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Rose Technic Staff

Rose-Hulman Institute of Technology

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ROSE TECHNIC

MAY, 1941

50th ANNIVERSARY

The Associate Director of the Office of Production Management has stated that "the supply of manpower in the specialized professional fields listed below (engineering and chemistry) which have a definite and direct relationship to the national defense program, is at a dangerously low level". Enrollments in engineering colleges must increase to provide trained men for defense preparation. For information in regard to courses at Rose write the Registrar.

ROSE POLYTECHNIC INSTITUTE

TERRE HAUTE, INDIANA



ROSE TECHNIC

VOLUME L

MAY, 1941

NUMBER 8

JACK K. KENNEDY, *Editor*

GENE F. McCONNELL, *Associate Editor*

JOHN G. MEHAGAN, *Business Manager*

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ENGINEERING COLLEGE MAGAZINES ASSOCIATED

Professor H. C. Richardson, Chairman

University of Minnesota, Minneapolis, Minnesota

Arkansas Engineer
Colorado Engineer
Cornell Engineer
Drexel Technical Journal
Illinois Technograph
Iowa Engineer
Iowa Transit

Missouri Shamrock
Kansas Engineer
Kansas State Engineer
Marquette Engineer
Michigan Technic
Minnesota Techno-Log
Nebraska Blue Print

North Dakota Engineer
N. Y. U. Quadrangle
North Dakota State Engineer
Ohio State Engineer
Oklahoma State Engineer
Oregon State Technical Record
Purdue Engineer

Pennsylvania Triangle
Rose Technic
Tech Engineering News
Villanova Engineer
Washington State Engineer
Wayne Engineer
Wisconsin Engineer

Published Monthly from October to May by the Students and Alumni of Rose Polytechnic Institute.



THEY STARTED IT ALL IN 1891 - - -

From left to right:

1st row—Eugene F. McCabe, T. S. Perkins, W. Arnold Layman, Francis W. Hurlbert.
2nd row—William J. Fogarty, William M. Blinks, Luther S. Rose, Arthur M. Hood.

ECHOES OF THE PAST

Rich memories flood to the surface as I sit down tonight to join briefly in the *Technic's* celebration of its Golden Anniversary. Despite crowded intervening years of absence and preoccupation in diverting responsibilities, it doesn't seem fifty years ago that the initial board of editors, perhaps courageously, launched the first issue of our journal. Rose herself was then but a new star in the educational firmament. Six classes only, comprising sixty-one embryonic engineers, had passed from her portals. Yet even then Rose commanded deep respect for her ideals and the extraordinary strength of her faculty. It was very natural for a plant so wisely rooted and so carefully nurtured in virgin educational soil, to develop new shoots of collateral foliage. Thus, in 1891, the *Technic* came into being, favored by sympathetic sunshine upon all sides.

I am sure the surviving members of the initial editorial board including Hurlbert, '91, Fogarty, Rose, and Layman, '92, Hood, '93, and Blinks, '94, hardly dreamed their infant production would attain the dignity and excellence of the *Technic* of today, and were McCabe, '91 and Perkins, who was for a short time a member of the Class of '94, with us today, they too would express this sentiment. Yet, as I review tonight the pages of our introductory volume, I am impressed that we contributed to the preservation of some of the landmark records of Rose's early history. The truly remarkable pioneers of our faculty generously graced and dignified our pages. Two of our presidents gave us articles for the first issue dated June 12, 1891—Dr. T. T. Eddy, then at Rose's helm, and Dr. T. C. Mendenhall, but recently theretofore retired because of declining health. I find the names of Prof. Wickersham, Dr. C. L. Mees, Dr. Thos. Gray, Prof. W. A. Noyes, and Prof. C. A. Waldo, conspicuously favoring our early numbers. The Rose boys of today will have but hazy knowledge of these first faculty members, but the old boys always think of them with reverence and great admiration, for they were outstanding leaders in the scientific world of that early date. Perhaps our first incentive for the *Technic's* creation came from Dr. Mendenhall, who was a splendid friend of Rose to the end of his life, and who, during his administration as President, placed Rose in



AMONG OTHERS, THE 1940-41 STAFF HAS CARRIED ON . . .

From left to right:

1st row—Wayne C. Shanks, John G. Mehagan, Charles A. Howlett, Hulit L. Madinger, Richard H. Raab.

2nd row—R. King Chalfant, Harold E. Bowsher, Leon L. O'Dell, Richard O. Driskell, Alan W. Ker.

3rd row—Jack K. Kennedy, Gene F. McConnell, Ralph E. Brown, Raymond C. Hogan, Eldred Beckman, C. Lewis McWilliams.

Not in picture—Earl F. Michaels, John E. Bartmess, William G. Leedy, Richard A. Holthaus, Winston H. Cundiff, Michael W. Percopo, John T. Newlin.

the front rank of engineering colleges then existent. It was my good fortune to have a lifelong close friendship with him. His remarkable initiative and vigorous mental vitality were well illustrated by an extended, somewhat crudely typed letter received from him after he had passed the age of eighty. He naively apologized for the letter's appearance, explaining that he had just taken up typing.

Glancing on through the pages of our first volume, the story of all phases of Rose's affairs as of that early date in her history brings back the keenest recollections of student friendships with some of our men who have passed into the beyond; of warm association with others that time and events have forced far apart from us; of notable achievements in intra and intercollegiate athletics; of Rose's initiative in the establishment of intercollegiate friendships; and of evidences in student and alumni contributions of that eminence in professional life many men of Rose have achieved. The story of creation of the first volume of the *Modulus* by the class of '92, and the manner of its financing without advertising, brought back many pleasing memories.

Indeed, I have the feeling Rose boys of today would enjoy, and perhaps be stimulated to a degree, by resurrecting Volume I and discovering when and how some of our valuable precedents had their origin. But in all humility I must yield laurels to the *Technic* editors of recent years. They have greatly improved on our initial efforts, and the *Technic* of today enjoys a prestige, worthily, of which we of the old time board are proud. My closing word in contributing to this anniversary issue is to voice congratulations to Rose and to the recent *Technic* staffs upon the progress, high ideals, and useful character of the creditable publication to which they have brought the infant we introduced into the world. May the boards of the future continue this expansion of character and value!

W. A. LAYMAN,

First Editor, '92.



THE PRESENT - - -

- - - AND ITS PAST

Chauncey Rose was an engineer by experience and inclination if not by training, and as such he knew the difficulty of finding men who had adequate training in vocations of an engineering nature. Because of his realization of a need for men so trained, and because of his interest in such work, Mr. Rose contemplated the establishment of a school offering engineering training.

With a number of friends and business associates as incorporators, Chauncey Rose established the "Terre Haute School of Industrial Science" on the tenth of September, 1874. A month later the board of managers was organized with Mr. Rose as president, Josephus Collett as vice-president, and Demas Deming as treasurer.

The corner stone of the main building of the School was laid on September 11, 1875, at the northwest corner of 13th and Locust Streets in Terre Haute. On the same day the board of managers, in spite of protests from the founder but with the approval of Terre Haute citizens, changed the name to Rose Polytechnic Institute. The site was selected because it was sufficiently removed from the business district to avoid distractions from studies and still was accessible by good streets and by street railway and Herdic stage lines.

Building construction continued steadily until the death of Mr. Rose on August 13, 1877. Some delay was encountered during the settlement of his estate. Prior to his death, he had contributed almost \$350,000, and the provisions of his will brought the aggregate of Mr. Rose's donations to more than \$500,000. The buildings finally completed were a three-story academic building with basement for offices, recitation rooms, library, laboratories, models, etc.; a two-story shop building for wood and metal



practice, including a foundry, power, lighting and heating plants; a chemical laboratory with office, store room, and recitation room; and a gymnasium with locker rooms, rubbing rooms, and showers. The chemical laboratory burned in 1895, and the other buildings have been occupied by Gerstmeyer High School since the removal in 1922 of the Institute to its present location on U. S. 40, five miles east of Terre Haute.

Mr. Rose, in the Articles of Association, had provided that, "When the Institution may be full, preference shall be given to the admission of residents of the County of Vigo," and that, "In case only it shall be absolutely necessary to sustain the institution, moderate tuition fees may be charged." The Institute has adhered to these provisions, and approximately half the Rose graduates have been from Vigo County and the surrounding territory. It was found necessary to charge tuition, since the income from the funds left after building construction and equipping amounted to only \$25,000 yearly. The tuition has been kept at a minimum, however, and today is much lower than that of other endowed colleges of engineering.

The first catalogue issued by the college set forth the general purpose of the school and outlined the courses offered: "In accordance with the directions of the founder, the Institute offers a good education based on the mathematics, physical sciences, living languages, and drawing and familiarity with some form of applied science or handicraft. The course of study is so planned that every student spends a fixed portion of his time in learning the elements of the business or profession that he designs to pursue after graduating; this part of his work is called practice. Recitations, lectures, laboratory work, and drawing are of uniform kind and amount for all students; exercises in practice are widely different, depending on the department selected by the student. The general course of study does not differ essentially from that pursued in other polytechnic schools. The practice is offered in the following departments: Mechanics, Civil Engineering, Chemistry, Physics, Drawing, and Design."

Dr. Charles O. Thompson, the first president of the School, believed that a polytechnic institution should not be narrow in its outlook: "The polytechnic is a professional school, and must concentrate itself upon its own special work; but the broader the base upon which it builds, the more massive the structure that can be reared. Whether the polytechnic course shall rear an obelisk or a pyramid depends on the preparation of its students." The studies included in the early curriculums were: algebra, geometry, trigonometry, descriptive geometry, integral calculus, physics, chemistry, geology, mineralogy, metallurgy, mining, the German and French languages, history, English literature, rhetoric, logic, and instruction in civil, topographical, and mechanical engineering.

These subjects were taught by a faculty of six professors and instructors, with three professorships unfilled. Twenty-five students reported for instruction in the first class. From 1883 to 1887 the mechanical engineering course was the only one fully organized. In the latter year the civil engineering course was established, and the first student graduated in the course in that year. The electrical engineering course gave its first degree in 1893, having previously been a part of the mechanical engineering department. The course in architecture was established in 1898. Modifications in all courses were made from time to time whenever a way of improving the curriculum was found. In 1891 the requirements for obtaining a degree in any course were fixed, and in 1903 a limited number of electives were introduced.

The requirements for admission to the Institute have been increased with advances in pre-college education. The requirements at the time of the school's opening were equivalent to about two years of high school work. Examinations in subjects including arithmetic, United States history, geography, English grammar and algebra were held. The prerequisites were gradually increased, and since 1905 the equivalent of a four years' high school course has been required for entrance.

The faculty at the opening of the school included Charles Colton, Professor of Chemistry; Edward Barnes, Graduate Student of Johns Hopkins University, Professor of Higher Mathematics; Clarence Waldo, Professor of Elementary Mathematics and Librarian; James Wickersham, Professor of Languages; Edward Cobb, Superintendent of Machine Shop; and William Ames, Professor of Drawing.

Persistent persuasion by the Board of Managers brought Dr. Charles Oliver Thompson of Worcester to Rose as the first President. The Board followed his directions and suggestions in regard to the curriculum and upon Dr. Thompson's arrival he found things as he had planned them. He occupied himself with the affairs and future of the school to the exclusion of practically everything else, and worked with an energy that overtaxed his endurance. Thus, at the beginning of a career of great promise of achievement, he became ill and died on March 17, 1885.

Two men served short terms of office as President of the school following Dr. Thompson. Dr. Thomas Mendenhall, formerly Professor of Physics at Ohio State University and Chief of the United States Signal Corps at Washington, D. C., served from 1886 until 1889, when he resigned to become Superintendent of the United States Coast and Geodetic Survey. Dr. Henry Turner Eddy, formerly President of the University of Cincinnati, became President of Rose in 1891 and served until 1894.

Following this early period the school realized an uninterrupted quarter-century under the Presidency of Dr. Carl Leo Mees. Dr. Mees, formerly Professor of Physics at Ohio State University, had come to Rose in 1887, where he held a similar position until his election to the Presidency in 1896. Dr. Mees came to the school at the beginning of its third active year, and served as President for a longer time than any other man. During his term as President, approximately 800 men were graduated as engineers from Rose. He was very active in leading the school to its present high ranking and remained truly the President until his retirement in 1919.

At present, Dr. Donald B. Prentice is President of the Institute. Dr. Prentice received his engineering training at the Sheffield Scientific School of Yale University. He practiced engineering for some time, then returned to Yale as a faculty member, and from there went to Lafayette College. He was called to Rose in 1930 as President and has been active in social affairs here, as well as in professional and educational circles.



Several faculty members have served as President or as acting President at one time or another. Professors Clarence Waldo, John White, John Peddle, and Frank Caspar Wagner have served capably as President. Dr. Philip Woodworth became President in 1921, and directed the removal of the Institute to its present location.

It was decided in 1913 to move the school to larger quarters, but the plans were not carried out until 1921 because of the World War. The land for the campus was donated by Anton and Herman Hulman. The 123-acre tract includes two small lakes, meadows and hills, with Lost Creek separating the athletic field from the main campus—altogether providing a campus of unusual beauty.

One large building, 400 feet by 160 feet, housing laboratories, recitation rooms, gymnasium, shops, club rooms, library, and offices, has been erected on the campus. These rooms are adequately equipped for purposes of instruction in the subjects taught. The library, mainly technical, consists of some 21,000 volumes and receives approximately a hundred periodicals regularly.

The Demas and Sarah C. Deming Memorial Dormitory was built in 1926 as a gift of Demas Deming. It is a modern fireproof building overlooking a small lake, and accommodates sixty students, mostly freshmen, in single and double rooms. The basement is arranged as a cafeteria for serving the residents and day students.

The athletic grounds include a well sodded and drained football field, with concrete bleachers; a baseball diamond; concrete tennis courts; and indoor and outdoor rifle ranges. Several clubs have been organized for the participants in athletics, among them being the R-Man's Club, the Rifle Club, and the new fencing team, organized only this year. The Senior Engineer Unit of the Reserve Officers' Training Corps maintained at Rose provides instruction in Military Science and Tactics and makes use of the spacious campus for purposes of drill and maneuvers.

Rose undertook the training of special detachments in auto mechanics and other technical subjects during the World War and graduated more engineers by continuing school throughout the summer vacations. The school gave a total of 985 men to the Army and Navy during these years. The Institute is again aiding defense plans in the present rearming by giving night school courses in practical technical work.

At present seven chapters of national fraternities are established at Rose. These include four social fraternities, which are, in the order of their establishment at Rose, Alpha Tau Omega (1893), Sigma Nu (1895), Theta Xi (1907), and Lambda Chi Alpha (1939). The remaining three are Tau Beta Pi, an honorary fraternity recognizing high scholastic achievement; Blue Key, which elects those upper classmen who have been active in extra-curricular activities; and Tau Nu Tau, a professional military engineers' organization. Student branches of the American Institute of Chemical Engineers, the American Institute of Electrical Engineers, the American Society of Mechanical Engineers, and the American Society of Civil Engineers are organized at Rose. Clubs have been formed by groups who have found common interest in a particular hobby. These include the rifle club, camera club, radio club, athletic association, debating club, glee club, and the R-Man's Association.

Rose Polytechnic Institute is privately endowed and is dependent for its existence upon gifts from its friends. Among the larger gifts to the school are those made by Susan K. Francis, William S. Rea, James McGregor, Demas Deming, William Ball, Spencer Ball and Mrs. J. J. Moorhead, Anton and Herman Hulman, and Josephus Collett. The present endowment of Rose exceeds two million dollars, and the land and buildings are valued at more than half a million dollars.

The present faculty is composed of twenty-seven members. The enrollment is about 250 students, and the sections are made small so that the instructors can give individual attention to the students and their problems. Rose Polytechnic Institute admits only men and grants only degrees in engineering. It has maintained high scholastic standards, and its 1778 graduates have been very successful in engineering work in all parts of the world.

George H. Kesler, ch.e., '42

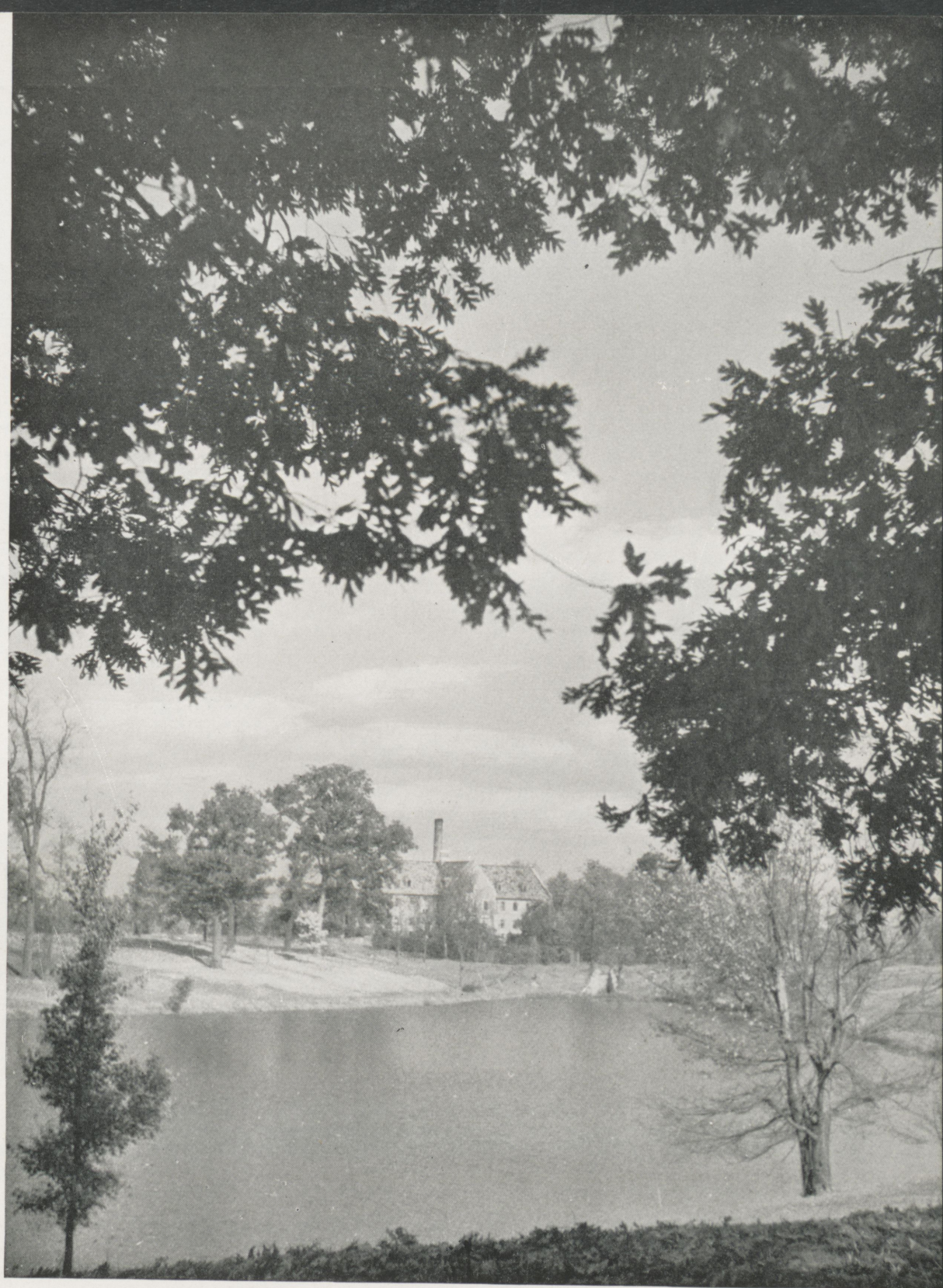


Photo by White

This view of the Lower Lake will bring back many memories of their freshman days to the graduates of Rose. It was and still is the take-off point for many rule-breaking freshmen.

A KEYNOTE TO KETONES

by John T. Newlin, c.e., '43

IN times of national emergency when efforts are being made to increase production of new, all-important items of defense, one may easily pause to wonder what will become of the new industrial plants which are now mushrooming over the country? Will they remain as grim ghosts to haunt us after they have served their purpose, or will they be turned to doing constructive tasks which will enrich our nation?

If it is possible to look for the future in the records of the past, it is interesting to view the history of one of Terre Haute's foremost industries, the Commercial Solvents Corporation. This local plant was developed to meet a demand, caused by the World War of 1914-18, which arose due to the poor quality of the acetone used by the British navy in the manufacture of their high explosive powder. The acetone used then was made by the distillation of wood, and it was unsatisfactory both in quality and in quantity. When the British navy muffed a chance to defeat a German squadron in the South Atlantic because the acetone which they used made their powder unsatisfactory, the British began searching for a better method of manufacturing acetone. Then Dr. Chaim Weizmann, a university instructor in England, developed a process of fermenting corn mash which produced acetone along with butanol and ethyl alcohol, and their problem was solved.

Six British distilleries were soon converted to making acetone and when a shortage of corn was feared in Britain, new plants were started in Canada and India. After the United States entered the war, the British purchased the plant of the Commercial Distillery at Terre Haute and set it to aiding in the production of acetone by the fermentation of corn. Located in the heart

A question foremost in the minds of the industrial leaders is what will become of the present war-time plants. This article is the first of a series covering the vital industries of the United States.

The Commercial Solvents Corporation of Terre Haute, Indiana, was one old war-time plant that converted its products to meet peace-time demands. The products of the company as to their nature, method of manufacture, and use are discussed as an example of what may become of the present defense industries.

of the corn belt, near a plentiful supply of water from the Wabash River, and in the vicinity of plentiful supplies of coal, Terre Haute was an ideal location for the young industry. The United States government bought the Majestic Distillery which was only a few blocks from the Commercial Distillery and the two plants were united by the Allied War Board into the Commercial Solvents Corporation of New York.

The new corporation had barely reached full production when the Armistice was declared, and the demand for acetone in powder manufacture was drastically reduced. Then the Eighteenth Amendment brought prohibition and the use of ethyl alcohol in liquors was curtailed.

Here, then, was an industry which had excellent facilities for making products which were no longer in demand. Should the corporation be liquidated and broken up at a loss to everyone concerned or could it be utilized by planned production and research? The outcome of this problem may serve as a guiding example for the future use of the plants now being built to make war materials. The switch-over from making materials needed in war to making materials useful in peace was accomplished smoothly and successfully.

The government-owned plant was sold in 1919 to a civilian corporation which had been organized for the purpose of buying the plant and using the process discovered by the

British university instructor for producing acetone and chemicals which would find a ready market during peacetime.

The operation of the plant is dependent upon the life of minute bacteria who have the impressive title of *Clostridium Acetobutylicum*. These bacteria are the real workmen of the Commercial Solvents Corporation, for it is they who go to work in the cooked corn starch paste, prepared for them by human workers, to produce the solvent derivatives which are the products of the plant. These tiny workmen are all-important in the process and are given great care by scientists at the Commercial Solvents laboratories. Small groups of bacteria are placed in glass tubes filled with a starch paste and held at 98° F. These multiply rapidly and in twenty-four hours are placed in a larger vessel where they continue to grow. Each day the family requires a larger home until the fifth day an 800 gallon tank is required. After that the family is put to work in the 50,000 gallon tanks in which the fermentation process is carried out.

Carbon dioxide and hydrogen are liberated from the paste in great volumes and the paste begins to liquefy. The action of the bacteria is so rapid that the whole mass seethes and foams with the evolved gases. After forty-eight hours the fermentation process is completed and the starch has all been converted into butanol, acetone, and ethyl alcohol. The same three products are always formed in the ratio of six parts of butanol to three parts of acetone and one part of ethyl alcohol.

The mixture is then distilled in a series of stills which separates the components. The first distillation removes the solvents from the water. Further distillation separates the three other ingredients from the

mixture and these are then either sold in that form or further processed at the plant to produce the many derivatives which are made there.

When the plant was first operated, acetone was the only important product. No need had been found for butanol so it was stored in an immense tank awaiting a possible discovery which would make it valuable. Then, luckily for Commercial Solvents and also for the rest of the world, a new type paint which was tougher, more attractive, and more resistant to exposure than any others known, was produced by dissolving nitrocellulose in butyl acetate. This new paint, the lacquer now used on the exterior finish of nearly all automobiles, is quick drying and lasts nearly as long as the surface to which it is applied. The butanol awaiting use in the storage tank in Terre Haute was converted into butyl acetate and found a ready

market in the new lacquer industry.

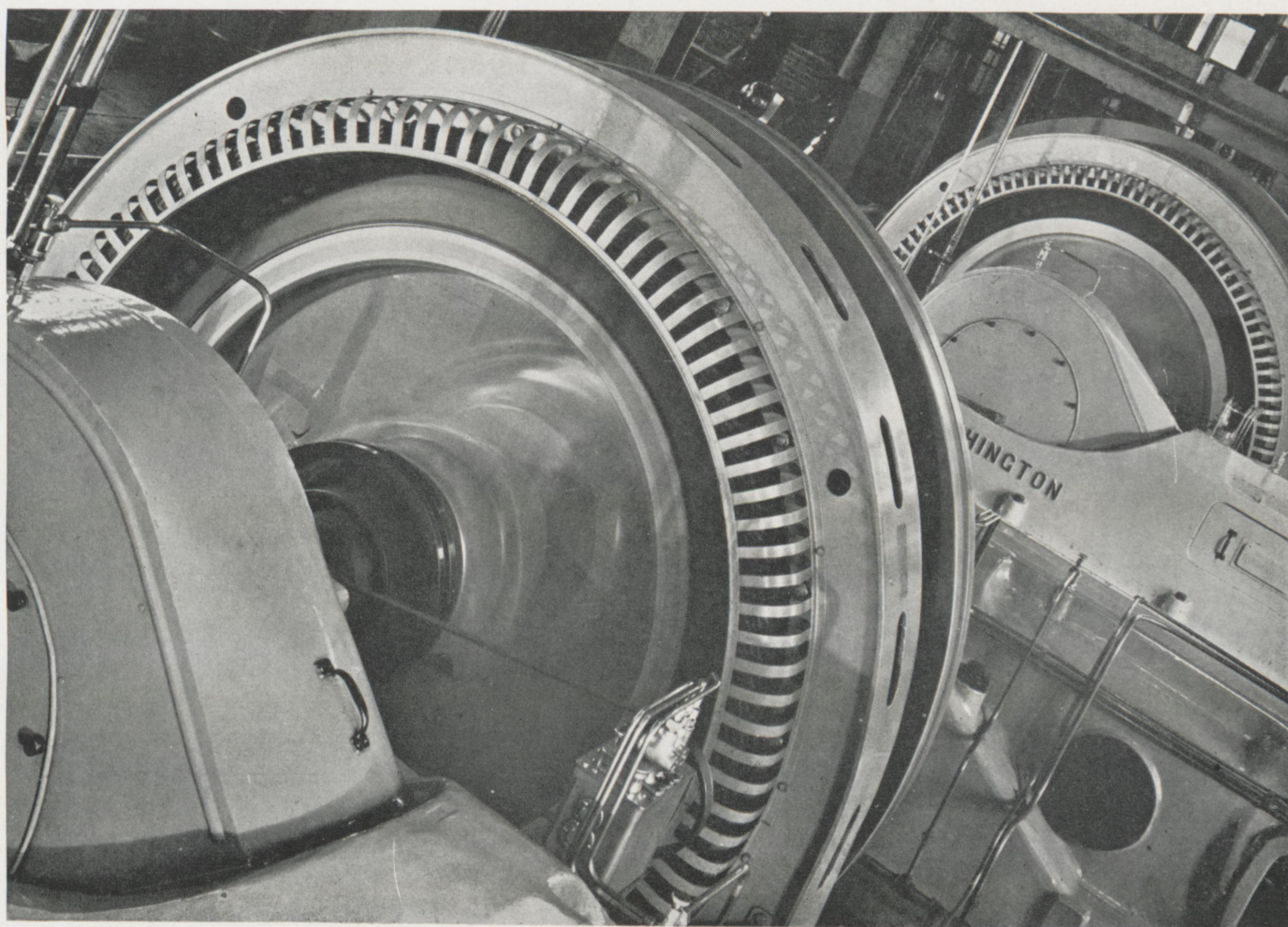
The carbon dioxide given off during the fermentation of corn was saved instead of being thrown out and was compressed with hydrogen under heat to form methanol—the wood alcohol of commerce. This replaced the old method of producing wood alcohol by the destructive distillation of wood. New uses have been found for methanol so that today the former waste product is needed to produce synthetic resins, anti-freeze solutions, dyes, medicine, anaesthetics, and many other newly developed substances.

This is an example of what planning and research can do to find uses for available products. The plant expanded until now there are large plants in Peoria, Illinois; Harvey and Westwego, Louisiana; Agnew, California; and Newark, New Jersey. Thus an industry started by the English in America became Amer-

ican owned and grew until it spread to become an important American asset.

Today with new powder plants being built and old ones working at full speed, Commercial Solvents is once again of importance in defense. The acetone which it produces is needed now as it was in 1918 to help in the making of high explosives.

This story of success may well be repeated throughout the nation if men with vision and resourcefulness find ways of turning our giant defense industries of today into the makers of products designed for the normal times of the future. No one knows today what magic the scientists and engineers will perform for our comforts of tomorrow, but we may be confident that the magic will continue, and that our country will be enriched in the future by the industries being built today for our defense production.



Margaret Bourke-White Photo Courtesy Commercial Solvents Corporation
COMPRESSORS:

These compressors perform a gigantic task in the plant described in the accompanying article.

WHO'S WHO

John L. Combs

When May 29 rolls around this year, John L. Combs can celebrate not only his coming graduation from Rose but also his twenty-second birthday. After graduating from high school in his home town of Indianapolis, Indiana, John decided to come to Rose and study electrical engineering.

Better known as "Ox" around school and the Alpha Tau Omega house, he won his first letter in football during the freshman year and became a member of the "R" Man's Association. His genial personality carried him into the presidency of the sophomore class where he attempted to deal fairly with the freshmen of that year. The honor points given for this position, added to those collected for winning another football letter and being a member of the *Modulus* staff, won him the first of his three Honor Keys.

Added to his collection of keys are the keys he obtained his junior year when Tau Nu Tau and Blue Key pledged him. Later in the year he was appointed as financial secretary of the student body and elected to the presidency of Blue Key. Leaving soon after summer vacation started, he spent six weeks of the summer learning about military life at Fort Knox in R. O. T. C. camp.

The senior year marked his fourth year of football and his rise to the office of advertising manager of the *Modulus*. Lacking time to do everything, John has had to let his reading slide but hopes to be able to catch up after graduation.

Joseph W. Dreher

Joseph W. Dreher, who first arrived in Terre Haute on May 24, 1919, must have cut his teeth on one of the first radio tubes. He showed great interest in radio and during spare hours tinkered with both send-

"Who's Who Among Students in American Colleges and Universities" is published every year. As the title explains, those men are listed who are outstanding on college campuses throughout the country.

Our contributions this year well deserve this honor. Here at Rose nominations were made by the student council, and from this list the faculty chose these representatives of our school. These six chosen men are without a doubt the outstanding students for the year and do well represent the school as have other men from Rose in the past. It is to these seniors that we, the underclassmen, look up to for the good examples of scholastic standing, leadership, and personality that they possess.

ing and receiving sets. While in high school Joe obtained his amateur license and since then has been known to the "hams" of the vicinity as W9WOD. This interest in radio was followed by a desire to find out more about it, so in the fall of 1937, he was one of the freshmen enrolling at Rose.

During his first year he was very active in extra-curricular activities, being a member of the radio club and the glee club besides playing enough basketball to win a letter. While continuing these activities during the following years, he added the A. I. E. E. and a position on the *Modulus* staff his sophomore year. It was during this year that he received the first of three Honor Keys. Returning to school the next fall, after a summer vacation in which he put a new transmitter on the air, Joe found himself business manager of the glee club. It was during the junior year that Blue Key tapped him.

During the summer he attended R. O. T. C. camp at Fort Knox, Kentucky, with other members of Tau Nu Tau to pick up knowledge in military engineering.

The senior year found him really shifting into high when the senior class elected him president as did the glee club. His brothers at the Alpha Tau Omega house congratulated him during the winter for co-captaining a winning basketball team and for being editor of the *Modulus*.

George C. Harper

Rose has had a hard-running full-back for four years in George C. Harper who captained the 1940 football team which ended up second in the Indiana Conference. The loss of the heaviest man in the backfield will undoubtedly be felt this fall.

Born in Lisbon, Ohio, on December 13, 1919, George hasn't let this date, which many consider unlucky, hinder him in compiling a fine college record. As a freshman he was elected secretary-treasurer and won a letter in football making him eligible to be a member of the "R" Man's Association. Theta Xi claimed him as a pledge and later as an active. Enrolling in the civil engineering course, he joined the student branch of the A. S. C. E. and later was elected secretary-treasurer. The next year found him on the *Modulus* staff as well as being a letterman in both football and basketball. He was elected to the vice-presidency of his class and received the first of his three Honor Keys. Blue Key, national service fraternity, and Tau Nu Tau, professional military fraternity, pledged him during the junior year.

The following summer found George with other Rose military students at Fort Knox, Kentucky, in the R. O. T. C. summer camp. During the fall elections after school resumed, George was elected to the vice-presidency of the senior class and of Blue Key.

Raymond C. Hogan

Although Raymond C. Hogan was born in Holliday's Cove, West Virginia, he certainly hasn't wasted his time taking holidays while at Rose. Until very recently "Shanty" claimed the distinction of being a senior who had never been dunked in the lake. However, with the help of a few other seniors, Ray visited Lake Deming between the halves of the annual intra-squad football game.

Soon after arriving at Rose, Ray proved to be popular on election day by being elected athletic representative of the "froshies." This popularity carried over into his later years during which he not only has held down the offices of vice-president of the junior class and treasurer of Blue Key, but also the presidency of Tau Beta Pi, Newman Club and the student chapter of the American Society of Civil Engineers. Both Blue Key and Tau Beta Pi tapped him during his third year. At the Theta Xi house the fellows look to Ray for help when they get stuck.

Football proved to be Ray's long suit as he received a letter for his play at tackle during each of his four years. Athletics, however, weren't his only interest as shown by his other activities. He sang in the glee club for three years and landed a position on the *Rose Technic* staff his junior year. This year he helped guide the *Technic* as associate editor. Last fall during an open date in the football schedule, Raymond represented the Rose chapter of Tau Beta Pi at the national convention in Lexington, Kentucky.

Charles A. Howlett

Charles A. Howlett, born in Valparaiso, Indiana, on February 3, 1920, will terminate a colorful college career when the senior class graduates from Rose this year.

The Howlett family moved from Valparaiso to Bloomington and from there to Terre Haute while Charles' father was earning his Ph.D. degree. Dr. Howlett is now a professor of physics at Rose.

During his freshman year "Chuck" was freshman sales manager for the *Modulus*. The following years, however, he gave his services to the *Rose Technic* which he edited in his senior year, having advanced from the assistant campus editorship to the position of assistant editor.

"C. A." was pledged to Tau Beta Pi in his junior year, is also a member of Alpha Tau Omega, A. I. E. E., Blue Key, and is a mainstay on the rifle team, winning four letters as a

marksman in the latter sport.

"Chuck" devoted part of the summer vacation of his junior year to the R.O.T.C. camp at Fort Knox, Kentucky.

Howlett demonstrated his popularity at Rose during his junior year when he was elected to pilot the junior class as its president.

After graduation, Charles has a position with the General Electric Company unless the army decides otherwise.

Edward James Klecka

Although Ed Klecka never became a great football star, he will long be remembered by the members of the football team who played during Ed's college career. For four long years he served the team as manager, as capable a man as could be found.

Ed was born in Plainfield, New Jersey, on November 9, 1919, getting his early education there. In 1937,

he enrolled at Rose as a student of chemical engineering. He began his "athletic" career as manager of the basketball team during his freshman year. In his sophomore year, he was elected assistant campus editor on the staff of the *Technic*, serving that position for a year.

During his junior year he was pledged to Tau Nu Tau military fraternity, along with many of his classmates. During the summer following his junior year, he spent six weeks at Fort Knox, Ky., at the R.O.T.C. camp. Ed was tapped by Blue Key and was elected president of the student chapter of A.I.Ch.E. in his senior year. He was also a member of A.C.S.

Ed pledged Theta Xi fraternity in his freshman year and became an active the same year. When he graduates this year, he will receive a commission as 2nd lieutenant in the Officer's Reserve Corps.

THE ROSE TECHNIC



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RESEARCH AND DEVELOPMENT

edited by John E. Metz, m.e., '43

Self-propelled Welder

A self-propelled engine driven welder recently constructed by the Precision Engineering and Manufacturing Company of New Philadelphia, Ohio, has steering gear, forward and reverse speed, controls with throttle, a treadle braking system, balloon tires, and a platform on which the operator stands. The motor is a 3-hp. traction motor, 85 volts D.C. for mine use.

A safety switch beside the exciter is used for welding or propulsion so that both cannot be done at the same time. When the safety switch is in the running position, the current from the welder terminal is directly connected to the motor and reversing switch. The exciting circuit is broken and a limit switch of the normally off type is inserted in this circuit with a discharge resistance across it. This limit switch is actuated by the brake release pedal. The start is gradual and entirely without jerk. No resistance is used for starting purposes. The throttle, which controls the speed of the engine, is equipped with a spring so that, if for any reason the driver should slip, the power would be shut off.

The unit, now in use in a large chemical plant, is estimated to save four man-hours per day over the former method, which required moving to the job an electric-drive machine and perhaps 500 feet of cable.

Wind-driven Generator

What is believed to be the largest wind-driven generating unit ever built and the first to deliver alternating current for commercial use is now being installed at Grandpa's Knob, in the Green Mountains, Vermont, with the expectation of going

into operation in June. The installation is admittedly experimental, but it is being made on a scale which should test the feasibility of such units for utilizing winds in favorable localities.

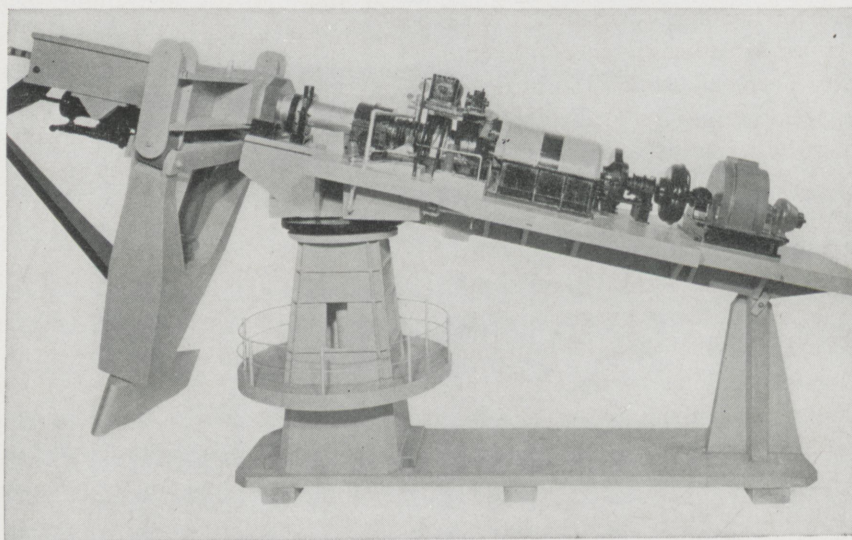
The generator rating is 1000 kw. at 80 per cent power factor and the design provides for delivery of 2300 volt, 60 cycle, three-phase energy to a transformer bank which will raise the potential to 44 kv. It is expected that the unit will be able to utilize winds for generation between 5000 and 6000 hours per year, at varying outputs and over a wind velocity range of from 18 to 150 m.p.h.

The structural steel tower supporting the generating equipment is about 110 feet high, with concrete and steel grillage foundations 22 feet deep. Near by, a 180-ft. anemometer tower has been erected for temporary measurements and records of wind velocities in the experimental period. The location of the plant is about 2000 ft. above sea level.

The generator, with a direct-con-

nected exciter, will be driven at 600 r.p.m. through a hydraulic coupling and oil-immersed gearing, driven in turn by a two-bladed propeller with a diameter of 175 feet. The propeller blades are of shot welded stainless steel and weigh about 15,300 pounds each. They are each 65 feet long and 11 feet wide, and the entire rotating mechanism of the unit as a whole, weighs about 75 tons. The speed of the propeller blades is 30 r.p.m., and the design of the unit provides for fully automatic stabilization, the pitch of the blades being automatically controlled. The blades are also free to cone down-wind against controllable restraint. The axis of the rotating equipment is inclined about 12 degrees below the horizontal, pointing downward against the wind. The blades are expected to "yaw" into the wind at all times, no tail vane being provided.

The design provides for a fully automatic station, and if successful, it is intended to develop units for operation in various sites under suit-



Cut Courtesy Electrical World
WIND OVER GRANDPA'S KNOB—Model of the 4,000-kw. wind-driven generating plant which is being erected in the Green Mountains about 10 miles west of Rutland, Vt., with part of one blade shown. The propeller has a wingspread of 175 ft.

able supervision. It is believed that such units would be of much value from the defense standpoint because of their decentralization.

The General Electric Co. designed and manufactured the electrical equipment, while the S. Morgan Smith Co. is financing the development and providing the mechanical equipment designs.

Fire Fighting Trailer

Fighting of large industrial fires in flammable liquids and electric equipment is the intended function of a new mobile fire-fighting unit recently announced by Walter Kidde & Co. The new unit is a trailer equipped with hose reel and nozzle and carries six 50-pound carbon dioxide cylinders. The cylinders are manifolded together and are operated individually by valves on each cylinder, thus permitting the use of all or any part of the unit's capacity on a large or small fire.

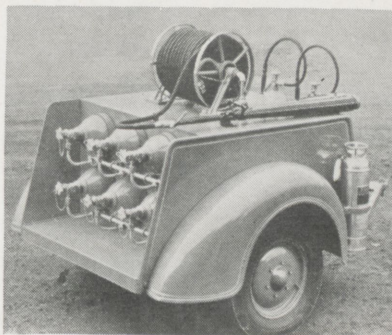
Carbon dioxide gas is discharged onto the fire through 100 feet of $\frac{1}{2}$ -inch hose, fed through a trunnion type manifold. A shut-off valve on the nozzle handle permits the discharge to be interrupted while the operator is maneuvering for position against the blaze.

For smaller fires, two portable carbon dioxide extinguishers of 15 pounds capacity are carried on the front platform of the trailer, together with two $2\frac{1}{2}$ -gallon pure-water extinguishers which operate on the principle of a syphon bottle.

Carbon dioxide is safe to use on live electrical equipment, since it is non-conducting, and in addition is clean, dry, does no damage, and leaves no residue.

Substation on Wheels

Following the recent story of a floating power plant for supplying power on an emergency basis where needed, comes the story of a substation on wheels for quickly supplying or restoring power in emergencies. A completely factory built, 1000-kva, mobile substation has been delivered to the Central New York



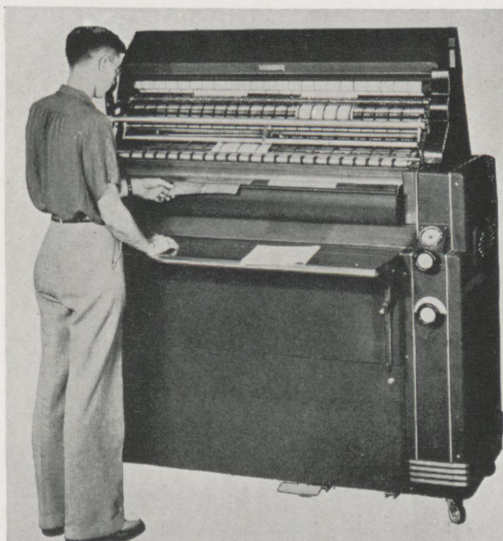
Cut Courtesy Chemical & Metallurgical Engineering

Carbon dioxide fire-fighting trailer

Power Corporation at Syracuse from the General Electric plant at Pittsfield, Mass.

The use of a forced-oil cooling system permitted the substation to be built very compactly. First of its type, the mobile unit is mounted on a special chassis, and can be hauled at speeds up to 40 mph. Over-all dimensions, including extensions, are 11 ft. 6 in. high, 21 ft. long, and 8 ft. wide; however, the height may be reduced to 9 ft. 10 in. for low clearances. The total weight is slightly less than 10 tons.

The substation is one of the most flexible transforming devices ever constructed. It consists of one three-phase 1000-kva transformer, with primary and secondary switching equipment and lightning arresters.



Cut Courtesy Machine Design

DEVELOPING MACHINE

This developing machine is one of many new instruments being used to speed blueprint production, and consequently, industrial output.

The unit is designed to take power from high voltage lines of 11,000, 13,000, 22,000, 33,000, or 44,000 volts; and to transform and supply it to systems of 230, 460, 2300, 4000, or 4600 volts.

The work of supplying or restoring power to customers in an emergency is made a comparatively simple matter by the mobile substation. Installation is merely a matter of parking, grounding the unit, and attaching incoming high voltage lines to one side and the secondary system lines supplying the customers to the other.

In addition to emergency service, the mobile substation may be used to by-pass regular substations while repairs are being made or while maintenance work is being carried on, thus preventing interruption of service. Sudden demands for new power can likewise be taken care of while permanent substation facilities are being installed.

High Speed Developer

A new developing machine for faster print production has been announced by the Charles Bruning Co. Using this new machine, known as the Bruning No. 159 Volumatic Developer, in combination with the Bruning Model "75" BW Printer, one operator can perform the entire printing and developing operation with ease and speed.

In operation the sensitized paper and tracings are fed into the machine at the front, where they are immediately exposed in the printer section. A vacuum separator roll at the discharge point of the printer separates the tracings from the exposed prints, allowing the prints to pass automatically to the developing and drying sections of the developer. The tracing is returned to the operator, while the completely developed print is delivered flat and dry at the rear of the machine.

The No. 159 Volumatic Developer consists of a separator roll, water roll, and a series of bands which carry the developed prints through
(Continued on Page 28)

AROUND THE CAMPUS

by Frederick L. Kolb, m.e., '43

Glee Club

The Rose Glee Club has enjoyed one of the most successful years of its history to date. Having made innumerable appearances before civic organizations and the many high schools in the city, the glee club will conclude its year with the annual concert to be held on May 29.

The glee club, made up of members of the student body who are interested in singing, has a steady membership of about 20 men. The songs that the club sings are of all types, some being spiritual, some religious, and others spiritual, some. Regardless of where they sing, the members of the club are always welcomed and more important perhaps, are asked to return the next year. This year, under the direction of Mr. Emil Taflinger and accompanied by Mrs. Edris Bennett, the club has chosen to learn a complete new repertoire with the result that the program is entirely new.

Some of the organizations for which the glee club has performed include: general assembly at Rose, Wiley Blue Tri Club, the Washington Ave. Presbyterian and the Central Christian Churches, the Woman's Department Club, a meeting of the coaches of the Wabash valley at the Student Union Building at I. S. T. C., and with the choir of St. Mary's of the Woods College in a Sunday afternoon recital at the Union Building.

Rose Students May Be Deferred From Draft

An important notice has been posted at Rose in the last month. This memorandum is in the form of a letter from the head of the Selective Service Department in Washington to the many local draft boards and redefines some of the various types of exemptions from

the draft. The letter states that men holding positions in defense production plants, or those who are specifically training for such positions, should be given deferment from the draft. This of course does not mean that simply because a young man is a student at Rose he will not be called for service. It merely means that due to the fact that Rose Polytechnic Institute is a school which trains engineers and is therefore preparing its graduates for technical jobs, if a student at Rose is called and applies for a deferment, he will in all probability receive it.

Commencement Committees Announced

Announcement has been made of the committees for the Commencement activities in June. The men chosen and the committees on which they are serving are as follows: Cap and Gown, Edward J. Klecka, John G. Appel; Announcements, John F. Carroll, John E. Bartmess; Memorial, Albert L. Klatte, John R. Roberts, James J. Bartholome, Dennis T. McCarthy. Commencement will be held June 7, 1941.

Radio Club

The Rose Radio Club was organized in 1923 by a group of students interested in the advancement and diffusion of technical knowledge in radio operation and construction among the members of the student body.

The radio station now known as WBOW of Terre Haute was once indirectly owned and operated by the club under the call letters WRPI. Due to the fact that so much time was necessary to keep the station running, it was finally turned over to a company owning a chain of small stations throughout the state.

Later, federal authorization was obtained from the Federal Radio

Commission to build and operate a station under the call letters W9NAA. During spare school hours a group of students can always be found in the club room learning the fascinating art of telegraphy.

In order to make it possible for a greater number of students to enjoy the use and operation of the radio station, the club sponsors radio code lessons in the early spring season. Some members of the club have experienced the thrill of talking around the world to stations in foreign countries. Cards are received from these stations from time to time and they are proudly displayed on the wall of the club room. Free message service to all parts of the United States is provided by means of affiliations with similar stations throughout the country. The Rose Radio Club is an official club station of the American Radio Relay League and cooperates with other university and college stations in the exchange of experimental data and information. The club station is considered one of the most unusual of its kind in this part of the country and serves as useful and instructive recreation for its members.

R. O. T. C.

Several pertinent facts about the Rose Polytechnic unit of the R.O.T.C. have just appeared in the latest issue of the *R.O.T.C. Engineer*, a magazine issued for the Engineer Units of the Reserve Officer Training Corps. The booklet states the following facts: There are 29 Engineer Units of the R.O.T.C. in the colleges and universities over the United States at present. The unit at Rose Polytechnic Institute is one of the oldest units in existence today, having been established in 1919. Only one other unit of the R.O.T.C. had been established prior to 1919 and that was at the California Insti-

tute of Technology in 1917. That particular unit was withdrawn in 1929, leaving Rose as holder of the longest record.

The members of the Rose Tech unit have distinguished themselves on many different occasions, one of which was their splendid work at summer camp in 1940. During that summer period Rose ranked 8th out of 29 units in rifle marksmanship and second out of the same number in pistol marksmanship. Of the 29 units in existence today, eight are on a voluntary basis, Rose included. The others in this group are Carnegie Tech, Johns Hopkins, Clarkson, Michigan Mines, University of Michigan, University of Wisconsin, and Texas Tech.

At the annual inspection last spring, the Rose unit received a rating of "Excellent", the highest rating given R.O.T.C. units.

Army Takes Over Rose Poly For Day

Rose Polytechnic Institute became a veritable U. S. Army camp on

Wednesday, May 14, for it was on that day that the Rose R. O. T. C. unit had its annual dress inspection and maneuvers. Col. Richard L. Smith, Rose '09, Corps Area Engineer of this section, was present to inspect the Rose unit. In the afternoon the outfit staged a mock war or sham battle doing everything that they would be forced to do under actual wartime conditions. The unit was divided in two groups and these two groups battled each other for the better part of the afternoon. The students taking part in the maneuvers were each assigned a certain number of blank cartridges and these together with the many charges of explosives, created a very true to life picture of what an actual battle would be like.

A. I. E. E.



During the year 1940-41, the Rose student branch of the American Institute of Electrical Engineers was unusually active.

Under the able direction of the

chairman, Rolland Buell, and the faculty adviser, Professor C. C. Knipmeyer, a series of meetings were held at which talks were given by members of the senior class in electrical engineering.

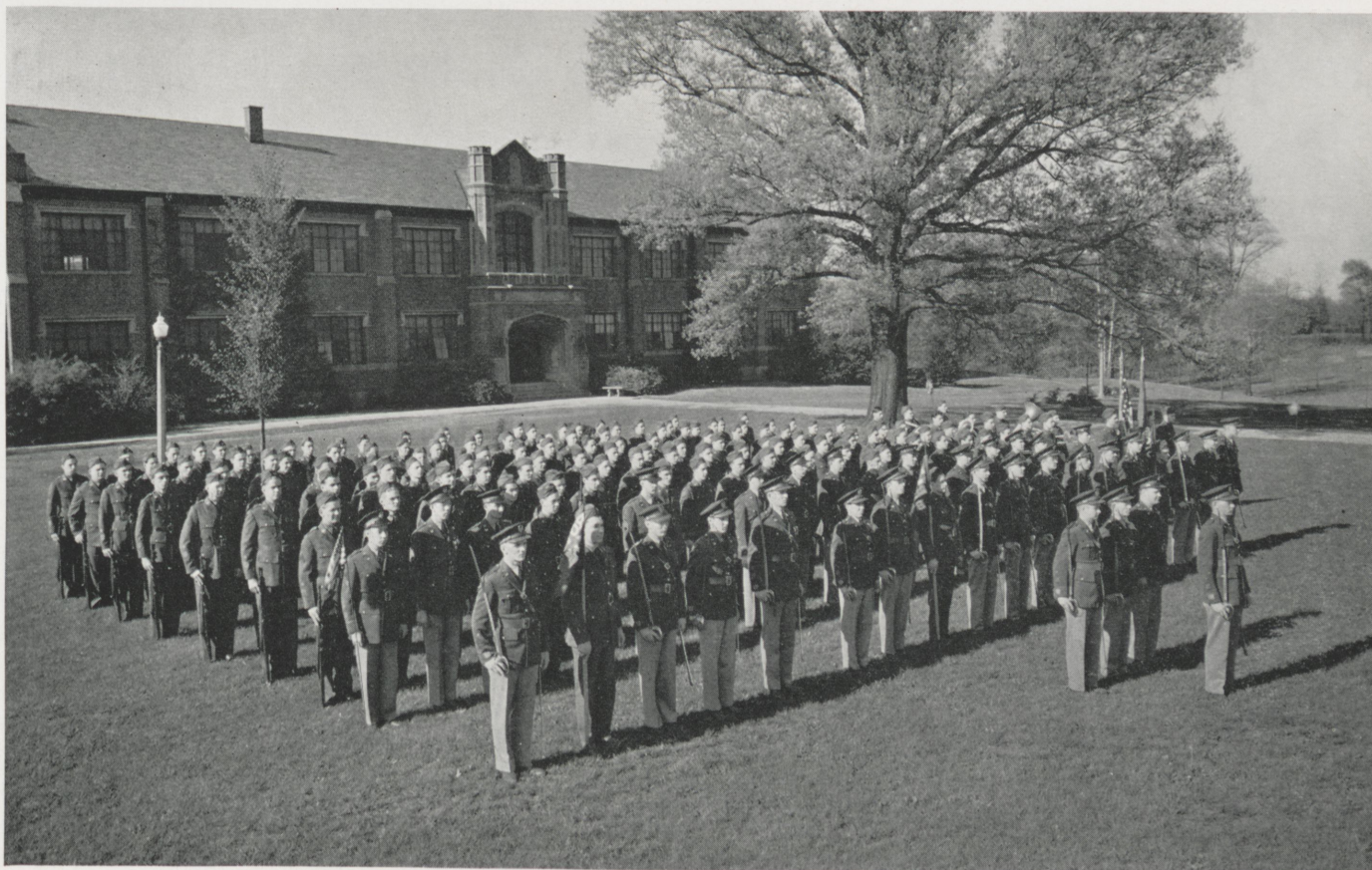
On December 20, Carl R. Wischmeyer, Rose '37, gave an interesting lecture on "A Thyatron Circuit for Theater Lighting". Mr. Wischmeyer is now assistant instructor in electrical engineering at Rice Institute.

Through the courtesy of the Oknite Company, a film was obtained and presented at one of the meetings of the branch which showed how rubber covered wires and cables are made.

Plans were made to attend the Tri-School meeting, which was held at the University of Illinois, this year, and a meeting which was held the following week at Chicago. Papers were presented at these meetings from Rose as well as from the other schools.

During the year the students have not only enjoyed the talks given be-

(Continued on Page 27)



The Rose Battalion stands at attention in mass formation.

CAMPUS SPORTS

by Harold E. Schwarz, '44

Sports at Rose

The past thirteen years of Rose Tech athletics compare favorably with any like period in the school's athletic history. To be sure we have had lean years in which victories were hard to find, but we have also had years in which we were heavily on the victory side. The old timers, of which I am one, are prone to remember only the glorious successes of their own teams of more than twenty years ago, but the years between those days and the present-day thoughts have a tendency to gloss over the defeats and emphasize the successes. We are all prone to think that the teams of yesteryear could lick the socks off any team of the present-day softies, but don't you believe it. These modern teams are too smart, too fast, and too versatile to allow themselves to be licked by old-fashioned teams.

As in football and other sports such as professional baseball or boxing, a comparison between the players of another generation and our present athletes is not fair to either group. The big difference lies in versatility and the heritage of years of training and experience. Joe Englehardt was a swell back, but he was no better than Joe Creedon of a few years ago, or Earl Michaels, our present quarterback. Dolly Gray and Hed Gray were great footballers, but John Tonetti, of the 1930's, was the greatest guard I have ever seen, and Nick Smilanic, class of 1940, was a deadly blocker while running from the guard spot. Little Ick Rinehart was a handy man to have around in any sport but he was not as versatile as big Bob Colwell or our present Bill Rumbley. These modern athletes must be able to do more things well than their older brothers.

This versatility and improved technique is a necessity in every

sport. Basketball has changed a great deal, so much so that our present players have to think faster, shoot better, and execute their fundamentals to perfection, in order to stand a chance. Even the individual track stars have to be faster and better conditioned than they did twenty years ago; look up the ever-improving records in every track or field event for the proof that these boys are better than the old-timers.

The editors of the *Technic* have asked me to pick some of the outstanding athletes of Rose in the past thirteen years. This is a most unwelcome task. To me every team is better than the one before. I am not a believer in All-American teams because I feel that no one player is any better than his teammates. But I think I can select a few players of the past few years who were more gifted with natural ability than their hard-working and less-publicized fellows. You men who have been with me through the wars, please forgive me if your names are not on this list.

In football:

Ends: Gillette, DeWitt, Wodicka, Colwell, Rumbley.

Tackles: Kruzan, Richardson, Combs, Hogan.

Guards: Tonetti, Smilanic, Bruce, Morris, Cavanaugh.

Centers: Ogan, Hutchins.

Backs: Dean, Creedon, Henderson, Pratt, Michaels, Bowsher, Harper, Klatte.

In basketball:

Forwards: F. H. Richardson, Meurer, Knipdash.

Centers: Colwell, Rumbley.

Guards: Sawyers, Yaegers, Bowsher, Ellsworth, Morrison.

—by Phil Brown, Coach

Intramural Sports

As the end of the school year draws near, everyone at Rose begins to think about the intramural sports which are played here every spring. Some of us are interested in the fine games that are seen each year in the various sports and others, the more athletic type, are interested in winning one of the tournaments.

This year there will be contests in tennis, singles and doubles, golf, and baseball. The last is played late in the year with teams from the four departments entered. The Civils won in 1940, but all other departments are putting strong teams on the field, and the student body expects to see some real ball games.

The tennis singles roster is headed by defending champion, Earl Michaels, and the runner-up last year, John Mehagan. These men, along with other upperclassmen and a few outstanding freshmen, are expected to produce some real matches. The complete list consists of Michaels, Mehagan, O'Dell, Morris, Shanks, Anderson, Schwarz, Knipdash, Walters, Wright, Buckalter, Martin, McCarthy, Thomas, Wallenbrock, Powell, Fields, Douds, Eberly, Howlett, Wehle, Leach, Hill, Nichols, Meurer, Chalfant, Bowsher, Thiesing, Hodggers, Winters, and J. Brown.

The doubles tourney is also a haven for good players this year. Headed by defending champs Wayne Shanks and Fred Wehle and last year second placers, Earl Michaels and Charles Howlett, there are three or four other teams in the race that are certain to try to make winning it a man-sized job. The complete field is composed of Shanks and Wehle, Howlett and Michaels, Bowers and Martin, Wallenbrock and Powell, Miller and Padwojski, Brown and Meurer, Chalfant and Bowsher,

Thiesing and Fields, Klatte and Harper, Schwarz and Winters, Meghan and Knipdash, and Douds and O'Dell. This is the largest field in quite a few years and it should be close, hard-fought tennis all the way.

Golf is new as an intramural sport at Rose, this being the third year for such a contest. The tourney is played on a straight medal score basis with the low man for the fifty-four holes winning without any play-off. Rea Park is the scene of the 1941 clash. Since last year's champion, P. Temple, is not here this year, a new golf king will be crowned at Rose. The field in its entirety is composed of Michaels, who copped second place last year, Nelson, Turner, Shake, Anderson, Buchanan, Schwarz, Knipdash, Hershey, Martin, McCarthy, Beckman, O'Connell, Jessup, Bowers, Brittenbach, Ullrich, Leach, Nichols, Driskell and Strassel.

Track

It has only been in the last few years that the idea of a track team has met with results at Rose. We do not support a large squad of men as

yet, and Rose does not expect to win many laurels this year, but the team is building up to the point where in a few years we will be able to compete with other schools on an equal basis.

Although we have one of the best hurdlers in the state, two very fine high jumpers, and a really smooth pole vaulter, the squad is not large. The men and their events are: Cundiff and Garrett in the high and low hurdles, Johnson on the pole vault and possibly running the 440, Rumbley and Keeler in the high jump and one of them may throw the javelin while the other tries his skill with the discus.

The dates and places of the meets that Rose entered were: April 23 at DePauw, April 26 at Ball State, May 3 at Indiana Central, May 10 at Elmhurst, and the season will close with the Little State meet at Ball State on May 17.

Coach Brown does not hope to win any of these meets, but he does expect to place men in all of them. Since these track men are third year men or less, they are trying to gain experience that will aid them in

future events. If a few more men will try for the team next year, Rose should be able to compete with most of the smaller colleges by 1942.

Spring Football Game

The annual intra-squad spring battle was staged April 19 at the customary spot. Lost Creek Stadium was the scene of a real football game this year. The clash was scheduled for 10:00 A. M. and was under way on time.

The squad, which looked very good in the nights of practice before the game, was divided into two teams. The Red team under Captain Bowsher and the White team under Captain Cavanaugh fought for fifty-four minutes to a 7-7 tie. Instead of the usual 15 minute quarters, the second and fourth quarters were only 12 minutes in length. Since about one-third of the boys were playing their first ball for Rose, the twelve minute quarters were long enough.

The game was played with two men from the pre-game starting line-up on the sidelines. Buchanan developed a high fever and was out



JAVELIN THROWING:

"Big Bill" Rumbley exhibits his javelin-throwing technique.



POLE-VAULTING:

A member of the Rose "iron-man" track team, Art Johnson, is seen here "Crossing the Bar."

the last two nights of practice. The co-captain of the 1941-42 team, Michaels, was injured while running back a punt in scrimmage the day before the game.

The Whites won the toss and elected to receive the pigskin with the Red team defending the east goal during the first half. The kick-off went to Walters on his ten and he brought the mail up to his own thirty before he went down under a swarm of Red jerseys.

The game see-sawed back and forth the entire first half with no score by either eleven. The Red team was on the defensive most of the first two periods with outstanding kicking by C. Van Meter saving the game a number of times. From this corner it looks like Rose has a very fine kicker coming back next fall.

The only scoring opportunity by either team came late in the first quarter. J. Brown set it up when he got loose for a fifty yard run down to the Red eighteen. The next two plays produced six yards and with the ball on the twelve, third and four, a White fumble was recovered by Schwarz. The Red aggregation immediately kicked out of danger.

The intermission at half time

called forth a little action on the part of the seniors. They had promised, as part of the show, to throw Ray Hogan in the drink. With the aid of Arnold Jones and his car, five big, burly, ex-football players managed to get poor, little defenceless *Shanty* off guard, tie his hands and feet, and proceed to the lake. The brutes were Harper, Klatte, Combs, Klecka and Cook.

It was during the second half that both teams made their touchdowns. The Reds drew first blood late in the third quarter as a result of a blocked kick by R. Mitchell which was recovered on the five yard line by Morris. The first play hit pay dirt by virtue of a pass from Bowsher to Ellsworth in the end zone. C. Van Meter put a place kick between the uprights for the extra point.

The White eleven came back in the last period to tie the ball game. On the freak play of the year, Cavanaugh broke through the Red forward wall and taking the pumpkin from the hands of a Red back, pushed onward the remaining thirty yards for a marker. The extra point was produced from a fake drop kick on a pass from Brown to Holthaus in the end zone.

During the five minutes remaining

in the ball game, neither team got inside the thirty-five yard line. The game was an exceptionally fine battle for a spring contest. Both elevens played very fine ball and Coach Brown appeared to be very satisfied with the work of the entire squad.

RED	WHITE
Warrick	L.E. Ellsworth
Davis	L.T. C. Van Meter
Cavanaugh	L.G. J. Van Meter
(Capt.) Allison
/inslow	C.G. Morris
Bubeck	R.T. Halden
Cornelius	R.E. Schwarz
Kniptash	R. Rose
Walters	Q.B. Bowsher
Brown	H. (Capt.)
Van Kempema	H.B. Meurer
Sellers	F.B. Tucciarone

Substitutes: Holthaus; Kopan; Mitchell, G.; Mitchell, R.; Nahm; Price; Rumbley.

Score:

RED	0	0	7	0-7
WHITE	0	0	0	7-7

Officials:

Harper—Umpire

Klatte—Referee

Hogan—Head Linesman

Combs—Timekeeper

(Continued on Page 26)



SPRING FOOTBALL GAME:

It was a great day for the annual spring football game and other diversions such as a lake party for Hogan.

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GRADE A GRADS

edited by Wallover H. Nellis, '44

Rose Grad Heads A. C. S. Meeting

H. E. (Weide) Wiedemann was the general chairman of the 101st meeting of the American Chemical Society held in St. Louis, Missouri, during the week of April 7. Mr. Wiedemann served as toastmaster for the Alpha Chi Sigma banquet on April 10, 1941, and also as toastmaster at the banquet dedication of the Chemical Engineering and Chemistry Building at the Missouri School of Mines and Metallurgy at Rolla, Missouri, on April 11, 1941. He is a consulting chemist in St. Louis.

Mr. Wiedemann was born in Harrisburg, Illinois, on April 1, 1882, the son of Edward W. and Sarah A. Wiedemann. He was graduated from Rose Polytechnic Institute with a B.S. degree in 1903. Since his graduation he has received two other degrees—M.S., 1907 and Ch.E., 1909. He is a member of Alpha Chi Sigma fraternity.

In 1910 he was married to Amy L. Buchanan in East St. Louis, Illinois, and he now lives at 7003 Waterman Avenue, St. Louis, Missouri. Mr. Wiedemann has his own private business, his office being located in the Chemical Building in St. Louis.

Before going into business for himself, Mr. Wiedemann was a professor of chemistry at the Washington University Manual Training School from 1908-1910. He has held or now holds the following positions:

State Chemist of Missouri; Treasurer, Academy of Science of St. Louis; member of the Lime Committee, A. S. T. M.; chairman of the St. Louis section of the American Chemical Society; national vice-president of A. C. S. He is also a member of the A. A. A. S. and the A. S. Ch. E. He specializes in legal work and plant development and is an authority on limestone chemistry.

Departed

Charles H. Jumper, '02, died at his home in Washington, D. C., in November, 1940. He had previously been employed as a chemist in the U. S. Bureau of Standards, 402 Chemistry Building, Washington, D. C. He received his B.S. degree in chemical engineering from Rose in 1902.

Laurence E. Troxler, '95, died at his home at 2125 Murry Street, Louisville, Kentucky, on January 29, 1941. Prior to his death he was employed at the U. S. Quarantine Station at Point Loma, California. He received his B.S. degree in electrical engineering at Rose in 1895 and received the Heminway Medal for scholarship during his freshman year.

Proud Father

Gene E. Petty, '39, is the proud father of a daughter, Veva Jeanne, born April 11, 1941. Mr. Petty is the plant chemist with the Arkansas Fuel Oil Company, Jefferson, Texas.

Newlyweds

Miss Susan Langston of Peoria, Illinois, became the bride of Robert T. Mees, '31, on February 22, 1941. Mr. Mees is employed as a research engineer with the Caterpillar Tractor Company.

Mr. and Mrs. Andrew N. Mehlinger of Evansville, Indiana, announce the marriage of their daughter Evelyn Frances to Mr. Robert Edward Bond, ex-'37, at the latter's home at 6610 First Avenue South, Birmingham, Alabama, on Saturday, March 29, 1941.

Miss Margaret H. Bailey of Trappe, Maryland, became the bride of Elvin L. Everett, '34, of Chattanooga, Tennessee on March 26, 1941. Mr. Everett received his B.S. degree in civil engineering and is employed with T.V.A. Mr. and Mrs. Everett

will make their home in Chattanooga upon their return from a motor trip to Florida.

The Grads Advance

'18 Fred W. Springer, formerly construction engineer with Allied Engineers, Inc., has taken a position with J. G. White Engineering Corporation in New York City.

'25 C. Derby McDargh, former review engineer with the W.P.A. has taken a position with the American Bemberg Corporation, Elizabethtown, Tennessee.

'28 Robert F. Alexander, former Regional Safety Director with the U. S. Soil Conservation Service, is Assistant Chief of the Safety Section in the Office of the Quartermaster General, Washington, D. C.

'32 Wayne Plimmer, Commercial Solvents Corporation, Terre Haute, Indiana; Clifton A. Pratt, plant mining engineer with the Pittsburgh Limestone Corporation; and William O. Shofner, Bureau of Census, Washington, D. C., are all stationed at Fort Belvoir, Virginia.

John H. Montgomery, Junior Engineer with the State Highway Division, is now working with the U. S. Geological Survey at Urbana, Ill.

'34 James I. Mason, formerly with the Sunbeam Electric Company, is stationed at Fort Belvoir, Virginia.

'35 William S. Pratt, previously with the Metropolitan Water Bureau, Hartford, Conn., is stationed at Fort Belvoir, Virginia.

P. Byrne Terhorst, formerly In-

dustrial Gas Engineer with the Citizen's Gas and Coke Utility, Indianapolis, Indiana, has taken a job with the Curtis-Wright Corporation, Propeller Division, Indianapolis, Ind.

'36 Francis M. Blair, with the Northern Indiana Power Company, Clinton, Indiana, is in training at the Aberdeen Proving Grounds. He will later be sent to the Madison Proving Grounds, Madison, Indiana, as an instrument man.

Raymond J. Harrod, special apprentice with the Pennsylvania Railroad, has been transferred to Wilmington, Delaware.

C. Daniel Overholser, graduate assistant, Indiana State Teachers College, has been transferred to New Albany where he has charge of the N.Y.A. work of 16 counties.

'37 Charles F. Rich, former reducing unit operator with the Velsicol Corporation, Marshall, Ill., has taken a position with Joseph E. Seagram and Sons, Inc. at Louisville, Kentucky.

'39 Francis A. Marasco, meter tester with the Northern Indiana Power Company, Greencastle, Indiana, has been transferred to Kokomo, Indiana.

'40 Allen T. Wilson, time study engineer with the Sunbeam Electric Manufacturing Company, Evansville, Indiana, has accepted a position with R. C. A. in Indianapolis, Indiana.

Vernon E. Whitehouse, with the Indiana State Highway Commission, reported May 2, at Fort Knox, Kentucky, for a physical examination. From there he was sent to Fort Belvoir, Virginia.

Cuttings

Since the first issue in June, 1891, the *Rose Technic* has progressed over fifty years to the extent that it has become one of the finest engineering college magazines in the country. Its first alumni editor was Luther S. Rose, '92, who graduated with a B.S. degree in civil engineering. He later obtained his C.E. degree

in 1916. He was the former general manager of the P. & E. Railway but is now retired. The notes that follow are taken directly from the Alumni section of the first issue which was edited by Mr. Rose.

Mr. S. S. Raymond, '90, stopped in town about six weeks ago on his way home from his ranch in Montana.

Mr. S. S. Early, '85, the first graduate of Rose Poly, was married on January 21 to Miss Florence Hussey of Terre Haute.

Mr. William H. Shrader, '86, passed examination on May 26, securing the degree of Ph.D. from the Royal University of Strassburg, Germany.

The officers of the Alumni association are J. B. Aikman, '87, president; G. R. Putnam, '90, vice-president; and H. F. Goetz, '87, secretary. The executive committee is composed of Ben McKeen, '85; F. T. Hord, '88; and S. S. Early, '85.

Mr. J. T. Chapple, '86, is now prospering with the Indiana Bicycle Manufacturing Company of Indianapolis. This company started two years ago with a capacity of twenty machines a week, but has grown until now its output is six hundred machines per week.

In a letter to the Alumni Editor printed in full in the October issue of the *Technic*, 1891, Mason, Gallo-way, '90, expresses the enthusiasm with which the *Technic* was received by the alumni. It is this spirit that has kept the alumni section, especially, going to its fullest extent.

"The *Technic* is all that could be asked for in the way of a college paper and great credit is due those who started it. I think it the duty of every alumnus to give the paper every encouragement they can.

The "Alumni Notes" is, I think, an especially good feature, for it keeps us informed of what our former associates are doing and where they are, better than by almost any other means, since this news comes once a month."

As we continue to glance through the pages of the December issue of

the *Technic*, 1891, a sprightly bit of humor in the form of a poem catches our eye. It goes like this:

"My daughter," and his voice was stern,

"You must set this matter right;
What time did that sophomore
leave the house,

Who sent in his card last night?"
"His work was pressing, father
dear,

And his love for it was great;
He took his leave and went his way,
Before a quarter of eight."

Then a twinkle came in her bright
blue eyes,

And her dimples deeper grew;
"Tis surely no sin to tell him that,
For a quarter of eight is two."

Exchange.

The months of May and June seem to be top choices when it comes to selecting times for metamorphoses. It is during these two months that high schools and colleges disgorge thousands of graduates, and many a young man's fancy is turned so far at this stage of spring that the fatal step is inevitable. By this time too, the April showers prove their worth by aiding Nature to blossom forth in all her glory. Finally, in May a new *Technic* staff takes over.

With the publication of the April issue, the responsibilities formerly discharged so well by the men who are graduating were passed on to others. The magazine has fared well under "Chuck's" period of supervision and the departure of he and the other senior staff members constitute a challenge. The many problems they have solved in this past year make it even more imperative that the new group makes the coming year a notable one in the history of the *Technic*. This issue commemorating the fiftieth anniversary of the founding of the magazine is intended to be a step in that direction. It cannot be called a true sample of what is to come since the old staff has aided heroically in its publication but we hope to maintain the steady improvement the *Technic* has shown throughout its years of existence.

FIFTEEN YEARS

by Harold B. Hood, '24

1935

Huey Long was shot and killed, ending his extended dictatorship in Louisiana.

As a result of a border fracas late in 1934 between the Italian troops and Abyssinians, Italy entered upon a war of conquest in 1935 and continued in spite of sanctions authorized by the League of Nations. The effectiveness of the League of Nations began seriously to crumble.

England celebrated the Silver Jubilee of George V. After 17 years as President of Czechoslovakia, Thomas Masaryk resigned at 85, assigning failing strength as his reason, and recommending Benes as his successor.

John Lewis split with the A. F. L., and, in the following year, organized the C. I. O.

Amelia Earhart flew from Oakland to Honolulu in 18 hours. Clem Sohn, the bat man, soared, in a specially designed suit with wings extending from his wrists to his ankles, for 75 seconds while dropping from 12,000 feet to 6,000 feet before he opened his parachute. The dirigible Macon, engaging in naval manœuvres, fell into the sea, 81 of the 83 persons aboard being rescued. The cause of the failure was never determined.

Joe Louis won 13 fights in the first six months of his professional career. Kelly Petillo won the Indianapolis race with an average of 106.24 miles per hour, in spite of being limited to a 75 mile speed for thirty miles of the race. During the qualifying runs, Al Gordon crashed and turned over, the car sliding upside down for a long distance on the track. Only a few years before, the drivers had first been required to wear steel helmets. When Gordon was pulled out of his car, it was found that the top of his helmet had

This is the last of this article of the review of fifteen years between Mr. Hood's graduation from Rose in 1924 and his speaking for the 1939 commencement exercises. This installment covers the years from 1935 to 1938.

been ground paper-thin against the track.

In this year, the Chicago Cubs pulled one of the fanciest alibis known to baseball, after losing the World's Series to the Detroit Tigers with a score of 4-2. The Cubs said that they lost because, during the second game of the Series, the umpire berated the whole team, completely demoralizing them. Before the first million dollar gate since the Dempsey-Tunney fight in 1927, Joe Louis took Max Baer to a terrific cleaning in four rounds.

Wiley Post and Will Rogers, on a vacation trip, landed their plane on a river near an Eskimo camp ten minutes from Point Barrow, Alaska. As they took off, their engine failed at an elevation of 50 feet, and both men were killed.

A general strike paralyzed Terre Haute for 48 hours, but no one seems to have acquired any advantage from it.

The old gag about the man who bid no trump holding 13 spades in a bridge game actually came true in this year of 1935.

1936

After a campaign outstanding for its acrimony on both sides, Franklin D. Roosevelt was elected, in 1936, by the most enormous plurality ever known. Alfred Landon, the Republican nominee, received 5 electoral votes from Maine and 3 electoral votes from Vermont, although his popular vote exceeded 17 million.

King George V of England died in January from a bronchial infection, and his eldest son, Edward VIII, automatically succeeded to the throne. In July, the name of Wally

Simpson began to be coupled with that of the new King, and in December the King abdicated the throne, becoming Prince Edward, Duke of Windsor. Returning from Washington, D. C., by automobile, I heard the abdication speech, which was very impressive indeed—much more so, in fact, than has been the Duke's conduct in the past four years.

The Revolution in Spain became a real war in 1936, and several other European countries participated under cover.

Howard Hughes flew from Burbank, California, to Newark, New Jersey, in 9 hours, 25 minutes, 10 seconds elapsed time.

The German Zeppelin Hindenburg, nearly twice as large as the Graf Zeppelin which was so impressive in 1929, began regular passenger service between Frankfurt, Germany and Lakehurst, New Jersey.

Lou Meyer became the first three-time winner of the Indianapolis race, setting a record of 109.069 miles per hour. Much to his own surprise, Max Schmeling knocked out Joe Louis in the 12th round of their match for the championship.

In Dallas, Texas, an attractive widow sued her suitor, asking for \$5,000 damages for ribs fractured during an embrace that was, perhaps, too enthusiastic; and in Wisconsin, a ber 1907, explaining that that was the year in which his mother-in-law had died.

1937

In 1937, Franklin Roosevelt became the first President of the United States to be inaugurated in January. In February, he proposed the notorious modification of the Supreme Court set-up. Had his proposals been accepted, he would have been empowered to name six new justices to the Court, which would have given him a majority, and

which might have made no-one-knows-what changes in our legal system. The country, violently and precipitately aroused, stormed the halls of Congress with protest, and the proposal was defeated.

The younger brother of the Duke of Windsor was crowned George VI of the British Empire, and the little girl who was born in 1926 became Princess Royal and heir to the throne.

John D. Rockefeller died less than two months before his 98th birthday.

Amelia Earhart was lost without a trace during a flight between New Guinea and Howland Island.

The sit-down strike, used for the first time in the automobile industry, spread like an epidemic to such an extent that, in two or three instances, even domestic servants sat down in kitchens and refused to work or to permit their mistresses to get dinner.

Wilbur Shaw drove the Indianapolis race at an average of 113.58 miles per hour to beat Ralph Hepburn by 20 yards. War Admiral won the Kentucky Derby; the Yankees defeated the Giants 4-1 in the World Series; Joe Louis captured the heavyweight crown when Braddock succumbed in the 8th round, and then two months later outpointed Tommy Farr in a 15 round go.

George Eyston drove an automobile at 317 miles an hour on the Salt Flats.

The second New Deal was in full swing, and the San Francisco Golden Gate Bridge opened. A Kansan exhibited a pelt to prove that he had found two wolves fighting in his front yard for first place at his door.

The great Zeppelin Hindenberg, coming into a landing at Lakehurst with a large passenger list, suddenly burst into flames. Probably no more dramatic motion pictures have ever been made. Newsmen, photographers, and news reel photographers were covering the event, as was one broadcasting company. It was purely routine in the beginning; but suddenly a small flame shot from the tail of the ship, and in a matter of 10 to 12 seconds the whole body of

the ship, filled with hydrogen, was a roaring inferno. Less than a hundred feet from the ground when the fire broke out, the big balloon fell slowly enough so that people were not seriously injured by the shock; but nearly all were burned and a few had broken bones. Men and women with flaming clothes ran or crawled away from the wreckage. As the ship began to fall, the ground crew, momentarily panicked, turned tail and fled; but before they had run fifty feet, most of them turned and dashed back to aid in the rescue work.

1938

DURING the Indianapolis race which was won by Floyd Roberts who was killed in the 1939 race, a spectator, sitting on an improvised stand on top of a truck, died without ever knowing what had happened when a tire flew off a racer and struck him full in the face, decapitating him instantly.

In New England a nautically minded householder ordered a barometer by mail from Abercrombie & Fitch in New York. It arrived in one morning's mail, and the purchaser enthusiastically unwrapped it. Inspecting his newly-purchased gadget, he noted that the forecasting hand was apparently stuck on "hurricane". Neither shaking nor cursing corrected the defect; so he sat down and wrote a very hot letter to Abercrombie & Fitch. Wanting to be sure that they received his letter as quickly as possible, he walked down town to the post office to deposit his letter. By the time he got back, the barometer was gone, along with his house, which had been swept away by the unprecedented hurricane which strewed wreckage across almost the whole of New England in 1938.

Until 1938, I had done almost all

of my traveling on the ground, because of Mrs. Hood's distrust of air transportation. In 1938, United Airlines and Trans-Continental and Western Airlines offered free trips for wives. With some trepidation, Mrs. Hood agreed to join me on a trip east.

I was later told by officials of the line that the pilot and the co-pilot on that particular trip had both remarked that it was the roughest trip in their experience.

I had a lot of fun going through the old magazines and digging up the dope for this dissertation. I had a lot of fun dishing out the small portion of it for which I had time at the commencement exercises in 1939. But can you imagine what consternation I would have caused if I had tried to stretch the time allotted to me sufficiently to talk all of this during those commencement exercises?

It has been fun putting it down; I hope it has amused you and has appealed to you as a "different" kind of history.

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CAMPUS SPORTS

(Continued from Page 20)

History of Rifle Club

The early records in the *Technic* of the Rose Rifle Club started in the January, 1918, issue, during the World War. The Civilian Marksman-ship Division of the Militia Bureau of the War Department authorized the forming of a rifle club for each company of the Rose Militia. The clubs were formed for the purpose of giving rifle practice to every stu-

dent as a branch of military training. Rifles, ammunition, and equipment were furnished by the Militia Bureau.

Under the leadership of Professors Peddle, Wischmeyer, and Stock, the rifle club was well organized and by 1922 had 14 members. Warrant Officer Kearns, who was coach of the Rifle team until 1939 was also affiliated with the club at that time and was one of the 14 men.

The year 1928 saw an appreciable enlargement of the membership with almost one-fourth of the student body belonging to the club. Preliminary training was given on the outdoor range and eliminations began when the small-bore range was opened. The club was divided into ten man teams and shoulder-to-shoulder matches were held at school. That year rifle marksmanship was recognized as a minor sport and letter sweaters were awarded to nine team members. Nineteen twenty-eight was also the first year that Robert Prox medals were awarded to the three men with the highest

all-season scores.

During 1930 the rifle club entered its first postal matches with numerous universities and colleges throughout the country. It was at that time that the Fort Harrison Post No. 40 of the American Legion first gave medals to the three men showing excellence in marksmanship, and the Frances Gulick Shoulds Awards were also given for achievement in marksmanship.

An insignia for members placing on the R. O. T. C. Fifth Corp Area Intercollegiate Match team was first awarded in 1936. The shield is given for a member's initial year and each year after a star is added.

In 1938 the club entered the National Rifle Association, the constitution being rewritten to comply with certain specified requirements of that body. Warrant Officer Kearns, who had been with the rifle club more than 15 years was replaced in 1939 by Sergeant Burgess who is now the present coach. That same year the indoor range was enlarged to afford double the accommodations.

For 23 years the Rose Rifle Club has been one of the popular clubs on the campus. This last year the interest was increased by the varsity team competing in the National Intercollegiate Rifle Matches at the University of Chicago.

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AROUND THE CAMPUS

(Continued from Page 17)

fore the branch but have had valuable experience in preparing and presenting them.

A. I. Ch. E.



The Rose Polytechnic Institute chapter of the American Institute of Chemical Engineers was founded in March, 1937. The inauguration banquet was held in the Stevens restaurant with Dr. John White, former head of chemical engineering at Rose and Dr. James R. Winthrow, head of the Chemistry Dept. at Ohio State University, as the guest speakers.

Since that time the chapter has grown and prospered until today it is one of the outstanding organizations on the campus. Each year the A.I.Ch.E. has an annual banquet at which some outstanding man in the chemical field is the principal speaker, and these talks by these eminent men have been well attended by the student body of Rose. A list of the men who have spoken at the annual banquets follows: 1938—F. B. Langreck, assistant Vice-president of Monsanto Chemical Co., St. Louis spoke to the group. In 1939 Mr. Kirkpatrick, Editor-in-Chief of the magazine *Chemical and Metallurgical Engineering* was the guest speaker. In 1940 Dr. J. V. N. Dorr, president of Dorr Co. spoke. At the most recent banquet of the chapter, held in March, Col. Adelno Gibson, Chemical Officer of the Second Army of the U. S. A. spoke to the

group on the timely subject "Chemistry and War."

Throughout the year the chapter has presented various lectures and papers by its members to the group and has invited the freshmen of Rose to attend. These papers have all dealt with some phase of the chemical world and have been well received.

The counselor for the Rose chapter of the A. I. Ch. E. is Dr. Ralph K. Strong, who has very ably guided the chapter over its rough spots. Honorary members of the A.I.Ch.E. at Rose are Harvey L. Comins, Carl W. Frerichs, Dr. John White, Fred-eric A. Henney. The officers for the coming year are as follows: Chairman, Thomas E. Douds, Jr.; Vice-Chairman, William G. Leedy; Secretary-Treasurer, Wayne L. Loving; Sergeant-at-Arms, Paul E. Price.

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RESEARCH AND DEVELOPMENT

(Continued from Page 15)

the drying section. The application of the positive vacuum separator principle is entirely new. The developing section is driven by the printer, and is synchronized to operate at exactly the same printing speeds.

Flying Cameras

Some months ago, at a photographic board meeting, ranking officers of the U. S. Army Air Corps, experts on the application of aerial photography to combat, had before them considerable information citing what the European air forces were doing with cameras. Members of the board, realizing that the United States must enlarge its combat photographic service, sent a strong report to the Chief of the Air Corps, urging expansion of the camera corps beyond anything dreamed of before.

Those who urged the building up of the photographic service have received the answer in the form of a

fleet of ultra-modern "flying cameras," the latest development in aerial military photography. The first of these planes have been delivered and formed into the First Photographic Squadron—a unit unique, in most respects, in the world's air forces. These planes were built for the sole purpose of taking military pictures, and are assembled in units which can be set roaring out to bring back within a short time a set of photographs covering nearly 50,000 square miles.

The squadron consists of 15 planes, designated by the Army as Type F-2. They are twin-engined Beechcrafts, Model 18S, built by the Beech Aircraft Corporation. Through sliding doors in the belly of the plane, the lenses of two cameras point earthward. In the top of the cabin and in the side door are panels which can be removed so that hand-held cameras may be projected. There are special yokes which fit in the place of the panels, lined with sponge rubber so that the camera can be rested on them. In the tail of the plane is a small darkroom, where films can be developed or film magazines reloaded.

The plane cruises at around 200 m.p.h. and has a ceiling of 25,000 feet. Besides the pilot and navigator, two and possibly three photographers can be accommodated, but no armament is carried.

The ship is extremely steady—having been built for stability rather than maneuverability — and holds its course with minimum attention from the pilot. Since these planes

are quite often used in mountainous areas, they have been built for short take-offs and landings in small fields.

The photographic plane was designed to accommodate any of the cameras which are standard with the Air Corps, including the new color cameras. But it is especially well suited to carry the huge T-3A mapping cameras. In reality, the T-3A is two cameras which are mounted in tandem on the floor of the plane. The center lens of its 10 matched lenses shoots straight down while the others go off at angles—some as much as 45 degrees. Near the cameras is a central control box which produces the electrical impulse that opens the lens. All ten lenses must open at exactly the same split second, since the difference of even 1/500th of a second in any one of them would spoil a shot made from a speeding plane.

Reasonably clear weather is requisite for mapping work. Cloud conditions determine the altitude at which the plane can fly, and the altitude in turn determines the focal length of the camera to be installed. Precise instruments enable the plane to be flown in perfectly parallel strips a hundred miles long at a constant height. The flying camera can cover 80 miles on a single flight with one load of film which can record up to 3000 square miles.

The plane can also mount the Army's K3 single lens mapping camera using a 24-inch focal length lens for work at altitudes up to 25,000 feet. Often mounted beside this is another camera, the K7C. This is a spotting camera, also with a 24-inch lens, used in reconnaissance to picture the characteristics of some special piece of terrain, to record troop movements, or to expose camouflage.

The flying cameras are able to seek protection in two ways—high

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altitude and night flying. The development of "Big Bertha" cameras makes it possible for pictures to be taken from five miles up, but haze conditions often interfere. To combat this, the Army employs an infra-red film which pierces the haze. For night photography, heavy flash-powder bombs are used. These are controlled by time fuses, set so the powder will explode at a certain interval after leaving the plane. The flash trips an electrical device opening the camera shutter.

Camouflage must be very good if it is to be concealed from the camera. Only natural camouflage—cut limbs, leaves, etc.—will look natural in a photograph, and this will have a false appearance as soon as it begins to get dry. Also, the development of color cameras makes the detection of camouflage increasingly simple.

It is easy to see how dependent we would be upon this important instrument of observation and mapping should this country be involved in a war in defense of this hemisphere.

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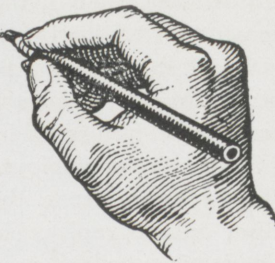
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Fraternity Notes



Alpha Tau Omega



The Indiana Gamma Gamma chapter of Alpha Tau Omega fraternity was founded at Rose in 1893.

In the school year of 1892-1893 Brother F. E. Smith entered Rose from the Beta Beta chapter at Alabama and immediately applied to the central fraternity government for a chapter at Rose and Indiana Gamma Gamma was founded on Nov. 15, 1893.

Brother Smith surrounded himself with a number of the outstanding men at Rose then. They were as follows: W. O. Munday, W. S. Speed, L. E. Troxler, F. F. Sinks, H. T. Liggett, W. R. Sanbor, and G. Williams, Jr. These men reflected credit on the chapter and were all good students, as well as being socially inclined. The first meetings were held in the rooms of the various members until the fall of 1894, when the brothers managed to rent a room in a building on 7th St. between Wabash and Ohio. The chapter meeting room moved from place to place until 1902 when the fraternity moved into a house on N. 8th St. Between the years 1906-1912 the chapter

moved several times into houses on N. 7th, 8th, and 9th Sts. During the following years several more moves were made until in 1927 the fraternity moved into the house at 63 Gilbert Avenue, where it is located today.

In the fall of 1918 the membership of the fraternity was rather small due to the war. An S.A.T.C. unit was established at Rose, and a number of the men entered the service and received commissions. In 1919 the chapter assumed new life with a chapter roll of 28 men and an excellent house on Chestnut St. where the fraternity remained for a number of years. Since they have bought their own house, the fraternity has enjoyed a normal growth and at the present writing lists 67 men in the chapter.

Lambda Chi Alpha



Lambda Chi Alpha Fraternity was founded by a group of law students at Boston University in 1909.

The group was known locally before that time as the Cosmopolitan Law Club. Since its founding, the fraternity has grown

to its present size of 107 active chapters, being one of four fraternities having more than 100 chapters. As the fraternity is very young, these figures show the results of a very well operated national organization.

The chapter at Rose originated as the well-known P. I. E. S. In 1925 this group was chartered as a chapter of Theta Kappa Nu Fraternity. In September, 1939, this group and Lambda Chi Alpha merged and took the name of the latter. In this way the chapter at Rose became the Theta Kappa Zeta chapter of Lambda Chi Alpha.

In September, 1940, the chapter opened a house after having been without one for some time. Theta Kappa Zeta takes pride in the development of the chapter thus far and feels that there is much to be looked forward to in the future.

Sigma Nu



Beta Upsilon chapter of Sigma Nu was the second of a trio of new Indiana chapters established within a period of less than

five weeks in the spring of 1895. Howard Schurman, Beta Zeta, Purdue, conceived the idea of the chapter at Rose and became its founder. Schurman had attended Rose before entering Purdue, and after his initiation into the fraternity, became eager to share its privileges with some of his former associates there. Favorable action was taken by the high council and Beta Upsilon chapter

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was installed on May 25, 1895, in the hall of Beta Zeta at Lafayette, Indiana. The five charter members initiated on that occasion were A. H. Meyer, J. B. Haney, H. T. Patterson, E. Walser, and J. J. Kessler.

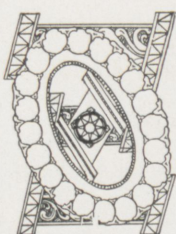
The affiliation of J. Robert Riggs, of Zeta chapter of Central University of Kentucky, created the alumni contact upon which Beta Upsilon depended for inspiration and guidance during the early years of its history. During these years the name of Bob Riggs, counselor and exemplifier of Sigma Nu ideals, was written indelibly in the records of this chapter.

Brother Fred J. Niccoson became alumnus adviser to the chapter in 1933, and in the spring of 1938 Professor E. A. McLean was made faculty adviser. It is to these men that the chapter is largely indebted for the wise counsel it has received during these past years.

Activities for this school year have included numerous open houses, regular monthly dinner meetings, and a hay ride. Actives and pledges of the chapter will particularly recall the hay ride, for it rained that night and the proposed excursion was forcibly converted to an open house. On March 3, the annual election of officers was held, and Brother Schull turned over the president's chair to the new commander, Clay Riley. The Sigma Nu state dance was held

March 22 at the smart Columbia Club in Indianapolis, with music by Warpy Waterfall. April 14 the chapter pledged A. Tucciarone and W. Theising. Brother Graves from Pennsylvania Delta Delta was also affiliated at that time. Concluding the year's activities was the annual Hoosier Rally at Epsilon Mu chapter at Butler University in Indianapolis.

Theta Xi



Early in 1906 there was an effort made by a group of Rose men to have a chapter of Theta Xi fraternity founded at the Institute. There were only five men ready to join and the minimum number for application to the fraternity was six men, so the fraternity did not become a reality until the spring of 1907. On March 30, 1907, the six men, who were the first members of the Rose chapter, traveled to the Theta chapter at Purdue and were established as the Kappa chapter of Theta Xi fraternity

at Rose Poly. The men initiated were Messrs. Canon, Scharpenberg, Zambrano, Kerrick, Buckley, and Sievers.

The first meeting was held in Mr. Zambrano's room on April 6th, 1907, and the second floor of a house on N. 9th St. was secured for future meetings. Since that time the chapter has resided in many different houses in town but has had the ill fortune of having two of the houses to burn, forcing the chapter to move. Practically all of the fraternity furniture was lost in these fires and it has been as the result of continual hard work on the part of the members of the fraternity that the Theta Xi house today is such a modern and well furnished place. The house is located at 1701 Chestnut St.

In 1937, however, the fraternity was rejuvenated and with a nucleus of one active and four pledges, started out to become one of the outstanding chapters on the Rose Campus. Since that time Kappa of Theta Xi has known normal growth and prosperity until today it boasts of 28 active members.

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INDIANAPOLIS, IND.

MANUFACTURED YARNS

edited by W. Alan Winslow, '44

I give some reasons here below
Which I am sure must prove
That science teaches men the way
A maiden's heart to move;
And if this theory is correct,
The girls can learn at last
Why Polytechnics flirt so much
That people say—they're fast.
In books on Trigonometry
We all begin with "sines,"
The "introduction" quite o'erlooked
Or left for future times.
In conic sections afterward
We study "graceful curves"
In which "i-lip-tic" functions play
A part that upsets nerves.
Girls are "magnetic," so we're told,
And though your heart be steeled
The "lines of force" will hold you
fast
If once you're in the "field".

Said Adam to Eve, "My dear will
you view

With me the strange animals kept
in our Zoo?"

Eve sobbingly answered while comb-
ing her hair,

"Alas, my dear Adam, I've nothing
to wear."

Rose Technic
March, 1893

When by experiment you've learned
Dynamics' great receipt,
Always apply your "force" with
"arms,"

The "couple" is formed complete.

Rose Technic
November, 1894

We leaned across the friendly stile,
The gentle moonbeam lit her face;
The sweet influence of her smile
Annihilated time and space.

Quoth he: "The breezes kiss your
cheek;

O happy, happy, breezes they!"

Sighed she, this maiden so petite,
"Who gave them a monopoly?"

Rose Technic
January, 1895

Father: "Willie, this hurts me
more than it does you."

Up-to-date child: "Corporal pun-
ishment is surely sufficient indignity;
kindly spare the insult to my in-
telligence."

Rose Technic
January, 1911

Society Dame: "James, you are the
slowest chauffeur I ever had."

James: "I'm naturally a bashful
man, ma'am."

Rose Technic
October, 1912

Father (to his old friend's pretty
daughter): "Good-bye my dear. I
won't kiss you; I have such a cold."

His Son (with alacrity): "Can I
do anything for you Father?"

Rose Technic
January, 1913

"Could anyone come between us,
love?"

He asked in accents tender.

"Well," spoke the young brother
under the lounge, "They'd have to
be awfully slender."

Rose Technic
November, 1914

Laugh and the teacher laughs with
you,

Laugh and you laugh alone,
First, when the job is the teachers'
Second, when the job is your own.

Rose Technic
January, 1917

"I'd like to be the cigarette
In some fair damsel's hand,
For every time she took a puff-
Um-m-m, you understand.

Rose Technic
May, 1917

The solemn-looking man remarked
to his friend: "I hope that you are
not unmindful of the fact that we
all have a duty to perform. We must
combat the unrest which exists in
the world."

"I am doing my very best," said
the other.

"How?"

"I manufacture mattresses."

Rose Technic
May, 1941

"What kind of dress did Hazel
wear at the party?"

"I think it was checked."

"What kind of a party was it?"

Rose Technic
January, 1933

G-E Campus News



JUNGLE JIVE

MISSIONARIES working among a newly discovered tribe of savages in Netherlands New Guinea, which has many times been called one of the "earth's remotest spots," had a strange experience.

They invited natives into their bamboo hut and turned on their short-wave radio. The tribesmen looked at one another in frightened amazement. Rev. C. Russell Deibler, one of the missionaries, says this of what happened: "As they heard voices coming from the receiver, they crouched over close and jabbered back, utterly bewildered where the strange voice was coming from."

The missionaries wrote their experience in a letter to Station KGEI, G.E.'s short-wave station in San Francisco, which sends its radio signal into Asia, using special directional antennas.



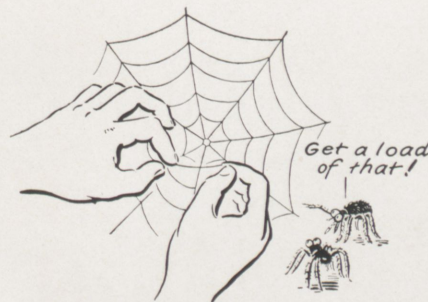
PRESTO!

THREE tiny 1000-watt mercury lamps, mounted in the new television floodlight de-

veloped by G-E laboratory engineers, yield as much light as 225 ordinary 60-watt bulbs. For the same amount of illumination these powerful little lights produce only one-fourth as much heat as do incandescent lamps. Water cooling dissipates much of the heat and so makes possible the very small size.

The new lights are equipped with motors and gears for remote control, so that they can follow the movements of studio performers.

These tiny lamps were developed at G.E.'s Lamp Department at Nela Park, Cleveland, which each year selects promising young engineering-college graduates from "Test" to train them in the lighting game.



SPIDERCRAFT

COULD you spot-weld wire one quarter as thick as a human hair?

That's the problem G-E engineers faced in producing filaments for thermocouples, those little super-sensitive devices used in measuring high-frequency alternating currents or voltages. These dainty filaments are $1/2000$ of an inch in diameter—so small that they are almost invisible—and have to be welded into a "K" shape.

The work is so fine that it must be done under a microscope, using a pair of tweezers to hold the wires.

At Schenectady there's a whole section of the G-E Industrial Department devoted entirely to welding. Practically all the men in this section are graduates of the G-E Test Course. General Electric Company, Schenectady, N. Y.

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