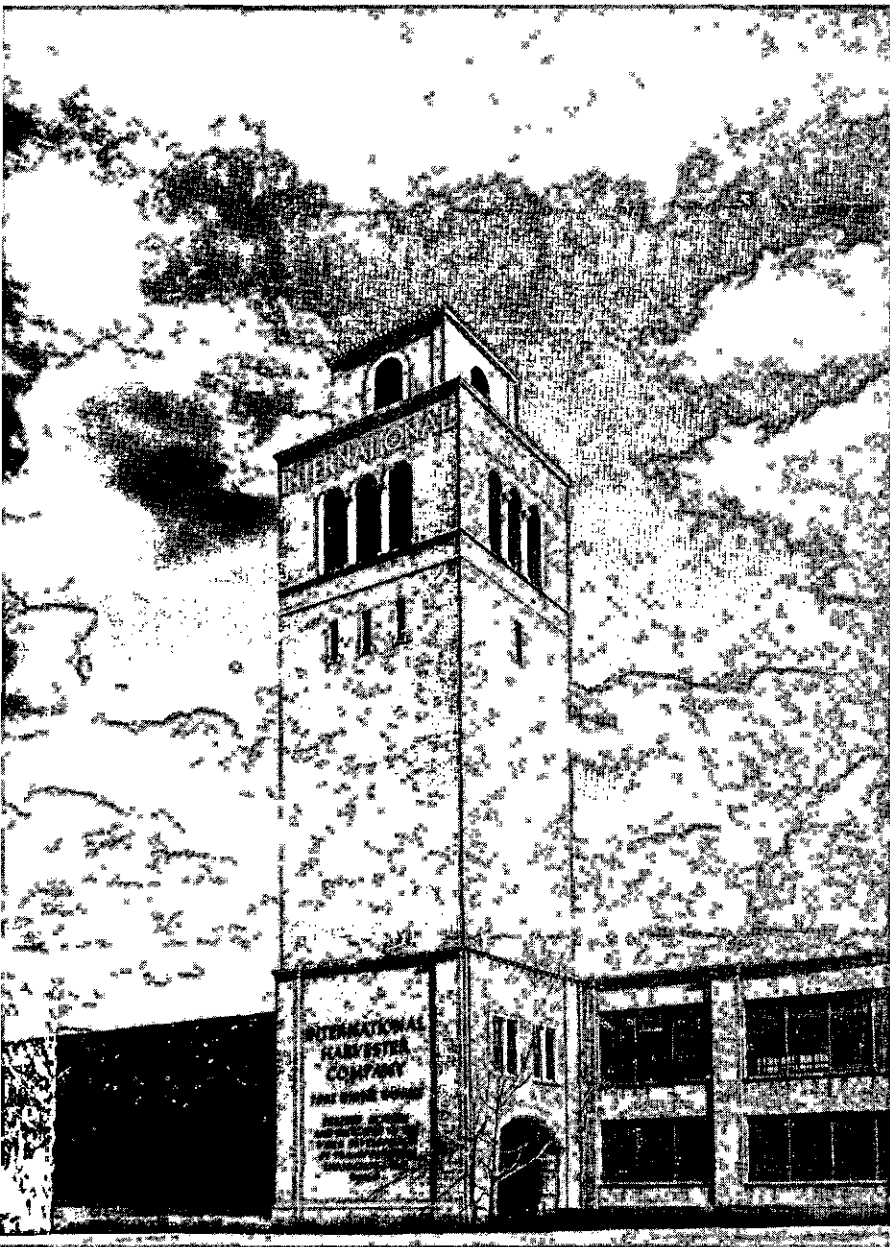


# Engineers NEWS

B & TA DIGEST OF ENGINEERING DEVELOPMENTS CAF



## **"The Engineer's Position in Society"**

**Dr. Roy C. Muir**

Vice-President in charge of Engineering  
General Electric Company

DINNER 6:30 — MEETING 8:00

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# Engineers News

Official



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## PRESIDENT'S MESSAGE

About this time of year, attendance at Club functions always shows a tendency to drop off quite seriously. I have always wondered whether it was a normal apathy or from some other cause. After the Christmas and New Years festivities are over a person should really have more time to attend such affairs. This sounds like the beginning of a lecture and in one sense it is. It appears that you will be missing some real treats unless you attend the meetings planned for the remainder of this season.

May I particularly call your attention to the February 17 meeting. During these busy times it is not so easy to obtain capable speakers of high rank. Thanks to Mr. Kelsey, we are fortunate in having with us on that date, Mr. Muir, Vice-President in charge of Engineering of the General Electric Company. I am sure Mr. Muir's talk will be well worth your interest and is on a subject very close to the basic interests of any engineer. Let's have an attendance to do justice to the occasion.

The noon luncheon meetings have also hardly been attended to an extent in keeping with their calibre. Judge Hilgeman and Mr. Flemming gave very good talks in January and February. Why not spend an hour with us in March? We promise to close promptly at 1:30 p.m.

L. Z. GOSSMAN

## COMMITTEE ON CIVIC AFFAIRS

D. H. Hanson's Committee on Civic Affairs has met with J. T. White, City Traffic Engineer, to consider the re-routing of main highways through or around Fort Wayne.

The committee, composed of D. H. Hanson, chairman; L. C. Heavner, A. W. Howard, and A. P. Irmscher, will make its report as definite progress is made.

P. T. Brantingham, of Harvester, has found it impossible to serve on the committee and will be replaced by another representative from that company.



## R. C. MUIR TO SPEAK

Roy C. Muir, General Electric's Vice-President in charge of Engineering, will speak to the February 17 meeting of F. W. E. C. His subject will be "The Engineer's Position in Society."

Mr. Muir, who is a 1905 graduate of the University of Wisconsin with a B.S.E.E., was given the honorary degree "Doctor of Engineering" by his Alma Mater in 1939 and was awarded the degree of "Doctor of Engineering" in 1942 by Manhattan College.

After graduation, Mr. Muir entered the student engineering course of General Electric Company and has been associated with that company continuously. He has served in the Design Engineering Department, Commercial Engineering Department, International General Electric Company, and on the staff of the Vice-President in charge of Engineering. In 1934 he was elected Vice-President in charge of Engineering and since such he is responsible for the operation and activities of the Engineering Departments of General Electric Company.

He always has been active in the educational development and training of young men and is chairman of the General Electric Education Committee which directs the recruiting of technical and business graduates. He also guides the extensive training and educational activities through which his company develops its personnel.

He has been a member of the New York State Regents Council on Apprentice Training for the past eight years and a Trustee of Union College. He is a member of the Board of Education, City of Schenectady, N. Y.

Mr. Muir is active in the American Society of Mechanical Engineers. At one time he was chairman of the Schenectady chapter of the A. I. E. E.

(continued on page three, column two)

## THE ELECTRON vs THE PROTON

By C. M. SUMMERS

The electron and the proton are two of the most important constituents of all atoms. The proton forms the nucleus or central core of the atom while the electrons revolve around the nucleus in a planetary fashion.

The electron is most insignificant insofar as its weight is concerned. It weighs only  $.9 \times 10^{-27}$  grams. It takes a little over 31 billion, billion, billion of them to weigh one ounce. But its physical size is also extremely small so that its density is astounding. The electron has an estimated diameter of about  $2 \times 10^{-13}$  centimeters or  $7.89 \times 10^{-14}$  inches. Thus, 12 billion electrons side by side would make a line just one-thousandth of an inch long. From the estimated diameter of the electron and its known mass, its density can be determined — a density that is beyond all imagination, 3,865,000 tons per cubic inch! — but a density which is insignificant when compared to that of a proton.

The electron carries a negative charge — a charge of such value that if 6 billion, billion electrons flow past a given point per second, the current is one ampere.

It would take 60 days for enough electrons to flow through the filament of a 60-watt lamp so that the combined weight of all the electrons haphazardly passed through would equal the weight of the filament. From these figures, the charge seems rather small, but let us consider it from a different angle. Suppose we had about 1 gram ( $1/28$  oz.) of electrons in Fort Wayne and another gram of electrons in Lima, Ohio. These two groups of electrons, due to their charge, would push each other apart with a force of 3,000,000,000,000 tons! Yet each of these groups of electrons would occupy a volume so small that a 20-power microscope would be required to make them visible.

The proton is nearly 2,000 times heavier than the electron and is considered, generally, to be smaller. Thus, its density can be estimated to be at least 4,000,000,000 tons per cubic inch. The proton has the same charge as the electron except it is positive instead of negative.

In the simple hydrogen atom, the proton forms the nucleus around which a single electron revolves at a distance of about  $.53 \times 10^{-8}$  centimeters. Thus, the electron is about 26,000 times its diameter from the nucleus. Compare this with the fact that the earth is about 12,000 times its diameter from the sun. Thus we can say in general that the atoms are comparatively as empty as the sky. In fact, all solid matter is relatively empty. If the earth could be compressed so that it contained nothing but solid matter, its volume would be about one cubic inch.

*Editors note: Whew!*

## INTERESTING NOTES ABOUT HARVESTER

The International Harvester Company, of which the Fort Wayne Works is a part, was organized in 1902, but its antecedent history goes back to the invention of the world's first successful reaper by Cyrus Hall McCormick on a Virginia farm in 1831. This invention marked the beginning of Agriculture's uninterrupted transition from slow, laborious human-power operation to the highly mechanized methods of today.

The plants and the endeavors of the International Harvester Company are world wide. In the United States, Canada, Australia, Sweden, France and Germany, there were before the war more than twenty-five manufacturing plants. In these many factories a huge variety of products are manufactured, including all types of farm equipment, motor trucks, and tractors of the wheel and crawler type.

Raw material properties of the Harvester Company include four iron ore mines in Minnesota, coal mines at Benham, Ky., (6,507 acres of coal lands) and at Harlan, Ky., the latter producing coking coal. At the Wisconsin Steel Works located at South Chicago, Ill., there are coking ovens, blast and open-hearth furnaces, Bessemer converters, blooming and merchant mills. Two large ore boats, the S. S. International and the S. S. Harvester, ply the Great Lakes; transporting company mined ore to the company mills. In the Province of Matanzas, Cuba, at Cardenas, is the Harvester sisal plantation of 4,679 acres.

Harvester's part in the war effort is large as evidenced by the variety of war material such as flare path trucks, cargo vehicles, military tractors, tanks, prime movers, power units, dump trucks, half-tracks, blood bank refrigerators, ambulances and mobile canteens, gun carriages, gun mounts, invasion ice chests, torpedoes, shells, automatic cannon, high speed gun carriages, military fire trucks, wheel tractors and other machines vital to victory. Harvester-built equipment serves with United Nations' troops today on every fighting front in the world.

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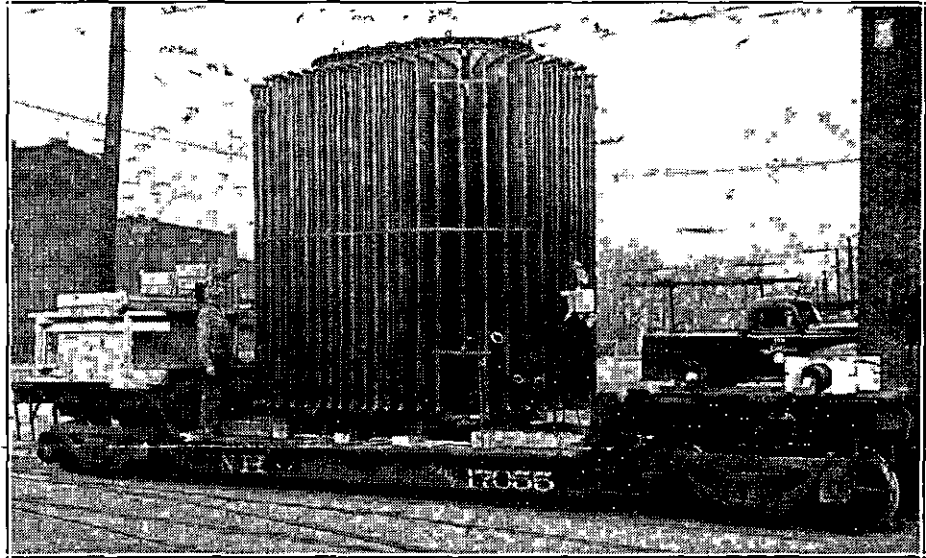
The meeting will be held jointly with the Test Engineer's Club of Fort Wayne. Mr. Muir will speak briefly to the Test Engineers immediately after dinner in the dining room, and before opening of the regular meeting. Dinner will begin at 6:30 p.m., the meeting at 8:00 at the Chamber of Commerce. The A.I.E.E., A.S.M.E., S.P.E., the Chemists Club, G. E. Squares and Indiana Technical College Undergraduates are invited to attend the 8:00 o'clock meeting.

### THE HARVESTER TOWER

The picture of Harvester Tower on the cover page undoubtedly prompts the often repeated question, "What in the world is inside of it?" The tower contains the factory reception room and a 100,000 gallon water tank.

## ISC INSTALLS LARGE TRANSFORMER

This 10,000 kva. transformer was installed recently by the Indiana Service Corporation to provide an additional interconnection between its 34,500 volt and 13,800 volt systems. Complete control of both power and reactive flow through the interconnection is obtainable by adjustments of both ratio and phase angle. The range of ratio adjustment is 10 per cent in 2½ per cent steps and the range of phase angle adjustment plus or minus 10 degrees in 1¼ degree steps. Weighing 73,000 pounds, this is the largest transformer operating at these voltages in this section of the state.



## CARLSON IN HIDING

C. E. Carlson, doughty digger of dues, has gone into hiding. His record (53% of the dues collected to February 1) resulted in such a drubbing at the hands of a grasping council that Carlson is refusing to answer letters, telephone calls, or even allow his picture to appear in this issue. He is a dispirited, broken man with his faith in mankind generally, and in his fellow F.W.E.C. members particularly, destroyed completely.

There is only one way in which to restore Carlson's fight—pay your dues TODAY. They are \$3.00 for regular and associate members and \$1.00 for non-resident members.

## STOCKETT HEADS CHEMISTS

The Fort Wayne Chemists' Club elected the following officers for 1944:

President—Stewart J. Stockett.  
Vice-President—Mansfield Ward.  
Secretary—Leslie Diveley.  
Treasurer—A. T. Thorsen.

The February meeting will be held at Indiana Technical College on the 15th, and will begin at 8:00 p.m.

There will be a sound movie on "Heat" furnished by the Johns Mansville Company.

## INDIANA ENGINEERING COUNCIL

The Executive Board of the Indiana Engineering Council met in Indianapolis on January 21 at the Claypool Hotel.

L. Z. Gossman and C. W. Kronmiller were appointed a special committee to prepare the reso-

lution, which was authorized at the October 30 meeting, opposing the Kilgore bill.

F. A. Henning was re-appointed Secretary-Treasurer for another year. Dates for Administrative Council Meetings were set.

The proposal of Vice-President Bass, that the Council coordinate the formation of a Technical Societies Council in Indianapolis, was rejected because the Council is a state-wide organization.

The Board referred an investigation of the status of the engineer in business and public contacts to a committee of which Mr. L. Z. Gossman is a member.

## A. I. E. E.

Mr. C. M. Summers of the General Electric Works Laboratory, was the speaker at the February 10 meeting of the American Institute of Electrical Engineers. His subject was "Graphical Electronics" and covered graphical methods of analysis of vacuum tube circuits. Graphical determination of amplification, plate dissipation and power output were discussed.

The meeting was held at the Fairfield Manor and was preceded by a dinner.

## A. S. M. E.

Mr. H. T. Morton of the Hoover Ball and Bearing Company spoke to the American Society of Mechanical Engineers at their February meeting on Wednesday, February 9. His subject was "Ball Bearing Manufacture, Design and Applications."

The meeting was held at the Y. M. C. A. A dinner, beginning at 6:30 p.m., preceded the meeting.