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The Rose TECHNIC

MONTHLY PUBLICATION OF THE STUDENTS
OF ROSE POLYTECHNIC INSTITUTE

MAY
1930

VOL. XXXIX TERRE HAUTE, IND. No. 8

Member of Engineering College Magazines Associated

Equipping A Cathedral of Learning for the University of Pittsburgh

Nine years ago the University of Pittsburgh, then a hundred and thirty-six years old, faced an urgent need for larger quarters. To extend its restricted campus was almost out of the question, for a city had built up around it. The logical direction for expansion was into the air.

American business had long before faced the same situation, and met it with the skyscraper. But no conventional business building would satisfy here. Chancellor John Gabbert Bowman envisioned a Cathedral of Learning, an edifice that would express the essential self of the steel center of the world, a structure with more power, more spirit of achievement and reverence in it than had ever before been attempted. A great architect put his soul into the making of the plans. Leading suppliers were called on for the materials for the realization of Chancellor Bowman's dream.

To Westinghouse engineers came the assignment of providing the electrical and elevator equipment for this great structure. Recognized as a great clearing house for electrical development, the Westinghouse organization draws interesting assignments in every field of human activity.

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Purdue University, '22
Engineer of Mechanical Design

R. A. GAUT
Pennsylvania State College, '25
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University of California, '26
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THE ROSE · TECHNIC

PUBLISHED · MONTHLY · BY · THE · STUDENTS · AND · ALUMNI · OF · ROSE · POLYTECHNIC · INSTITUTE · · ·

VOL. XXXIX. MAY, 1930. Number 8

TABLE OF CONTENTS

Engineering College Magazines Associated

Mr. Williard V. Merrihue, Chairman, 1 River Road, Schenectady, N. Y.

MEMBER MAGAZINES

Armour Engineer
Auburn Engineer
Colorado Engineer
Cornell Civil Engineer
Illinois Technograph
Iowa Engineer
Iowa Transit
Kansas Engineer
Kansas State Engineer
Marquette Engineer
Michigan Technic
Minnesota Techno-log
Nebraska Blue Print
Ohio State Engineer
Penn State Engineer
Princeton News Letter
Purdue Engineer
Rose Technic
Sibley Journal
Tech Engineering News
Pennsylvania Triangle
Oregon State Technical Record
Wisconsin Engineer

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Be glad of life because it gives you the chance to love and to work, to play and to look up at the stars; be satisfied with your possessions but not contented with yourself until you have made the best of them; despise nothing in the world except falsehood and meanness, and fear nothing except cowardice; be governed by your admirations rather than by your disgusts; covet nothing that is your neighbor's except his kindness of heart and gentleness of manner; think seldom of enemies, often of your friends.

—Dr. Henry Van Dyke.

THE SHOW

Prof. C. C. Knipmeyer, General Show Chairman

THE second biennial Rose Show is now a matter of history. It is a bit of history pleasant to contemplate. The show was carefully planned, enthusiastically prepared, and skillfully executed. By the public it was loyally supported, and it won many new friends for Rose.

The show needed no one to talk it up this year. The success of the first one was deeply impressed on the minds of our present juniors and seniors. There was no denying them. Friends, far and near, early in the school year began making inquiries. Freshmen and sophomores wanted to exercise their talents. Even the staid and sober-minded faculty felt the thrill and the urge.

The organization was formed and made ready for work. The exhibits committee was first to function. Very gradually a list of some two hundred and fifty exhibits was compiled and assigned to students. This list was studied long and carefully and many additions, subtractions, and modifications made before the exhibits were definitely accepted.

Other committees also started promptly. The program committee studied cover designs and size and arrangement of pages. The selling of advertising space was another task to be faced. The publicity committee made its plans for newspaper articles, including pictures, and talks before high schools, luncheon clubs, and other organizations. The placard and signs committee worked with the publicity committee on posters for advertising and, in addition, got ready to paint and letter the hundreds of signs necessary to number, name, and explain the various exhibits. The power and light committee became familiar with all power and light circuits and got supplies so that all power and light requirements could be satisfied. The work of the guides committee, tickets and reception committee, and decorations committee, from its nature, was put off till later, although the responsibilities were fully recognized.

Souvenirs of Rose Show Made in R. P. I. Shops

Many committee meetings were held, and joint meetings were held every week to exchange ideas, report progress, and definitely fix plans and policies. At these weekly meetings the chairmen of senior, junior, sophomore, and freshmen groups in each department, architectural, chemical, civil, electrical, mechanical, military, physics, and shops, were expected to be present as well as the other committeemen. These meetings were very effective in settling major problems and in keeping progress up to its proper stage.

As the weeks went by enthusiasm grew. Continual study of the problems of each exhibit brought new possibilities with a consequent increase of interest which reached its peak just before time for the show. It was most inspiring to see practically one hundred per cent of the student body bending to the task of making the show a success in every detail. Such loyalty and concerted effort are rarely found anywhere.

In spite of the rain the attendance on the first night was over fifteen hundred. The crowds were well distributed over the big building by the guides, who, receiving the people on the elevated runway, could easily direct them to the least crowded department.

All of the four timed demonstrations had their hours listed on a separate handbill so that they would not be overlooked. These timed demonstrations were as follows: sound picture demonstrations in the assembly room, photo-electric cells in room A, high frequency and ultra-violet rays in the physics lecture room, and chemical phenomena in the chemistry lecture room. These demonstrations were especially appreciated.

On the first night there were some difficulties with the power. Though our own generating equipment was relieved of more than half the load by connection with the power company's lines, still the demand was too great for the school equipment. By raising boiler pressure, strengthening fuses, setting up circuit breakers and transfering more load to the power company's supply, there was no further trouble experienced.

The second night brought out a total of about twenty-five hundred people. This crowd, although it thoroughly packed the big building, was extremely orderly, respectful, and appreciative. The third night, being Saturday, prevented people who wanted to shop from coming, yet furnished some twenty-one hundred, making the total attendance well over six thousand.

An analysis of the crowds showed, of course, many townspeople interested financially, not in science and engineering, but in the school and the students in the school. These people were dazed after passing a hundred exhibits. Their sensibilities were dulled and after a time they ceased their efforts to comprehend all they saw. They admitted they learned much, but their most vivid impression was that there was much on display that they could never comprehend. Others, with some basic knowledge of science, planned their inspection trips among the exhibits systematically. Many of these, realizing the educational value and the magnitude of the show, came two and even three nights.

Many hundreds of out-of-town people were noted. Most gratifying of all was the great number of high school students from neighboring towns. The interest manifested by scores of high school teachers and principals as indicated by their attendance and favor-

(Continued on page 216)

The Student's College Record as a Forecast of Success

Colonel R. I. Mees, Vice-President, A. T. & T. Co.

BUSINESS and industry are seeking, in constantly increasing measure, for men of trained intelligence. Because of the elimination process which goes on continuously through our educational system, industry looks to the colleges and universities of the country for ability and high capacity, and because many of our largest industries have to do with the applications of science in their production, engineering graduates of high quality are eagerly sought.

What are the fundamental characteristics which the employer expects to find in a graduate? Put in its simplest form, he expects to find a man able to think and to work. Contributory to these two small incentives, engineering education should, and does, develop trained intelligence, analytical ability and sound judgment based on fundamental knowledge.

Life on the campus and specific training also develop that important element necessary to success—co-operation in human relationships. A college education does much to assist the student in clarifying his life's objective, and in a well organized curriculum, such as engineering, in his senior year he has come a long way toward determining a specific career. All his college experience should develop power, vision, and clear thinking.

We may well ask ourselves whether there are elements in college experience which may indicate future success in life. If they could be discovered, they would be of the greatest value to both teachers and employers as indices of ability and fitness for the many fields of endeavor. As an indication of interest, the most significant, no doubt, are the courses of study pursued by the student. A well ordered curriculum, aimed at a definite objective, is surely one of the best evidences of specific interest. Aside from the evidence of good judgment inherent in carrying out a well planned curriculum, consideration must be given to other elements in the student's experience, and those naturally are the time-consuming factors, namely, academic work, participation in extra-curricular activities, and the necessity on the part of many students, of contributing out of earnings to college expenses.

Many, no doubt, have read an article by President W. S. Gifford of the American Telephone and Telegraph Company, entitled "Does Business Want Scholars?", published in Harper's Magazine for May, 1928. The article presented a study of the relation of scholarship to progress in the Bell System. With fine co-operation from the colleges, scholastic records were obtained in four groups—one, those students graduating in the first tenth of their class, two, those graduating in the first third but not the first tenth, three, those graduating in the middle third of their class, and four, those graduating in the lower third of their class. The records of 3,806 men were studied.

In examining the progress of these graduates, the index of progress used was that of salary advancement. In a large organization like the Bell System, salary is an unusually accurate indication of responsibility and authority. Progress of several scholarship groups was plotted on the basis of salary in relation to years since graduation, and medians of each group used for bases of comparison. It is hardly necessary to say that the medians used represent the average of performance of men in the different groups, and that records of individuals in each group vary very widely from the averages. This means, of course, that there are individual exceptions—men who were poor students who are succeeding well, and men who were good students, succeeding less well,—but on the whole, the evidence is very striking that there is a direct relation between high marks in college and salary progress afterward in the Bell System. As an illustration, take the median salary of 498 men who stood in the first tenth of their class. At ten years after graduation, the median salary of this group was something over 100 per cent more than the median salary of the entire group; at twenty years after, it was about 30 per cent more than that of the median of the entire group; and at thirty years after, was 55 per cent more than that median.

Without going into further details, the median of the first third at thirty years after graduation, becomes 20 per cent more than the median of the entire group; the middle third at thirty years, about 5 per cent less than the general median; and the lower third at thirty years becomes fully 20 per cent below the median for the whole group studied.

It must be emphasized of course, that this study pertains to but one industry, but does it not fairly indicate that scholarship has some predictive value for success? This is a very brief summary of the conclusions in Mr. Gifford's article, and the charts accompanying it are interesting to study.

Studies of the influence of extra-curricular activities are very inconclusive. The progress of a substantial number of graduates was studied in relation to their participation in extra-curricular activities, on the same basis as scholarship. They are divided into three groups—those who had "substantial achievement," "some achievement," and "no achievement," and also as to type of campus activity undertaken, such as literary and editorial, managerial, social, athletic, and musical or dramatic. While definite conclusions could not be drawn from an analysis of the evidence, a few generalizations might be mentioned.

It can be safely stated, it is thought, that participation in extra-curricular activities has not as much good influence on the student's future as a good record of scholarship. As an illustration of this, in scholarship we find that men in the first tenth of their class, who constituted some 15 per cent of the group studied, obtained a median salary of 40 per cent more than the median of the whole group at twenty-five years out of college. Men of "substantial campus achievement" constituted 20 per cent of the group studied at twenty-five years out of college, and obtained a median salary 20 per cent above the median

(Continued on page 214)

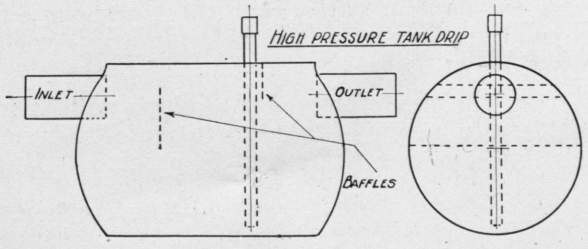
Laying High Pressure Gas Transmission Lines

Orville Evans, c., '31

THE pipe and equipment used in laying the main are, of course, very important. First on the list comes the ditcher. There are many types of ditch digging machines, but when "digger" is mentioned the writer pictures to himself the huge contraption manufactured by the Barber-Greene Co. with which he worked all summer. It is about eleven feet high. The digging part consists of large, very heavy buckets attached to a revolving chain. These deposit their loads of dirt upon a revolving belt which casts the dirt off to one side. The digger's means of locomotion is exactly like that of a caterpillar tractor.

The pipe used was lap-welded steel pipe of forty foot random lengths. It was ten inches in side diameter and about half an inch in thickness. Each length of pipe was cleaned on the inside by a brush, then welded into the line. Next it was cleaned on the outside by the coating gang, and a hot preparatory coating was put on, completely covering the pipe. After this was dry the final coat, consisting of a tarry bituminous substance called "bitumastic," was poured hot upon the pipe. This coating is to protect the pipe against rust and corrosion. It hardens to a flinty, glass-like consistency and great care must be taken in lowering the pipe into the ditch to prevent this coating from being chipped.

A tank drip is, as the name would indicate, a large tank used to collect the water in the main. In size and shape it resembles nothing more than a cylindrical heating stove, laid horizontally. The water from the main collects in the drips. There is a riser, a pipe with a valve, connected to the bottom of the tank which rises to the top of the ground. The pipe walker opens these valves every so often, and the pressure in the main blows out the water.



A rod drip is simply a three-quarter inch pipe connected to the bottom of a low place in the line for disposing of the water collecting in the low places in the pipe. These drips were placed at intervals, at the low points in the line. The tank drips were, by specifications, stationed not more than 5,000 feet apart. The rod drips were placed at the low points in the line and spaced about 500 feet apart. They were all coated with preservative just like the pipe.

The valves installed in the line were 250 pound Merco-Nordstrum lubricated plug valves.

Now for the pipe-laying proper. The first task for the engineer on the job was to secure a profile of the job. This was done in the engineer's spare time by setting stakes every 100 feet and running levels to obtain the elevation of the ground.

To run levels a helper was necessary to drive stakes and hold the rod. Anyone who has ever run any levels can tell you that an experienced rodman is decidedly an asset. Whenever a mile or two of levels had to be run, it was necessary to break in a new man from the gang of laborers in the ditch. This was no pleasant task and required a great deal of time. A kick to the foreman about this brought a regular helper—for about two weeks—but his pride could not stand the change. He became so cocky he would not do anything else—was too good to work in the ditch. The foreman got tired of his attitude and put him back in the ditch, and the breaking in of rodmen again started.

The levels run, next the cut must be figured and marked on the stakes. On this job the main was paralleling the South Shore R. R. four feet inside the property line. The railroad specified that we must have four feet of cover from the top of their rail, making the ditch in some places ten or twelve feet deep. The foremen couldn't understand the specifications of the railroad and thought I was just trying to spite them. They raved around and we had a merry time, but the pipe went down just the same. The least cover we could have was a foot and a half. The pipe was not supposed to run level. It was run up to a high point and then down again to a low point. This was done so that the water would drain down to the low points where the drips were placed. All these things had to be considered when the grade was figured and the cut marked on the stakes. It was no easy job to run it right. The grade was usually about two or three inches per hundred feet, but sometimes the pipe ascended or descended as much as a foot in a hundred to avoid a deep cut.

After the stakes were marked, the ditcher dug the ditch roughly to grade. The gang, with shovels, followed the digger and finished the ditch exactly to grade. Then I inspected the coating on the pipe and checked the grade at the stakes with a rule. If both were O. K., the pipe was lowered into the ditch. The grade was then rechecked, this time with a carpenter's level. This I laid on top of the pipe at intervals to make sure the water would drain in the right direction.

When a section of pipe about 2,500 feet long was lowered into the ditch, blind ends were welded on to the ends and the compressors went to work. The pipe was pumped up to 100 pounds pressure and a time recording pressure guage was set on it and allowed to run over night. If the pressure drop did not exceed 0.25 pound for twelve hours, this section was O. K. and the next section was tested and so on.

This ditching didn't always run smoothly. We had to tunnel under railroad tracks, pavements, and so forth. We had to have permits from the various railroads and towns before we could bore under them. I had to have these permits on the job. I also had to notify the fire departments in the towns that the street we were boring under would be closed for a certain length of time. In one place it took a little over a week to bore under the Pennsylvania R. R.

(Continued on page 216)

The Story of the Airship

J. A. Barrett, m., '31

EXPERIMENTS with the principles of aeronautics were begun early in the eighteenth century. However, the Montgolfier brothers did not complete the first practical design until June 1783. It was a 35-foot paper bag inflated with hot air and smoke from burning straw, and it sailed away from the little French village of Annonay.

In August 1783, a Paris physician named Charles constructed and sent aloft a silk balloon of approximately 1,400 cubic feet capacity. In November of the same year a young man by the name of DeProzier decided to be the first man to make a balloon flight. In spite of the opposition of the king, he succeeded in sailing over Paris and landed safely. Two years later Blanchard, a Frenchman, and Dr. Jeffries, an American, made the first flight over the English Channel from Dover to Calais in three hours.

Since the days of these experiments the balloon has been improved and used in several wars for observation purposes, notably the French Revolution, the Civil War, the Franco-Prussian War, and the World War. However, these balloons rode with the wind and had no power to direct their course. As a result men began to experiment with the power-driven gas bags, giving us the airship.

The first airship was built by Henri Gifford, a French inventor. It was a dirigible 145 feet in length and deriving its power from a three - horsepower steam engine. Under favorable conditions it could attain a maximum speed of five miles per hour.

Experiments with the principles of aeronautics were begun early in the eighteenth century.

Modern lighter than air ships divide themselves into three types: the non-rigid, the semi-rigid, and the rigid.

Within the next few years airships will be invaluable as a means of transportation of men and goods, both in war times and in peace.

—The Author.

America's first airship, a non-rigid type of 20,000 cubic feet capacity, was built in 1908 by the late Major Thomas S. Baldwin. It was used in the Army Signal Corps for training purposes.

Though the modern airship had to wait for the discovery of gasoline, many experiments were carried on. The first all-metal airship was built by an Austrian named Swartz, who used a framework and covering of aluminum. It was destroyed in its first attempt to land. In the meantime Count Ferdinand Zepplin developed the idea of the rigid airship which bears his name. During this period various other kinds of airships of the non-rigid and semi-rigid types were also built.

Modern lighter than air ships divide themselves into three types, easily distinguished as the non-rigid, the semi-rigid, and the rigid. All of them mount into the air through the buoyancy of the gas in the bag.

NON-RIGID AIRSHIPS

Non-rigid airships, or blimps, were the earliest airships. They are the smallest, also the simplest, and least expensive form of airship. They are essentially motorized free balloons built to give better speed and have less air resistance. The engines are carried in a car on the lower side of the bag. In order to maintain the shape of the blimp and take care of the expansion and contraction of the gas due to heating and cooling, a small air balloonet is put inside the large bag. As the gas expands air is forced out of the balloonet and as it contracts it is pumped in. For military use the non-rigid ship is chiefly a field service unit. It can be deflated and transported with ease and is easily and quickly assembled. It is used for patrol duty, observation, photography, mapping, and detailed reconnaissance. In addition they are also used as training ships for operators of the larger ships, since the principles of landing, and taking off are the same. Under ordinary conditions a 230,000 cubic foot non-rigid ship has a radius for cruising of 500 to 1,000 miles and an air endurance of 18 to 24 hours.

THE SEMI-RIGID AIRSHIP

The semi-rigid ship was pioneered by the French and developed by Italian builders. It is distinguished from the non-rigid type by a metal keel and a metallic nose and tail, which take and distribute the stresses on the bag. Its metallic tail gives better bracing for rudder and fins so that it is more easily controlled. The control car and engine cars are attached to the keel. Because of its more rigid construction, it can be built in larger sizes and greater speeds obtained.

The first American built semi-rigid, the RS-1, was built by the Goodyear Tire and Rubber Co. at Akron and was launched from Scott field near St. Louis. It is the property of the U. S. Army Air Service. The RS-1 has a gas capacity of 719,000 cubic feet, is 280 feet long, has four 300 horsepower engines, a rated speed of 70 miles per hour with a cruising radius of 1,100 miles, and carries a crew of nine men. The metal used in the RS-1 was the new alloy, duralumin, which is remarkably light, non-rusting, and has the strength of mild steel.

The record of the semi-rigid ship is shorter than either the non-rigid or rigid, and its future in aeronautics is still to be determined, but it has shown great structural steadiness, dependable speed, and an impressive range of action. Experiments have proved that the semi-rigid ship can be utilized for airplane carrying. The plane is suspended from the ship by means of tackle and is merely pulled along.

(Continued on page 222)

Our Contemporaries—Carl E. Ehrenhardt

OUR list of contemporaries would certainly not be complete without the name of Carl E. Ehrenhardt, for he is a man whose achievements are many and whose reputation is such as to attract the envy of any undergraduate. Mr. Ehrenhardt is truly of the executive type. He always works quietly, and efficiently, never losing his temper even under the most trying circumstances.

Carl Ehrenhardt received his high school education at Wiley. He was president of the senior class at that school and was graduated with honors in scholarship. Since his enrollment at Rose in 1926, he has maintained a high scholastic standing having been awarded four Rea scholarships by the Institute in recognition of his splendid work. During his junior year he was among the few in his class who were awarded the coveted honor of election to Tau Beta Pi. During the past year he has been secretary of that fraternity.

The Rose Young Men's Christian Association has interested Carl since the beginning of his college career. He has taken an active part in the work of the "Y" and was vice-president of the organization during the year of '28-'29. He also took an active part in the camera club during his first two years.

Early in his college course Carl became interested in journalism and since that time has advanced to the highest of positions. In the 1928 Modulus he was responsible for the fraternity section. The following term, Carl was elected Alumni editor of the Rose Technic. It is due to his efforts that that section of the magazine showed such improvement. In recognition of his diligent work, the staff elected him Managing Editor for the senior year, and also sent him as a delegate to the National Convention of the Engineering College Magazines Associated. Under his guidance the Technic has prospered.

By virtue of Ehrenhardt's position on the Technic staff during the current year he has held a seat on the student council. The council has shown appreciation of his merit by electing him vice-president.

Mr. Ehrenhardt has participated in all of the social functions of the Institute. The junior prom committee solicited his services.

Carl is an Electrical and a member of the Rose Chapter of the A. I. E. E.

The Alpha Tau Omega fraternity is justly proud to have Carl as one of its members. Since his initiation he has overseen all of the social affairs and during his senior year has been at the head of the chapter. May he be as successful in the future as he has been in the past.

Prize-Winning Exhibit of 1930 Rose Show

Hoff and Hurst, c., '31

THE present line of the E. I. & T. H. railroad just west of Riley, Indiana, runs northwest down a steep grade to the bottoms of Honey Creek, through a small side valley. There it turns southwest following the creek valley for some distance where it curves again to the west. This is a circuitous route with several curves which make reduced speed necessary. The Riley cut-off was, therefore, a practical problem in railroad economics; by making the cut-off we could eliminate the seven curves putting in a one degree curve instead. We could maintain an even .5 per cent grade throughout, whereas the old line has grades as high as 1.5 per cent; and we could shorten the present line by about 2600 feet, the old line having a length of 14,500 feet. This cut-off would enable the railroad to run heavier trains more economically and raise the average speed thirty miles per hour.

The field survey of this project was made by the present sophomore and junior classes last summer during Professor Hutchins' survey camp. The traverses of the old line and the new cut-off center line were run, and profile and contours were taken along this new centerline. This fall the field data compiled during the summer camp were taken by the junior class and contour maps were made of the entire project. The profile was plotted, cuts and fills computed, and the necessary bridges and culverts were designed. A set of blue prints was made from these maps and from them the relief map traverse was laid out, the bridges built, and the ground moulded.

The box constructed to build the map in was twelve feet by five feet by ten inches. A scale of 120 feet to the inch horizontally and 20 feet to the inch vertically was used. Setting this box up, the old line and the new line were laid off to scale on the bottom of the box. The grades were laid off to scale on ¾ inch boards, using the bottom of the box as having an elevation of 375 feet. Then by sawing the boards out and anchoring them upright in the box, the grade of the track was obtained to scale. By sawing the edges of the boards on the table saw and spacing the cuts about every quarter of an inch, it was possible to show the ties in the track. Radio bus wire was used for track, the wire being soldered on to brass headed upholstering nails embedded in the ties. Next the clay was put in place, after laying off the old line in sections ten stations long. Thus the ground could be molded according to our contour maps by taking one section at a time. The outlying ground for which there were no contours was plotted by going down to Riley and sketching form contours

(Continued on page 222)

Published Monthly by the Students of the Rose Polytechnic Institute

The Rose TECHNIC

A Magazine Pertaining to Engineering and Allied Sciences

Member of Engineering College Magazines Associated

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The Show

THE great show is over and for this let us all be thankful, not only for the fact that it has passed but for its huge success. The Show is an activity dear to the hearts of all true Rose men. It represented the result of long and untiring labor in planning and carrying out the work, undying loyalty to Rose, and the hearty cooperation of all students and faculty members. The freedom enjoyed by the students in selecting their Show jobs was an incentive to greater effort, and the absence of discipline made the work more enjoyable. Let us at this time express our gratitude to the faculty for their help in making the show so successful.

The Senior Shoot-Up

NO one has yet expressed any objection to the manner in which the seniors conducted the nth annual shoot-up. Doubtless the graduating class enjoyed the event tremendously and took advantage of the opportunity to do a little extra studying before exams? Contrasted with the affair of two years ago, the morale of the activity seems to have been raised to a higher standard.

On the morning of May 2, 1928, Professor Faurot was conducting our class in Spanish in the usual manner and the day promised to be nothing out of the ordinary. Suddenly a terrific noise broke out, starting first on the run-way above the library and quickly spreading to all parts of the building. A group of seniors burst into the classroom with guns spouting flame. The recitation was over, for everyone was stricken with the fear of "hell fire" and dashed madly from the room. The building was so full of smoke and the noise was so deafening and continuous that we could scarcely see well enough or think accurately enough to find our way out of the building. When we finally gained the campus it was only to be pursued by another bunch of two-gun demons. We reached the dormitory about three puffs ahead of hi-jackers, rushed into one of the rooms, and locked the door. Although we were fired at through the key hole and under the door we suffered no casualties. From the window we could see many less fortunate individuals fleeing from formidable pursuers and gaining safety only when the ammunition of their assailants gave out. After some time the seniors, finding no more rhinies to scourge, mobilized their lost battalion and marched away from the university toward the village. Such is the history of the (n-2) shoot-up of the Senior Class of the Rose Polytechnic Institute.

What benefit could have been derived from all this foolishness? The event made history for Rose Poly, but the making of history for any institution, be it school, city or nation, is an unproductive enterprise unless actuated by more idealistic motives than mere horseplay. The 1928 shootup was a waste of time for the entire student body and faculty, a waste of money for the seniors and the Institute, a waste of energy, for everyone involved. The operating expenses of the Institute are about $300 per day. If the school is forced to discontinue classes for a day, $300 in cash has been wasted. A shoot-up is not worth this much to the seniors. Therefore, the 1930 Senior class is to be congratulated for not having had a shoot-up. They showed more intelligence and better judgment than have previous classes.

It will be recalled that the present junior class chose to forego the annual Hallowe'en tear-up, another indication of this improved attitude. The famous junior banquet was held, but although we can make no rash statements as to the high morale of the affair, we can assure you that no bad effects were experienced by anyone, and that the Institute has witnessed more notorious banquets in the past. These actions speak well for the entire student body and indicate a better school spirit.

Our Contemporaries—John W. Rockwood

JOHN ROCKWOOD is a man of pleasing personality. He has struck a happy medium between student activities and scholarship and has shown himself worthy of the many honors conferred upon him by his classmates.

John came to Rose from Wiley High School in the fall of '26. He immediately became interested in the Rose Technic and was elected to the position of humor editor of the publication. The following year he very competently managed the athletic department, and during his senior year was advertising manager. Under his direction the volume of advertising has increased, and he has been partly responsible for the better financial condition of the Technic.

During the sophomore year, John was on the Modulus staff, occupying the position of humor editor. The same year he was elected president of the class and by virtue of this office was a member of the student council. So many activities, all in one year, deserve recognition and he was awarded an honor key for being an outstanding man in extra-curricular activities.

Rockwood has always been interested in athletics both as reporter for the Technic and as a member of the varsity teams. During both his junior and senior years he was awarded a letter in football and basketball. He has also been a member of the Athletic Board of Control.

John will receive the Bachelor of Science degree in Civil Engineering this Spring. His ability in this line was recognized by his election to the presidency of the local branch of the American Society of Civil Engineers.

The Alpha Tau Omega Fraternity is justly proud to have John Rockwood as one of its members. He has always taken an active part in the work of the chapter and has brought it nothing but honor.

In recognition of his participation in student organizations "Rocky" will probably receive another honor key this year when the awards are made at the end of the term.

To have held so many student offices is indeed an honor worthy of any student's endeavors. No doubt John will continue his good work after graduation and bring as much credit to the school as a successful alumnus as he has as a student.

The Technic Staff takes this opportunity to wish the former advertising manager success in whatever work he may undertake. The staff is confident that John Rockwood will always bear in mind the interests of the publication and that he will frequently contribute to its columns.

Cobalt Steel Compass Needles

WHEN cobalt magnet steel was first specified for aircraft compass needles there arose the puzzling problem of how to make them, as the steel is very brittle at room temperature.

It had been forged and cast into a wide variety of shapes for the magnets in loud speakers, meters, oscillographs and microphones, but it had never been made into wire suitable for use as compass needles. The common practice of wire making consists of drawing it cold through a series of decreasing diameter dies until the desired diameter wire is attained. Due to the inherent lack of ductility in cobalt steel it was useless to try to reduce it to wire by this method.

The first method attempted was that of hot rolling the cobalt steel to approximately the required thickness at a temperature of 1000 to 1100 degrees C. in square grooved rolls, from which it was reduced by hot swaging in the round section to a finished diameter of 0.10 inch. The needles were cut to 2 inch lengths and hardened by immerging them for three minutes in a bath of molten salts at a temperature of 950 degrees C. and then quenching them in a very light oil.

Magnetic test of the needles thus prepared showed them to possess an erratic and subnormal quality, resulting no doubt from the surface decarburization suffered during the repeated heating incident to the rolling operation. File tests revealed a loss of carbon from the surface layer of metal sufficient to render it incapable of being hardened by quenching, which, of course, was highly damaging to the magnetic properties. To hasten the rolling operation and thus diminish the opportunity for loss of carbon, a set of hexagon-grooved rolls was designed. Steps were next taken to replace the carbon that would be lost even under the improved conditions.

In the modified process the needles were carbonized previous to hardening by heating them to 850 degrees C. in a carburizing compound for approximately 12 hours. This method restored the carbon content to a proper value for producing needles of uniform magnetic quality.

The needles must pass a rigorous bounce test before being assembled in the compass. Here the finished needles are dropped one at a time between vertical guides placed over a horizontal bar of highly magnetized cobalt steel. Each needle is thrust two or three times to the bottom of the grooves with the external fields of the needle and the bar in opposition. If the magnetic field of the needle survives this demagnetizing treatment with enough residual strength to force the needle upward against gravity to a predetermined height, then it has passed the test. It is because of its high coercive force that cobalt steel has such exceptional ability to deliver flux against magnetizing forces as are encountered in this test.—*Electric Journal.*

Research and Progress

Conducted by Lee C. Kelsey.

Diesel Driven Auto and Locomotive

TRAVELING a distance of 792 miles at an average speed of 31.7 miles an hour and with a total consumption of 30 gallons of fuel oil was the record set recently by the first American built diesel driven passenger automobile in a run from Indianapolis to New York City. This record corresponds, comparatively, to a rate of approximately 26.4 miles per gallon with a seven passenger car weighing 6,000 pounds. The cost of the fuel for the entire trip amounted to $1.38. The first full tank having been purchased at 4 cents a gallon and other fillings to complete the trip at a higher rate. The engine used was of four cylinders with a 4½ inch bore and a 6 inch stroke, developing approximately 50 horsepower.

The Diesel develops its power at low engine speeds, as evidence by the engine used in the trip. It was equipped with a governor which took the engine away from the driver at 1300 revolutions a minute, yet the car ran perfectly at a speed of 55 miles an hour. A 2½ to 1 gear was used in the car.

This success crowned the trial of the 1200 horsepower Diesel locomotive with pneumatic drive recently run successfully upon the main line of the German National Railways, and marked the culmination of the first stage development of this interesting unit begun in 1923. The test train consisted of 10 cars weighing 257 tons and negotiated the famous Geislinger grade of 2.5 percent at a speed of 12½ miles an hour. Basically the idea behind the new design is the substitution of a Diesel driven single-stage air-compressing set with exhaust reheater to replace the steam boiler.—*Machine Design.*

New Cast Iron

THE idea of a new cast iron sounds strange as cast iron is a very old material and has been applied so widely, and for such a great variety of purposes. The recent important changes in cast iron have not received the publicity merited by their economic value to manufactures of mechanical apparatus that have been given to steels and to the numerous non-ferrous alloys.

The general term "cast iron" has been generally understood to designate a material having a tensile strength of 15,000 to 20,000 pounds per square inch; but the idea is no longer correct, for there are perhaps as many kinds of cast iron as there are of steel, and the irons cover a wide range of physical properties. Reliable gray cast iron castings are now being produced that have tensile strengths ranging from 30,000 to 60,000 pounds per square inch. These important changes are the results of the co-operation between the metallurgist and the foundryman. They have been obtained by the proper use, either singly or in combination, of such metals as nickel, vanadium, molybdenum and chromium.

The success achieved in producing these new castings is the result of working primarily to obtain quality, so that the increase in reliability and strength much more than offsets the increase in cost. This notable development is of importance to practically all manufacturers of mechanical apparatus. It should not be assumed that every gray iron foundry is able to produce these new high strength cast irons, because in most instances special methods and equipment are needed; but there are many foundries that have been successful in producing these new cast irons to meet the present day needs of industry.—*Abstract, Machinery.*

Underwater Tunnel

AN underwater tunnel with a total length of 2.16 miles and an interior diameter of 46 feet 3 inches is now under construction under the Mersey River and will connect Liverpool and Birkenhead, England. The trunnel will carry four lines of vehicles abreast with ample space for ventilating air ducts. A space has been provided beneath the roadway for street cars although they have not been definitely decided upon.

Plans for improving the communication between the two boroughs have been under consideration for the last three-quarters of a century but it was not until 1922 that any definite steps were undertaken to provide a way. A committee of three engineers was appointed to make a study of the problem and to report upon the feasibility of improving facilities for cross-river traffic by means of a bridge or tunnel. After an exhaustive study, these engineers reached the unanimous conclusion that a tunnel would best meet traffic requirements. Accordingly, after approval of the plans had been secured from parliament in 1925, work was started in that year on the driving of a preliminary tunnel along the line of the future main tunnel to explore the ground.

Double approaches are provided on both sides of the river. The 36-foot roadway used in the underwater section is continued throughout the main approaches on each side and, in addition, branch approaches from sections near the river front are provided with roadway widths of 18 feet, accommodating two lines of traffic. Roadway gradients are, for the most part, 1 in 30, with a maximum of 1 to 29.4 on the Liverpool approach. The usual cast-iron lining is to be used, sealed with concrete grout and concrete on both exterior and interior faces.

Ventilation will be taken care of by three plants on each side of the river which will supply a total of nearly 4,000,000 cubic feet of fresh air per minute. It is expected that the maximum proportion of carbon monoxide will not exceed 4 parts in 10,000. The system of ventilation to be used has not been definitely determined; studies are now being made of the

(Continued on page 207)

ON the 17th, 18th and 19th of April, Rose had her second Engineering Show which we have a very good right to declare a tremendous success. As we viewed the crowds that crowded themselves throughout the building, the faces of "Old Grads" seemed to be everywhere. Among those present were:

1886—Foltz.
1887—Baur.
1891—Harris, Mewhinney.
1892—Rose.
1893—Hood.
1900—Madison, Richardson.
1903—Blair, Cushman.
1905—Everson, Robertson.
1906—Benbridge, Butler, Wischmeyer.
1907—Routledge.
1908—Bernhardt, Freers, Heidinger, Kelso, Lindeman, Wood.
1909—Rockwood.
1911—Kerr, Newhart, Stock, Wallace, Wimsett.
1912—Heer, Schoonover.
1913—Brewer, Lawrence.
1914—Hardman, Hoberg, Smith, Tygert.
1915—Sanford, Wallace.
1916—Merrill, Stuart.
1917—Davis, Lyon.
1918—Mikels, Price.
1919—King, Gillum.
1920—Froeb, Maxwell, Osmer, Stimson, Zimmerman.
1921—Biller, Reibel.
1922—Brown, Moench.
1923—Benson, Field, Hager, Kinkle, McComb, Price, Wright.
1924—Bogardus, Hood, Simms.
1925—Andrews, Anderson, Dahlquist, Gray, Merrill, White.
1926—Lewis, Kelley, Matson, Pierce, Watson, Werner.
1927—Crutcher, Johnson, Pennington, Yansky.
1928—Alexander, Drompp, Guggenheim, Harvey Holmes, King, Martin, Mitch, Payne, Reed, Siegelin, Swartz, Thompson, Watkins, York.
1929—Andrews, Bell, Derry, Dodson, Johonnott, Hutchinson, Nancrede, Reeves, Vendel.

This is only a partial list and if your name does not appear you were just as welcome. Let us hope you enjoyed the show, and realize that we of the present student body are quite alive and striving for the best interests of Rose.

'86

Mr. Herbert W. Foltz of Foltz, Osler & Thompson, architects, moved into new quarters April 16. Their new permanent address is Architects and Builders Building, Indianapolis, Ind. Mr. Foltz was the designer of the splendid dormitory on the Rose campus.

'15

Mr. Joseph S. Gillum is making another stride in the direction of success. His last promotion makes him Assistant Division Engineer of the Pennsylvania Lines at Philadelphia.

Mr. Ernest B. Plott, formerly with the United Alloy Steel Co., has taken a position with the Youngstown Sheet & Tube Co., at Youngstown, Ohio. We hope he likes his new work.

'22

Mr. Sterling H. Pittman has taken a position with the Westinghouse Company at Mansfield, Ohio. We also hope that Pittman will find his new work suited to his particular liking.

'27

We are informed that Baird E. West is Assistant Director of Publicity for Westinghouse Lamp Company at Bloomfield, N. J. Whether this is a recent promotion or not we can not say, but mention is made of West's position because it shows he is progressing.

Mr. W. R. Ferris is with the R. C. A. Radiotron Co., Inc., at Harrison, Ohio. This change on the part of Ferris was a result of a transfer by General Electric Company of their business in this line to the newly formed company. Ferris does not know his new capacity as yet, but we hope that it will be substantially better than the one he had in the older company.

Research and Progress

(Continued from page 206)

relative advantages of transverse and longitudinal ventilation.

Present plans call for completion of the tunnel in June, 1932, at an estimated cost of approximately $25,000,000, of which the English government will contribute over $12,000,000. The balance of the cost will be met by loans, secured by toll charges to be maintained for a maximum period of 25 years, and also by funds to be provided by the two cities.—*Scientific American.*

CAMPUS NOTES

Robert Mees, m., '31

March 20

THE hour was devoted to the showing of motion pictures through the courtesy of the White Motor Company. The three reels shown recorded the impressions and scenes that may be experienced by touring the larger of our National Parks by motor bus. The three resorts considered were Yellowstone Park, Estes Park in Colorado, and Yosemite National Park in California. The pictures showed many of the interesting scenes along the routes of travel and afforded pleasing entertainment.

March 27

The speaker scheduled for this assembly was unable to appear, so the letters for the 1929-30 basketball season were presented with Coach Phil Brown making the awards. He gave a brief summary of the last season and outlined the prospects for the forthcoming year. Letters were awarded to Allen, Spangenberg, Fisher, Sanford, Gillett, Alexander, and Sawyers.

April 7

The regularly scheduled assembly for Thursday, April 3, was delayed till the following Monday evening when the student body was entertained with a demonstration of talking pictures conducted by a representative of the General Electric Company. This marked the initial showing of talking pictures at the Institute, and the demonstration proved to be very interesting. The first reel was a lecture by Dr. C. Hewlett, who spoke on "Radio-active Substances." The following reel recorded the cruise of the new electric ship, Virginia, from the shipyards through the Panama Canal to San Francisco. The pictures showed the detailed construction of the ship and brought forth the latest developments in sea locomotion. After an intermission of ten minutes, the third reel was shown, presenting a detailed account of the construction of the Cascade Tunnel in Washington. The fourth and last reel was a lecture by Sir Ernest Rutherford, who took "Composition of Metals" as his subject.

Rose Radio Club

THE Rose Radio Club has recently purchased a considerable amount of equipment. A Utah dynamic speaker is one of the most prized articles. It is hoped that in the near future the club will be able to buy a radio set which will be equal to the quality of the Utah speaker. The set will then be put into a convenient place so that everyone will be able to use it. The short wave transmitter and receiver, built for the show, is now installed in the Radio Club room. Many improvements have been made on these sets, which improve the sending and receiving qualities of each. Letters are received daily from other amateur fans commenting on the splendid tone and clearness of reception of the transmitter. The television receiver, which aroused quite a bit of excitement during the show, is also receiving its share of attention. There has been a great deal of work done on it by several members of the club, and much better results have been obtained than were expected. With all of this new equipment, the Club expects to do some progressive experimenting during the remainder of the school year.

Military Notes

THE annual inspection of the Engineer R. O. T. C. Unit will be held late in May. The inspection this year will be under the direction of Major Robert G. Guyer who is the Engineer Officer, Fifth Corps Area.

The afternoon of the inspection day will be given over to Military and will include class room questioning by the inspecting officer, outdoor competitive drills and a combat problem. The combat problem will include a stream crossing in which the Lampert footbridge will again be used. The crossing will be undertaken in a heavy smoke screen against heavy machine gun fire and will present a picturesque problem. Medals constituting the "Frances Gulick Shourds Award," the "Prox Award" and the "American Legion Award" for rifle marksmanship will be presented to Benedict B. Wassel, Lowell L. Ray, A. Massa, Gilbert L. Shew, and Clyde S. Marsh. Reserve Officers of the 5th District have been asked to attend the inspection, to assist in judging the drills and to present the officer's saber which that group donates annually to the outstanding senior in Military.

Sweaters for rifle shooting have been issued to L. L. Ray, B. Wassel, G. L. Shew, C. S. Marsh, F. J. Bogardus, E. Withers, and A. Massa. In winning their minor sports "R" in rifle these men attained an average of 87½ percent or better in all the matches of the 1929-30 rifle season.

Definite assurance has been given by the Commanding General, Fifth Corps Area, that new uniforms for all basic students of this Unit will be ready for issue at the opening of school in September. In the new uniform, the old stand-up collar is replaced with the conventional roll collar. Trousers instead of breeches will be worn by basic students in the future, and the new cap is of the improved overseas type. The lapels of the coat are faced with blue, and the material of the new outfit will be gabardine.

ATHLETICS

CHARLESTON 66 — ROSE 65

THE opening track meet of the 1930 season for Rose Poly was dropped by a lone point to the Charleston Teachers on April 11 by a score of 66 to 65.

The Engineers scored eight firsts, six seconds, one tie for second, and five thirds, while the victors tallied seven firsts, six seconds, and two ties, and seven thirds, to emerge the victor by one point. The winner was not determined until late in the meet, the lead having changed several times.

Connit of E. I. was the high scorer of the day, gathering 15 points, while Stanley and Weddle were close on his heels with 14¼ points each, and Spence with 12. Stanley captured two firsts, the 440-yard dash and the broad jump, and came in second in the 220-yard dash. Weddle won the 100-yard dash after a poor start, and the 220-yard dash, and finished second in the low hurdles. Spence won the mile and the two mile and tied for second in the high jump.

The half mile relay race was won by Rose with about 35 yards to spare. Loving, running first, gave Dean a good lead which grew steadily throughout. The time was 1 minute and 36 seconds.

Summary of events:

100-yard dash—Weddle, Rose, first; Ballard, E. I., second; Dean, Rose, third. Time, 10.3 seconds.

220-yard dash—Weddle, Rose, first; Stanley, Rose, second; Ballard, E. I., third. Time 24 seconds.

440-yard dash—Stanley, Rose, first; Mattix, E. I., second; Ballard, E. I., third. Time 55.3 seconds.

Half-mile run—Wassem, E. I., first; Witt, Rose, second; Mattix, E. I., third. Time, 2:17.5.

Mile run—Spence, Rose, first; Baker, E. I., second; R. Smith, Rose ,third. Time, 5:9.

Two-mile run—Spence, Rose, first; Brewer, E. I., second; Wassel, Rose, third. Time, 11:48.

220-yard low hurdles—Loving, Rose, first; Weddle, Rose, second; Baird, E. I., third. Time, :28.7.

120-yard high hurdles—Sims, E. I., first; Loving, Rose, second; Baird, E. I., third. Time, :17.7.

Shot put—Connit, E. I., first; Dush, E. I., second; Heidenreich, Rose, third. Distance, 42 ft. 6 in.

Discus—Connit, E. I., first; Creamer, E. I., second; Leitzman, Rose, third. Distance, 115 ft. 3 in.

Pole vault (Rose no entries)—O. Elliott, E. I., first; C. Elliott and Hance, E. I., tied for second and third. Height, 10 ft. 6 in.

Javelin—Connit, E. I., first; Dicks, Rose, second; Creamer, E. I., third. Distance, 167 ft. 2 in.

Broad jump—Stanley, Rose, first; Jones, Rose, second; C. Elliott, E. I., third. Distance, 20 ft. 5 in.

High jump—Baird, E. I., first; Spence, Rose, and Foreman, E. I., tied for second and third. Height, 5 ft. 6 in.

Relay—Loving, Dean, Stanley, and Weddle, Rose, first; Adkins, Highsmith, Magner, and Scott, E. I., second. Time, 1 min. 36 sec.

ROSE 83⅔ — OAKLAND CITY 47⅓

THE Fighting Engineers of Rose Poly won their second track meet of the season from Oakland City by a score of 83 2-3 to 47 1-3. From the time Weddle romped to victory in the first event, the 100-yard dash, the winner was never in doubt. In winning the meet, Rose scored nine firsts, ten seconds, and six thirds.

High scoring honors of the day went to Gladdish, Oakland City, who took three firsts, the high jump, discus, and shot put, and third in the javelin, for a total of 16 points. Stanley, Rose, was second with 14¼, and Weddle next with 12¼.

Summary of events:

100-yard dash—Weddle, Rose, first; Dean, Rose, second; Loge, O. C., third. Time, 10.5.

220-yard dash—Weddle, Rose, first; Stanley, Rose, second; Loge, O. C., third. Time, 23.

440-yard dash—Stanley, Rose, first; Dean, Rose, second; Witt, Rose, third. Time, 55.5.

High Hurdles—Nelson, O. C., first; Loving, Rose, second; Clark, Rose, third. Time, 19.2.

Low hurdles—Kelly, O. C., first; Loving, Rose, second; Weddle, Rose, third. Time, 27.9.

Pole vault—Loge, O. C., first; Nelson, O. C., Schaack, Rose, Mason, Rose, tied for second and third. Height, 9 ft. 6 in.

Broad jump—Stanley, Rose, first; Loge, O. C., second; Patburg, O. C., third. Distance, 20 ft. 11¼ in.

High jump—Gladdish, O. C., first; Nelson, O. C., second; Burns, O. C., third. Height, 5 ft.

Discus—Gladdish, O. C., first; Montgomery, Rose, second; Nelson, O. C., third. Distance, 111 ft. 3½ in.

Shot put—Gladdish, O. C., first; Heidenreich, Rose, second; Montgomery, Rose, third. Distance, 36 ft. 4½ in.

Javelin—Dicks, Rose, first; Kelly, O. C., second; Gladdish, O. C., third. Distance, 150 ft.

Mile run—Baker, Rose, first; Spence, Rose, second; Fitch, Rose, third. Time, 5:11.5.

Two-mile run—Spence, Rose, first; Wassel, Rose, second; Baum, O. C., third. Time, 11:00.

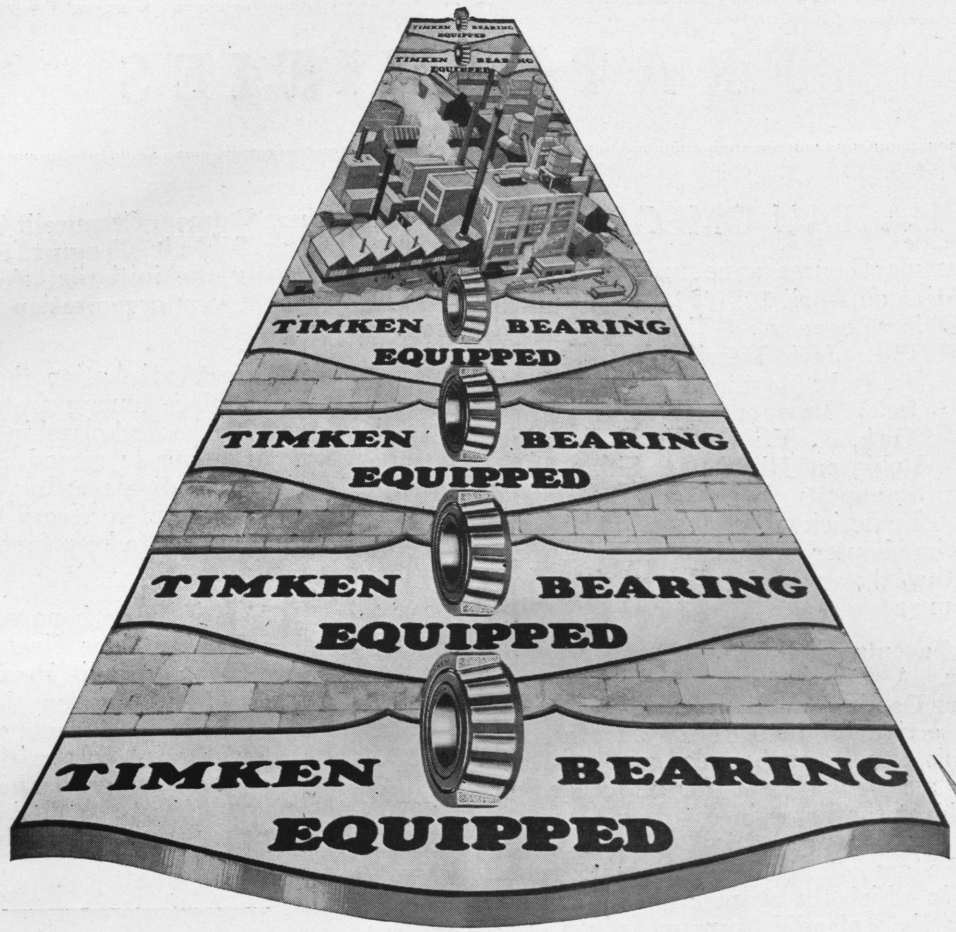
Half mile run—Baker, Rose, first; Witt, Rose, second; Maurer, Rose, third. Time, 2:11.

Half-mile relay—Rose first team (Schaack, Smith, Dean, Weddle) first; Rose second team (Clark, Wilcox, Mason, Stanley), second. Time, 1:40.6. Second team disqualified, dropped the baton.

ROSE 88½ — FRANKLIN 42½

ROSE POLY won their second victory from the Franklin track team by a score of 88½ to 42½. The weather was ideal for a meet and some good records resulted. Weddle, Rose dash man, was the

(Continued on page 218)



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FRATERNITIES

ALPHA TAU OMEGA

INDIANA Gamma Gamma announces with pleasure the initiation on April 13, 1930, of Paul Cooper, Struthers, Ohio; Logan A. Gillett, Logansport, Ind.; Jack Merrifield, Indianapolis, Ind.; Raymond McNeill, Gary, Ind.; Raymond W. Wells, New York, N. Y.; Orville R. Lowther, Robinson, Ill.; James Skinner, Indianapolis, Ind.; Cliff Lamb and Frederick J. Bogardus, both of Terre Haute. The chapter is glad to welcome these men and know that they will do all in their power for Gamma Gamma.

Several special events are holding the attention of the local chapter. A "get together" banquet is to be held at the Hotel Deming on Saturday, May 10, for the alumni and active brothers of the chapter. It is hoped that this event may become an annual affair. Plans are also being made for a Father-Son smoker to be held at the house in the near future.

As Mother's Day is approaching, plans are being made for the annual Mother's Day program. This is one way in which the chapter can show their appreciation for the splendid support given the chapter by their mothers.

Gamma Gamma is proud of the work of Brothers Stanley, Witt, Jones, Fitch, and R. Wells on Rose's winning track team. Alumni Brothers Joe and Max White, Tom Reed, Tom Crutcher, and Arthur Drompp visited the chapter during the Rose Show.

ALPHA CHI SIGMA

IOTA was well represented at the student meeting of the American Chemical Society in Indianapolis April fourth and fifth. The Indiana Section of the Society always puts on a worthwhile program and the Indianapolis Professional chapter of Alpha Chi Sigma follows up with a banquet at the close of the session. This year around the table there were Alpha Chi Sigma men from coast to coast along with Dr. Charles Mann, Grand Professional Alchemist; John R. Kuebler, Grand Recorder; Dr. Moore, Dean of men at Purdue; Dr. Lind, head of the Department of Chemistry at University of Minnesota, and our own Dr. White. Opportunity was thus had to meet more intimately the big men in the profession and to enjoy an evening of good fellowship.

On the night of April 7th nine pledges completed their active pledge life and became members of A. O. P. The mysteries of the order were conveyed in a fitting and proper manner and the chapter welcomes Brothers Batman, Cromwell, Guymon, Heidenreich, Kraemer, McNair, Peugnet, Sipple, and Swoboda. Following the initiation election of officers was held and the new organization was set into motion.

It was with great satisfaction that Iota noted its advent into first place among fraternities and unorganized men in the scholarship rating. Quite naturally the dropping to second place during the previous period was disconcerting, especially since it spoiled an almost perfect record of several years. The fellows are now out to keep first place in a regular manner.

During the show we were honored with the presence of Brother John Kuebler, Grand Recorder, and Brother Doane of Indianapolis Professional chapter (and M. I. T.) who came to view the results of the efforts which the R. P. I. students put forth. Several of the fellows had dinner with the visiting Brothers at the dormitory and then guided them through the show. The visitors had nothing but compliments for the way in which the show was put on.

SIGMA NU

BETA UPSILON announces the formal initiation on April 18 of Jack Faust of Terre Haute; Bertram Menden of Chicago; Ernest Hurst of Alton, Ill., and Carlton Sexson of Bloomfield, Ind.

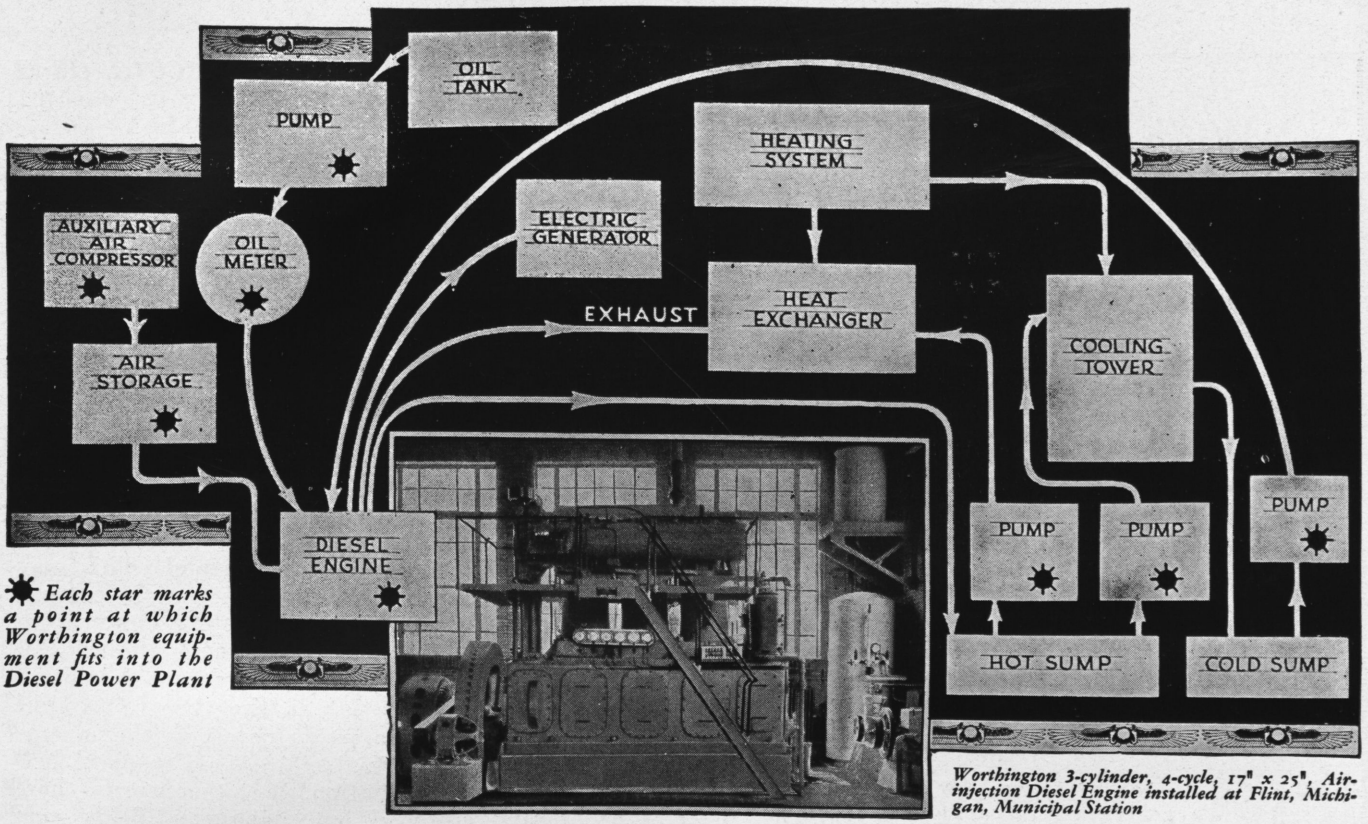
Among the graduates who returned to view the Rose Show last month, were several alumni of Beta Upsilon. Those who made themselves known were Harry S. Richardson, '00; Allen D. Merrill, '16; Glenn N. Maxwell, '20; Ray Billér, '21; Valentine Mitch, '28, and Jack Derry, '29.

The Annual Faculty-Dads Smoker held at the chapter house on May 2 was every bit the success it was expected to be. Practically every member of the faculty was present along with a goodly number of Dads and Alumni. Stories and conversation were of course the main diversion as is always the case on such an occasion, while cards and cigars were enjoyed throughout the evening. Toward midnight, refreshments were served, after which the party slowly broke up.

According to Sigma Nu's annual custom, the entire chapter will attend church in a body Sunday, May 11, in observance of Mother's Day.

Besides the Junior Prom on May 16, one other gala event is left on Sigma Nu's social calendar. A Spring Formal and a Sport dance have always been annual affairs, but the week-ends are too crowded

(Continued on page 217)



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The Student's College Record as a Forecast of Success

(Continued from page 200)

for the whole group. On this basis only, it appears that "substantial campus achievement" does have some rather definite bearing on progress in the Bell System, but that its influence is not so great as that of high grade scholarship.

In comparing the results of participation in extra curricular activities of both engineering graduates and arts graduates, it would seem that "substantial achievement" is not as good an index for the future for the engineer as for the arts graduate. It may be that such indulgence in campus life detracts more from his scholastic effort. There seems to be something favorable in the situation of the group of engineers who had "some achievement." This may quite possibly indicate that some interest in campus affairs is more valuable to men pursuing engineering courses than too great an interest in such affairs.

Another generalization may be warranted but not vouched for, which is, that in the type of campus achievement, those who participated in the groups which required intellectual effort seem to make better progress after graduation. In other words, those in the literary, editorial, and managerial fields seem to have some advantage over those in social, athletic, and musical or dramatic endeavors.

A study of those who found it necessary to earn part or the whole of their expenses through college, gave a negative result. The obligation of a young man to earn while he is in college, we might say, is no handicap to his future career, but might be considered a favorable factor. That is, his necessary sacrifices seem warranted, and what is lost of other varieties of college experience, is compensated for by the student's intensity of purpose.

Altogether, it would seem that this somewhat inconclusive picture is a normal one. Naturally, when an employer examines an applicant, the question uppermost in his mind is the man's record of previous performance. In giving weight to scholarship, he concludes that it is evidence of how well the young man performed on his previous job. The evidence is that there are real values in this conclusion. From the viewpoint of the student, it seems clear that he should so budget his time that he give his major attention to the important objective of his college life —education—and relate his other obligations in a proper balance to this.—*McGraw-Hill Book Co.*

The Show

(Continued from page 199)

able comments was very pleasing to the faculty of Rose. As to the success of the show there is no question. The visitors were hearty in their praise. The students realized they had scored a hit. They had worked hard, they deserved success, and they were happily conscious of real achievement.

In three particulars the show was of outstanding value. First, it gave most excellent training to the students. The planning and building of the exhibits, the loyal cooperation, the organization work, and the contact with the public in demonstrating and explaining the exhibits, all contributed to the rich experience for the students. Second, it gave to the public a better acquaintance and a deeper appreciation of the school. It made many friends for Rose. Third, it brought high school teachers and students to Rose in such numbers and under such favorable circumstances that there is every assurance of having the best students from many of these high schools come to Rose for an engineering training. We can confidently look forward to a better freshman class next fall because of this show.

In spite of the tremendous amount of work involved in producing our biennial Rose Show, it appears that it is to become an established institution among Rose activities. Progress in science and engineering over a period of two years will always provide many new things to place before the public and so justify another exhibition. It is only fair to the student to allow him to participate twice in the Rose Show, first as a helper and second as a leader. The public, too, is eager for a show every two years. It would seem, therefore, that the biennial feature should be retained. Rose is carrying on. The engineering world knows it through her graduates. Terre Haute and neighboring communities will know it best through the ROSE SHOW.

Laying High Pressure Gas Transmission Lines

(Continued from page 201)

tracks in Gary a distance of about forty feet. In another place we had to ditch right through a macadam pavement for a distance of about three hundred feet.

When the 2,500 feet sections were tested with air and welded into the line, all drips set, and all necessary valves placed, the line was completed. A final test was applied at the completion of the line. The valves in the line were closed and sections of from four to six miles in length were tested at 100 pounds pressure for a period of twenty-four hours. If these tests proved all right the line was pronounced satisfactory.

Everything considered, the job was a very interesting one and certainly gave one a good chance to study human nature.

Point thy tongue on the anvil of truth.—Pindar.

Fraternities

(Continued from page 212)

this spring to arrange both. Accordingly they will be combined into a big informal to be held at the house on May 23. Chairman Dean and his committee are making special plans for decorations and music to produce something novel in the way of a dance.

The close of school in June will deprive the chapter of the leadership of three men on whom it has learned to depend in the past. These men are Charles Barbre, James Brevoort, and Milo Dean. Their experience, advice, and fellowship will be greatly missed. The Mothers' Club has planned a dinner in their honor and the Informal dance on May 23 will serve as a farewell from the chapter.

KAPPA OF THETA XI

AFTER two days of preliminary tests, Robert Moench. Ottobert Axton, Paul Carter, Roger Peugnet, Homer Phillips, Norris Engman, and Edward Weinbrecht were initiated in Theta Xi. We have great hopes for these men in their work in the future and assure them that Theta Xi is for them.

After the confusion surrounding the Y. M. C. A. election had subsided, we found as president none other than Brother Robert Laatz, and as secretary-treasurer Brother Lowell Ray. Brother Laatz' success is practically assured because of his former experience in Y. M. C. A. work. While this is Brother Ray's first experience in this type of work, his previous good record assures us that his work will be of the best calibre. The Rose Y. M. C. A. acts as a medium of friendship among Rose students and has proved to be invaluable.

Brothers Smith, Schaack, and Pledge Bro. Heidenreich are out for track and are doing their share to bring in points. Brother Smith's specialty is the mile and he does this in a very creditable manner. Brother Schaack is in the broad jump and pole vault and manages to hold his own with everyone. Pledge Brother Heidenreich is featuring in the shot put. Heidenreich seems to be a detriment though, because he throws the shot so far that it cannot be found. However the Institute does not seem to mind and at the present time Heidenreich is still amusing himself with the shot.

Brothers Collins, Corp, Chinn, Davy, and Renfro are completing their work here and are about to leave for more fertile fields. As we look back we find that these men have been among the foremost in all school and fraternity activities and it is with regret that we are to lose their active interest. We realize, however, that it is for the best and they leave with our heartiest congratulations and best wishes for future success.

Brother Henry Nancrede returned Easter to celebrate the first anniversary of an event participated in by Brothers Muntz and Nancrede. Brother Nan-

(Continued on page 218)

Fraternities

(Continued from page 217)

crede was enjoying himself although it was not made clear to everyone what it was all about.

Brothers Pellum, Lyons, Nancrede, Johonnott, Joslin, Matson, Schwartz, and Merrill have visited us during the past month.

The founder's day banquet was held at the Hotel Wolford at Danville, Illinois, in conjunction with the University of Illinois and Purdue Chapters. Every year at this time a huge banquet is held and enjoyment reigns supreme. The banquet this year was no exception and when we left reluctantly everyone was tired but happy.

THETA KAPPA NU

INDIANA Gamma takes the greatest pleasure in announcing the initiation of the following pledges: Wayne Plimmer, Reagan Mallett, Russell Powell, Ted Bauer, Bill Lindeman, and James Guyman. Initiation was held at the house on Sunday, April 26.

Indiana Gamma of Theta Kappa Nu held its annual spring dance on April 11 at the house. Jack O'Grady was master of ceremonies and, with his orchestra, furnished plenty of peppy entertainment. The affair was a knicker dance, inaugurated last year, and repeated this year. The representatives from fraternities were Orville Evans, A. T. O., and Milo Dean, Sigma Nu.

Theta Nu loses five men by the graduation route this year—Henderson, Kehoe, Lotze, Scofield, and Baker. Although the chapter will miss them greatly, it wishes them the greatest success possible in their new ventures.

With the track season in full swing, it is gratifying to see that three of our fellows are gathering their share of points for Rose. Baker and Spence are running in the distance events and Leitzman is taking care of the discus.

Many alumni were back for the show and the following week-end. Among them were Roger Mace, Isaac McKillop, Fred Andrews, Allen Reeves, James Lawyer, and Harold York.

Since in a few days everyone will be scattering for the summer, Theta Nu wishes everyone the best of summers and hopes to see all back next fall.

Athletics

(Continued from page 210)

high scorer along with Smith, Rose distance man, both scoring 10 points. The feature of the afternoon was the high hurdles, which was a dead heat, Loving and Annadel finishing together.

Summary and events:

100-yard dash—Weddle, Rose, first; Ross, Franklin, second; Dean, Rose, third. Time, 10.1.

220-yard dash—Weddle, Rose, first; Stanley, Rose, second; Ross, Franklin, third. Time, 23.5.

High hurdles—Loving and Annadel tied for first; Surface, third. Time, 19.2.

Low hurdles—Loving, Rose, first; Weddle, Rose, second; Surface, Franklin, third. Time, 27.6.

Mile run—Smith, Rose, first; Spence, Rose, second; Baker, Rose, third. Time, 5:03.

440-yard dash—Dean, Rose, first; Stanley, Rose, second; Medsker, Franklin, third. Time, .54.

Two mile—Smith, Rose, first; Spence, Rose, second; Webb, Franklin, third. Time, 11:42.7.

High jump—Kessel, F., first; Hanna, F., second; Spence, Rose, and Downey, F., tied for third. Height, 5 ft. 2 in.

Pole vault—Hanna, Downey, Franklin, and Schaack, Rose, tied for first. Height, 10 ft.

Shot put—Surface, Franklin, first; Heidenreich, Rose, second; Downey, Franklin, third. Distance, 36 ft. 8¾ in.

Discus—Easter, Franklin, first; Leitzman, Rose, second; Montgomery, Rose, third. Distance, 113 ft. 8 in.

Javelin—Dicks, Rose, first; Downey, Franklin, second; Montgomery, Rose, third. Distance, 141 ft. 7 in.

Broad jump—Stanley, Rose, first; Jones, Rose, second; Downey, Franklin, third. Distance, 20 ft. 3 in.

Half mile run—Witt, Rose, first; Baker, Rose, second; Medsker, Franklin, third. Time, 2 min, 12 sec.

Relay—Rose, first (Loving, Dean, Stanley, Weddle). Time, 1 min. 36 sec.

Rose Loses to Muncie State

THE Ball Teachers of Muncie walked off with the meet held at Rose field April 30 by a score of 50 1-3, State 43 2-3, Rose 36. The tracksters of Muncie started fast when Graham took first in the century and the 220 yard dash. He also led the field in the 440 yard dash, thus gaining high scoring honors for the day with 15 points.

Spence of Rose ran a nice race in the two mile heat to set a new record for that event. He started fast and was never pushed, finishing in the record breaking time of 10:37.3. This is ten seconds better than the old record held by Fitch of Rose.

Muncie scored the only slam of the day in the high jump, three men tying for first at a height of 5 ft. 5 in.

Summary of events:

100-yard dash—Graham, Muncie, first; Weddle, Rose, second; Dean, Rose, third. Time, :10.2.

220-yard dash—Graham, Muncie, first; Johnson, Muncie, second; Weddle, Rose, third. Time, :22.2.

440-yard dash—Graham, Muncie, first; Davis, Indiana State, second; Stanley, Rose, third. Time, :52.

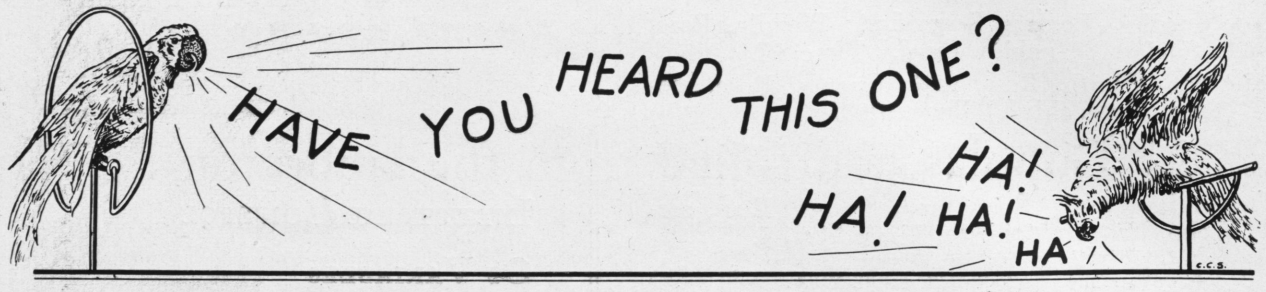
Half mile run—Baker, Rose, first; Bussell, State, second; Witt, Rose, third. Time, 2:07.3.

Mile run—Bussell, State, first; Spence, Rose, second; Baker, Rose, third. Time, 4:46.4.

Two mile run—Spence, Rose, first; Horn, State, second; Olsen, Muncie, third. Time, 10:37.3. (New record).

220-yard low hurdles—Jones, Muncie, first; Lov-

(Continued on page 222)



"What do you mean by bringing my daughter home at this hour?"

"Well, I have to be at work at seven."

We still maintain that a sorority is a *broad* activity.

The stranger laid down four aces and scooped in the pot.

"This game ain't fair," said Alkili Ike, "that ain't the hand I dealt you."

"I hear that the professors have stopped necking and drinking on the campus."

"Well, they should, men of their age."

"You look like Helen Brown."

"Thanks, I look even worse in white."

"How would you punctuate this sentence: 'Mary went to the garden nude'."

"I'd make a dash after Mary."

Boy—"Yeah, that's what I said. I'm a fraternity man and a gentleman."

Co-ed—"Listen, you don't look like twins to me."

"Hey, Mike," said a workman to the other atop, "don't come down that ladder on the north end. I took it away."

He—"Then I put my hands over her eyes and said, 'Guess who this is'."

She—"Who was it anyway?"

It's the little things in life that hurt. You can sit on a mountain but not on a tack.

"Why are your socks turned wrong side out?"

"Oh, my feet were so hot I turned the hose on them."

"Mother," asked little Willie, when they had guests for dinner, "will the dessert hurt me or is there enough to go around?"

Early to bed, early to rise keeps your roommate from wearing your ties.

"I hear that Smith and Smith Umbrella Co. is trying to put a stop to all fraternity meetings."

"Why is that?"

"It's always good weather when good fellows get together."

"Where did you get that red lantern?"

"Some careless fellow left it out here beside a hole in the road."

"No, Dick, I cannot marry you, but I will be a sister to you."

"Good, how much did we inherit from our father?"

"Your girl is somewhat spoiled, isn't she?"
"No, that's the perfume she uses."

"You are charged with habitual drunkenness. Have you any excuse to offer?"

"Habitual thirst, your honor."

"If you had five dollars in your pocket, what would you do?"

"I'd think I had somebody else's pants on."

Teacher in grammar class: "Willie, tell me what it is when I say 'I love, you love, he loves'."

Willie: "That's one of them triangles where somebody gets shot."

Athletics

(Continued from page 219)

ing, Rose, second; Weddle, Rose, third. Time, :26.5.

120-yard high hurdles—Porter, State, first; Jones, Muncie, second; Stiff, Muncie, third. Time, :16.4.

Shot put—Reynolds, State, first; Heidenreich, Rose, second; Lahti, State, third. Distance, 39 ft. 6¾ in.

Pole vault—Wampler, State, first; Biel, State, Millbrant, State, and Trabel, Muncie, tied for second and third. Height, 11 ft.

Discus—Pugh, State, first; Barker, Muncie, second; Montgomery, Rose, third. Distance, 107 ft.

Broad jump—Dick, Muncie, first; Allhands, State, second; Stanley, Rose, third. Distance, 21 ft. 7 in.

Javelin—Dicks, Rose, first; Lee, Muncie, second; Barker, Muncie, third. Distance, 142 ft. 9 in.

High jump—Jones, Dick and Barrett, Muncie, tied for first, second and third. Height, 5 ft. 5 in.

Relay—State, first; Rose, second; Muncie disqualified.

Prize-Winning Exhibit of 1930 Rose Show

(Continued from page 206)

of the area needed by eye on a county road map. It was possible to do this because the ground was all fairly level, on both the uplands and the creek bottoms. Having the ground molded, the ponds and creeks were put in by using mirrors for water; grass was shown by means of a green pigment obtained at a paint store, and trees were made by cutting up green rubber sponges into various shapes and thrusting small lengths of wire into them for trunks. Two roads were laid out, one a gravel road, for which fine white sand was used, and one macadam, which was made by painting a strip of carboard with a bituminous paint and sprinkling sand on top of the paint. For the fence lines match sticks painted black and a fine oxidized copper wire were used. Ballast for the railroad was made from the white sand, and the military department furnished the small houses to represent the town of Riley.

Small signs were placed at all pertinent points on the relief map, and directly behind the box the general location map and the profile were hung to enable visitors to orient themselves.

The Story of the Airship

(Continued from page 203)

These ships are also used as training schools for the larger rigid type of ships.

THE RIGID SHIP

The third and greatest of airships is the full rigid ship. It has a complete metal framework with longitudinal girders from nose to tail with ring girders set at intervals to brace the longitudinal ones, which are themselves braced with cross girders and wire bracing. The entire framework is enclosed by a fabric cover. In other types of airships the lifting gas is enclosed in a simple cover while in the rigid

ship the gas is carried in 16 or 20 cells, so if one bag is deflated the ship still retains its buoyancy. In this manner there is double cover. The outer cover resists snow, rain, hail, and local injuries while the inner does nothing but retain the gas. In other ships the crew and passengers are housed in cars suspended from the great bag, while in the rigid ship they are housed inside the bag itself. The control car is even inside the bag and in the future the engine cars will even probably be installed in the ship.

The development of the rigid airship has been taking place for over twenty-five years and in that time the building of 116 ships has furnished opportunities for improvements. The rigid ship is the fastest large vehicle and the largest fast vehicles devised by the brain of man. It has made longer trips and flown more hours and more miles without refueling than any other type. It has greater carrying capacity than any other aircraft and greater speed than any other instrument carrying similar loads. It is independent of topography, and oceans and continents are but areas to fly over.

THE FUTURE OF THE AIR SHIP

Since the World War, in which all types of airships were utilized, a number of improvements have been made which make the future of the airships unlimited.

First among these is the use of helium gas in America, which has a monoply on this valuable, non-inflammable gas. Many engineers say the hydrogen can be made safe but helium is the final protection against fire hazards and gives the required buoyancy. Also in the last few years has come the development of the mooring mast. The nose of the ship is merely made fast to a large mast. Mooring masts are much cheaper and more accessable than hangars although new mechanical devices have been worked out so that ships are handled with comparative ease.

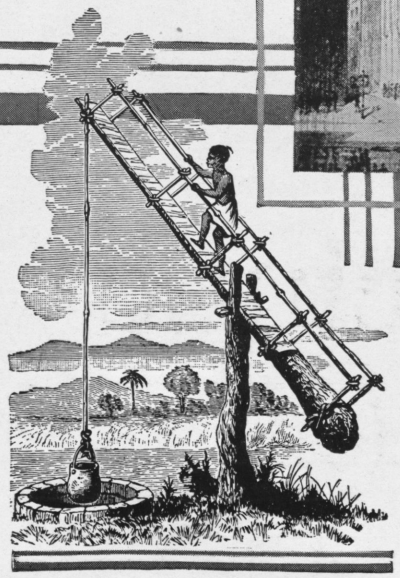
Another important improvement has been that of a recovery and condensation of the exhaust gas, so that the weight of the ship is kept constant and no lifting gas has to be released to compensate for the loss of the weight of gasoline.

A new rigid airship is being contemplated to take to take the place of the Shenandoah. It would be able to cross the Atlantic with little trouble and would be at least twice the size of the Shenandoah. The projected ship would have about 6,500,000 cubic feet capacity while the Shenandoah had but 2,115,000 cubic feet. It would have an increased girth which would increase the longitudinal strength. The projected ship, although three times as large as the Shenandoah, would be only 100 feet longer. All the quarters and cars would be within the ship. Only the propellers would be outside and would be tilting on a 90 degree arc to help force the ship up. The keel would be double or triple instead of single as in older ships. Such a ship would be capable of carrying six airplanes which would be taken inside and released or taken on as desired. The ship would be driven by engines of 4,800 horsepower and could fly from 5,000 to 8,000 miles without refueling at a speed of 90 miles per hour with full military load.

The airship is quickly coming into its own. Within the next few years airships will be comparatively safe and will be invaluable as a means of transportation during both military and peaceful periods.

Russ Building, San Francisco, Cal. Geo. H. Kelham, Architect
Equipped with Otis Signal Control Elevators

One of the early phases of Vertical Transportation.



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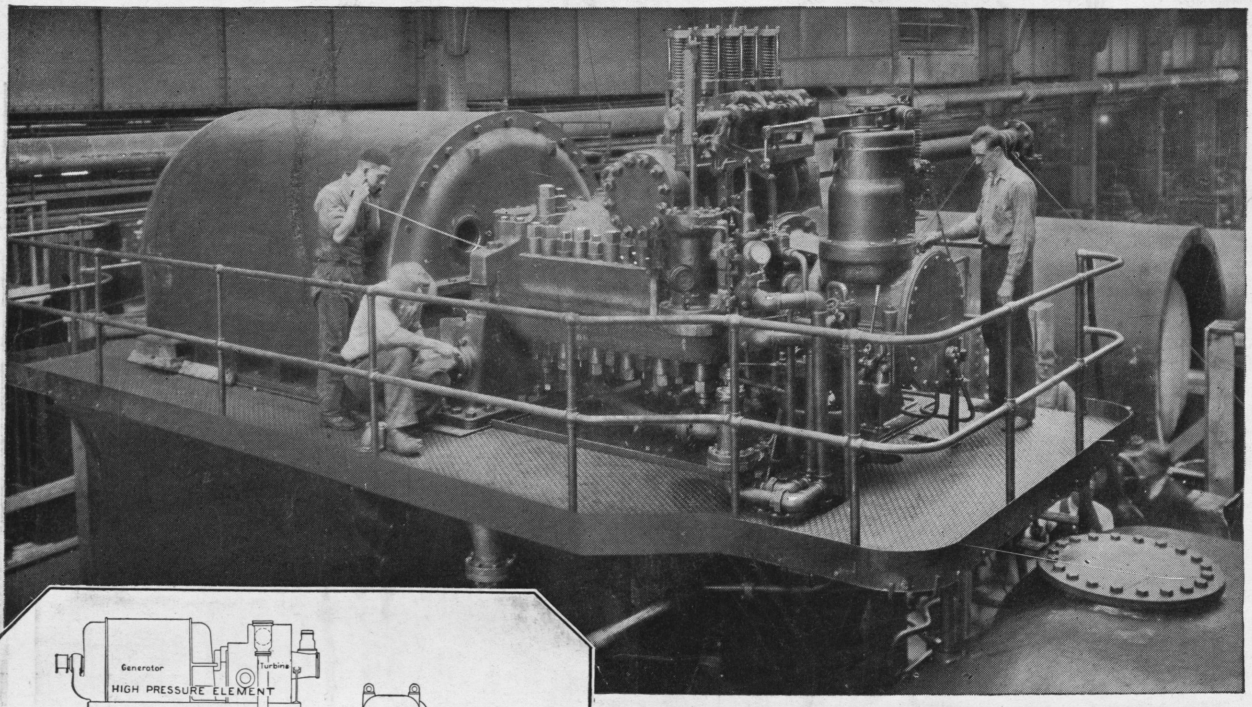

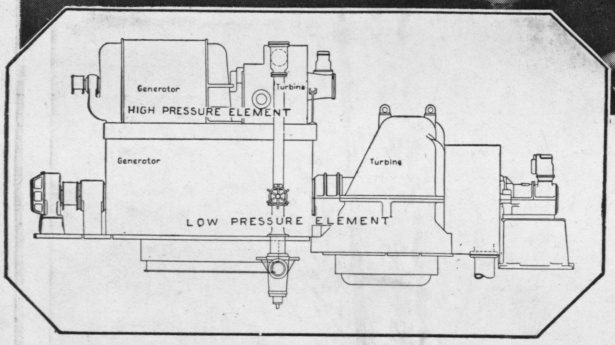

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