rd. Detachment, Aviation Section, American Expeditionary Force, France.
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CALLAN, JOHN, Ensign, U. S. Navy.
CHRISTY, LEE A., Lieut., Washington, D. C.
COLEMAN, E. H., Captain E. O. R. C., Camp Pike, Little Rock, Ark.
COMMAGERE, J. A., Jr.
CREIGHTON, W. H. P., U. S. Navy, New Orleans.
DIETTEL, A. A., First Lieut., 114th Engineers, Camp Beauregard, La.
FORTIER, L. J., First Lieut., 17th. Field Artillery, Washington, D. C.
GARSAUD, MARCEL, Major E. O. R. C., Camp Pike, Little Rock, Ark.
GILBERT, HORATIO, L. Headquarters Dept., E. T. R., Camp Humphrey, Va.
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HAWKINS, E. C., Ensign, U. S. Navy, Pensacola, Fla.
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JOUBERT, C. E., Captain, 312th Eng'rs Camp Pike, Little Rock, Ark.
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LEWIS, J. H., Captain, E. O. R. C., Camp Pike, Little Rock, Ark.
MANLEY, R. S., U. S. Navy, New Orleans Naval Station, New Orleans.

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- NOLTE, R. W., First Lieutenant, Seventh Engineers, Fort Leavenworth, Kansas.
- O'BRIEN, J. A., Second Lieutenant, 117th. Engineers, American Expeditionary Force, France.
- O'NEILL, J. H., Captain, Sanitary Corps, 37th. Division, Camp Sheridan, Ala.
- ROSE, E. A., Co. D., 37th. Engineers, American Expeditionary Force, France.
- SCOTT, ARTHUR M.
- SHAW, A. M., Major, Construction Quartermaster, Mech. Repair Unit No. 305, Fort McPherson, Ga.
- SHUTTS, FRED N., Lieut., First Artillery Corps Park, Camp Jackson, S. C.
- SILSBEE, J. A., First Lieutenant, S. C. A. S., Wilbur Wright Field, Fairfield, Ohio.
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- STEM, C. H., Second Lieut., E. O. R. C., American Expeditionary Force, France.
- DE TARNOWSKY, JACQUES, Major, 517th. Engineers, Camp Gordon, Georgia.
- WHITE, THOS. M., Second Lieutenant, C. A. R. C., Fort Casey, Washington.
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- WILSON, VENNARD, Second Lieutenant, E. O. R. C.
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- WYLER, C. J., Second Lieutenant, Coast Artillery, Fort Pickens, Fla.
- YOUNG, SAMUEL, Captain, E. O. R. C., Camp Humphrey, Va.

PAPERS AND DISCUSSIONS

PRESENT SITUATION RELATING TO THE INTRODUCTION AND USE OF NATURAL GAS IN NEW ORLEANS.

By HOWARD EGGLESTON, C. E.,

Industrial Engineer, New Orleans Association of Commerce.

Read before the Society, June 10, 1918.

To give a clear idea of the present situation as regards supplying New Orleans with natural gas, it will be well to review briefly what has been done in the past.

It is related by Mr. Shaw in his recent report on the Terrebonne Gas Field, that I. N. Knapp *states* that a patent was granted fifty years ago "for collecting, enriching and marketing Terrebonne gas." Thirty-eight years ago a man named Songe demonstrated that gas was coming out of the waters of a boiling spring that had been supposedly operated by evil spirits. A few years later a local company was organized, and spent about fifty thousand dollars drilling wells. Then came Captain Knapp, an old oil prospector, who was so convinced that oil was to be found in Terrebonne, that he spent over half a million dollars drilling dozens of wells. He found gas several times but it always got away from him. One of his wells blew wild for ninety days and was only shut off by the ground caving in. He finally gave up, saying "There is plenty of gas here, and some young fellow will come along and find out how to control it—I am too old to do it." Knapp was not the only one drilling at that time; several well known men tried their hand, but all were unsuccessful. Gas was often struck, but proved to be unmanageable, generally blowing out the drills and pipe, wrecking the derriek, and then stopping itself up. As it costs from \$15,000.00 to \$25,000.00 to drill a well, these results were discouraging. But W. B. McCormick, who had been very successful in finding and controlling gas at Shreveport and Monroe, became interested in the Terrebonne Field, and in 1911 began drilling for oil and gas, and for six years kept at work without success, but learning through his failures, finally found and controlled what is believed to be the largest gas well in the world, having a measured capacity of 90,000,000 cubic feet daily, and a few months later

brought in and capped a second well of equal size. A little later he found gas in a third well, and has it under control, but part of his drill stem is down in the pipe, and the flow of gas is largely cut off. He believes with a very little work he can clear the pipe and have as large a flow from this well as from the other two. In this case they will have a supply of 270,000,000 cubic feet daily, which equals a yearly supply of 98,550,000,00 cubic feet.

If natural gas could at once be substituted for all the coal and fuel oil used in New Orleans for domestic and industrial purposes, there would be consumed 65,000,000 cubic feet daily, or 23,725,000,000 cubic feet per annum, not 25% of the supply under control, provided the wells that have been brought in continue to flow for one year, which would be a very short life for them.

When at the wells recently I, for the first time, realized what a difficult thing it is to "bring in" a gas well. A hole ten inches in diameter is bored down through the alluvial soil a distance of fifteen or sixteen hundred feet; this work is done by means of a flat "bit" secured to the end of a "stem" consisting of 2½-inch special strength pipe; this pipe has two holes in it close to where the bit is attached, and through this stem or pipe is constantly pumped a stream of diluted clay, a thin soupy mixture of clay and water; the clay forms a lining for the well as it is drilled, keeping it from falling in and choking the drill; when the bottom of the alluvial deposit has been reached the well is "cased" with ten-inch pipe and the drilling continued for five or six hundred feet, when an eight-inch casing is let down inside of the ten-inch casing, and forced down to the bottom of the well. Again the drilling proceeds with the bit reduced in size to go inside of the eight-inch pipe. As the well goes down, borings are constantly brought to the surface by the return flow of the water that is pumped down through the hollow "stem" of the drill, and it is by examination of these borings that the driller obtains all the knowledge he has of the ground or rock his drill is penetrating. From over half a mile down under his feet come these little pieces of shell, gravel, sand, and by them he must judge whether he is nearing the object of his search or not. He may drill through gas strata and not know it, for the pressure of mud and water in the well is greater than the pressure of the gas, and he is safe

from a "blow out" until he has reduced this pressure by "bailing out" some of the mud, when, if he is not extremely careful, he is likely to find his bailer going into the air, and his derrick falling about his ears; one dip of the bailer too much may cause the loss of work that has cost \$25,000 and months of labor.

I do not believe there is any reason for doubting that there is an immense and possibly inexhaustible supply of natural gas in the Terrebonne fields. A safe supply has been secured and the men on the job have learned how they must go about the work of controlling the gas when they have found it.

Now as to transporting the gas to New Orleans, there is the difficulty of securing pipe. The economical size to use would be sixteen-inch, which would give, at 350 lbs. pressure, a delivery of 54,903,240 cubic feet per day, or at 450 lbs. pressure, 70,025,024 cubic feet per day, which would undoubtedly be an ample supply for the first year. Of course, this pipe can only be obtained through a priority order being given by the Government. No formal request for this pipe has been made; an informal inquiry was made, and an informal reply received, to the effect that they did not see how so much pipe could be spared, but it was intimated that if there were any special reasons why an order for this pipe should be given, they would be considered.

If natural gas was brought to New Orleans at once, two great savings would be made; one in saving fuel, and the other in saving transportation. We now use for manufacturing and domestic purposes over 666,000 tons of coal and over 1,143,700 barrels of fuel oil annually. To transport these two materials takes at least 24,000 cars and over 300 locomotives, the cars being in use over 195,960 car days. This is a saving in which both the Fuel and Railroad Administrators should be interested.

The owners of the gas wells claim that they can secure enough 10 and 12-inch pipe, in small lots, to lay a line to the city, and that they are ready to begin whenever they have a market assured them. I think it would be very inadvisable to use pipe of this size if it can be avoided, for this size is very uneconomical. Very thorough investigation has convinced me that a reinforced concrete pipe can be made that will meet all requirements, and I hope to be able to demonstrate that I am right in the near future.

Under what terms and conditions natural gas shall be brought to New Orleans is of the greatest importance, and should receive the most careful consideration. I believe that the municipality should buy the gas at the gas field and bring it to the city in a municipally owned pipe line; that it should act as a wholesale distributor of gas, serving all its customers at one price. If it does not take over the City Gas Co., it should furnish the said company natural gas at a wholesale price, and compel that company to deliver it to domestic consumers at a fair and reasonable price; it should sell to all manufacturers at the same rate per thousand, the rate should be sufficiently high to check needless waste, and to give sufficient funds to extend the pipe line service so liberally that every one desiring to use gas for manufacturing can be accommodated.

If this plan should be carried out the city would be reasonably safe from the fate that has befallen every city that has been served with natural gas. I have reports from nearly every city in the union, that has used natural gas, and from all the report is the same:—lessened supply, increased prices, and in many cases an entire suspension of service to industries, the supply being reserved for domestic use where the prices were higher. If the city goes to the gas field to buy its gas it can secure it at a reasonable price, so long as any gas can be found, and this is the only way it can permanently control the price.

MAIN DRAINAGE CHANNELS FOR RECLAIMED AREAS OF SOUTHERN LOUISIANA.

By CHAS. W. OKEY.

In the reclamation of the coast lands of Louisiana little attention has been given to the disposal of the water pumped from the drained area after it is discharged from the pumps. Little attention has been deserved by this feature. The amount of land protected by levees and drained by pumps has been relatively so small when compared to the vast areas of level prairie land, that the water pumped over the levees could immediately spread out and had no appreciable effect on the stage of water in the main natural water courses.

There are many sections of the coast country which have large waterways leading into the Gulf and no considerable amount of water coming into them from the higher lands to the northward. Such areas are very fortunate and may always be able to avoid taking up the problem of improvement of main drainage channels even after practically all the wet lands are protected by levees and drained by pumps. On the other hand, there are large areas which have very limited capacity in the main drainage channels. The natural channels are small and infrequent and take long tortuous courses to their final outlet into the Gulf. Even before the reclamation work was started in such areas, in times of heavy and prolonged periods of rainfall, the water would often stand from 1 to 3 feet deep on the surface for weeks at a time.

Other areas have large natural waterways but which unfortunately receive large amounts of water from the higher lands further inland which not only prevent them from draining the low lying lands, but actually results in increased over flow in these areas.

The run-off from each drained area will be greatly increased in both rate and amount over that prior to drainage. In addition, as the work of reclamation goes forward, the area available for overflow and consequent storage will be decreasing. This will mean an increased burden on the existing main drainage channels. As an increase in necessary capacity will mean increased velocity, an increase in slope will be necessary, resulting in a rise in the water in the interior portions of the district. This in turn will

mean increased height in levees, greater power in pumping plants and increased cost of pumping.

The question at once arises as to whether it would be cheaper to provide for this condition by an increased height of levee and power of pumping plant or by improving the main drainage channels. Naturally the local condition in every area so affected will determine the solution of the problem.

For purpose of illustration a certain area between Bayou Lafourche and Bayou Terrebonne in the parishes of that name has been selected. The area between these two bayous and north of a line from Montegut to the junction of the Cher Ami Canal with Lafourche is roughly 220,000 acres. While the information available is not complete, the total cross section of the natural channels leading into the Gulf across this line is about 2100 square feet. From cross section of these streams finished by the War Department, the hydraulic radius appears to be about 7. A slope of 0.13 feet per mile over the 40 miles from the Cher Ami Canal to Thibodaux would result in a total difference of head of about 5 feet, which condition has been known to exist during the very heaviest rainfall. With a co-efficient of roughness of 0.030. Kutter's formula gives a velocity of 1.1 feet per second. The total capacity of the channel would then be about 21,000 second feet or 1-5" of water per day over the total area. If the slope were to be 0.26' per mile, causing a rise of about 10 feet at Thibodaux, the run-off capacity of the channels would be about 2-3" per day.

However this would cause a great increase in the height of the levees and the cost of the pumping plants.

Supposing the entire area to be cut up into districts of 5000 acres each with levees on all four sides, the total length of levee would then be 530 miles. With earthwork, costing 20c per cubic yard in place in the levee, the following would be the cost per mile for 4, 5 and 6 foot levees with a 5-foot top and a 2 to 1 side slope: 4' \$1900, 5' \$2900, and 6' \$4200. It will be noted that the 5 foot levee costs \$1000 more per mile than the 4, and that the 6 foot costs \$2300 more than the 4 foot. Therefore to increase the height of 530 miles of levee by 2 feet would cost about \$1,000,000. Furthermore, the slight increase in surface slope in the main drainage channels that could be allowed by



U. S. DEPARTMENT OF AGRICULTURE
OFFICE OF PUBLIC ROADS AND RURAL ENGINEERING
L. W. PAGE, Director

SOUTHERN LOUISIANA

Showing Reclamation Districts and Storm Tide Data

Chas. W. Okey, Senior Drainage Engineer
Prepared under the direction of
S. H. McCrory, Chief of Drainage Investigations

1917

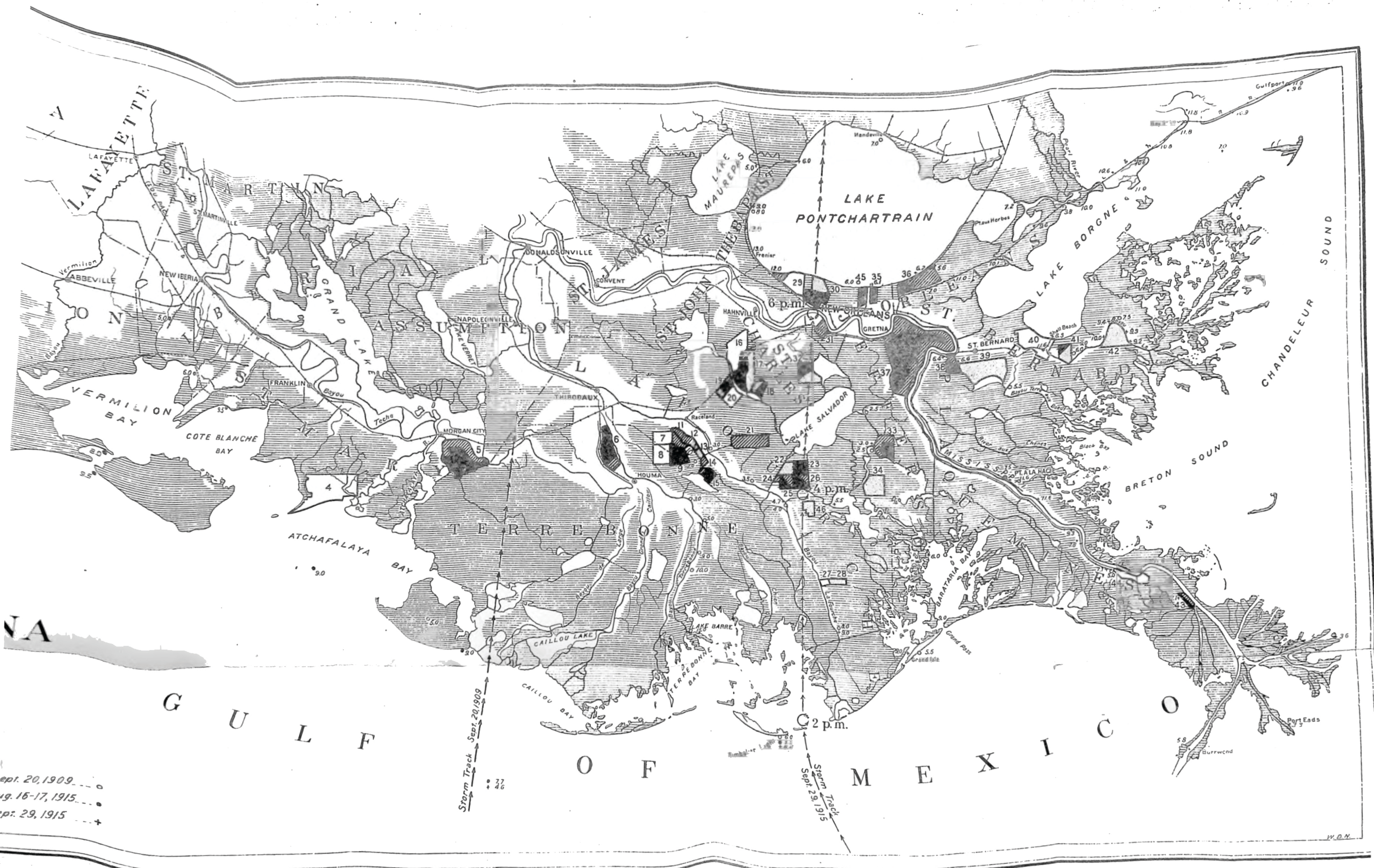
- Survey and Plans Completed
- Construction Started
- Pumping Plant in Operation
- Land under Cultivation

All Elevations refer to Mean Gulf, Cairo Datum

- High Water of Sept. 20, 1909.
- High Water of Aug. 16-17, 1915.
- High Water of Sept. 29, 1915.

SEE TABLE I FOR NAMES OF DISTRICTS CORRESPONDING TO THE NUMBERS ON THIS MAP

Map of Southern Louisiana Illustrating C. W. Okey's Paper on Main Drainage Channels



Sept. 20, 1909.
Aug. 16-17, 1915.
Sept. 29, 1915.

the increased height of the levee, would increase the total carrying capacity very little.

Without considering at this time the increased cost of pumping plant construction, and plant operation due to increased lift, the cost of providing increased out-let channels will be discussed.

A main channel 10' deep and 150' wide at the outlet would have a capacity of 2500 second feet if the slope were 0.26 foot per mile. This with the capacity of the original channels would give a total capacity of 4600 second feet and a run-off of about $\frac{1}{2}$ " per 24 hours.

A channel cut on a direct line from a point on Grand Bayou where it is much larger than the proposed channel need not be longer than 20 miles to reach the major portion of the area under consideration. The channel need not average more than 10 by 100 feet over the length, and assuming the yardage price at 10c. the cost per mile of channel would be \$20,000, or a total of \$400,000. Due to the short route the total difference in elevation at the two ends of the channel would be only 5.2 feet, or only slightly more than the actual variation in the area at present.

While the above comparison is not made with the idea that it is accurate, it is believed that it shows the proper relation between the two methods of solving the problem of caring for the drainage water after it is pumped over the levees. It is believed that the above method of comparison is capable of general application to other areas on the Gulf Coast.

There are other items which will further increase the cost of "the increase in levee heights method:" 1st. Increased first cost of pumping plant caused by the greater maximum lift. 2nd. Increased operating charges on the plant due to increased average lift. Under average conditions an increase of one foot in the average lift would mean about 10c per acre per year. The operating charges would still further increase because of increased pumping due to seepage through the levees during high stages of water outside the district. Records have shown that such seepage may increase the annual amount pumped by 30%. 3rd. The building and maintaining of high levees on the soft foundation available are expensive and difficult operations. Rapid sub-

sidence occurs during construction if levees are built too high rapidly, and there is a gradual subsidence due to the nature of the material in the levee itself. Observations on these features have now covered a sufficient length of time and variety of areas to confirm these statements.

The spoil banks along the main outlet channels could be used for levees and such channels would be of great value for navigation purposes. A large percentage of such main channels could connect with the Intercoastal Canal and bring deep draught different. The natural channels are large, but carry flood water barges to all parts of the district.

The situation in the area in Southwest Louisiana is somewhat different. The natural channels are large, but carry flood water from the adjacent high lands through the belt of low lands along the coast. It is believed that the cheapest method to remedy this condition would be to first protect by means of levees the low lands along the river from river overflow, and to drain the land by independent channels leading directly to the Gulf, after the manner of solving the problem along the Mississippi River.

In the planning of gravity draining districts the common interests of adjacent districts in securing good outlet facilities have in all parts of the country long been recognized. Experience has shown co-operation between such districts to be necessary. As yet, most of the reclamation districts that secure drainage by pumping are independent of each other and many of them will remain so. On the other hand, interior sections will eventually need better outlet facilities to the Gulf if the present policy of developing small, independent districts is continued.

It is apparent that in certain sections the present channels are already well loaded in time of heavy rainfall. It is also apparent that the run-off from the drained areas is much greater and more rapid than from the original prairie land. Therefore further reclamation work will mean a proportionate rise in flood levels in the existing channels. The various interests in such areas should combine in solving the problem. No doubt the best method of handling the matter would be to organize some large drainage districts along the lines of the different water-sheds. Not only the reclaimed and raw prairie lands should be included

in such districts, but the higher lands along the bayous as well. Such lands will of necessity be more and more affected by the construction of drainage improvements, and should be taxed in a fair and equitable manner for the improvements of these main channels. A large percentage of the so-called gravity drained lands have always been poorly drained, and in many cases have needed further main channels for many years.

By co-operation at the proper time between all the interests affected, whether they be individuals interested in navigation, gravity drained lands, or lands drained by pumps, the problem of providing main drainage channels can be solved fairly to all and with the most satisfactory results. It will be much cheaper and better to undertake this work at once, at least in a preliminary way on any area likely to be affected, rather than to wait until drainage channels have become inadequate, resulting in crop losses and depreciation in land values.

MINUTES OF MEETINGS AND BUSINESS OF THE SOCIETY.

June 10, 1918.

There being no quorum, the regular meeting of the Board of Direction was not held.

JAMES M. ROBERT, Secretary.

Regular Meeting of the Society, June 10, 1918.

The regular meeting was called to order with President Klorer in the chair and 13 members and guests present.

The minutes of the previous meeting were read and approved.

Upon motion of Mr. Dusenbury, the meetings of the Society were adjourned for the months of July and August, 1918.

Upon motion the Editor of the Proceedings was authorized to print a paper by Mr. Chas. W. Okey, this paper having to do with main drainage channels in reclaimed lands in Southern Louisiana.

The technical exercises of the evening were then held, the subject being "The Present Situation as Relates to Introduction and Use of Natural Gas in New England," by Mr. Howard Eggleston.

There being no further business the meeting adjourned to the usual collation.

JAMES M. ROBERT, Secretary.

The Proceedings of the Louisiana Engineering Society

Published bi-monthly, February, April, June, August, October, December,
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DOUGLAS ANDERSON, Editor.

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PROCEEDINGS

OF THE

LOUISIANA ENGINEERING SOCIETY

VOL. IV

OCTOBER, 1918

No. 5

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EDITORIAL NOTES AND COMMENT

Discussion of Mr. Okey's Paper. The September meeting of the Society was devoted to a discussion of the paper on "Main Drainage Channels for Reclaimed Areas of Southern Louisiana," published in the August number of the Proceedings. While Mr. Klorer and Mr. Lawes touched somewhat upon the technical details set forth by Mr. Okey, the discussion took the general trend of a consideration of the problem of the proper method and organization for handling the many phases of the question of supplying the proper channel capacity for the drainage of these lands. The question is one not merely for the present, but is of still greater importance for the future. Preparations now being made by the Government for rehabilitating returned soldiers after the war involves a very comprehensive plan of settling many of them upon farms. This will call for the development of a

large proportion of the virgin lands of this as well as the other States of the Union. There are no more fertile lands in the whole country than those of Southern Louisiana, but they must be adequately drained and protected from overflow in times of high water. This problem should not be left for its solution to ing out its own particular project, but there should be a broad individual and scattered companies or organizations, each work-plan embracing the whole district, the whole state, in fact, and an organization with the authority to make and carry out general plans. As pointed out by Major Kerr, the Board of State Engineers is now expected to take care of such propositions, and does handle many of them to the extent of its ability. But this Board is so fully occupied with its other and onerous duties that much better results could be secured if the Legislature would adopt the plan outlined by Mr. Dusenbury. This plan involves the creation of a department of the State Board of Engineers, which department shall be headed by a drainage engineer who shall handle the work of this department in much the same manner as is done by the Department of Highway Engineering. According to the views of the men most directly concerned with the problems of reclaiming wet lands in Louisiana a Drainage Department of the State Board of Engineers is a very pressing need.

The Civic Opportunities and Obligations of the Engineer. Elsewhere in this issue will be found the report of a brief discussion which was held at the last meeting of the Society, which brings up a general proposition of great interest and importance to the engineering profession. It is a proposition which has been discussed at great length in recent years by engineering societies and by the various engineering journals and publications. Briefly stated the question is just this: Does the engineer assume his fair share of responsibility and thereby reap his fair share of credit in the planning and development of projects of great civic importance to this community? As Mr. Olsen points out, New Orleans in the past few years has carried out some tremendous projects, in which the knowledge and experience of the engineer was of absolute necessity. In the preliminary discussion of these projects, however, while almost every exchange and organization

in the city participated, and had its representatives present at the meetings, the Louisiana Engineering Society was never represented. Individual firms of engineers were, of course, called in for advice and consultation, but the profession through its representative organization in this state has never been recognized. Whose fault is this? There is only one answer to this question. Our own fault! The writer has often heard the expression used by members of this Society that we should not get into anything which savors of politics. But in these modern days almost everything connected with the municipal activities of a great and growing city is mixed up with politics, and if an organization desires recognition in the councils of the municipality the politics must be taken along with the other things. And after all, politics is a word with a wide latitude of meaning, and we may make our politics what we choose. The point is that if this organization is to be a potent factor in the present and future development of this city and community, it must come forward and make itself heard in the preliminary deliberations over projects which involve the knowledge, skill and experience of the profession. It would seem, therefore, that when the Association of Commerce asks us to co-operate with them in a scheme to set before the country at large the advantages of this city, we should welcome the opportunity as an entering wedge to the fullest ultimate participation in all affairs of civic importance, which involve engineering problems.

NOTE: Since writing the above the Editor has received from the National Research Council, which acts as the Department of Science and Research of the National Council of Defense, a statement which emphasizes some of the comments made above with reference to the civic obligations of the engineer. The statement is printed elsewhere in this issue under the title "Reconstruction Problems From An Engineering Standpoint." It well deserves the thoughtful attention of our members.

New Members: The following new members and transfers have been passed upon by the Membership Committee. We extend to these gentlemen a most cordial greeting and trust that we may see them often at the monthly meetings of the Society.

RESIDENT MEMBERS: Duncan Buie, William F. Oakes, John J. Chisholm.

NON-RESIDENT MEMBERS: John J. Davidson of Morgan City, Elmer E. Shutts of Lake Charles, Charles S. Zimmer of Birmingham, Ala.

TRANSFER FROM JUNIOR TO RESIDENT MEMBER: Walter B. Moses, New Orleans.

TRANSFER FROM STUDENT TO NON-RESIDENT MEMBER: John Callan.

Our Roll of Honor. The roll of honor for this issue is being published in a different form, to the extent of omitting both the rank and the present address of the man. This is done for the reason that it is reasonably certain that there are mistakes in both of these items. Men are being shifted so rapidly now from place to place in this country, many of them have been sent to France, and many of them have been promoted in rank. It appears to be impossible for the Secretary and the Editor to secure the information concerning these changes, and it therefore seems wiser to omit these details entirely and print simply the list of names of the men in service. If members of the Society have definite information concerning any of the names on the Roll, we shall be glad to publish these facts as separate items. It should be borne in mind, however, that this journal is issued only bi-monthly and care should be taken to see that the information sent in will not be changed before the following issue.

We have recently been informed of the promotion of Major Marcel Garsand to the rank of Lieutenant Colonel.

Captain Louis A. Fortier has recently been promoted to the rank of Major.

Major W. B. Gregory keeps his old friends informed of his general whereabouts in France, and by the time this issue goes to press he will have seen a full year of service on the other side.

We have also received word that Sergeant Walter Cooke, 523d Engineers, has sailed for France.



OUR ROLL OF HONOR

CAPTAIN ARTHUR A. DIETTEL, Killed at Camp Beauregard, August 6, 1918.

APPLEBY, JOHN, JR.
ARPIN, EDWIN A.
BATE, H. HESTER
BERNARD, MERRILL
BILLINGSLEY, FREDRICK N.
BRES, EDWARD W.
CALLAN, JOHN
CALONGNE, ASHLEY
CHRISTY, LEE A.
COLEMAN, E. HUNTER
COMMAGERE, J. A., JR.
COOKE, WALTER
DE TARNOWSKY, JACQUES
FISHER, E. J.
FORTIER, LOUIS J.
FROMHERZ, A. M.
GARSAUD, MARCEL
GILBERT, HORATIO L.
GREGORY, WM. B.
GREHAN, B. H.
GUILLOT, A. H.
GWINN, J. M., JR.
HAWKINS, EUGENE C.
HAYNE, H. M.
HORNOT, E. M.

HOTARD, N. A.
JOUBERT, C. E.
KIRSCHNER, CHARLES
LEWIS, J. H.
MANLEY, R. S.
MIELLY, A. R.
MULLER, J. F.
NOLTE, ROBERT W.
O'BRIEN, JOHN A.
O'NEILL, JOHN H.
ROSE, ERNEST A.
SCOTT, ARTHUR M.
SHAW, A. M.
SHUTTS, FRED N.
SILSBEE, JOHN A.
SPRAGUE, F. E.
STEM, CLIFFORD H.
TURNER, FRANK
WHITE, THOMAS
WILSON, MAYBIN H.
WILSON, VENNARD
WOLFF, ALLAN L.
WYLER, CHARLES J.
YOUNG, SAMUEL

OBITUARY.

Captain Arthur A. Diettel, a resident member of this Society, was accidentally killed at Camp Beauregard, August 6, 1918.

Captain Diettel was born in New Orleans, August 4th, 1889, the son of Hans A. Diettel and Elvena Fehrenback. His preliminary education was received at the McDonogh Memorial School and at McDonogh Number Seven. After graduation from the Boys' High School, he entered Tulane University, taking up the course in Civil Engineering. His record at Tulane was an excellent one, and he graduated with the Class of 1910. He began his professional work in Civil Engineering with Mr. J. Frank Coleman, gaining his practical experience in the different lines of work and remaining in the employ of Mr. Coleman for five years.

Soon after graduation from Tulane he became connected with the Louisiana Engineering Society and in 1915 was transferred from a Junior Member to Resident Member. Captain Diettel took an active interest in the affairs of the Society and was always very regular in attendance at its monthly meetings. After five years of service with Mr. Coleman he became connected with the Public Belt Railroad and was holding this position when the United States declared war upon Germany. Answering at once the call of his country he enlisted in the Officers' Training Corps and was sent to Camp Pike, Little Rock.

His ability as an engineer stood him in such good stead there that he was commissioned a lieutenant before the average period of training was over and he was sent to help with construction work on another cantonment. He was later on commissioned as captain and sent to Camp Beauregard. He was a proficient officer and commanded the respect and esteem of his men. It was in an heroic effort to protect some of his men from the premature explosion of a hand grenade that he met his own death.

Appropriate resolutions were passed by the Society at its regular meeting September 9th, and these resolutions are published elsewhere in this issue. Captain Diettel leaves behind his father, Mr. Hans A. Diettel, a prominent contractor, and one sister, who reside at 321 Audubon Street, New Orleans.

PAPERS AND DISCUSSIONS

DISCUSSION ON PAPER OF MR. CHAS. W. OKEY, ENTITLED "MAIN DRAINAGE CHANNELS FOR RECLAIMED AREAS OF SOUTHERN LOUISIANA."

(Published in August, 1918 Journal of the Society.)

THE PRESIDENT: The technical exercise for the evening will consist in a discussion of Mr. Okey's paper. We have a promised discussion from Mr. Dusenbury on this paper. Mr. Dusenbury, the Society would be pleased to hear from you.

MR. DUSENBURY: Mr. Chairman and Members: I have been out of town for six weeks, and did not know anything about this paper until Mr. Hutson advised me of it to-day, and so I did not have time to read it until to-night.

The subject matter of Mr. Okey's paper is a matter in which I have been very much interested through some work that my company has done in the region between Bayou Terrebonne and Bayou Lafourche. There is a large drainage basin there that has not adequate outlets. The only outlet for that big basin was cut by my company, about thirteen years ago, running from Lockport back into the Lake Fields territory and westward. That canal—some of you may have been over it—is the only outlet for an area of close to 150,000 acres, and each year it has proved less and less able to take care of its drainage problem, and sometimes, after heavy rains, I have seen big steamboats unable to push a barge up that canal.

Between Bayou Lafourche and Bayou Terrebonne, an effort was made about 30 years ago by the parishes of Terrebonne and Lafourche to cut a canal from Grand Bayou into Lake Fields and Lake Long, which would give relief, and the two parishes raised a certain amount of money and started to work, and carried it on for a year or two, and then stopped, and nothing more has been done in the way of draining the basin.

Now, as to Bayou Lafourche itself, it so happens that a great many canals are opening into it, and it cannot carry the amount of water it is called upon to do, particularly in times of heavy

rains and adverse winds, and so there must be other outlets cut in the territory, but the canal started some thirty years ago is the proper place for a canal to drain that whole basin.

Now, in some reclamation work we have done in that territory it was originally thought that levees three feet high would be adequate, but after those levees were up, and several districts were in cultivation, it so happened that further reclamation work at the upper end of the basin caused a more rapid run-off, and the water coming down to the lower points did not find sufficient capacity. As a result two of our districts were drowned out, and we had to go to the expense of capping the levees and making them safe against that danger of overflow, which expense could have been obviated if there has been sufficient outlets.

Now for the past six years I have endeavored to have created by the Legislature a department in the State Board of Engineers headed by a drainage engineer, to be designated as is the highway engineer. The State Board of Engineers now have their hands full, or nearly so, especially with the amount of money they have available, and they cannot give the subject of drainage problems the particular attention that it deserves. We have not met with success in the creation of that department as yet. Last March there was a conference of the leading agricultural interests of the state at the Association of Commerce, and at that meeting various subjects were discussed. I brought up there the matter of creating this department, and, among other resolutions that were adopted by that conference pertaining to agricultural subjects, they adopted a resolution in favor of changing the State Board of Engineers, or adding to them a department to be headed by a state drainage engineer, under the general supervision and control of the present State Board of Engineers. At that time I wrote a little paper, which I read before that conference, and, if you will permit me, I will read it to you now.

The drainage laws now in force in the state of Louisiana had their inception in Act 317 of the legislative acts for the year 1910, which said act was subsequently amended by the Legislature sitting in the years 1912, 1914 and 1916. These laws provide for the creation of drainage districts throughout the state and authorize the various Police Juries to divide their parishes

into one or more drainage districts either upon their own initiative or upon petition of interested land owners.

There is no provision in the law, however, which compels a Police Jury, prior to the creation of drainage districts, to give adequate study to the territorial limits of the lands to be embraced within such districts, or to give any proper thought to the manner in which the lands in said drainage districts shall be actually drained.

To date a number of drainage districts have been created by certain Police Juries, the boundaries of which embrace a portion of relatively high lands that may be drained by natural drainage, but at the same time contain a great deal of land which is so low that it can be drained only by artificial means. Irrespective of this topographical condition, drainage bonds of the same amount per acre have been issued against the entire districts, with the result that high lands have been greatly benefited, while the lower lying lands have not received any benefit commensurate with the amount of bonds issued against them. I could cite you a number of drainage districts where the situation is as above outlined and in some of which the legality of the bonds is now being contested in our courts, on the ground of disproportionate benefits.

Our present drainage laws provide that, before bonds can be issued against any drainage, or sub-drainage district, the Board of State Engineers shall be required to pass upon the feasibility and practicability of the proposed drainage of the lands intended to be drained. It is the duty of the Board of State Engineers to run lines and levels and to estimate the probable cost of the proposed drainage, but as at present constituted, the Board of State Engineers, composed of a chief and four assistants, is so burdened with other necessary work, notably that caused by the Mississippi River control, that it does not have the requisite time to devote to drainage problems throughout the state, and therefore when called upon by the commission of a given drainage district, it finds it necessary to appoint some outside engineer to make an examination of the area to be drained, to formulate plans and specifications for the drainage of the property and make an estimate of the cost involved. This engineer may or may not prove competent to handle this class of work, but he is not

vested with sufficient authority to give the particular project the attention it properly demands. No adequate study is made by him to determine what effect the ultimate drainage of adjoining or in some cases, distant lands, may have upon the particular area in question, nor how the drainage and protection from overflow of this particular area may affect adjoining or even distant lands.

There is no adequate study given by the Board of State Engineers, or other competent authority, to the problem of run-off, and this is a vital subject which demands immediate attention. Bayou Lafourche and Bayou Terrebonne, two bayous which drain a very extensive territory in South Louisiana, are even now overtaxed, and as the drainage of large bodies of land contiguous to them is either now in progress or soon to be commenced, they will not prove capable of handling the increased run-off entailed, with the result that other large out-fall canals must be provided.

At present, where a bond issue has finally been placed on a tract of land and the actual work of drainage commenced by the drainage commission of the particular drainage district, there is no check on the expenditure of the funds derived from said bond issue and the result is that the monies are often injudiciously spent or dissipated in various ways and the work intended to be accomplished is not completed. Neither the bond holders then, nor the small land owner whose land may, even against his wishes, be embraced within the limits of the drainage district and who may have absolutely no voice in the management of the district and the expenditure of its drainage funds, receives adequate protection.

At present, after the work of a drainage district has been completed by its drainage commissioners, there is no final examination of the property made by the Board of State Engineers to see whether the drainage fund has been well spent and the work, as outlined and approved by the Board of State Engineers in the first instance, shall have been done in an acceptable manner.

Instead of such procedure all contracts for drainage, before being awarded by the drainage commission of any drainage district, should first have the approval of some competent authority

and finally, when the work is completed, the drainage commission should receive its proper quietus.

The drainage of Louisiana's wet lands, both those which may be drained simply by providing the necessary out-fall canals and those which must be leveed and pumped in order to be drained and protected from overflow, is only just beginning, but before it proceeds further a change should be made in our drainage laws that will prevent, in large measure, the failures that have been made in the past and the injustices perpetrated on innocent land holders, and that will give added and much needed protection to bond holders and land owners, generally.

What is vitally needed at this time is the passage of an act by our State Legislature at its next meeting creating a drainage department of the Board of State Engineers, which shall be in charge of a man possessed of large experience in drainage matters, who shall devote his entire time and that of his department to drainage problems generally throughout the state, and who shall have, under the control of the Board of State Engineers, entire charge of all drainage problems that may arise.

Before the Police Jury of any parish or the joint Police Juries of adjoining parishes shall be permitted to create drainage districts, this state drainage engineer should be called upon to investigate the areas which are to be included within the proposed districts, so that no lands which should not be included are included, and so that none which ought to be embraced therein are omitted. He should determine whether or not there are adequate out-fall facilities for the water from the lands, within the said district to be drained, or whether new out-fall canals must be provided; he must be in a position to determine what special works of drainage shall be installed and prevent the issuance of bonds on lands which will not be properly benefited thereby.

In a report of the Board of State Engineers to the Governor of the State of Louisiana, covering its activities during the period from April 20, 1912, to April 20, 1914, attention is called on page 96 to the necessity for the appointment of a state drainage engineer, and such an appointment is therein strongly recommended, but for some reason the

Legislature has not acted favorably on the recommendation. The demand, however, for the creation of a drainage department is now greater than ever before, and I respectfully urge that you give this important subject your careful thought, and if you see the necessity for such an action, that you adopt suitable resolutions dealing with the matter and, further, lend your assistance at the coming session of our Legislature to insure the enactment of such a law or laws as may bring the desired results.

Now that conference passed the resolution required in the matter, and the Association of Commerce passed on all the recommendations of the conference and recommended them, but when the Legislature assembled I did not think it advisable to go before them and try to pass the bill, because it meant creating new offices and new expenditures at a time when the Legislature was not in a mood to do this, and a number of my friends did not think it could be got through at this session, and thought that we might wait until a time when the war might be over, and we could then get through a bill that would be satisfactory. And so the matter rested.

THE PRESIDENT: We are glad to hear Mr. Dusenbury's discussion, I am sure. We have with us to-night one of the oldest members of the Society, Major Kerr, who will favor us with a talk or a paper on this subject.

MAJOR KERR: I have listened with great pleasure to what Mr. Dusenbury has said. Of course, it has become a habit with the General Assembly of Louisiana, for so many years that I do not care to say how many, to refer all matters of any particularly deep interest to the state engineers for solution. There have been times when they referred matters to the Board of State Engineers which should have gone to the Supreme Court of Louisiana. And so it is not surprising to learn that this question of drainage should desire to be relegated to the Board of State Engineers.

Now the board itself has lots to do, a world of work to do, and is not looking for any additional duties or labors, but it has recognized, as has been admirably expressed by Mr. Dusenbury, the necessity for systematizing these problems of drainage in a comprehensive way. As it stands, as Mr. Dusenbury has explained, projects are submitted to the Board of State Engineers,

under special laws of the state, and the board does the best it can to examine the project and report on the practicability and feasibility of it, and to estimate the cost; but all of that is largely derived from reports and surveys made by engineers selected by the drainage districts themselves, subject to the approval of the Board of State Engineers. Now it happens that the Board of State Engineers is composed of men who are rather familiar with the State of Louisiana at large, and with localities in particular, so that they can reasonably pass on these projects, as projects. I cannot recall now how many have been passed upon, but I think not far from a hundred, since this drainage agitation has been started. But, as has been pointed out, when these plans have been submitted and passed upon by the Board of State Engineers, they go out for construction, and that is the last the State Board of Engineers hears of it. The work is generally put through under the direction and control of the engineer who has been employed to make preliminary surveys and projects and to submit a report, and the board hears nothing more about it. Now really, as a matter of fact, with reference to a great number of projects, we do not even know that they have been started; much less completed, and the necessity for some organization by which they could be carried on impressed the Board of State Engineers long ago, and it recommended, though not seeking for further duties or further labors or further honors, that a department of drainage be created, just like the Department of State Highway Engineers, under the direction of the Board of State Engineers, and that a competent expert be employed by the Board of State Engineers, not only during the initial proceedings, but to follow up all proceedings in the drainage districts and report upon them. But so far, neither Mr. Dusenbury and his associates, nor the State Board of Engineers, have been able to impress upon the State Legislature the necessity for creating such a department of the Board of State Engineers. Whenever it is created, I want to assure the Society that we will do our level best to make a success of it.

I am really not prepared to discuss all the details of this problem to-night, but knowing Mr. Okey as well as I have known him, and knowing his capacity and ability, I thought I would say one particular thing, which is simply an expression of opin-

ion upon one of the high spots in his paper, and, with your patience, having reduced it to writing, I will read it to you.

It is indeed very gratifying to learn, through a recent paper, appearing in the *Proceedings of the Louisiana Engineering Society* for August, of the continued interest exhibited by Mr. Chas. W. Okey, in that very vital problem to Louisiana relating to drainage and reclamation.

Mr. Okey is not only well qualified as an engineer to fully review the subject, but, by reason of his stay in the state for quite a while, for the special purpose of intimately studying the subject, is particularly well qualified to write of it in its relation to the low and wet lands of Louisiana.

Thus it followed, as a matter of course, that the question of properly disposing of the accumulated run-off from reclaimed areas, and finally delivering it where it would bring about the most effective results, and could be received without injury to contiguous areas, naturally impressed him very greatly, as so clearly brought out in his paper.

The force of his argument for the early improvement of existing main natural water courses, or the establishment of auxiliary or new direct channel ways, to meet in a more immediate way the new burden imposed upon the existing natural channels by the more rapid run-off from reclaimed areas, is very impressive. Particularly is this so where the tendency with those, whose interest is only locally centered, is to proceed upon lines prompted solely by immediate and local conditions, as opposed to the consideration of remedying conditions present and ultimate, in the basin as a whole in which any project may be under exploitation.

This, however, is no new view of the subject.

Some eight or ten years ago, when drainage and reclamation in the state began to set forth claim to early possible and comprehensive consideration, the Board of State Engineers, in one of its biennial reports, foretold the probable evil effect of promoting small projects, as advanced by Mr. Okey, upon extended low areas or basins as a whole, if such a tendency were not systematically guarded against, and broader propositions kept well in mind and provided for.

The board at the time even went so far as to outline the various basins which, as a whole, or in comprehensive units, must sooner or later, from the point of view of drainage and reclamation, command attention, urging the careful study of each before too precipitately launching forth upon smaller fields of venture.

As to a choice between enlarging and improving existing main water courses, and cutting new auxiliary channel-ways of any extended length and section, the practical conclusion, in the opinion of the writer, judged from the point of view of continuous local efficiency and ultimate cost and maintenance, with particular reference to peculiar local topographical conditions, rights-of-way, etc., would, it is generally thought, lead most engineering minds to the adoption of the former.

The writer has had some considerable experience in tracing efficient drainage for not only low and wet lands, but correlatively for the generally contiguous higher lands, in several of the basins in the state. It would give him pleasure to relate some few of such experiences, but this paper has already dragged out longer than was intended, and has probably already tested your patience.

However, I will say that, all things taken into consideration, the thoughtful selection and adequate improvement of existing *main natural water courses*, which are to be found in practically all basins, was found by him to satisfy the demands of efficiency and ultimate economy better than the substitution of newer channel-ways.

Nearly all, if not all of the existing *interior* main natural water courses or drainage ways in Louisiana, you know, have, through the decay, here and there, of vegetation, falling timber, the abuses of man—by the establishment of fords, bridges, dams, using them as dumping sites for waste, refuse, etc., long since, independent of the advancement of drainage propositions, become greatly impaired in efficiency as drainage ways.

They, however, must, in the very nature of things, undoubtedly, in the past, dim and distant possibly—have done work far superior to their present capacities.

Would it not, therefore, appear the wiser step to, with the proper treatment, help them "to come back," rather than to venture too largely into the realms of improving on Nature?

THE PRESIDENT: I know that I express for the Society its views when I say that we are very thankful to hear from Major Kerr upon a subject in which he has had extended experience.

MAJOR KERR: You understand that that is only an opinion on one particular thing in Mr. Okey's paper.

THE PRESIDENT: We understand that. It is just the different opinions that we are trying to get.

We have also been promised a discussion by Mr. Lawes on the same subject.

MR. LAWES: I have prepared a short paper on this subject, which I will read, and it is very much on the lines expressed by the two gentlemen who have preceded me.

I shall not attempt to critically analyze, or scientifically discuss Mr. Okey's paper, as I am quite sure that this phase will be amply covered by the other gentlemen on the program, who are better qualified than I to do the subject justice. I will confine my remarks to a few general observations which appear to me to be pertinent and applicable at this time.

It occurs to me that a discussion of Mr. Okey's paper is appropriate at this time as calling attention to a problem which will, unless given careful consideration by designers and developers of reclamation tracts and drainage projects, be a source of trouble and expense later on.

The discussion will also be useful in directing attention to drainage and reclamation generally, and, perhaps, bring to notice the fact that present projects are very sporadic and disconnected. Each one of these is apt to be an isolated unit having no connection with, or relation to, any other project nor of the place it may occupy in the scheme of a comprehensive system of drainage or reclamation of which it perhaps may become a part in the future.

It is my opinion that a state department of drainage and reclamation should be instituted under a competent head and placed under the jurisdiction of the Board of State Engineers. It is only in this way that a comprehensive system can be evolved

and the drainage of the state made uniform and consistent. As conditions now are, there may come a time when an existing project may seriously interfere, or be seriously interfered with, in the development of projects to be inaugurated later. All of which might be avoided by a proper, scientific and efficient handling of the matter now.

The state should, the sooner the better, be divided into districts, each district comprising the lands within certain areas susceptible of improvement by drainage and reclamation. The problems in each district should be thoroughly worked out, and then wherever a project is instituted within a district, its place in the system, and the nature of the canals, levees, etc., in their relation to the main scheme shall have been determined, work along the required lines should be strictly enforced. It will be fortunate indeed if in fifty, or even twenty-five years hence, existing projects will fit into the comprehensive system which will undoubtedly be inaugurated.

As to the location of main canals or channels for projects. Mr. Okey is in a position to, and evidently has given the subject a great deal more study than most engineers, or others not directly interested in the matter, and therefore his conclusions and suggestions are entitled to considerable weight.

In designing canals it would appear well to pay attention to cross-sections. The capacity of channels may be materially increased by the shape of the section. A canal with wide bottom and shallow depth has much less capacity than one with narrow bottom and greater depth, although each has practically the same cross-sectional area and is the same head. This is due to the increased frictional resistance in the wide bottom channel.

The slope being fixed by limiting conditions, the discharge may be increased by reducing the frictional resistance, and in narrowing and deepening the channel this is accomplished. The foregoing is not new, there can be no doubt, at the same time my observation is that not as much attention is given to the shape of section in this respect as might be.

THE PRESIDENT: If there are any other members who care to discuss this question, we would like to hear from them.

MR. ZANDER: Referring to the remarks of Mr. Dusenbury and Mr. Lawes, I wish to say that I consider Mr. Dusenbury's proposition to have appointed a state drainage engineer is a very good one. In connection with the proposition, however, there are some points to which attention might well be called. I have had quite considerable experience in the drainage business, and in my opinion the problems met with in the country parishes have features quite different from those bounded by the four walls of the city of New Orleans. The greatest difficulty to be overcome in connection with a drainage problem in one parish is very often to be found in the adjacent parish. Who organizes these drainage districts? The people who want the new district are those who own the swamp lands, and the ones who do not want it are the people on the high lands. This brings up a legal question and so we go to a lawyer. As a rule, he knows nothing of engineering, but he draws up the plan of our project, and before we can solve the problem we are apt to be involved in a law suit.

A great deal of the trouble lies with the promoter, who is usually not an engineer, and if he differs in opinion from the engineer as to the details of the problem, then he thinks the latter is wrong and should be discharged.

It is my belief that the State Board of Engineers in consultation with other competent engineers should analyze the whole problem and be entrusted with the laying out of the boundaries of the different drainage districts. This should not be done by the Police Juries.

Let the engineers of the State get together on this proposition and agree upon a comprehensive and feasible scheme, and you will have no trouble in getting the Legislature to pass the necessary laws for carrying out the proposition.

THE PRESIDENT: Is there anybody else who wants to discuss Mr. Okey's paper? If not, I will proceed with my own remarks on the subject.

Mr. Okey has brought notice to a problem connected with the future drainage and reclamation work in this State, which even now though somewhat in advance of the time for action, should merit the study and investigation of those concerned in this line of work.

While it is recognized that the discharge of rain water by pumps over levees on to the surrounding land is the expedient thing to do when a pioneer drainage district is created in a locality that previously was marsh land, it will readily be appreciated that this practice cannot continue when the time comes for the adjacent lands also to be reclaimed and "put under the pump."

In these cases it is evident that a common main outfall canal or channel will have to be provided for. The engineering difficulties in providing such a canal adequate for the purpose will be nothing compared to the obstacles that will have to be overcome in getting the necessary right-of-way and assessing the proportionate share of the cost of this main channel among the owners of the land—developed and undeveloped.

If any one is disposed to minimize this apparently simple proceeding, let him inquire about the difficulties encountered by those who were charged with furnishing the United States Government the necessary right-of-way for the Intercoastal Canal, for the construction of which there was no assessment of cost on land owners other than the requirement of free donation of the strip of land needed.

It is barely possible that if the subject were presented in the proper way before the proper authorities, that a broad public policy may be adopted by the State which will provide that in the case of a natural stream being of insufficient size to carry off the drainage of the lands contiguous to it, the State may in such cases properly spend a part of the public funds towards enlarging the cross-section of the natural main drainage channels such as suggested by Mr. Okey. This would be a happy solution of the difficulty of distributing the cost of these channels.

Referring particularly to Mr. Okey's comparison of the two methods for obtaining greater discharge capacity, the one by increasing levee heights and the other by a supplemental channel, I think there will be no disagreement in the conclusion reached by him. The fact may be overlooked, however, that the difference in cost is much more than that indicated by a careless reading of Mr. Okey's statement. The comparative

costs in this particular case referred to are not as \$1,000,000 to \$400,000, but much more divergent. The \$1,000,000 estimate is based on increasing the levee grade two (2) feet in height, while to meet the conditions of the problem stated, namely, a ten foot stage at Thibodeaux, would require the levee grade to be increased four to five feet in the upper section of the area discussed, with a gradually lessening increase as we progressed southwards. Since the natural ground elevation of the greater part of this section probably does not exceed one to two feet above Mean Gulf Level, levees would be required from eight to ten feet in height. Any levee exceeding six feet in height is a "high" levee for reclaimed land and as Mr. Okey correctly states "the building and maintaining of high levees on the soft foundation available are expensive and difficult operations."

There is one disadvantageous feature connected with this proposed main drainage channel not mentioned by Mr. Okey, but which should be considered along with its advantages. The short, direct and uniform channel that will remove the rain-fall so quickly will also offer ready access to Gulf water coming into the interior, and which will reach higher elevations than previous high tides during stormy periods. The experience gained by observation of that section of Plaquemines Parish protected by the Gulf Coast Levee shows that previous to the construction of this levee and the consequent canal from which the earth was borrowed, it used to take two or three days' steady blowing of high winds to produce a three-foot or four-foot tide. This canal was gradually enlarged, from time to time, on account of borrowing material to repair storm damages to the levee and now it only takes five or six hours, with high winds from a favorable direction, to cause a tide of three or four feet. As these stormy periods are generally followed by heavy rain-fall, it is not unlikely that the main drainage channel will be partly filled, if not wholly filled, with storm water at a time when a low level is needed badly. If this contingency is to be provided for, it will necessitate, of course, greater pumping capacity and the attending higher operating costs due to a greater life whenever these adverse conditions exist.

MAJOR A. M. SHAW (communicated) :

Next to the proper control of the River it is thought that the most important work now facing the people of Louisiana is the immediate preparation and the gradual execution of a comprehensive plan for :

(a) The protection of the low lands of the lower coast country from overflow,

(b) The improvement of existing, and the construction of additional, navigable waterways, and,

(c) The drainage of the wet lands.

The reason that it is thought that the immediate preparation of a plan is necessary is that without a proper co-ordination of the works of protection, drainage and navigation, there will be a continually increasing conflict between the interests involved, and each of these interests is too large and too important to be sacrificed entirely in the interest of the others. In illustration: it is probable that the inland waterway that will eventually be constructed, leading west from the city of New Orleans, will follow approximately the route of the present selected by the Government engineers. This will probably lead through one of the present commercial canals, and will intersect the drainage of the Barataria region, of the Bayou des Allemandes, of Bayou Lafourche, Bayou Terre Bonne, Bayou Caillou, and all of the other important waterways leading to the south.

Even at the present time there exists a condition which is the result of individual efforts which have not been properly harmonized, but all of which have been leading toward a common end, that of the protection and drainage of the overflow lands of the lower coast. Before such work can be done on a large scale with proper economy, a comprehensive plan must be worked out whereby duplication of effort, and the claim of priority of outlet, to the detriment of other interests, may be eliminated. The natural outlets which proved ample for some of the earlier reclamation projects are already over-taxed, and this condition will be greatly aggravated as development proceeds. It is only by the regulation of the entire problem by a State or Federal body which can develop and put into execu-

tion a proper plan which will give due consideration to all the interests involved.

The work which such a controlling body might undertake would be the preparation of a general scheme of protection levees, which would keep out the waters from the gulf storms, which would provide ample discharge outlets, and which would provide suitable crossings of these outlets for a navigation canal. Whether these crossings should be protected by locks, holding the waters in the navigation canal at about mean tide level, or whether they should be left open to the fluctuations of the tide, is a problem which can only be decided after a careful study of the whole question.

In the protection of the areas against overflow from the Gulf storms, a comprehensive outer system of levees will doubtless be required, the exact location of these levees being controlled not only by the desire to protect as much land as practicable, but also by the necessity, for economic reasons, of securing suitable sites for the levees.

In addition to the construction of these outer protection levees it will probably be found advisable, on account of the tremendous interests involved, to construct a second line of defense, so that the failure of any one system of levees would not mean the inundation of all properties within the outer system.

It would not be practicable to raise the funds necessary to construct all of such works at the outset, nor would it be good business, but there should be prepared such a comprehensive plan, and this plan should be followed so far as practicable.

If this were done, it would not be necessary for every individual reclamation project to construct its levees to a height that would insure against maximum flood tides. Under existing conditions it is now necessary for a moderate sized project to spend \$12.00 to \$20.00 per acre for their protection levee system, and it is not possible for the average project to construct its protection levees in such a manner as to give them as great insurance against overflow as could be given at a fraction of the cost if the protection was secured under a general plan that would enclose areas many times the extent of that which they control.

It is not considered necessary that this system of general control should be followed out in the details of ditching and pumping, as these items will vary with each project, and can be handled with economy by the owners of small units. Also the requirements will vary with the purpose to which the land is to be put. In the writer's opinion, the problems which the individual owners are unable to handle economically are the protection against overflow, the provision for proper drainage outlets, and the provision of a suitable transportation system.

As the territory develops it will undoubtedly be necessary to provide additional rail facilities, but the most pressing need in the line of transportation is the improvement of existing waterways, and the development of new lines which will serve the territory.

CO-OPERATION.

(The following brief discussion brings out some matters of very great importance to the engineering profession as a whole and to the members of this Society in particular.—Editor.)

THE PRESIDENT: There is a matter that I thought might be mentioned to the members of the society, rather than to the Board of Direction, because some of the men may have suggestions to offer. About five or six weeks ago Mr. Walter Parker asked me to come to his office, that he wanted to talk to me about something, and he suggested an idea that I think has a great deal of merit in it. He said that what New Orleans needed or wanted—what the Association of Commerce needed—was an engineering brief that would advance the arguments in an engineering way to the engineers and advisers of the different industries that might seek to locate in New Orleans. He said he realized it was a big subject to tackle, but he thought the Louisiana Engineering Society was big enough to tackle it, and if the work was subdivided among four or five, or eight or nine members, and each subject taken up and treated in a brief and concise way—not as a newspaper or magazine would treat it—but in such manner as would appeal to the engineers of the industries seeking or hoping to locate here, it might bring results. There seemed to be a great deal of merit in the suggestion. Of course, it involves a great deal of work, but I would like to mention it, as there may be some enthusiastic members of the Society who are not overburdened with work and who would like to render a service, and who are beyond the draft age. The divisions of this brief would probably suggest themselves as the matter was gone into; one would be the matter of fuel—what it costs per horsepower for gas or coal or crude oil here, the different kinds available and the cost per horsepower. Another subject would be the transportation matter, and some other subject might involve the cost and quantity of raw materials available right here. If any of the members think they are equal to the task, I would like to hear from volunteers, and then we might get together and agree on some definite report, to help out Mr. Parker.

MR. KERR: I thought that the Association of Commerce had an engineer, an advisory engineer, who might inform them along these lines, without reference to the Louisiana Engineering Society.

THE PRESIDENT: Mr. Parker suggested that the engineers of the Association of Commerce would co-operate with us and help us out, and we might work together.

MAJOR KERR: I can readily understand that the Louisiana Engineering Society might go forth in an educational way on its own responsibility, but not to assist the Association of Commerce to do so,—that we could do that independently of the Association of Commerce. The Association of Commerce, I think, is very well able to take care of itself, and I think that the Louisiana Engineering Society can very well take care of itself, too.

THE PRESIDENT: I don't think that Mr. Parker had in mind to rob our Society, if we did the work, of any honors that would be due us. In fact, he would see that the results of our labors were placed to the fore and distributed where they would bear results.

MR. OLSEN: I had a long talk with Mr. Parker on this subject coming back from a gathering in St. Louis. I believe the Association of Commerce can take care of itself, but I believe the Louisiana Engineering Society ought to come out as the Louisiana Engineering Society and take up various civic matters presenting themselves to this community. We have a number of large propositions coming up. Some years ago we had the cotton warehouse; we had the development of the water-pumping out between Napoleon Avenue and Peters Avenue; we had the grain elevator; the Industrial Canal; the Louisiana Railway and Navigation Company's coming into New Orleans. At those various times every exchange in New Orleans, the Contractors and Dealers, the Sugar Exchange, the Board of Trade, the Association of Commerce, was taken into consultation and committees were appointed, but the Louisiana Engineering Society has not been known at all; and while I think the Louisiana Engineering Society can stand on its own feet, and present its own case, still I think we ought to try to co-operate for the time being with the Industrial Committee of the Association of Commerce in these

matters. I think we should go to our Mayor and to the Governor of the State and tell them that in any case of this kind the Louisiana Engineering Society is perfectly willing, and has able members to handle the matter and discuss it in an engineering way,—more so than the Sugar Exchange, the Board of Trade, or any such boards. The Louisiana Engineering Society ought to be right in the foremost rank on all these committees, and I believe it would be a good thing for the profession in general, and for the members in particular, to take up the matter and push it. I don't offer myself as a volunteer, but a committee might be appointed, consisting of various members along certain lines, to take it up, and, if need be, handle it with the Association of Commerce. I believe it is a matter worthy of being looked into and which should be duly considered.

MAJOR KERR: I think Mr. Olsen really voices my own sentiments in this matter, that if we take any active part or participation in any engineering project and advancement of the city, that the Society should do it of its own accord and its own responsibility, and not as tacked on to the Association of Commerce or any other department; do it as an independent party.

MR. OLSEN: I had no idea of consolidation with the Association of Commerce. There is a difference between consolidation and co-operation.

THE PRESIDENT: I think it would be premature to take any action on this subject to-night, but I think we might consider it. We might make ourselves useful, and even though that might deprive some of the members of a prospective fee, I think the fee will be forthcoming later on, when they get the industries down here. They will look up the men who know, if they once are brought to New Orleans. I think that anything which helps the city along will help the engineers. If we can get up information that will bring them here it is work well done. Unless the Society thinks otherwise, we might let the matter remain in *statu quo*, and, in the meantime, we might talk it over, and possibly take action at the next meeting.

RECONSTRUCTION PROBLEMS FROM AN ENGINEERING STANDPOINT.

(A Memorandum from the National Research Council.)

What should the engineering society or organization do at the present time to help in the solution of the after-war or reconstruction problems?

Engineers, individually and collectively, have done and are doing much to win the war. In fact the great world war is largely a matter of engineering. The engineers have an equal or even greater duty in securing to mankind the benefits which flow from victory. They as men of vision, educated largely at the public expense, have a responsibility and an opportunity surpassing that of other classes of citizens.

They may be excused for their lack of preparedness for war, because war was uncertain. But there is no excuse for failure in preparedness for peace. Even though we may be merely entering the great war and while we should devote every possible energy to winning it quickly, yet we know that peace must come some time, whether next year or the year after. We also know that the longer the war continues the greater will be the changes and the more the necessity for thorough preparedness for the resumption of peace activities.

Someone must have the foresight and vision to get ready for the rapid shift which will take place when peace is declared. There is no way of evading the changes. Shall we have any plans ready, or shall we simply leave matters to "muddle along" and take the consequences in internal upheaval and prolonged suffering?

If plans are to be made, shall the task be left to the commercial interests, to the bankers, to the lawyers, or to the politicians? Does the engineer intend simply to keep hands off and as a passive spectator or disinterested citizen let matters take their own course? Or will he use his training and experience to conduct researches into the present conditions and to rapidly prepare plans consistent with his broad knowledge of existing conditions? These are momentous questions and should be

seriously considered by each engineer and especially by the engineering organizations.

It may be urged that consideration of after-the-war problems is premature; but our Allies are not of this opinion. They have already begun careful study into the conditions which may prevail. Great Britain has a highly developed Ministry of Reconstruction with many engineering committees or branches. Canada and other parts of the British Empire are following the example of the mother country. France also is making far-reaching plans, and throughout the world it may be said that every advanced country excepting the United States is considering the matter from the scientific and practical standpoint. Already bills have been introduced in our own Congress, but the great body of engineers has not yet been heard from.

It may be urged in reply that reconstruction is not the business of the engineer. A little consideration, however, will show that there are relatively few fundamentals with which he is not concerned. Of course, much depends upon what we mean by the engineer. If we limit our definition simply to the mechanic or to the man who is studying the materials of construction, then the excuse may be offered that his range of duties is somewhat limited. But if we adopt a more modern definition, one within which engineers are acting more and more, then it appears that his responsibilities are large indeed.

Perhaps the best definition yet offered is that by Mr. C. C. Williams of Kansas University, who has elaborated upon Tredgold's well-known saying to read as follows:

"Engineering is the science, art, and business of utilizing the forces and materials of nature and the abilities of men to promote the welfare and prosperity of mankind."

If this definition is adopted and we compare it with the list of things which form the subjects of research and study in any reconstruction project, it is surprising to note how many of these fundamentals fall within the domain of the engineer. Primarily, under our new conception of things, the engineer is concerned with the greatest of all the forces used in engineering, that of man himself. Labor, which has before been considered merely as incidental, now occupies the front place in all engineering plans. Fully one-half, if not more, of the expenditures in engineering go directly for labor, and the efficiency and econ-

only of all engineering operations are dependent directly upon the wise direction and control of the labor factors.

It thus appears that the first and foremost consideration in the modern engineer's mind is that of labor questions, and while any solution of these must be partial and temporary, yet even these cannot be workable unless the engineer has a large hand in them.

Next in importance is research and investigation into natural resources and laws. This is particularly the work of the scientific man and engineer, and without his intelligent direction little progress can be made. The great war has awakened American engineers to the fact that in their somewhat complacent attitude of mind they had permitted European nations, especially Germany, to far outstrip them, with the result that when war came suddenly upon us, we were compelled to lose time, and directly or indirectly sacrifice thousands of lives and millions of dollars in accumulated wealth because of our short-sighted policy with reference to scientific research along engineering lines.

The whole subject of raw materials is also one which can be attacked successfully only by the engineer, including with these materials not only iron, copper, clay, petroleums, and other substances from the earth, but also the fuels and other sources of power, such as from the flowing waters.

The engineer's problems also include that of transportation, not merely the building and operating of railroads, waterways and highways, and the cars or boats moving on these, but also the navigation of the air and all of the matters which lead up to successful performance.

Next in importance comes the means of communication—the telephone, the telegraph, the wireless, and closely connected with these the rapidly increasing number of public utilities, founded primarily on engineering plans and methods. It has been the fashion to leave the larger control of these to business men and lawyers, but the time is arriving when the engineer is appreciated to be the chief factor in their success.

In agriculture also the engineer has entered, and with the increasing demand for food, the skill of the engineer is being more and more called upon, not only in developing agricultural

machinery, but in building irrigation and drainage systems, in clearing lands, and in directing operations in a large way. In housing problems the engineer, as well as the architect, must direct affairs. Even in education and the diffusion of intelligence the operations are becoming more and more closely connected with the principles of engineering.

In all of these matters which pertain to the conservation and use of the resources of the country, both material and human, and the development of ideals, the engineer should be the leader; while his profession may not include the direct control of capital and credit, of foreign and domestic trade, of agricultural distribution, and of many purely business questions, yet he is, or should be, such a factor in the fundamentals of these that his knowledge and skill cannot safely be neglected.

Assuming that the above statements of the range of the engineer's activities are approximately correct, then comes the question as to what he and his organization should do in the present crisis of world affairs. The reply seems obvious that of all mankind he should be most active in these world problems. Every society should have its committee on reconstruction, charged with the duty of arranging for effective presentation of one or another of these great subjects of employment of labor, research, study of raw materials, of fuels, power, transportation, public utilities, and other matters, all of which are undergoing radical changes. The trend of these should be studied, and the influence of the engineer as an individual should be wisely used.

The engineering society under this conception has a great duty and responsibility to its members and through them to the public. The standing of the engineering profession in the near future must be determined largely by the wisdom of the action taken now in approaching these great problems of reconstruction.

MINUTES OF MEETINGS AND BUSINESS OF THE SOCIETY.

Special Meeting of the Board of Direction, September 5, 1918.

A special meeting of the Board of Direction held September 5, 1918, was called to order with Messrs. Klorer, Barelli, Riess and Robert present.

The following applications approved by the Membership Committee were ordered to the ballot:

Duncan Buie, New Orleans, Resident Member.

William F. Oakes, New Orleans, Resident Member.

John J. Chisolm, New Orleans, Non-Resident Member.

John J. Davidson, Morgan City, La., Non-Resident Member.

Elmer E. Shutts, Lake Charles, La., Non-Resident Member.

Charles S. Zimmer, Birmingham, Ala., Non-Resident Member.

Walter B. Moses, New Orleans, La., Transfer from Junior to Resident Member.

John Callan, Marysville, Tenn., Transfer from Student to Non-Resident Member.

The applications of Messrs. Armour and Spence were returned to the Membership Committee with the question as to whether or not the committee had made a mistake in classifying same. Mr. Armour applied for Resident Membership and Mr. Spence for Junior Membership. Both were approved by the Membership Committee for Associate Membership.

Mr. W. T. Hogg was changed from Non-Resident to Resident Membership.

Certain members were dropped for non-payment of dues.

There being no further business, the meeting adjourned.

J. M. ROBERT, Secretary.

Regular Meeting of the Board of Direction, September 9, 1918.

The regular meeting of the Board of Direction held September 9, 1918, was called to order with the following present:

Messrs. Klorer, Barelli, Riess, Dusenbury, Hutson, Robert.

The application of Mr. George C. Schoenberger was passed subject to the approval of the Membership Committee. A letter from Mr. Henry Hutson, Chairman of the New Orleans Section of the American Society of Mechanical Engineers, stating that they had subscribed to the Journal of the American Society of Engineers for our Library. This letter was ordered read to the meeting. A letter from Mr. E. W. Carr, Secretary-Treasurer of the New Orleans Section of the American Society of Mechanical Engineers, was also read. This letter stated that the said section was remitting to the Louisiana Engineering Society the sum of \$25.00 for the use of the Library rooms for the year 1917-1918. The \$25.00 was

ordered turned over to the Library Committee with the instructions that they buy Mechanical Engineering books. A letter from Mr. G. W. Hillman, relative to legislature concerning engineers, was then read.

The request of Mr. R. B. Quiney to be considered in the service and have dues remitted although he does not wear the uniform, was not granted.

The status of Messrs. Jos. M. Bing and A. A. Wood was changed from Resident to Non-Resident membership.

A letter from the Concrete Mixer Association was ordered transferred to Mr. John Riess with a request that he select a committee to answer the same.

There being no further business, the meeting adjourned.

J. M. ROBERT, Secretary.

Regular Meeting of the Society, September 9, 1918.

The regular meeting of the Society was called to order with President Klorer in the chair and twenty-four members and guests present. The minutes of the previous meeting were read and approved.

A letter from Mr. Henry Hutson, Chairman, and Mr. E. W. Carr, Secretary-Treasurer, of the Local Section of the American Society Mechanical Engineers, donating a subscription of the Society's Journal and \$25.00 to our Society, were read to the meeting.

Attention was called to the death of one of our members, Captain A. A. Diettel, U. S. Army Engineering Corps. A committee consisting of Messrs. Derickson, John Riess and Anderson were appointed and they submitted the following resolutions which were amended and made a part of these minutes:

Whereas, Captain Arthur A. Diettel, United States Army, was accidentally killed while in the discharge of his duties at Camp Beauregard, August 6, 1918.

Captain Diettel was a rising young engineer of this city and an active member of this Society. He was able and conscientious in the performance of his duties as an engineer, and his rapid promotion in the army gave evidence of his proficiency as a soldier.

He died the death of a brave man and a hero, being himself killed in the attempt to save his men from the results of a panic during practice with hand grenades in the trenches.

While it was not given him to make the supreme sacrifice amid the excitement and glory of the battle-field, yet he is no less a hero and as such deserves the recognition and gratitude of his country and his fellow men.

Therefore, be it resolved, That the members of the Louisiana Engineering Society place themselves upon record as expressing their deep sense of loss in the death of their friend and colleague and extend to his bereaved family the expression of their sincere sympathy in the great loss which they have sustained.

And be it further resolved, That a copy of these resolutions be spread upon the minutes of the Society and published in the official journal, and that a copy be sent to the family of the deceased.

Signed,

DONALD DERRICKSON,
JOHN RIESS,
DOUGLAS ANDERSON, Committee.

In the absence of the author, the Secretary read a paper by Mr. C. W. Okey, entitled: "Main Drainage Channels for Reclaimed Areas of Southern Louisiana." After an interesting discussion by Messrs. Dusenbury, Kerr, Lawes, Zander, Klorer and others, the meeting adjourned to the usual collation.

J. M. ROBERT, Secretary.

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PROCEEDINGS OF THE LOUISIANA ENGINEERING SOCIETY

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EDITORIAL NOTES AND COMMENT

Fuel Conservation. Elsewhere in this issue is published a very interesting and comprehensive article by Mr. Leo S. Weil, Administrative Engineer for Louisiana of the United States Fuel Administration, dealing with this important subject from the standpoint of our own state and city. European nations, particularly the continental ones, have always criticized us as a people of extravagant and wasteful habits. We have known that a great deal of the criticism was well founded and just, but a great deal of this wastefulness could be attributed to the feeling that we had such abundant supplies of raw materials that it did not matter if we did waste even a considerable portion of it. Probably nothing could have served to bring us to a truer comprehension of our real position than the demands made upon our resources by the War. We first began to realize this when war was declared in 1914

by the rapid increase in the price of all fuels due to the demands of the Entente powers, and then it came to us more sharply still when upon our own entry into the hostilities we were put upon fuel "rations."

The establishment of the United States Fuel Administration was necessary for the purpose of properly distributing the available fuel supplies and utilizing them in the most efficient way, but probably the most valuable outcome of its activities has been the opportunity that has been given to emphasize the very important matter of conservation of fuel. Conservation involves the study and correction of wasteful methods of fuel production, waste in transportation, and unnecessary losses in consumption, both on the part of the operators of large plants and the small consumer.

Of course, large public utility and industrial plants are constantly studying this problem of fuel conservation, and while there is still room for improvement even in these, yet the most fertile field for sowing the seeds of the gospel of conservation lies with the smaller industrial plants and even with the household consumer.

This latter item of household consumption is greater than the average man realizes. Mr. Weil points out that of the total estimated production for the year ending April, 1919, of 700,000,000 tons, at least 120,000,000 tons of this is used for household purposes. It is estimated that with proper methods of conservation, 12,000,000 tons of this could be saved. This means practically that every man, woman and child in this country should save about 250 lbs. of coal per year. It may be a matter of surprise to many of us that every man, woman and child of our population uses practically 2500 lbs. of coal per year.

Another important method of fuel conservation which deserves emphasis is the more widespread use of electrical power on the part of the operators of small, and in many cases, of large industrial plants. This does not appeal to us in this city as strongly as it does in other industrial centers, because of the fact that here we must still pay a very high price for electric power, but even with that handicap there are many instances in this city in which a careful survey of conditions and

the proper design and installation of the driving units would result in a considerable saving. The flexibility of electrical power and the consequent direct application of the electric motor to the machinery to be driven are strong points in the problem of fuel conservation. The use of electrical power generated at the point of production of the fuel and transmitted electrically would also serve to eliminate much of the waste, necessary and unnecessary, in transportation of the fuel in its original form.

Mr. Weil's paper calls attention to many of the details of installation and operation in which a saving of fuel may be affected, and the managers and operators of plants may well afford to keep their engineers instructed on these points. It may be mentioned in this connection that Mr. A. M. Lockett got out a few months ago a very excellent little pamphlet called "How to Save Fuel," which contains many valuable suggestions and rules. Copies of this pamphlet may be obtained for the asking from the firm of A. M. Lockett & Co.

The Social Side. The War is over, and in the course of the coming months many of our comrades, who went into the service, will be returning. Perhaps by the Spring or early Summer the majority of them will be home again. May this not be an opportune time, therefore, to begin thinking, at least, of a resumption of one of our social functions which, by common consent, was eliminated several years ago? We called this function "The Outing," but the name does not necessarily signify. The important point is that the social side of an organization such as ours should be emphasized, to the proper extent. This is a day of conventions and annual assemblies, and it is to be noted that in all such conventions the social entertainment plays a considerable part. In fact many are of the belief that the main purpose of a convention is to give the members from various localities an opportunity to get acquainted with each other and to exchange views in an *informal* way. Of course, in this Society the members are in frequent touch with each other on account of being located in the same city, and on account of the monthly meetings.

But many of us believe we should go further than this and have each year one function to which we could bring our sweet-hearts and wives, and, laying aside the more serious features of technical and scientific discussion, all join in having a good time and in getting better acquainted. Perhaps in the Spring or early Summer some such affair could be arranged as a sort of welcome to our Roll of Honor men, and an informal getting together and renewing of spirit of us all. This is merely a suggestion and it may be taken for what it is worth.

A Word from the Editor. This issue of our journal completes the fourth year of its existence, during which time it has not been necessary to suspend publication of a single issue, and with a few exceptions we have come out on time. No attempt has been made to make the publication other than its name implies, that is, a record of the proceedings of the Louisiana Engineering Society. Occasionally we have published articles from other sources when they had special bearing upon the activities of our organization, and that is only what should be done. No attempt has been made to make it an engineering news journal, even for local projects, and only to a slight degree have we attempted to keep up with the personal activities of our own members. Either of these is precluded by the very fact that the journal is only a bi-monthly one. There have been times, this year in particular, when we have wondered whence the material for the next issue was to come, but a kind Providence, aided by a very efficient Chairman of the Program Committee, has each time enabled us to come across. We have gone on for four years with very little comment from our members, either in the way of suggestions or in the way of criticism, both of which we would welcome.

There are in New Orleans to-day great projects under way of development and construction, and as many of the men most directly concerned with them are members of this Society it would seem that this would constitute a good field for the contribution of articles for our journal. Furthermore, as stated above, many of our soldier members will soon be returning and their experiences would make interesting articles for publication. May we ask the members to bear these

points in mind and try to influence such of their friends as fall into either of these categories to furnish us with papers or articles for publication in the Proceedings?

Our Roll of Honor. The number of members of the Louisiana Engineering Society who have gone into military service has now reached a total of fifty-six, this out of a membership of two hundred and fifty, making a percentage of over twenty-two. Out of this number, as far as we have been able to learn, only one man, Captain Arthur Diettel, has been called upon to make the supreme sacrifice. A large percentage of our men have seen service abroad, and those of us who know their temper and their spirit, know that they have rendered a good account of themselves and done honor to this Society, which honors itself in honoring them.

Lieutenant Colonel Garsaud was mentioned in the public press a few weeks ago on account of the excellent engineering work he had done in connection with the fighting around Cha-teau-Thierry.

Since the publication of our last issue the following notes concerning our men in service have come to us:

A. Rogers Mielly is a Second Lieutenant of Engineers located with the Seventh Regiment of Engineers at Camp Humphreys, Virginia.

Richard B. Kohuke is with the A. E. F. "somewhere in France."

William T. Newton, Master Engineer, is with the Fifth Engineers at Camp Humphreys, Virginia.

Andrew J. Wild, Jr., is with the Fifth Infantry at Camp Beauregard.

Sergeant David Weidman is with the Sixth Engineers in France.

Joseph W. Joachim is with the United States Navy in Galveston, Texas.

Elmer E. Shutts is "somewhere in France" with the A. E. F.



OUR ROLL OF HONOR

CAPTAIN ARTHUR A. DIETTEL, Killed at Camp Beauregard, August 6, 1918.

APPLEBY, JOHN, JR.
ARPIN, EDWIN A.
BATE, H. HESTER
BERNARD, MERRILL
BILLINGSLEY, FREDRICK N.
BRES, EDWARD W.
CALLAN, JOHN
CALONGNE, ASHLEY
CHRISTY, LEE A.
COLEMAN, E. HUNTER
COMMAGERE, J. A., JR.
COOKE, WALTER
DE TARNOWSKY, JACQUES
FISHER, E. J.
FORTIER, LOUIS J.
FROMHERZ, A. M.
GARSAUD, MARCEL
GILBERT, HORATIO L.
GREGORY, WM. B.
GREHAN, B. H.
GUILLOT, A. H.
GWINN, J. M., JR.
HAWKINS, EUGENE C.
HAYNE, H. M.
HORNOT, E. M.
HOTARD, N. A.
JOACHIM, J. W.
JOUBERT, C. E.

KOHNKE, R. B.
KIRSCHNER, CHARLES
LEWIS, J. H.
MANLEY, R. S.
MIELLY, A. R.
MULLER, J. F.
NEWTON, W. T.
NOITE, ROBERT W.
O'BRIEN, JOHN A.
O'NEILL, JOHN H.
ROSE, ERNEST A.
SCOTT, ARTHUR M.
SHAW, A. M.
SHUTTS, F. E.
SHUTTS, FRED N.
SILSBEE, JOHN A.
SPRAGUE, F. E.
STEM, CLIFFORD H.
TURNER, FRANK
WEIDMAN, DAVID
WHITE, THOMAS
WILD, A. J., JR.
WILSON, MAYBIN H.
WILSON, VIENNARD
WOLFF, ALLAN L.
WYLER, CHARLES J.
YOUNG, SAMUEL

OBITUARY.

Captain William Joseph Hardee, a charter member of this Society, died in New Orleans, Nov. 17, 1918.

Captain Hardee was born in Brandon, Mississippi, March 27, 1863. He moved to New Orleans at an early age and received his education in the public schools of this city. He was also a graduate of St. Stanislaus College in Bay St. Louis. He began his professional work with the old New Orleans Pacific Railroad, now known as the Texas & Pacific. From 1886 to 1890 he was Assistant United States Engineer engaged in hydrographic and topographic surveys of the Mississippi River from Vicksburg to the mouth of the river. From 1890 to 1900 he was Assistant United States Engineer in charge of location, maintenance and construction of levees in the same territory.

At the outbreak of the Spanish-American War he volunteered for service and on July 9, 1898, was commissioned by President McKinley Captain of Company F, Third Regiment, United States Volunteer Engineers. He served in this country and Cuba until mustered out May 17, 1899. In November, 1899, he was elected City Engineer of the City of New Orleans, which position he held until his death. During his administration of this office a great deal of constructive work was done by the city and many of our most prominent public works are monuments to his skill and professional ability. Notable among them is the sea wall and park at West End which was designed and constructed under his direction.

The following resolutions have been drawn up by a committee named by the President of the Society:

Whereas, Almighty God, in His Infinite Wisdom did remove from our midst one of our most zealous and conscientious workers in the upbuilding of our Society, one of its charter members, whose professional capacity and industrious efforts have in so many instances reflected to the great credit of our membership and whose labors as City Engineer for eighteen years were crowned by the execution and completion of public works which stand to-day as monuments to

his professional ability, one whose courteous and gentlemanly bearing at all times commended him to the respect and love of the members of our Society;

Be it Resolved, That, we the members of the Louisiana Engineering Society in meeting assembled and moved by a feeling of deep respect and sincere sorrow do record in our official proceedings our appreciation of the valued services of our fellow member William Joseph Hardee, deplore his untimely taking away and extend to his widow our heartfelt sympathy in her great sorrow.

Be it further Resolved, That a memorial page be set aside in our minutes for the inscription of these resolutions and that a copy properly certified by the officers of the Society, be sent to his widow.

Adopted by the Louisiana Engineering Society in meeting assembled December 9, 1918.

JAMES M. ROBERT,
Secretary.

JOHN KLOSER,
President.
THOS. L. WILLIS,
A. M. BLAMPHIN,
Committee.

Charles H. H. Gillean, a non-resident member of this Society died on November 9, 1918.

Mr. Gillean was born in Waco, Texas. He graduated in the Civil Engineering Course at Tulane University in 1907. From 1905 to 1907 he spent his summer vacations in engineering work for the New Orleans and Northeastern Railroad and in Land Survey work in New Mexico. From 1907 to 1909 he was employed in sidewalk paving and water pipe laying in the city of New Orleans. For the next two years he was Inspector and Junior Engineer with the United States Engineer Office in New Orleans. From 1912 on he was variously employed in reinforced concrete sewer construction, draftsman for the New Orleans Railway and Light Company, and had considerable experience in Spanish Honduras as instrument man on railway and waterworks location for the Vaccaro Bros., and for the United Fruit Company.

In 1914 he again became connected with Government work in the capacity of Inspector and Junior Engineer with the Fourth Mississippi River District at New Orleans, in which position he remained until the time of his death.

The following resolutions have been drawn up by a committee named by the President of the Society:

Whereas, In the exercise of an inscrutable wisdom, and in the fulfillment of His allwise decrees, Our Heavenly Father has deemed it opportune to recall from a most promising earthly career, from the bosom of a loving family, and from the companionship of his admiring friends, U. S. Junior Engineer Charles H. H. Gillean, and

Whereas, In his death this community has suffered the distinct loss of an upright and conscientious citizen, his family a devoted son and brother, and this society a most valued member, now therefore be it

Resolved, That the Louisiana Engineering Society does deeply deplore the death of Junior Engineer Charles H. H. Gillean, and in his untimely taking away shares with his family in the great loss which they have sustained, and be it further

Resolved, That as an outward token of the brotherly sentiments entertained for their departed member, and as further evidence of their sympathy and condolence with his bereaved family, does hereby further direct that the Secretary of this society transmit to them a copy of these resolutions, that they be published in the official journal of the society, and that another copy be inscribed upon a separate page of its records.

G. D. WADDILL,

JAMES M. ROBERT, Committee

Attest:

JOHN KLORER, President,

JAMES M. ROBERT, Secretary,

Louisiana Engineering Society.

December 9, 1918.

PAPERS AND DISCUSSIONS

FUEL CONSERVATION IN LOUISIANA

By LEO S. WEIL,
Administrative Engineer, U. S. Fuel Administration.
Read before the Society Nov. 18, 1918.

I have come before you to-night to tell you of the work of fuel conservation in Louisiana; to recount what has already been accomplished to that end, and to describe to you the present plans by which it is hoped to bring about even greater savings in the future.

Before going into this subject, however, let us see why it is necessary to practice fuel conservation. In the year 1914, the mines of this country produced 513,525,477 tons of coal; in 1915, the production increased to 531,619,487 tons; in 1916, it was 590,098,175 tons, and last year this tonnage was raised to 652,000,000 tons. Why is it then, in the face of this rapid increase in production, that fuel conservation is necessary? The reason is that, in spite of all efforts that have been made, the need for coal, due to war demands, has far outstripped the supply, and the slackening of our war activities, effective measures must be taken to make the supply go round. When we consider that for every ton of steel that is made four tons of coal are required, and that during the present intensive bombardment on the Western front 1800 tons of steel are often dropped on a single crest, or point of attack, in one hour, some idea of the vast tonnage of coal required in munition making alone may be obtained. Nor is this all. Steel is required for building ships, for manufacturing ordnance, for constructing and maintaining railroads, and for numerous other necessary war enterprises; and for every ton of steel that is used a corresponding quantity of coal is required. Coal is needed also for propelling the ships, for transporting food and men, for operating the railroads, for keeping the cantonments warm, for making explosives, and for export to our allies. The War Industries Board has called for 15,000,000 tons of steel, requiring 60,000,000 tons of coal. The shipping program of the War Department at present calls for transporting 250,000

men a month, with food and armament. This will require 1,000,000 tons of shipping, and to transport and maintain an army of 2,000,000 men on the other side, and to furnish all the bunker coal called for in our shipping program, will require 22,000,000 tons annually. The navy will use 4,500,000 tons; the Shipping Board estimates its needs as 13,00,000 tons and the demand for export, that must be met, amounts to 24,000,000 tons. In addition to this, our railroads will burn 166,000,000 tons of coal; for our domestic needs we must have 125,000,000 tons; our public utilities use 35,000,000 tons, and the mines themselves consume 13,000,000 tons in operating their plants. The total of these figures is about 463,000,000 tons, and it does not include any of our regular industrial requirements, which due to war conditions, are greater than ever before. Some idea of the extent of these requirements can be given by mentioning the tonnage required by some of our more important industries: Steel works and rolling mills consume 24,000,000 tons; cotton mills, 5,000,000 tons; ice plants 5,000,000 tons; cement mills 8,000,000 tons; paper mills 7,500,000; foundry and machine shop products 7,000,000; slaughter houses 3,500,000; chemical works 3,000,000; glass factories 3,000,000; flour mills 2,000,000; woolen goods 2,000,000. This last is by no means complete, but it will serve to illustrate the extent of our manufacturing demands. When we realize that of the total production of the country 18% is for domestic use; 27% is burned by the railroads; 15% is used for cooking, smithing, bunkering, and miscellaneous needs; and the industrial and war demands combined can have only 40% of the total, it is easy to see that the estimate of 735,000,000 tons for this year's requirements is not excessive.

To meet this demand, it is expected by a maximum of effort to produce 700,000,000 tons for the coal year beginning April 1st, 1918, and ending April 1st, 1919. This is 35,000,000 tons less than the estimated needs. When a situation like this arises, that the supply is less than the demand, one of two things must be done; either the supply must be increased to meet the demand, or the demand must be decreased to meet the supply.

Let us now proceed to a consideration of what the government has done to meet and prepare for this situation. When

the Fuel Administration was organized last year, Dr. Garfield divided the work of his organization into three departments: production, distribution and conservation.

One of the first efforts of the production department was to bring together capital and labor. There had been a great deal of mutual recrimination between operators and miners, each blaming the other for the decreased output of the mines. There was also a generally unsettled condition of price, which made the operators afraid to run their mines to full capacity, and it was, therefore, highly important that prompt attention be given to stabilizing prices. A careful study of operating costs in each producing district was made, and a price was set for each grade of coal, depending on its quality and the cost of production. Margins were also set for jobbers and retail dealers, so that those in the coal business would know exactly how much they would be allowed to ask for their coal, and the consumer was protected against over-charge. After considerable effort, an agreement was also made with the miners, whereby they were pledged to work full time, and penalties were assessed for strikes and lockouts.

One of the principal causes of trouble during the past year was the poor quality of coal that was shipped by most of the mines. This had a doubly harmful effect. The higher percentage of ash and dirt in the coal was just so much extra tonnage which the already over-burdened transportation lines of the country had to handle; and furthermore, with inferior coal, the quantity of fuel that had to be burned in a plant was largely increased. In a great many plants in this city the amount of coal consumed, under the same conditions, jumped up fully 50%, which was directly attributed to the higher percentage of ash in the coal. In one plant, at which I ran tests, the coal contained, by chemical analysis, 29% of ash, and the more cars were used to handle this increased percentage of ash made necessary, caused the refuse drawn from the furnace to amount to fully 40% of the coal burned. Conservative estimates place the ash content in coal for the year 1917 7% higher than formerly, and based upon the number of cars required to move the mine output this means that about 800,000 more cars were used to handle this increased percentage of

ash. What an unnecessary hardship this was on our heavily burdened railroad lines! Much difficulty was experienced by plants all over the country in using this inferior coal, and, in almost every instance, it made necessary the operation of more boilers, and, in many cases, the employment of more firemen and coal passers, who were hard to obtain on account of the shortage of labor. In order to better these conditions, the Fuel Administration has now placed a premium on prepared coal, and also penalizes the mines for dirty coal, and inspectors have been placed at all of the principal producing centers to see that the quality of coal shipped is up to standard. While conditions are not yet everything that could be hoped for, a very market improvement has been obtained.

You are now probably asking the question why it is, with these initial difficulties largely corrected, and with an unlimited supply of coal in the ground, production cannot be increased sufficiently to meet the demand. The answer to this can be given in two words—transportation and labor. A few years ago, coal formed 36% of the country's total freight. Since that time, the tonnage of coal to be handled has jumped nearly 40%, but the other freight business of the railroads has increased to such an extent that to-day this vastly larger quantity of coal constitutes only 29% of the freight carried by the railroads. The amount of railroad equipment added in the same few years has been inconsiderable, with the result that the roads are taxed to their absolute limit of capacity. You are all familiar with the enormous order for equipment recently placed by Mr. McAdoo. If the entire amount of this order were devoted to additional equipment, and none were required for the replacing of old equipment, it would give added carrying facilities amounting to only 5%, which will give you some idea of the magnitude of the transportation problem. Further increase in railroad carrying capacity is restricted by the fact that steel is so badly needed for other war purposes, and in order to supply the demand for munitions, shipbuilding, and other war essentials, the work on the roads must be held down to a minimum.

Labor shortage is also a very serious factor in holding down production. In the first place, the Draft has materially

reduced the number of miners. Secondly, munition factories and other war industries have taken their increment, either by the lure of higher wages, or more congenial employment. And finally, one effect of better pay has been to cause the men to absent themselves more frequently from work, as they earned in a few days enough to live on, and, therefore, saw no reason to work a full week. This last condition has now been largely corrected by the agreement with the miners previously referred to, but the other two difficulties are still subjects of serious concern. In spite of these handicaps, however, the production department has succeeded in materially increasing the output of the mines; and when we consider that the United States is the only warring nation that has been able thus to increase production, we must agree that the efforts of this department are deserving of the highest commendation.

The second department of the Fuel Administration is the distribution department, whose most effective work was the establishment of the zone system of distribution. With exceptions in case of special grades, coal is sent from each producing district to the nearest consuming center, thus putting an end to the expensive evil of cross-hauling. On the zone system, as worked out, Louisiana draws its coal supply from the following centers:

Arkansas	100,000 tons
Illinois	52,000 tons
West Kentucky	972,000 tons
Alabama	447,000 tons
Oklahoma.....	2,000 tons

This gives Louisiana a total allotment of 1,573,000 tons from April 1st, 1918, to April 1st, 1919, out of which allotment all domestic and industrial demands must be taken care of. This does not include coal used by railroads, or for bunkering purposes.

The distribution department also has a complete record of the amount of coal produced each week by each district and mine; also a record of the amount consumed in each district; and, finally, knows the stock on hand in the yard of every dealer and industry. With this information, it is able to direct judiciously the streams of coal required to fill the needs of each

section. Last winter, when a serious fuel shortage threatened, it was a problem of the Fuel Administration to see that coal was equitably distributed, and that hoarding was prevented. To this end, all consumers in this state were limited to having thirty days supply of coal on hand, and arrangements were made whereby the more necessary industries, such as public utilities, would receive their coal in preference to the less essential plants. This same problem will confront the Administration again this year, to an even greater degree, and in order to keep our war industries running at full tilt, it may be necessary, unless some other remedy can be found, to curtail the production of the less essential plants.

The only remedy for this situation is conservation. We have considered the reasons why production cannot be increased beyond a certain point, and as the supply cannot be made sufficient to meet the demand, the only way to avoid a wholesale shut-down of non-war industries is to reduce the demand by introducing conservation measures among coal users. This will bring about improvement where improvement does the most good, namely at the consuming end, because any betterment in conditions made here will not only lessen the load on production, but will also relieve our already overburdened transportation lines.

The importance of the work of conservation was early realized in New Orleans, and an energetic Conservation Campaign was started here about a year ago, this being one of the first cities in the country to begin work actively to this end. In considering conservation measures, it was decided that coal could be saved in three ways:

1. By substituting other fuels, where available.
2. By the consolidation and closing down of unnecessary plants.
3. By improving operating conditions.

When the car shortage and insufficient mine output last winter interfered seriously with the coal supply, investigations were undertaken by the Fuel Administration and by many local plants to determine the advisability of substituting other fuels for coal. The lumber mills hereabout operate almost entirely on wood, their waste product supplying ample fuel for

their boilers, and usually a large excess beyond their own requirements. It was thought that this excess could be used to good advantage by other plants, and the Fuel Administration, therefore, urged the use of wood wherever possible. Unfortunately, however, very few plants were able to make use of this fuel, because of their location and equipment. Most of the lumber mills are situated in the country at a considerable distance from other steam producers, and the difficulty in the way of transporting this wood waste, because of its bulk, practically precluded its general use. This narrowed the choice down to continuing with coal, or equipping the boilers for burning oil. There were many angles to this problem. The cost of the two fuels, the expense of changing equipment, the capacity for carrying over-loads, the probable supply, must all be considered. Experience in past years, covering a large number of plants burning coal and oil, had demonstrated that one ton of coal would produce about the same quantity of steam as four barrels of oil. This is an average figure which will vary with the kind of equipment and the efficiency of operation in different plants, and is based upon a comparison of coal containing 13,500 b.t.u. and 14,000 b.t.u., and oil containing 18,500 b.t.u. In stoker fired plants, the showing will be a little more favorable to coal, and in hand fired plants a little less favorable. During the past year, however, the quality of coal received has been very much poorer than formerly, the heating value being less, and the percentage of impurities greater. Some of this coal was very bad indeed, but based upon the usual quality that was received, and the average results obtained, it was estimated that one ton of coal would still do the work of about $3\frac{1}{2}$ barrels of oil. The average price of most of the coal used in New Orleans last winter was from \$4.50 to \$4.75 per ton, delivered in cars. The price of fuel oil varied greatly with different producers, but the probable cost was around \$2.00 per barrel. At this price, and with the ratio of $3\frac{1}{2}$ barrels of oil per ton of coal, the equivalent fuel cost of oil would be about \$7.00 for each ton of coal burned.

It may readily be seen that if this were the only item of operating cost, the use of oil would be prohibitive; however, in many plants this fuel cost could be partially offset by the use

of a smaller operating force in firing oil. The possibility and amount of this saving would be dependent on the size and equipment of the plant and the quantity of fuel burned. In smaller plants, employing only one fireman, the saving in labor by changing over to oil would be non-existent; but, in large plants a very considerable saving could often be made. This was especially true with the poor quality of coal lately received, because the labor of cleaning fires was very much greater than formerly, in many instances necessitating an increase in boiler room forces. With the labor situation as acute as it is at present, additional firemen were hard to obtain, and any decrease in the operating personnel would help to solve a difficult problem.

Another potent argument in favor of oil was that with the poor quality of coal lately received, it was often difficult to obtain full capacity out of the boiler equipment, whereas manufacturing conditions and improved business, generally, demanded an increased output from the boiler plant with the same equipment. What required the greatest consideration, however, was the continuity of supply of the two fuels. With the coal situation as threatening as it was last winter, most industrial concerns were more interested in keeping running than in the cost of operation. A careful survey was made of conditions in the fuel oil industry, and this did not promise any more permanent relief from this fuel than from coal. The increasing demand for oil in ship propulsion and in war industries had called for an unprecedented output by producers of this fuel, and the removal of oil tankers to Trans-Atlantic trade rendered their supply increasingly difficult to obtain. Besides this, the same transportation difficulties existed with fuel oil as with coal, owing to the shortage of tank cars.

A careful study of the situation showed very little to recommend oil as fuel, the supply of oil being as problematical as the supply of coal, and in almost every instance the cost of operation was greater with oil, except where old contracts were in force. The plants where a saving in labor could be effected were plants which used a large quantity of fuel, and the increased cost of the oil would almost always offset any saving in labor. Some few plants did change over to oil, in

order to obtain more capacity out of their boilers, or because they were able to obtain exceptionally advantageous contracts, but a big majority of the industries found it preferable to continue the use of coal.

It is unfortunate, with the example of last winter's conditions before us, that no plan has been devised for bringing the much talked of natural gas into the city. Plants here are now limited to operating on coal, or oil, or to using purchased power from the Railways Co. This last source of power is not always practical, as steam may be required for process work, and besides the capacity of the Railways Company for handling additional business is very limited. If natural gas were brought in, it would not only go far toward solving our fuel problem, but would also give a wonderful impetus to the industrial development of the city.

The second possibility of saving, mentioned above, was by the consolidation and closing down of unnecessary industries. There were not very many opportunities for this last winter, without drastic orders curtailing the fuel supplied to certain plants, and for this measure the Fuel Administration was not at that time ready. The most noteworthy example of accomplishment along these lines was the consolidation effected among the ice factories in the city. There are in New Orleans twenty-three ice plants, having a combined output of 2,050 tons of ice per day. In the winter months these plants run at only one-third capacity, their total output being 618 tons per day. The ice plants were notified that it would be necessary for some of them to close, and that the output of the remaining plants could be used to supply the customers of all. The owners of the plants very patriotically got together on this and made an arrangement whereby thirteen of the factories were shut down, the rest of the plants supplying all of the ice. In deciding which factories should shut down, consideration was given to which were most economical, and also to which were most centrally located, so that ice could be distributed throughout the city with a minimum expense. As a result of the shutting down of these plants, it is estimated that about twenty-five tons of coal a day were saved, and no

permanent damage was done to any of the plants which were closed.

The third means considered for saving fuel was by the introduction of better operating methods, and this presented possibilities far greater than either of the other two. There are not many plants which are not operated, more or less, inefficiently, due either to carelessness or to lack of co-operation between the operators and the owners. Any campaign undertaken to ameliorate these conditions must be largely educational in its character and must aim to bring about co-operation between owners and operating forces. With a full realization of this, and, as a first step to bettering conditions, a meeting was called last December of the owners of all of the industrial plants in the city. At this meeting the necessity of co-operation between owners and engineers was strongly urged, and the owners were requested to encourage their engineers to make suggestions and improvements because any saving that could be effected would be financially beneficial to the owners, as well as helpful in the conservation campaign. In order to assist the plants in eliminating waste, certain suggestions, covering the most likely sources of waste, were distributed among those present. These suggestions were as follows:

- 1—Keep the heating surfaces of the boilers free from soot, scale and oil.
- 2—See that the baffling is in good condition and that the gases follow the proper path.
- 3—Be sure that the boiler settings are tight and free from air leaks.
- 4—Work your boilers up to their rated capacity. Do not have more boilers in operation than are necessary to carry the load.
- 5—Do not have too much grate surface for the size of the boiler.
- 6—Do not have openings in grates so large as to lose a large amount of combustible with the ash.
- 7—Fire light and often, spreading the coal over the thin spots in the fire.

- 8—Keep the fires level and free from holes.
- 9—Use the dampers to regulate the draft; not the ash pit doors.
- 10—Do not carry the fires so thin or have so much draft as to draw a lot of excess air through the boiler.
- 11—Do not carry the fires so thick or cut down the draft so much as to have incomplete combustion of the coal.
- 12—Admit some air over the fire to complete combustion.
- 13—Do not soak the coal with water before firing.
- 14—Be sure the blow-off valves do not leak.
- 15—Do not have the safety valve popping off continually.
- 16—Use your exhaust steam to heat the feed water; do not waste it.
- 17—Have the valves on your engines properly set.
- 18—Minimize radiation losses by covering steam pipes.
- 19—Do not allow the waste of steam through leaky traps, valves, etc.
- 20—Never use live steam where exhaust is available and can be used as well.
- 21—Do not have belts too tight or so loose that they slip; keep all shafting in line.

The results of this meeting were very gratifying, as all the local industrial plants unanimously pledged their support to the campaign of conservation, and a committee of industrial plant managers was formed to assist in this campaign.

The next step undertaken was to call a meeting of the operating engineers and to address these engineers on methods of improving operating conditions. Questionnaires were distributed to every plant in the city, asking for certain information, which would form a basis for recommending improvements that might be made. A further, and more important, step to this same end was taken by the organization of a committee of operating engineers, whose duty it was to visit all the local plants, and submit a report to the Fuel Administra-

tion on conditions in these plants, and make suggestions for improving these conditions. There were ten of these inspectors and they were divided into five committees of two men each. All of the industrial plants in the city were divided into five corresponding groups, one group being apportioned to each sub-committee. The two men on a sub-committee visited each factory in turn and went over its plant in company with the operating engineer of that plant. As a result of the discussion between the two inspectors and the resident engineer a report on the condition of the plant was made up and submitted at the meeting of the entire committee, which was held one night each week. These reports were then passed on by the entire Committee and recommendations were submitted to the Fuel Administration, which were, in turn, transmitted to the factory in question. These recommendations were scrupulously followed up until a report was received from the owner, advising that the recommendations had been carried out. Of the plants visited, fully 85 per cent carried out the recommendations. It is very difficult to estimate the amount of saving that actually resulted from these inspections, but as the plants visited burned about \$3,000,000.00 of fuel per year, and as the returns from plants that were able to estimate their saving showed an improvement of from 2% to 30%, it is believed that the benefit derived from these inspections was very large, indeed.

We now come to a consideration of the national campaign for fuel conservation, which is, at present, being carried on all over the country, and by which, it is hoped, to effect a saving of 70,000,000 tons of coal this year, scheduled as follows:

	Tons Estimated Total Consumption	Tons Estimated Annual Saving
1—In homes, 10%.....	120,000,000	12,000,000
2—In industrial plants, in- eld'g locomotives, 10%	400,000,000	40,000,000
3—By substituting wood, 10,000,000 cords, inc'se		6,000,000

4—By using natural ice and consolidating arti- ficial ice plants.....	15,000,000	1,500,000
5—Daylight saving		1,000,000
6—Electric-railway saving by skip-stops		1,500,000
7—Consolidation of public utilities	35,000,000	2,000,000
8—Natural reduction build- ing material, 30%.....	20,000,000	6,000,000
Total.....		70,000,000

The campaign planned, in its essential details, is similar to the one which was carried on in New Orleans last winter, and, in fact, is based upon preliminary work which was done in this city, and in other communities which were pioneers in the conservation movement. The plan of organization and of operation was drawn up by a committee of prominent consulting engineers, and the plan has the approval of the U. S. Bureau of Mines, and of the Engineering Council of the four national engineering societies. The work, as a whole, is directed by the Bureau of Conservation in Washington, and the campaign in each State is under the supervision of an Administrative Engineer, who has associated with him an advisory Committee, consisting of prominent technical and business men. The Administrative Engineer is expected to build up an organization in his State to carry on the work, this organization consisting of a number of Local Conservation Committees, with inspectors attached to each committee to do the actual work in the field.

In Louisiana, conservation committees were appointed for every parish, and the first duty assigned to these committees was to prepare a complete list of all plants burning coal or oil under steam boilers, and forward this list to the Administrative Engineer. In this way a comprehensive list of all plants in the State was obtained, and recommendations and questionnaires, of which I have a sample here, were mailed to every one of these plants.

These questionnaires have been characterized to me by more than one recipient as a nuisance, but if you will examine them carefully you will find that they are really very simple and easy to fill out, and for every question on one form there is a corresponding recommendation on the other. The recommendations are all very fundamental, and suggest things that should be done in every plant; and by asking a question that must be answered, concerning each of these fundamental things, we not only find out whether the plant is wasting fuel, but we also start the owner and engineer thinking about these things, which is the surest way to get them done. Really, what the questionnaire aims to do is to remind the engineer of things which he already knows, but to which he usually fails to give proper attention. These things are:

1. Keep the boiler setting tight, and stop a lot of air from leaking in, which does not help to burn coal, but which must be raised to furnace temperatures, and then thrown away up the stack as waste heat.
2. Adjust grate area and draft so that the fires can be carried heavy enough to prevent constant holes in the fuel bed, and yet not have the boilers popping off all the time; in other words, get the proper rate of combustion.
3. Have the boiler surfaces clean of soot and scale, to let the heat in, and have the steam surfaces covered with insulation to keep it in.
4. Never use live steam where exhaust is available and will do as well.
5. Keep records of the performance of the plant, and get the co-operation of the men to improve this performance.

One of the points on which particular stress is laid by the Fuel Administration is the value of supervision. It is contemplated to appoint in each factory and building a shop committee, which will look after the small savings. The duties of this committee will be to organize and carry out methods for prevention of waste.

It is recommended that records be kept of the changes accomplished by the activities of this committee, and that some bonus system be introduced to reward those most active in accomplishing results. The following are some of the small things which should receive the attention of the shop committee:

1. Eliminate operation of motors when machines are idle by means of convenient switches.
2. Group machines, so that driving motors or engines operate at their highest efficiency.
3. See that all bearings are regularly oiled and inspected, to correct alignment and insure operation with least friction.
4. Eliminate belt slippage, so far as possible.
5. Stagger manufacturing operations, so that peak loads will be flattened as much as possible.
6. In alternating current installations, provide means for improving the power factor conditions.
7. Reduce elevator service to a minimum.
8. Reduce use of hot water to a minimum.
9. Stop all leakage in water spigots, pipes, etc.
10. Reduce number of lights used wherever practicable. Reduce candle power of lights used wherever possible.
11. Eliminate use of carbon lamps and replace with Mazda or other high efficiency lamps.
12. Eliminate arc lamps by using large lighting units of more efficient type.
13. Provide a thermometer in different parts of the shop and make arrangements to keep the temperature within reasonable limits.
14. Eliminate heating radiators or piping not in actual use.
15. Wherever possible provide storm doors and storm windows on all openings used during winter months.

Based upon the thoroughness with which the suggestions in the questionnaire are carried out, each plant will be classified and given a rating. Any plant can better its standing by im-

proving its conditions, and sending in a report of changes made to the Administrative Engineer, who is charged with rating all plants. It is desired to bring about results not so much by regulation as by co-operation. We would far rather help an inefficient plant than to penalize it, if the plant will only try to help itself. The slogan of the administration is "MAXIMUM PRODUCTION with MINIMUM WASTE," and to get this production we want to keep all plants running, if, at the same time, we can cut out the waste.

While it is only in exceptional cases that we will go to the extreme of shutting down a plant, it is proposed, in case of a fuel shortage, to apportion coal on the basis of the ratings given to the plants, those factories which are most efficient being given coal in preference to the more wasteful ones. It must be understood, however, that in rating the plants only the efficiency with which existing equipment is used will be considered. The difficulty, delay and expense involved in the installation of improved equipment is fully recognized, and the Fuel Administration expects only that the present equipment be operated at the highest efficiency possible. A very large saving can be made by improving operating conditions without the delays and expense involved in installing new and improved equipment.

The Fuel Administration also aims to educate the householders in the proper methods of heating their homes. It has been pointed out that if the average temperature in homes and buildings is maintained at 65° to 68° instead of 72°, as formerly, a considerable saving in fuel will be effected, and the low temperature will also prove much more healthful. In this connection the value of humidifying the air is being emphasized: 65° of moist air will give more real comfort and heat than 70° of dry air. It is not an uncommon practice in office buildings to see radiators going full tilt, with the windows open to admit cool air. This is because of the discomfort of the dry heat produced by the radiators, and if some means of moistening this air were introduced, greater comfort and a saving in fuel would result.

Some specific examples of changes that have been effected and savings that have been made here, as a result of the conser-

vation campaign, might prove of interest. An order was promulgated by the Fuel Administration several months ago, placing the breweries on 50% of their former ration of coal. At the time that this order was issued, the breweries were unanimous in declaring that it was impossible for them to operate on this small amount of coal. However, "Necessity Is the Mother of Invention," and when they came face to face with the problem of making this quantity of fuel do, or shutting down, they devised means of getting along, and, in some cases, did this without any curtailment of their output. In one brewery, that I have in mind, most of their work had been done during the daytime, and they had been in the habit of using their entire boiler capacity in order to do this work. By distributing the work equally over twenty-four hours, they were enabled to cut out half their boilers with a considerable saving in fuel. The wasteful consumption of water was also stopped, and the number of cellars was reduced, thereby cutting down the refrigerating load. The boilers were put in good condition, and exhaust steam was used wherever possible, with the result that this plant is now operating successfully on half the fuel they formerly consumed, and as the manager of this brewery expressed it, "the curtailment order of the government was one of the most beneficial things that was ever done to his business."

Another conservation measure of considerable value was the introduction of the skip-stop system on the railways. This skip-stop system has been introduced in many of the largest cities in the country, and has resulted not only in reducing the amount of fuel used, but has actually improved service on the lines themselves. It is estimated that introduction of the skip-stop in New Orleans is saving about eighteen tons of coal a day, or over 6,000 tons a year. This saving is effected without any real inconvenience to the traveling public.

Still another measure which has been introduced is to get all the office buildings to shut off heat on Sundays, to close their heating plants at a fixed hour every day, and to maintain the temperature of their buildings at 67° instead of the higher temperature formerly carried. At a meeting of the managers of all of the office buildings, which was called recently, they agreed to

comply with this request of the Conservation Division and to put these changes into effect. It is estimated that this will save on the average of a car of coal a week.

The consolidation of the ice plants, which saved about three cars of coal a week last winter, and which will be put into effect again this winter, has already been referred to.

These are only a few of the measures that have been introduced, but the campaign of conservation is well under way, and, as people grow to realize more and more the necessity of this work, larger improvements will be made.

The national program calls for the saving of from 25,000,000 to 50,000,000 tons of coal this year, and this saving is to be made by increased efficiency of industrial operations and without arbitrary curtailment of industries. This amounts to about 10% of the domestic and industrial coal used, and on this basis the State of Louisiana is charged with the saving of about 150,000 tons of coal. When it is realized that the present price of coal is from \$5.00 to \$9.00 per ton, it will be seen that our task is one of no little financial importance and magnitude. If, in the entire national campaign, the consumption of coal is reduced by 25,000,000 tons, at an average price of \$5.00 per ton, the Fuel Administration will save the country \$125,000,000.00 this year.

And there is no reason why this same saving cannot be made every year, not only during the war, but after the war. With the coming of peace, we are about to enter into a period of intense industrial rivalry, when every resource and every dollar will count. It will be necessary to meet foreign competition and to battle with it for the markets of the world. The nation that can make goods the cheapest will be the one that succeeds, and the hard lessons that we are being taught today will help us to earn and hold the commercial supremacy that must be ours. One of the chief of these lessons is conservation; and it is our duty to ourselves, to our country's present and to our country's future, for the war of today and the peace of tomorrow, that we learn this lesson in such a way that it will never be forgotten.

DISCUSSION.

THE PRESIDENT: Gentlemen, we have listened to a very instructive paper on a subject in which all engineers are interested. I believe we have a better idea now of the problem that the fuel administrator was up against when this war started, and we also recognize now that some of the apparent hardships were blessings in disguise. I see that tonight we have quite a number of mechanical engineers with us, and I feel sure they will probably want to add their views on the question to the very thorough and logical paper that Mr. Weil has given us.

MR. LOCKETT: I want to compliment Mr. Weil on that paper. I think it was very instructive and interesting. I have no remarks to make, because I think he covered the subject very fully. I would like to ask, however, if there is any movement on foot by the government to keep up this work after the war, because it seems to me that the last two or three paragraphs of the paper are very important. It is desirable that the work should go on the same as during the war, and I believe that possibly the government might work along that line.

MR. WEIL: That is under consideration, right now. I know at the time that this conservation commission was organized there was a movement on foot to have the work continue after the war. But the war has ended so recently, and they had so many bigger problems to consider during the war, that no decision has been reached. But it will be continued for the present, because the fuel situation this winter promises to be as acute as if the war had continued. I am sure the fuel administration will continue it for the time being.

MR. DUSENBURY: May I ask if the fuel administration has given adequate consideration to the natural gas situation, and the question of bringing natural gas to this city?

MR. WEIL: As the fuel administration, it has not. Individually, some of us have looked into the proposition, and a great many people interested in bringing natural gas here have come to us and gone over the matter with us. We are heartily in accord with any movement to bring natural gas to New Orleans, but it is a proposition for the people themselves to solve, and not the fuel administration: it is for the city authorities. However,

we are behind any movement that will bring it here, not only from the fuel standpoint, but for the good of the city itself.

MR. MALOCHEE: In the paper there was a question touched on which occurred to my mind over a year and a half ago; in fact, I addressed a paper on the subject. That was the subject of the quality of the coal. At the time, I figured about what the gentlemen has figured, about five per cent of additional ash in the coal of the country meant about one million carloads to be distributed over the United States, for no good to anybody, not even the railroads. The gentleman brings out in his paper that inspectors had been placed at the mines. I would like to know, first of all, if Mr. Weil knows when these inspectors were placed—about what time, how long ago.

MR. WEIL: I cannot tell you exactly, but it has been about three months ago.

MR. MALOCHEE: Well, it has been only recently?

MR. WEIL: Yes.

MR. MALOCHEE: And at the same time that was one thing I never could understand, in the fuel administration's work; that they should not have recognized the importance of that thing from the outset, irrespective of whatever contracts they make with the owners or what the arrangements were between the owners and miners.—that they should have permitted the throwing away of so much valuable equipment, of so much valuable coal with the ashes, as was brought out in the paper. I never could understand that from the national administration. And that the matter was brought to their attention, there is no question. I was not the only one, way down here in the far end of the South; I saw that in the Manufacturers' Record, and the Times-Picayune editor brought it to the attention of the local office, I think. I know I did, to Mr. O'Kelly. That this matter should not have been taken up, has seemed to me almost criminal, because, notwithstanding the fact that they may have had large problems—and there is no question about that—it always seemed to me that that was one of the things that should have been done, because of the intense demand for production. They increased the tonnage at the mines, but how much of that tonnage was stuff that was absolutely valueless, and which carried with it a lot of good coal which should never have gone to

the ash-pile? I am very much interested in the matter of fuel conservation; it has been my life-study, or work for the past ten years; and it seemed to me very peculiar, that particular forgetfulness on the part of the fuel administration. I know they had much work; I know the work done here in this city was good, excellent; remarkable results have been obtained. But, as Mr. Weil pointed out, co-operation was necessary between that office and the engineers, and, more than that, education of the owners. They absolutely didn't care. One man showed me a table—and, by the way, that was a brewer—and he said "I had a consulting engineer on this job I don't know how long, and I don't know to what use, except that he sent me large bills every one or two months, but my coal bill has gradually crept up, so that it is today twice what it was three years ago. Now what is to be done?" It was very plain, as Mr. Weil says, that he things to do were simply to look after the boiler plant, after the ashes, regulating the draughts by the damper instead of the ash-pit door, and all that; and it was very difficult to get a man, accustomed to firing thick on the front of the grates, to level his fire, and put it all over the grates. I want to thank Mr. Weil for his very excellent paper this evening.

MR. WEIL: I have done considerable talking already, but I want to give Mr. Malochee an answer to one thing. He spoke about the poor quality of coal; I am entirely in accord with what he said about that, but it was not a case of forgetfulness on the part of the fuel administration. That is one of the most vexing propositions we had to contend with. I had the opportunity to get the view-point of the fuel administration, and also of one of the big coal operators in this part of the country. There was considerable blame put on the operators for shipping out poor coal, as it was said they would thereby get out more tonnage, but as I understand it, the fault is not entirely there. The miners were formerly penalized for shipping out poor coal, and it was hand-picked, for if they didn't turn out good coal they were only paid for the amount of good coal they turned out, but with labor conditions as they were at the beginning of the war it was not possible to penalize the miners for not picking the coal properly, and that was one of the things which brought about

the dirty coal shipped. That has improved now. It is not what it should be, but we hope that condition will improve very much.

MR. MALOCHEE: Is it not possible, if, instead of giving more money to the miners, they had told these miners that they had to live up to these agreements, and the fuel administration was not willing to submit to the dictation of the labor, something might have been accomplished? It seems to me that was the paramount proposition. The minute that the laboring man said: "I want so much money," he was given it, and no *quid pro quo* was given. That seemed to be the trouble.

MR. WEIL: Well, you are tackling the biggest problem of the country, now.

MR. MALOCHEE: I realize that.

THE PRESIDENT: In your inspections of the different plants around the State and city, did you find a disposition on the part of small plant owners to agree with you in the necessity of going to the expense of covering their boilers properly, and their steam-pipes, and in the use of the boiler room accessories that count for efficiency in the boiler room? Didn't you meet with quite a good deal of objection on their part to these so-called improvements?

MR. WEIL: I am glad to say that we did not. The plant owners were almost unanimous in acceding to any suggestion we made. Now, I will say this, however, that we did not make many suggestions that called for large expenditures. Anything that called for any expense repaid its cost in a short time. But the support given the work last winter was very gratifying, indeed.

MR. ROBERT: I want to ask Mr. Weil one question. He mentioned that a great deal of fuel was saved by adopting the skip-stop system. Why was that system adopted in the way in which it was adopted? Would not they have saved more fuel by stopping, say, every third block, instead of every second block, with practically no further inconvenience to the public? The people would have had very little further to walk. In certain cases, rather than walk down this way a block, they would simply walk up a block. It seems to me it would have saved a great deal more coal, with not much more inconvenience to the public.

MR. WEIL: That was worked out by the city authorities and the railway company. We simply made the suggestion that such a measure should be put into effect.

MR. ROBERT: Is it not a fact that in other places they adopted a system of stopping at every three blocks, instead of every two?

MR. WEIL: Yes.

THE PRESIDENT: Is there any further discussion on Mr. Weil's paper? It seems to me that this was such an unusually good paper, that we ought to give some recognition to Mr. Weil's effort,—that the society should express its appreciation by a standing vote of thanks.

MINUTES OF MEETINGS AND BUSINESS OF THE SOCIETY

Regular Meeting of the Board of Direction, November 18, 1918

The meeting was called to order with President Klorer, Messrs. Olsen, Riess, Dusenbury and Robert present.

The question of paying subscription rates for our exchanges was referred to the Library Committee. The resignation of Mr. H. M. Harriman, to take effect January 1, 1919, was accepted.

Ballots for new members were then opened and the following were elected to the respective grades of membership:

RESIDENT MEMBERS—Duncan Buie, William F. Oakes.

NON-RESIDENT MEMBERS—John J. Chisholm, John J. Davidson, Elmer E. Shutts.

NON-RESIDENT JUNIOR MEMBER—Charles S. Zimmer.

TRANSFER FROM JUNIOR TO RESIDENT MEMBER—Walter B. Moses.

TANSFER FROM STUDENT TO NON-RESIDENT MEMBER—John Callan.

These elections and transfers to take effect January 1, 1919. Those who have joined the uniform service since the ballots were sent out are to pay entrance fees only.

The question of employing a librarian was then discussed and upon motion of Mr. Dusenbury, duly seconded and carried, it was decided to employ Miss Carrie Freret at a salary of \$10.00 a month.

There being no further business, the meeting was adjourned.

JAMES M. ROBERT, Secretary.

Regular Meeting of the Society, November 18, 1918

The minutes of the previous meeting were read and approved.

President Klorer called attention to the recent death of two of our members, Messrs. W. J. Hardee and C. H. Gillian, and stated that he would appoint committees to bring in resolutions. A letter from the father and sister of Captain Diettel was read to the meeting.

Upon motion duly seconded and carried unanimously, the following resolution was adopted:

Whereas, it has come to our knowledge through the city newspapers, that the Commissioner of Public Property of the City of New Orleans, will resign his office on December 1, 1918, and,

Whereas, it is our opinion that the administrative and executive duties falling to the Commissioner of the Department of the City Government can be satisfactorily and efficiently filled by a competent and capable engineer as evidenced by the experience of more than a hundred cities in this country that have found it economical and advantageous to employ engineers as City Managers; this result being attributable to the fact that engineers

are by education, training and experience qualified to administer to the physical welfare and comfort of communities, and

Whereas, some of the large problems confronting our City Government and calling for solution in the near future, as for instance, the Street Railway situation, the disposal of garbage and municipal waste, the introduction of natural gas, are essentially engineering problems,

Therefore, be it resolved, that the Louisiana Engineering Society, both as engineers and as citizens interested in the welfare of our city, respectfully urge upon the Mayor and Commission Council of the City of New Orleans the desirability of electing as Commissioner of Public Property some qualified and competent Engineer who will have an administrative voice in the solution of the economic affairs of our city.

Be it further resolved, that the Louisiana Engineering Society tender its hearty co-operation and services to the Mayor and Commission Council in the furtherance of the above object, and that the President of this Society appoint a committee of four members to serve with himself to represent the Society in any conference on this subject.

The technical exercises of the evening were next proceeded with and Mr. Leo S. Weil, member of the U. S. Fuel Administration, delivered a most interesting and instructive address, entitled, "Fuel Conservation in Louisiana." After some discussion, a rising vote of thanks was tendered Mr. Weil. There being no further business to come before the meeting the same was adjourned to the usual collation.

JAMES M. ROBERT, Secretary.

PROCEEDINGS

OF THE

LOUISIANA ENGINEERING SOCIETY

DECEMBER, 1918

“PATRONIZE OUR ADVERTISERS”

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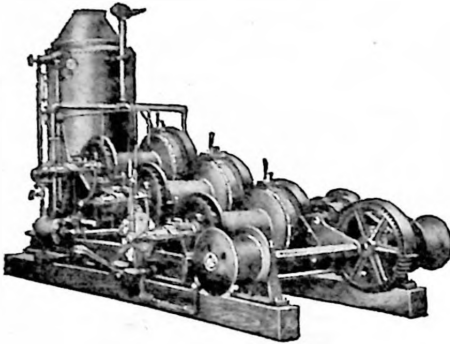
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