To the upper-classmen the school now seems just a little more like home. There is a feeling of "old times" back again. Doctor Mees has returned.

This feeling very probably exists only in the upper classes, however. If the Doctor, by his appearance alone, inspires the Freshmen with the same fearful combination of awe and terror with which he was wont to inspire former Freshman classes, they are sure to wonder somewhat at the feeling of their seniors. But if they are fortunate enough to remain in school for a year or so longer, they will begin to see the light.

With all levity aside, however, The Technic feels that it is taking no liberties in extending to him a most hearty welcome in behalf of the entire school. We are all glad.

Doctor Mees will not take up active work during the remainder of this school year, but will assist in the coming campaign for the raising of funds for the new school. He will spend a portion of his time at the Institute, which arrangement is at least better than a protracted stay in foreign parts. Doctor White will continue with the many duties which he has handled so ably during the past seven months.

The present day technical schools are often criticised for attempting to cover too much ground. Perhaps this criticism is warranted, and perhaps much better results could be obtained by attempting less but attempting that more thoroughly. On the other hand it may be better to attempt to give only general ideas, but to give them in quantity, leaving the student to strengthen the framework of his knowledge after he leaves the college. We do not desire to argue on either side. There is one thing, however, which is not done by the modern technical school because of the speed with which the work is hurried thru. The average technical school does not give the student the power to read, and comprehend, exceedingly difficult technical matter without assistance. Too much dependence is placed upon the professor. This is the inevitable result of present methods. In the ordinary class there is always a definite
amount of work laid out to be covered during the term. If the subject under study involves the reading of matter which is accepted by the student as impenetrable, the professor lacks time to thrash the matter out, and so gives his version, or we might say translation, and the work goes on to the next topic. This results in a decided leaning by the student upon the professor. This habit will prove a decided handicap to the student if he later attempts to take up independent study along any line.

The study of languages is usually derided by the underclassmen. It might be casually mentioned here that a study of languages aids in developing this ability to read intricate matter easily and intelligently.

Infinitely better than the study of languages, however, would be an intensive study of some book such as Rankine’s *Applied Mechanics*, or the translation of Joubert’s *Traité Elémentaire d’Electricité*. The subject dealt with would mean little, the manner of treatment everything.

It might require an exceptional man to make such a course practical, we cannot say as to that. But with the right man in charge, much real training could be accomplished.

THIS number goes to press as the local campaign for the raising of funds for the new school opens. According to Frederick Courtenay Barber, director general of the work, this local campaign will develop into one of the biggest philanthropic movements in the history of this section.

Terre Haute people undoubtedly realize what the Rose Polytechnic Institute means to them. When they discover the actual necessity of their assistance they are sure to respond generously. Rose Alumni are everywhere doing all in their power to assist in this campaign, and this is realized and appreciated by people of this city. The loss of this institution to Terre Haute would be irreparable. Of little avail would be a sudden realization after the well had run dry.

As time goes on we are more than ever convinced that in Mr. Gilbert we have found an athletic director worthy of our respect and confidence. Mr. Gilbert is but making a beginning. In some ways he is more than a little handicapped. These things should be considered. He has already demonstrated that he is lacking in neither initiative nor originality. Mr. Gilbert’s latest idea, the Rose “R” Association, should not only benefit our athletes of the past, but prove a decided stimulus to the present day stars and aspirants. Possibly the benefits derived by the school as a whole from such an association may be much more far-reaching than is at first apparent.

In the December number we rashly used a clip from the *Rensselaer Polytechnic*. Little did we realize at that time what awaited us. Notice the chain of circumstances. At about the same time the Alumni Editor bestirred himself, and went in search of Alumni articles. H. J. McDargh, ’96, happened to be one who was called upon to assist. It also happened that at about this time Mr. McDargh was a member of a committee selected for the purpose of securing an increase in compensation for the engineers of the City of Chicago, and had at his finger tips many important facts concerning the compensation of engineers as compared with skilled labor and unskilled labor. The figures showed conditions at the present time and at different times in the past. Mr. McDargh had the figures, Mr. McDargh read the December Technic, and Mr. McDargh was most happily given a chance to express himself. Mr. McDargh has.

Like Nathan Hale we have only one statement to make. That statement is that the matter quoted appeared in the other paper, not in 1900, but in 1916.

We are very glad that Mr. McDargh availed himself of the opportunity to correct the figures which we printed. We are more than glad to get similar figures which we can be sure are correct. The true compensation of
the Engineering Graduate is something which possesses great fascination for the underclassman.

This article also deals with co-operation and its relation to just compensation. As the author states, it has been a matter of but only of about three years since the Engineer began to really appreciate the value and desirability of co-operation outside of purely technical affairs. The various older engineering societies of this country have for the most part never taken any definite action along those lines which The Associated Technical Men are striving to develop, and it has remained for younger societies to spring up and attack these obstacles which must be overcome. The American Association of Engineers is another young organization founded for somewhat similar purposes.

This is the first Alumni article of this nature to be published in The Technic. Doubtless the future will see different phases of this subject discussed more than once.

EVERY man who has casually glanced thru the elaborate booklets prepared by gas and electric companies, each striving to prove conclusively that their method gives the best and cheapest result, has wondered, no doubt, by what feats of legerdemain these widely varying results were so easily obtained. Fred B. Lewis, '05, noticed this same thing in the gas and electric journals, and as a result he undertook an investigation which yielded the results set forth in his discussion on the "Comparative Cost of Illumination." Mr. Lewis' article is most interesting, pointing out three reasons why the figures given by different companies are at such variance. The table giving the comparative costs of all types of illuminants from the kerosene lamp to the Series Magnetite Arc is apt to prove something of a surprise to the reader who has never before seen similar comparisons. How many people would ordinarily guess that the cost of kerosene oil illumination is only exceeded by two other types of illuminants, and that the cheapest light obtainable costs approximately one-tenth as much as kerosene light? It must of course be remembered that the exact figures given hold only for the locality in which this investigation was made. The comparative costs in other localities may vary considerably from this.

This paper was recently presented at a meeting of the District Agents of the Southern California Edison Company.

AS was announced in the last issue we present this month the second of a series of articles dealing with the educational opportunities offered technical graduates by the larger companies and organizations of this country. This article deals with the work of the Westinghouse Electric and Manufacturing Company, and for it we are indebted to Mr. J. H. Mustard of the educational department of that company. We wish to acknowledge our indebtedness and to thank him for the assistance he has given us.

The article, altho by no means lengthy, covers the ground thoroly, stating the qualifications for entrance into this work, explaining the general training plan, and going into detail regarding the various lines of endeavor which may be entered into. It is interesting to note the various ways in which technical graduates are viewed by the different companies, and to also compare the underlying principles which shape their policies in regard to this educational work. The Westinghouse idea seems to be "fitting the man to the job."

In the next issue will be published an article concerning the work of a company possessed of large public service holdings.
THE WEST(110,17),(871,997)

THE Westinghouse Electric & Manufactur- ing Company believes in the tech- nical graduate. His mental training and know- ledge of fundamental scientific principles form an essential part, if not the foundation, of his complete equipment. But it has been the ex- perience of the Company that the technically trained man makes more rapid progress in the end by first obtaining general practical experi- ence.

Furthermore, in this day of specialization and of increasing demands upon men, it is of utmost importance, not only to each young engineer but to society in general, that each man be started right.

By bringing the young technical graduate into active contact with many types of apparatus, the methods of their manufacture, and with men of industrial affairs, his inherent abilities at once stand out and he may be di- rected into that specialty for which he is best suited, with the least loss of time.

OBJECT.
The purpose of the Westinghouse training course is to develop thoroly competent men to fill positions with the Company which, due to the natural growth of the business and the changes in personnel, are constantly develop- ing.

The general plan is therefore arranged to round out the student's engineering training by practical experience; to assist him in finding his field of greatest aptitude. Following this the special training is provided for those who are to remain with the Company. For 20 years the Company has recruited from 50 to 65 per cent of its leading men from the gradu- ate students.

QUALIFICATIONS.
This opportunity is open to a limited num- ber of technical graduates who show the re- quisite physical, mental, moral, and social qualifications.

Students are selected from the graduating classes of technical and scientific schools of recognized standing, after a careful investiga- tion of each individual applicant. Graduates of electrical and mechanical courses are given equal consideration. Graduates of other courses may be considered.

THE PLAN.
The training consists of a period of general shop and test-floor experience, followed by specialized training in that particular phase of the activities of the Company for which the student has indicated a preference and has demonstrated his suitability. From six to fifteen months will be required to complete this training.

The General Training provides a broad experience in methods of manufacture and testing and a wide general knowledge of the prod- ucts of the Company. The actual handling of the many lines of apparatus, the close as- sociation with other students from widely separated localities and the personal acquaint- ance with engineers, salesmen, and other specialists, are, in addition to the general value of the experience, of great assistance to the student in determining the line of work for which he is best suited.

Close personal attention is given each man by the Educational Department; he is studied from many angles and his characteristics are checked on the basis of his daily showing in the shop, office, or class room. The cumulative result of these observations by many men aids the student in the choice of his specialty.

THE GENERAL TRAINING WORK.
In the shop, answers to many perplexing problems are found while working with actual materials, alongside of skilled mechanics. Here
the student becomes a workman, gets the regular workman's point of view and has an opportunity to "make good" with many different foremen and managers. Engineering consists not alone in handling apparatus but also in dealing with men.

The shop work furnishes abundant information relative to such subjects as: general shop practice, special processes of manufacturing, cost and wage systems, labor conditions, and methods of handling orders and materials, which are valuable assets in any line of future specialization.

The work in the Testing Department consists in checking up apparatus to see that it meets the specifications according to which it was designed and comes up to the Westinghouse standard of quality; also in supplying the Engineering Department with test results which are afterwards worked up into data for future design calculations. The student here learns to connect up the different kinds of apparatus, how to conduct commercial and special tests, and to distinguish between essentials and non-essentials in determining the performance of machines. He also learns logical and speedy methods of locating different kinds of trouble. He learns the characteristics of modern machines, becomes acquainted with the relative proportions of parts, from the largest to the smallest machines and has ample opportunity to develop resourcefulness and judgment.

Class.

Each student reports to the Educational Department for a conference period each week. Work in the classroom is based on shop observations and Company literature, not upon the theory of electricity. This work supplements that in the works by discussion of the specific work in which each student is engaged and by a general study of the construction and limitations of electrical apparatus, materials, methods of manufacture and application of theory to commercial machines. These meetings make the student more efficient as a workman and at the same time make his shop experience more comprehensive.

The Specialized Training Work.

Engineering Design.

Engineering Department.

Works Management.

Production, Rates, Cost, Inspection Departments and Efficiency Studies.

Commercial.


Erection.

Large Winding and Assembling Sections, Switchboard Building, and Testing Sections.
Operation.

The Manufacturing and Testing Sections.

Teaching.

The Manufacturing and Testing Sections.

Engineering Design—Three months of 7½ hours per day of class room work, supplemented by shop inspection trips taking up the study of questions and problems relating to the design and construction of the various kinds of apparatus. Conferences led by different engineers are held weekly.

Works Management—About three months, two hours per day. Factory costs, wage systems, routing of material, planning production inspection, machine-tool equipment, storekeeping. Time and motion studies, hygiene and factory sanitation, illumination, heating and ventilation.


Erection—About four months of class room work. Two months of erection experience in one of the Company’s service offices. Returned to the Works and given experience preparatory to going into the field permanently.

Operation—A specific schedule is planned for this work and all such students attend regular classes pertaining to power apparatus.

Teaching—No specific schedule. Students may attend other classes when possible. Are utilized as assistant instructors in Apparatus and Testing Classes, if advisable.

Records and Grades.

A complete record of each student, based upon the reports of the instructors, the shop foremen, and department heads is kept in the Educational Department office. In the class work, examinations form one basis for grading. Each student’s record is open to his inspection.

The Westinghouse Club.

The Westinghouse Club located in the residential town of Wilkinsburg, is easy of access to the hundreds of Westinghouse employes who live in this vicinity, furnishing them opportunities for educational, social and athletic development. A spirit of fellowship makes the transition from college life to the industrial life less abrupt.

It has nearly a thousand members, and its activities have been extended to include Athletics, Excursions, Entertainments, Library, Lectures, Music and Education on Technical Subjects, each being managed by a committee appointed from the membership of the club.

Basketball in competition with strong college teams, handball, and other indoor games are played at regular intervals throughout the winter season.

Technical sections are formed for the study of various engineering subjects. These are supplemented by lectures and excursions to various industrial plants throughout the Pittsburgh district.

Social features consisting of dances, “mixers,” boat rides and other forms of entertainment are provided throughout the year which foster good fellowship and enable the new men to become acquainted with each other as well as with the older members.

The Electric Journal, one of the leading technical magazines of the country, is published under the auspices of the Club.
Compensation—Cooperation

By HARRY J. McDARGH, '96

The Alumni Editor tells me that he needs an article. Inasmuch as we usually follow the paths of least resistance whenever possible, this article will deal with the thoughts which were occupying a portion of the writer's spare moments at the time the request was made.

On page 78 of the December issue of The Rose Technic, "The Potential Value of Engineering Graduates" is given being taken from The Polytechnic. Our editor does not say what year this was published in the other college paper but as a guess, I would say that it was for the year 1900.

Just at the time this article appeared, the writer was a member of a committee selected for the purpose of securing an increase in compensation for the engineers employed by the City of Chicago.

One of the features of this Committee's report was a comparison of wages of common and skilled labor to the rate of compensation of the technically trained man for the last twenty years. Referring to the published article in The Technic it stated that:

- The unskilled workman earns annually on the average, \$500.00
- The non-technical but trade-trained man earns annually on the average, about \$800.00
- The technically trained graduate of our engineering colleges, earns annually on the average, at least \$3,000.00

Let me present what this Chicago committee found to be true in these comparisons and bear in mind that tho these figures may be high as compared with those of smaller cities, living costs counter-balance any excesses. For this comparison, the technically trained graduate of our engineering colleges should be divided in four classes, viz:

- Class I Rodman, Instrumentman, Tracer.
- Class II Draftsman, Junior Engineer.
- Class III Designing Engineer, Resident Engineer.
- Class IV Engineer in executive capacity.

It would be rather difficult to make a statement which would apply to all cases, but for this article it will be assumed that the average years service in these classes before advancement is made, will be:
- Class I Two years.
- Class II Three years.
- Class III Five years.

This committee found that in Chicago

<table>
<thead>
<tr>
<th>Year</th>
<th>Unskilled Workman</th>
<th>Trade-Trained Man</th>
<th>Foremen</th>
<th>Technically Trained Engineer</th>
</tr>
</thead>
<tbody>
<tr>
<td>1897</td>
<td>$475</td>
<td>$1,020</td>
<td>1,250</td>
<td>2,040</td>
</tr>
<tr>
<td>1916</td>
<td>$1,041</td>
<td>$1,906</td>
<td>2,150</td>
<td>3,500</td>
</tr>
</tbody>
</table>

If you will make a comparison between these figures just given, it is readily seen why the
writer takes exception to those published in the December issue.

Such statements are misleading to undergraduates and also have a tendency to discourage young engineers when they compare their monthly check to that which it ought to be according to such published statements.

A committee of the American Society of Civil Engineers appointed to “Investigate the conditions of employment of, and compensation of, Civil Engineers,” made its final report last December. It is quite interesting to note their findings obtained from some 6,000 civil engineers.

186 men with five years experience, received from $600 to $12,000 per year; average  $1,935.00
353 men with ten years experience, received from $1,080 to $30,000 per year; average  2,972.00
267 men with fifteen years experience, received from $960 to $30,000 per year; average  4,201.00
209 men with twenty years experience, received from $780 to $57,500 per year; average  4,954.00

The writer will gamble that there is not a Rose graduate making only the minimum amount mentioned nor but a very few, if any, the maximum amount. However, the class of men turned out by Rose is such as on the average will probably measure up on pay day very close to the average as set forth by this committee.

The statement is ventured, however, that where one Rose man is found in this average standard, there are ten other college graduate engineers making an average salary of at least twenty-five per cent less. It is unfortunate that this last committee did not make some comparison of rates of compensation covering a period of twenty years past. The writer is certain that no great increase would have been noticed.

Referring to the Chicago committee’s findings you will note that the unskilled and trade-trained workmen have increased their “potential value” in the last twenty years an amount varying from fifty to one hundred per cent and the college trained engineer, not in executive capacity, twelve per cent.

Your thought now turns to trade unions. Yes, that has assisted in this 50% and 100% increase. But just now, let it be clearly understood that the writer is not going to talk of, nor does he believe in, such a combination for the engineering profession, even tho he is heartily in sympathy with the major portion of the ideals of organized labor as relating to the unskilled and trade-trained workman.

But what about the twelve per cent increase of the engineers? Before dealing with this question, let us consider our standing in the world of labor. The engineering profession can be divided into a dozen branches but as a whole, it has furnished this age with the fundamental material elements of all modern civilization. By that is meant, transportation, water supply, sanitation, telegraph, telephone, working of metals, etc., etc. We have furnished comforts, luxuries and necessities which were never dreamed of fifty years ago. We have a very personal responsibility in our profession which is equalled by only a few others. If we build a structure which fails or a machine which will not work, we are held accountable. If a doctor loses a patient, either the case was incurable or the patient disobeyed. If the lawyer loses a case, it is either the judge, jury or witnesses that are to blame. This responsibility increases our self-reliance and makes us dig deeper for accurate results, but while we have been doing this, have we been neglecting some opportunities which would lead to something else other than cheapening the cost of production and of producing that which the public demands?

Have you noticed any amount of representation of the technical profession as members of arbitration boards, industrial commissions, Chamber of Commerce, philanthropic and charitable organizations, of Congress, State Legislatures, City Councils and many other national, State and local societies for the ad-
advancement of this and the suppression of that? It is not enough for us to simply have a thorough knowledge of the economic problems of the day but we should take such steps as will allow us to share in these activities. Is it not possible for us to trace the small increase in our compensation to the engineer's indifference?

What about the lawyers, doctors, druggists, dentists, real estate men, grocers, butchers, bakers and most any other profession or business you can think of? Who looked after their interests? Why did they all form organizations to solve their respective problems?

If all of these other interests have found it profitable to co-operate so as to protect their welfare and to place their members in places of public trust, why do not we as members of the technical profession follow suit? When you submit such a subject to a gathering of engineers, you will be given two principal objections.

First, that the interest of technical men tend toward specialization and that the field is so broad that a single organization could not cover the ground.

Second, that technical men desire to stand alone, unrestricted, independent and are indifferent.

The first objection seems valid until we note that the whole profession is distantly connected with the conditions which are working against us. Regarding the second objection, it is very fine for us to take such a stand. It brings out the desired result individually but works to the disadvantage of the profession as a whole.

Only by an organized effort can we push ourselves forward into the position which we should occupy in the business world.

This article makes the writer appear to be a pessimist but we can sometimes get the best comparisons by looking at opposites. More interest in the subject of co-operation amongst engineers has been aroused in the last three years than in the twenty years preceding.

The writer is a member of the Associated Technical Men, the first national organization of its kind, which has for some of its policies:

To develop co-operation among technical men.

To encourage technical men to assume a responsibility in handling civic and economic problems.

To furnish

(a) A means of properly determining the qualifications of men who are to enter the profession.

(b) Statistics showing comparative incomes from various lines of technical activity.

(c) Statistics relative to the supply and demand for technical men.

To obtain

(a) Influence and representation in regulating and restricting bodies, in national, state and municipal governments.

(b) A fair compensation for the going value of technical men.

This Association is composed of technical men of known repute and selected for their loyalty to the cause. It is very improbable that all their hopes will be attained within the present generation, but every large undertaking has its small beginning. It is very gratifying to note the degree of interest that colleges, universities, national and state engineering societies, technical periodicals and other agencies are taking in this need of cooperation.

A fair compensation for the services of technical men will never be obtained until the profession reaches, thru its own efforts, the place of power and influence to which it is entitled.
ARTICLES often appear in the technical press setting forth the comparative cost of different forms of illumination and it has probably been noted that these articles are often at variance.

In the gas journals it is shown that gas is cheaper for illumination purposes than electricity, and simultaneously figures appear in electrical publications which show the reverse to be the case. Probably magazines published in the interest of coal oil or carbide manufacture set forth tabulated figures showing that for real economy nothing can compare with the good old coal oil lamp or the acetylene gas individual plant.

After a careful analysis, the causes of these discrepancies are found to be due to one or more of the following causes:

First, variation in the comparative rates charged for gas, electricity, coal oil, etc. in different localities. For example in certain cities in the middle west the prevailing rates are: gas, thirty cents per thousand; and electricity, twelve cents per kilowatt hour. In Southern California the customary rates are: Gas, one dollar per thousand; and electricity, seven cents per kilowatt hour. Naturally gas has a considerable advantage over electricity in the middle west as compared to this community.

Second, varying practice regarding the charge for maintenance and renewals in different localities. In some cities lamp renewals are free and in others the consumer must purchase same. Likewise some gas companies furnish free mantles and labor to maintain the lamps while others, as is usually the practice, make a monthly charge for maintenance and the supply of new mantles. This is usually fifteen cents per mantle per month.

Third, biased or prejudiced viewpoint or basis of comparison. As shown above, it would be quite simple, in order to produce a desirable comparison between gas and electricity to use rates that suit your convenience. Likewise, very different results are obtained by adopting “average” instead of “original” candle power or efficiency. And again, the use of “mean spherical candle power” instead of “maximum” or “useful candle power” will greatly affect the comparison.

In explanation of “average” and “original” candle power and efficiency attention is directed to the depreciation in candle power and efficiency of illuminants during their useful life. During five hundred hours burning of the ordinary gas mantle (Reflex burner) the candle power decreases fifty percent, while the Mazda lamp loses but eight percent. The consumption of gas during this period falls off twenty-seven percent and of electricity two percent. The resultant consumption of gas per candle-power therefore increases forty-seven percent while the Mazda increases only six percent. Therefore in figuring the cost per candle power the original or rated economy cannot correctly be used. In the present comparison the average value has been taken as basis. The irregularity of the gas mantle curves is due to variation of gas pressure which is characteristic even of the most modern operation.

The open gas flame gives practically the same candle power in one direction as another, in other words, its candle power curve is practically a true circle. In the case of other illuminants the candle power is greater in one direction, usually the horizontal, than another and this greatest value is used as the rated candle power. For instance, the sixteen candle power lamp gives this amount of light in the horizontal direction but only about nine candle power downward.
The average of the candle power in all directions is called the “mean spherical.” By the use of reflectors the light that is given in a useless direction can be diverted to the direction in which it is of greatest service, usually the downward direction. The “mean spherical candle power,” of course, remains the same but the “mean hemispherical candle power” is thereby greatly increased. Reflectors can be applied to almost every type of illuminant and are always used in efficient installations. In this comparison, therefore, the “mean hemispherical (M. H. S.) candle power” of an illuminant equipped with the most effective and efficient type of reflector is considered.

For interior lighting, one thousand hours per annum are usually considered an average use of artificial lighting. Thus one thousand candle power hours is equivalent to one thousand hours or practically one year. The table published herewith indicates the cost, per thousand M. H. S. candle power hours, of practically all of the illuminants used at the present time. This cost includes gas, oil or electricity, supplies, renewals, maintenance, etc., based on rates and charges that prevail in this locality.

### TOTAL COST PER 1000 M.H.S.

<table>
<thead>
<tr>
<th>TYPE OF ILLUMINANT</th>
<th>CANDLEPOWER HOURS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Kerosene Oil—Rochester burner</td>
<td>22.0 Cts.</td>
</tr>
<tr>
<td>2. Gas—Acetylene</td>
<td>23.3</td>
</tr>
<tr>
<td>3. Open Flame</td>
<td>25.0</td>
</tr>
<tr>
<td>4. Upright mantle</td>
<td>10.43</td>
</tr>
<tr>
<td>5. Reflex burner</td>
<td>9.74</td>
</tr>
<tr>
<td>6. Arcs</td>
<td>8.02</td>
</tr>
<tr>
<td>7. Electric—Nernst Glower</td>
<td>22.2</td>
</tr>
<tr>
<td>8. Mercury vapor</td>
<td>10.1</td>
</tr>
<tr>
<td>9. Carbon incandescent</td>
<td>25.8</td>
</tr>
<tr>
<td>10. Gem</td>
<td>18.4</td>
</tr>
<tr>
<td>11. Mazda, Type B</td>
<td>8.34</td>
</tr>
<tr>
<td>12. Mazda, Type C</td>
<td>6.92 to 4.42</td>
</tr>
<tr>
<td>13. Arc, D. C. enclosed</td>
<td>10.15</td>
</tr>
<tr>
<td>14. Arc, A. C. enclosed</td>
<td>10.9</td>
</tr>
<tr>
<td>15. Arc, flame</td>
<td>2.88</td>
</tr>
<tr>
<td>16. Arc, Series Magnetite</td>
<td>2.67</td>
</tr>
</tbody>
</table>

In making a comparison of different forms of illumination it is not sufficient to consider only the relative economy or cost of operation. One should also take into account the questions of safety, convenience of installation, cleanliness, steadiness, maintenance and last but not least, color quality. The superiority of the electric over all other illuminants in each characteristic but color quality is so thoroughly understood that no space need be allowed for discussion.

A color is distinguished because it is illuminated by rays of a like color. For instance, red appears red because the red rays of the sun or artificial light illuminate it, and if the illuminant does not possess any of the red rays, that color will appear black. The mercury vapor lamp is practically void of red and orange rays and cannot therefore be used where colors must be distinguished as for instance in dry goods stores. Likewise, the gas mantle of either the upright or reflex burner type is extremely lacking in red rays.

Sunlight is of course the ideal illumination, and while we speak of it as being white light, yet it will be remembered that white is composed of blue, green, yellow, orange and red in certain proportions. An illuminant therefore that contains these colors in as nearly the same proportions as possible will approach the ideal. The different forms of illuminants vary in this respect through a very wide range, and to express this quality briefly, it is usually stated that an illuminant possesses a certain per cent of sun light quality.

The comparative rating of different illuminants is as follows:

- Magnetite Arc ............. 65%
- Mazda—Type C ............. 55%
- Enclosed Arc ............. 45%
- Mazda—Type B ............. 34%
- Gem .................. 25%
- Carbon incandescent ....... 20%
- Acetylene ........... 16%
- Gas mantle .......... 13%
- Nernst ........... 10%
- Mercury Vapor .......... 5%
The New School Campaign

SINCE the last appearance of The Technic the Alumni fund raising campaign has gone on at a very merry rate with the result that the total amount pledged now stands at $85,000. By the time this issue makes its appearance it is very probable that the fund will total well over the $100,000 mark. The campaign has gone on rapidly altho not quite as fast as was expected. The big difficulty encountered in this campaign has been that of reaching the widely scattered Alumni. On this account it is probable that the campaign may not terminate with this month as was originally planned. All the men reached so far have responded loyally. The completion of the fund of $150,000 only remains a matter of time. The class secretaries are carrying out a most important work in getting these distant men in line.

It has been fully demonstrated in this campaign that Rose has no more loyal friends than some of the men who spent a few years at the school but were unable to remain to complete the course. A very large number of these men have contributed generously to the fund, and have proved themselves true Rose men.

Since last month the organization of the New York team has been perfected. This team will have headquarters in New York and will have charge of all campaign work in the Atlantic coast cities. The team consists of Arthur D. Kidder, ’99; Frederick J. Frisz, ’09; William A. Peddle, ’03; Walter H. Burr, ’05, and Ralph C. Gray, ’05. The California team also began organizing the latter part of March. Headquarters for this club are being maintained in both San Francisco and Los Angeles. The work of organization was placed under the direction of Frederick N. Rumbley, ’03, president of the Southern California Tech Club, located at Los Angeles, and Nathan A. Bowers, ’10, of San Francisco.

Chicago’s team has added Minnesota to its territory, and has appointed team members to reach all Rose men in that state. Clinton B. Kidder, ’88, of Fergus Falls; Gustav Willius, Jr., ’97, of St. Paul; Frederick H. Cash, Jr., ’07, of Kinney, and Ivan L. Kauffman, ’14, of Minneapolis, will represent Minnesota in the Chicago team.

The way in which the pledges are coming in is encouraging to say the least. During the week ending March 20, thirty-five pledges varying in amount from $50 to $2000 were included in the totals. The Cleveland team made a splendid showing during this week and edged into second place in the team competition. Chicago maintained the lead which it had obtained earlier in the campaign. The class of 1917 retained its lead in the number of pledges made. The total fund rose during this week to $61,675.

During the week ending March 27 a sum of $10,175 was added to that already subscribed. This amount was the result of forty-six separate pledges, the largest number yet received in any one week.

At the end of the week of April 3 it was found that $13,870 had been contributed during the week, thus swelling the total fund to $85,670. The largest contribution during this week was for $5,000. During this week the class of 1917 lost the first place which it had held by virtue of the number of men tendering subscriptions, and fell back into fourth place. 1910, 1915 and 1916 are the leading classes as regards number of subscriptions made.

The final report obtainable shows Chicago still in the lead as regards amount pledged with Cleveland and the Southern Club close behind. The class standing highest in percentage of subscriptions is the class of 1889. Four out of eight members, or 50% of this class have subscribed.
Nearly two hundred men have now contributed to the fund.

One of the greatest needs of the new Institute will be equipment. It is believed that many of the Alumni can aid in the campaign by obtaining gifts of needed equipment from individuals and corporations. In order to further this work, each team has been provided with a list of the equipment which the Institute will require, in addition to such present equipment as may be removable to the new site. Several of the teams have made a beginning in this direction, and expect to report favorable results in the near future.

The local campaign also just beginning and adding to the general excitement had its official start with the arrival in the city of Frederick Courtenay Barber. The campaign was inaugurated very auspiciously with the assistance of the Rotary Club. Tuesday, April 10, was “Rose Polytechnic Day” at the Rotary Club. Dr. Mees, Dr. White, and Mr. Barber addressed the Rotarians at their luncheon, explaining the plans for the new school and how it will be necessary to rely on the people of Terre Haute to a certain extent. Considerable interest in the movement for the new school was here evoked. R. E. Woodruff rendered several vocal numbers, and the efforts of the Rose Mandolin Club did much to make the luncheon pleasurable.

Next month will see us much nearer to the goal towards which we are striving. Below is given the additional subscriptions made since last month, and the present standing of the teams.

**Team Standing.**

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**SUMMARY OF SUBSCRIPTIONS REPORTED MARCH 20, MARCH 27 AND APRIL 3**

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THE "R" ASSOCIATION

PRACTICALLY the greatest honor an undergraduate of Rose can receive is the right, bestowed upon a student by the Athletic Association, to wear the "R". The Athletic Association does not bestow this honor upon request, but as a reward for meritorious service. Secretly every student of the Institute wishes he might win the right to wear the letter.

However, among all the men who have been educated at Rose only approximately two hundred and fifty have won the "R." From those two hundred and fifty only a handful have won a letter in three branches of sport, and but two have succeeded in winning the "R" in all four major sports. Wearers of the "R" are a select few.

Every man who has won the "R" of Rose has a stronger attachment for the Institute than the men who have not won the letter. To the winners, that "R" stands for severe lessons learned on the athletic field, for self sacrifice, hard work, pain, defeat, victory, and a thousand emotions never experienced by the other men. Those memories stand out in the minds of old "R" men who have long since departed while the memories of other student activities have been long forgotten. It seems regrettable that the athletes of bygone days have no means of keeping in touch with each other. It is no more than right that a graduate who has won the distinction of the "R" by winning it as a Fighting Engineer deserves to have his name recorded and the history of his team preserved. He should have an organization to bring together his former team mates. He should have something to say about the Alumni team that annually faces the football team of Rose. The only thing this graduate has to connect him with Rose is the Alumni Association which includes all graduates.

With the object of forming a temporary organization to draw up plans tending towards an organization of an "R" Association at the Alumni Association meeting June 7th, Athletic Director Gilbert called a meeting of all "R" men residing in Terre Haute, and arranged for a dinner to be held at the Hotel Deming on the evening of March 23rd.

After the dinner, a discussion of the idea resulted in a committee being appointed, the duties of the committee being to get in touch with all the "R" men in order that all might be familiar with the plans before the June meeting of the Alumni Association. The committee appointed consists of Chesleigh Gray, '13, Chairman; Charles C. Modesitt, '06; George F. Standau, '10; Paul Turk, Ex. '06; Carl Wischmeyer, '06, and W. C. Wente, '17. The committee has as yet issued no report as to their work, but it is certain that all "R" men will be reached before the date of the meeting in June.
ALUMNI NOTES

Benjamin F. Chandler, '97, and Herbert E. Shryer, '05, have been appointed to represent Detroit on the Cleveland campaign team.

Clarence M. Ridgely, '96, is Engineer of Machine Tool Efficiency for the Farrell Foundry and Machine Co., at Ansonia, Conn.

H. M. Kauffman, '11, who has been with the General Electric Co., at Schenectady, N. Y., has taken a position with the Wagner Electric Co., at St. Louis, as Power Apparatus Specialist.

Patrick L. Millette, '15, who is with the Mahoning and Shenango Ry. & Light Co., at Youngstown, O., has been operated on for appendicitis, but is now getting along nicely.

Jay H. Hall, '97, who for the past two or three years has been located at Morganton, N. C., has returned to his former post with the Electric Controller & Manufacturing Company, at Cleveland.

Clarence F. Carlisle, '16, has resigned his position with the Pennsylvania Lines, at Cleveland, and entered upon work with the Standard Oil Company at Wood River, Illinois.

Henry M. Shaw, '10, now with the Washburn-Crosby Co., Minneapolis, is a captain in the field artillery of the Minnesota National Guard. He returned recently from the Mexican border, and expects to be called out again in view of the war declaration by Congress.

On March 31, Harrison W. Craver, '95, left his post as Librarian of the Carnegie Library of Pittsburgh to become Director of the United Engineering Societies Building, 29 West 39th Street, New York. Mr. Craver has been connected with the Carnegie Library for nearly fifteen years, first as Technology Librarian and later as head of the entire institution.

With his departure from Pittsburgh, Mr. Craver relinquishes the captaincy of the Pittsburgh Alumni team. His place will be taken by Maurice C. Rypinski, '97, who has been an able lieutenant to Mr. Craver in the work of the campaign.

The Cleveland Tech Club has reorganized for the coming year, with the following officers: Harry S. Richardson, '00, president; Paul F. Stokes, '10, vice-president; J. Simms Brosius, '03, secretary, and Harry R. Canfield, '06, treasurer.

As president of the Engineers' Club of Indianapolis, W. H. Insley, '00, has issued an appeal to the engineers of the state to aid the Government in every way possible in making preparations for war. A battalion of engineers is being raised by the Indiana National Guard, and this probably will include a number of Rose men. Many Rose men have offered their services.

E. A. Scheffel, '13, who has been with the Consolidated Light and Power Co., of Huntington, W. Va., has left to become Secretary-Treasurer of the Corey-Scheffel Lumber Co., of Louisville, Ky.

Clifford Post, '07, is now with the Goodyear Tire and Rubber Co., of Akron, O. Mr. Post was formerly connected with the Pyrene Mfg. Co., at Milwaukee.

Barton R. Shover, '90, who was formerly General Superintendent of the Tata Iron and Steel Co., of Sakchi, India, has opened an office in Pittsburgh as Consulting Electrical and Steam Engineer.

Fred W. Kingery, '16, who is with the Standard Oil Co., has been transferred from Wood River, Ill., to Louisville.

F. E. Meyer, '12, has left Fenwood, Wisconsin, and taken a position with the Waterloo Gasoline Engine Co., Waterloo, Iowa.

Roland C. Rehm, '12, assistant examiner in the Patent Office at Washington, has gone with the firm of Barrett & Truman, Patent Attorneys, Monadnock Building, Chicago.
A

OTHER St. Pat's Day has rolled around and become a memory, but as a memory at least a pleasant one. The annual festivities in honor of the doughty old patron saint of all engineers proved to be an immense success, eclipsing even the record set of the celebration of last year. One continuous round of merriment marked the time from the first gathering of the clan at the Heminway House until the final strains of the dance music had died away at midnight.

Director Gilbert had planned a Pentathalon contest for the morning's entertainment, but unfortunately the weather prevented a large turn-out, and an attempt to carry out this part of the program was finally abandoned.

At one thirty the general assembly at the Heminway House took place. Green colored adornment was everywhere in evidence. Every man flaunted a green tag bearing the legend, "St. Patrick was an Engineer; So Am I." Just-out-of-the-attic green caps decorated the heads of all Freshmen present. And neckwear, hosiery, and various other equipment of an emerald hue forbade forgetfulness of the date. After all of the stragglers had arrived, the march to the Hippodrome began. The green tag on each coat lapel afforded admission to the theater, and the Rose contingent had settled itself in the best seats in the house before two o'clock.

The performance was not scheduled to start before two-thirty o'clock. An impromptu performance with various gifted students as the furnishers of entertainment was therefore ceremoniously staged. Jimmy King being the anointed leader of the flock took charge and acted as a combination author, producer, stage manager and actual combatant. With Willie Osmer at the piano in the orchestra pit the opening chorus of "a Rambling Wreck" was under way before the audience was well aware of what they were viewing—and hearing. After this opening number had been rendered to the satisfaction of all concerned, Manager King presented "The Misfit Army," composed of the ever present Stone, Rolshausen and Peker, whose act may best be described as a touching rendition of ballads, etc. This trio having discreetly left the stage, Joe Englehard was next introduced. This gentleman after a few remarks entertained with a mouth harp serenade and as a climax gave vent to "America" in the blinding glare of the spot light which gave the best kind of an illusion of "bombs bursting in air." The audience reverently stood at attention when the thundering tones of this anthem issued from his instrument. Barnes and King dueted awhile, and Tony gave the stock address which so many of the upperclassmen had heard at last year's Owl Hunt.

By this time the orchestra of the theater began to get anxious for their overture, but they were refused admittance to the pit until Robin Woodruff had done his bit for the cause.

Possibly the management of the theater was fearful lest a rough-house be started during the show, but if there were such fears, they were groundless. The performance was allowed to proceed unmolested, and it was demonstrated to the world that Rose Poly men are "perfect gents," even if they do whistle several tunes off key. The performance proceeded without unusual excitement, and at the conclusion the Sons of St. Pat moved out hur-
riedly to prepare for the festivities of the evening.

The conferring of the usual degrees in the Order of the Elephant took place at six-thirty in the evening. The rolls were called and the green badges given out in the fitful glare of torches on the west porch of the Heminway House. After these ceremonies had been concluded, the formation of the parade began. The arrangement of the various floats was effected with efficiency and dispatch, and by seven o'clock the triumphal march had started.

The parade was preceded by an advance guard, Eddy Richard who jauntily rode in a wheel barrow pushed by St. Patrick Davis. Then came the much advertised, expectation-fulfilling band, led by Drum Major Bill Bruning, who wore his striped uniform with an ease and grace which could not have been excelled by a life-termner. During the entire march this band continually rendered such stirring strains as, "There'll Be A Hot Time," "Loola," "Drunk Last Night," and other soul inspirers. First after the band, in accordance with their rank came what was left of the Seniors. They carried a banner upon which was emblazoned the triumphant statement, "Positively Our Last Appearance." They have been described as appearing in "flowing white robes," we let it go at that.

The Juniors followed clad more or less in green sashes and turbans. They carried two remarkable floats, an aeroplane and a submarine. The submarine, R-18, was completely equipped with conning tower and periscope. The aeroplane was complete even down to the revolving propeller.

Next came the Sophs, the guardians of the Sacred Elephant. The Elephant was a masterpiece. Red and green lights glowed in her eyes, (port and starboard) and at the rear was placed a tail light, as required by law. A guard of eight Hindu spearmen, appropriately clad and wearing green turbans and flowing beards, walked beside the sacred beast who was guided by his mahout aloft. In thus allowing herself to be made a beast of burden, Rosie III proved to be of a more enduring nature than either of her predecessors who, altho riderless, weakened visibly at the knees after being led thru the streets.

The uniforms of those Sophomores who were not Elephant guards consisted of khaki suits and green plug hats.

Bringing up the rear of the procession were the Freshmen each one wearing the regulation green cap and a night shirt of most violent green. This class proudly carried their rep-
route of the parade included the whole business district. The first stop was made at Seventh and Wabash, where the procession was successfully led thru the most intricate maneuvers by the able drum major. The traffic officer at each corner was encircled several times, and the usual bedlam reigned supreme. The streets were lined with spectators.

After the principal downtown streets had been traversed, the parade returned to the Heminway House and there disbanded.

The dance was the next thing on the program, and by nine-thirty the majority of the school had succeeded in donning presentable attire and in reaching the hall. The grand march was led by W. Edward Richard, chairman of the St. Pat’s Committee, and Miss Bertha Kickler, and was followed by eleven dances. Over eighty couples were present. The elephant placidly viewed the merrymakers from the center of the floor. The hall was decorated in the colors of orange and green.

Before the dance had progressed far favors made in the Rose Poly shops — There y’are, gints, a real one!

THE CHEMISTS’ PARTY

The annual party for the Chemists, given by Dr. and Mrs. White, and Professor and Mrs. Coles, was held in the Chem Lab on Friday, March 16. Owing to the nearness of St. Patrick’s Day, the Freshman Chemists were invited in order that the necessary color scheme might be carried out. However, the Freshmen soon forgot that they were present for decorative purposes only, and enjoyed themselves quite as well as the others present.

The guests were entertained with various indoor sports popular in these parts, and after thereby developing a proper receptivity were served with a delicious supper which they were quite capable of enjoying. The supper was served in evaporating dishes, and the most noticeable phenomena was complete and exceedingly rapid evaporation. The ensuing reaction $\text{RoY + MuCh} \rightarrow \text{PaIN}$ is by no means an indication of the characteristic of the second member of the equation. In fact, in this case this was of such quality that exactly opposite effects might have been expected. The reaction is entirely due to the manner in which this second member is attacked by the first.

The evening’s entertainment concluded with a game of “indoor shinney” which is played with old baseball bats and golf balls, from which we gather that the game is possibly a little rough. According to trustworthy information, however, the party did not end in row, but with the best of feelings.
PERHAPS the accompanying panel of snapshots appears to be an awkward squad going thru elementary drill. When the photographs were taken the organization was more or less of an awkward squad. It is now known as the Rose Polytechnic Officer’s Company. It was announced in the last issue that military training was to be taken up. As a preliminary to introducing the training Professor Coles, who is in charge of the work, called for volunteers for an officer’s company with the idea of training these men and fitting them to officer the companies organized in carrying on the later training. Over forty men loyaly responded, and have been hard at it for about three weeks. These men have by this time rounded into sufficiently good form to warrant their taking hold of the two lower classes among which the training is compulsory. These lower classmen will make up the Rose Battalion. Professor Coles will act as major of the battalion.

There will be two companies in the Rose Battalion. The first company will be the Sophomore company. Altho there are now less than forty men in this class, it is expected that volunteers from the two upper classes will swell the number to at least sixty. The Freshman company will need no additional recruiting to bring its numbers up to full war strength.

As this number goes to press a competitive examination for the commissions in these two companies has been announced. This examination is to consist of a written test on the Infantry Drill Regulations of the United States Army, and a competitive drill. The date now set for this examination is Monday, April 9. Captain Keesling of the local recruiting station recently inspected the officer’s company and recommended certain men for commissions. The recommendations of the army officer, the result of the written test, and the showing in the competitive drill will decide which men are to receive the coveted places.

Running parallel with the drill is to be a series of lectures by Captain Keesling. The first lecture has already been given. On April 4, Captain Keesling appeared and addressed all of the two lower classes and a considerable number of upper classmen. This first talk did not cover any special ground in regard to military science or camp sanitation, which are to be the subjects dealt with in this course, but was more in the nature of an introduction. The place of the technically trained man, the engineer, was elaborated upon. Captain Keesling also gave his reasons for believing in universal military training, and service if necessary, but added that he had not until recently viewed universal training as advisable or wise, and that it was only of late that he had realized that this was inevitable and the only course to pursue.

The enthusiasm of the students was raised to a high pitch on Friday, April 6, when Terre Haute staged her monstrous patriotic demonstration. At 3:45 on the afternoon of the day, a general assembly was held in the gymnasium. Dr. White gave a short talk, saying that he knew Rose men would always do their duty when called upon, and gave his opinion as to the wisest course to take during the present crisis. He announced that the evening previous the faculty had voted to allow any Senior who gave his services to the country a diploma regardless of how much thesis work he had done. Professor Coles then spoke for a few moments, explaining that all Rose students would of course be expected to appear in the parade, and giving the necessary instructions. After this F. W. Hild, as president of the Student Council, said a few words in regard to raising a fund for a school flag and flag pole. It was suggested that the class presidents cooperate in this matter and that an assessment.
of fifty cents be made upon each man. This plan met with hearty approval, and the collection began immediately. R. P. Long of the Junior class also said a few words regarding the matter of buying a flag staff and flag, and urged the hearty co-operation of the student body in any move which need be taken.

In the parade the Rose men appeared in military formation and, with the assistance of the officers who had been trained under the direction of Professor Coles, were able to put up a much better appearance than would have otherwise been the case. The Rose contingent, headed by a crack drum corps, excited applause all along the line of march.

SENIOR TThESES.

Investigation of the strength and safety of bridge across Eel River and the bridge at Massey, Ind., on the E. & I. Railroad, by Richard Aitken and Arvil Binhack.

Investigation of the suitability of certain barium ores for the commercial production of barium peroxide, by M. H. Smith and M. Tilley.

Electric testing of iron for hysteresis and losses, by T. M. Evans and H. W. Knox.

Test of the efficiency of combustion of automobile engines, by W. C. Wente and G. W. Holding.

Test of a new device for measuring the velocity of flowing water, by V. J. Whelan and J. C. Rector.

Test of boilers using waste heat from cement kilns, by Henry C. Gray and Floyd S. Carpenter.

Commercial utilization of wood waste at the Standard Wheel Works, by Benjamin R. Brodsky.

The fertilizing value of the garbage collected in the city of Terre Haute, by J. Lex Weeks.

Investigation of the strength and the stresses of the members in the three span bridge of the E. & I. R. R., at Plummer, Ind., by Chester A. Williams and Edgar N. Goldstone.

An investigation of production and distribution of electrical power at the Home Packing and Ice Co., by Elmer C. Austermiller and Wayne K. Self.

Design of efficient shops for given output of specified type of drill press, by Frederick W. Hild and Donald B. Weaver.

Collection of data for determination of water supply for the new Institute at the Hulman's farm, by Raymond Davis, Edward W. Richards and Harry A. Toelle.

SENIOR CLASS MEETING.

At 4:00 p.m. on April 2, a Senior class meeting was held. The object of the meeting was to make arrangements for the annual Senior picnic and also to discuss plans for an inspection trip. It was decided to hold the picnic on the first day of May, and to hold it at the Hulman Farm if at all possible.

In regard to the inspection trip, it was learned thru the office that in case 90% of the men desire an inspection trip, the Institute will bear half of the expenses. From the opinions expressed at the meeting it seems probable that 90% of the men will desire such a trip, and in that case it only remains to select the cities to be visited, plan the route, and set the date. If the trip is taken it will be taken shortly before graduation, just after the thesis work is completed. Chicago and Milwaukee were suggested as cities which might be visited. St. Louis was also mentioned. It may be that Cleveland and Detroit will be selected. A committee to investigate various possible trips and to determine the expense in each case, was appointed and it is upon the report of this committee that the class is waiting before deciding definitely as to whether or not the trip will be taken.

Y. M. C. A. MEETING.

A meeting of the Y. M. C. A. was held in the library on the afternoon of March 19, in order to elect officers. The new officers are: Presi-
dent, C. K. Failing; vice-president, Rudolph Wiedemann; secretary-treasurer, Herbert Hutchinson. It is hoped that, under the new administration, the activities of the Association will be greatly increased. It is promised that there will be another Bean Feed at the Heminway House before long.

Plans are under way to get "Dad" Elliott, of the International Committee of the Y. M. C. A., to address the school at a general assembly.

SPECIAL STUDENT COUNCIL MEETING, MARCH 7, 1917.

Meeting called to order by President Hild at 4:00 p.m. Kessler, Carpenter, Long and Wente absent.

Motion made by Streeter, seconded by Howard, that $47.61 be reverted to Athletic Association. Motion carried.

Motion by Smith, seconded by Waggoner, to allow March budget of $360.00. Motion carried.

Meeting adjourned.

W. E. RICHARD, Secretary Pro Tem.

STUDENT COUNCIL MEETING MARCH 23, 1917.

Meeting called to order by President Hild at 8:00 p.m.

Howard, Kessler, Streeter and Smith absent. Failing appeared as Y. M. C. A. representative.


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Totals ...... $185.75 986.63 1172.38 619.53 552.85

Motion by Waggoner that the May budget be approved; and that $16.14 be taken from the Scientific Society, $24.05 from the Camera Club and $200 from the General Fund and given to the Athletic Association. Seconded by Wente. Motion carried.

Committee composed of Wente, Waggoner and Richard appointed to see about designs for recognition pins.

Waggoner excused.

Discussion of a recognition pin to be presented to each member of the Senior Class on St. Patrick’s Day. Committee composed of Wente and Richard appointed to see about designs for recognition pins.

Discussion about having outsiders at St. Patrick’s dance. It was decided that the dance should in the future be for Rose men only.

Motion by Long that Freshmen clean up the debris left by them in the Heminway yard. Second by Failing. Motion carried.

Motion for adjournment by Long, second by Wente. Motion carried.

W. E. RICHARD Secretary.
A GOOD start does not always mean a good ending is in sight, and a bum steer at the take-off doesn't always indicate a record climax. If Streeter could have believed the turbulency of the first few hours he spent at Rose was a foretaste of what was coming to him during his entire college career, he might have been justified in forgetting his registration fee and in beating it for milder climes.

The following is taken from a local paper dated Sept. 17, 1915:

“Winton Streeter, 534 S. Sixth-st., donned his fighting attire, mounted his trusty bicycle and rode forth to the Rose Polytechnic campus prepared to spill much Sophomore gore in the Freshman-Sophomore class fight.

“Leaving his trusty mount in the bicycle rack at the grounds he entered the fray.

“But sad to relate, Streeter fell with his brother freshman after a long and furious battle into the hands of the hated Sophs.

“Insult was added to insult when Streeter was loaded into a moving van and taken many miles into the country. Many times as he plodded his weary way back to his trusty mount did he vow vengeance on the hated Sophs.

“But the thought of his trusty steed awaiting him spurred him on. At last he arrived to where he had left his “bike” and—

“It was gone.

“The police have been notified to look for the bicycle and all Sophomores are given fair warning. If they see Streeter first, all right. But if Streeter sees a Soph first—Flowers.”

His luck changed, however. The first hours of strenuous trial had so aged him in the eyes of his classmates that he was looked to as something in the nature of a leader, and he was immediately picked out to serve on both the Athletic Board and The Technic staff. Mention of a place on The Technic staff may cause some doubt as to change of luck to arise in the mind of the reader, but Streeter accepted the job as an honor, and in this case it is safe to put his value on it. This year he rose to the rank of athletic editor in spite of his comparative youth, and in dealing in futures it is difficult to say just what is in store for him in this line.

This year his classmates decided that he would make a good class president, following which action he made his debut on the Student Council. He was hailed with great joy at this meeting, and being young, inexperienced, and unsuspecting was presented with the job of leading cheers. Well, he at least tried, but after one trial decided that leading cheers required too much modesty, and moreover, that it required training in the art of mesmerism to produce synchronous phonetism from any collection of Rose students. He therefore Bill Bryanized out, much to the sorrow of all concerned.

He possesses a sense of humor quite as unusual as that of Jimmy Whelan, tho not in the least the same. With a little development he could probably evolve a school of Futuristic Wit which would be both original and unusual.

His “personal equation” (quotation from M. A. H.) ranks well, his abilities have been sufficiently demonstrated, and he is sufficiently well-favored to enable him to get by in almost any locality. He can be depended upon, which quality alone will bring him all the jobs, both student and real, that he can ever use.

In spite of the uncertainties of the future we predict a valid diploma and a job which may be likewise described all waiting for him in 1919.
ATHLETICS

ALTHO, since our last issue, Rose has not participated in an athletic contest of any sort, activity has by no means ceased. Every night on the field baseball, track, football and tennis are all well represented.

The ball team is fast rounding into shape under the watchful eye of Coach Gilbert. An infield that threatens to outshine our famous self termed, “million dollar gang,” of last year is composed of Hauck, Meadows, Brophy, Pence and Captain Reinhard. Rolshausen, Holding and Thiry are waging a merry old battle for the mound. With Bake behind the bat, we will have an infield that should rank high in the I. C. A. L. As for the outfield, Coach Gilbert has such men as Mikels, Yatsko, Howard, Thiry, Barnes, Ervin and Stock to pick from. As things look now our weak point appears to be the hitting department. A batting cage has been constructed, however, and enough practice should remedy this defect. Base running, something last year’s team never mastered, is receiving full attention.

As for track, Binhack, Yatsko and Floyd are weight men left from last year’s team. Bolton and Wiedemann are fast recovering their old time running form. Among the new men Wagner, high jump and hurdles, Norton, dashes and runs, and Stoll, runs, are displaying some rare form.

The tennis courts have been put into shape and some keen competition will be seen before Wente’s partner will be chosen. Bixby, last fall’s tournament winner, Owen, Smith, Werbner, Brown, Rector and Leathers are all to be considered as likely material.

Spring football is holding its own. Next year’s team should be a wonder. Read what Captain Grafe has to say on the subject.

At a recent meeting of the letter men of basketball, “Doc” Orr was unanimously elected captain for the coming season. Doc will be a Senior next year and will play his fourth season for Rose. This year he was one of the steadiest men on the team, altho he played the entire season with a crippled arm. Doc plays either forward or guard.

WHAT THEY SAY

Captain “Ick” Reinhard, Baseball:—“The graduation of seven regulars from last year’s nine is not going to be as hard a blow as was first expected. The vacant places are being filled by the underclassmen in fine style. With good weather and barring accidents, Rose will be represented by a well balanced team, a team good enough to beat Normal two more games.”

Eddy Richard, Track Manager and Poet:—“We have the meets; but where’re the athletes?”

W. H. Bruning, Asst. Football Mgr.:—“The ‘Buzzards’ have now taken on the more dignified title of ‘The Rose Tech Club.’ A complete schedule of games is being booked with the more important high school teams of the Wabash Valley. Every man out for football now has an opportunity to play on a team.”
The men for the second team will be selected with as much care as men for the varsity squad. The development of the younger men can be watched with greater ease while playing on the second team and much good varsity material will be developed.”

Leslie Heedwohl:—“With prospects for good material it now seems as if Rose has an opportunity to turn out a good basketball team for the season of 1917-18. Under the watchful eye of ‘Lefty’ this material should develop rapidly and weld itself into a winning combination.

“Work on the schedule has been started and it is expected that some fast teams will be booked.

“The work as assistant last year was not what it is ‘cracked’ up to be altho when ‘Dutch’ appeared life seemed to very different.”

P. J. Grafe, Football Captain:—“Spring football practice began in earnest on Tuesday, April 10. Practice has now been going on for some time. Coach Gilbert has secured a brand new tackling dummy filled with pig iron, iron fillings and sand and will soon have it mounted on a new frame. In speaking of his dummy the coach said that the men would be willing to tackle a freight engine after having tackled the dummy for about three weeks. However, he will not get any results from a tackling dummy alone. He must have the men to work on. Quoting Professor Hathaway, “Anything worth doing at all is worth doing well.” There is not a man in school but knows that spring football when handled correctly is a very good thing and that a man trying for a place on the team failing to come out regularly is doing himself as well as the team an injustice. There will be several old football stars out to help Coach Gilbert, including some Alumni, and it is certain that the spring practice will be made worth while if the men will come out. The time is spent learning the fundamentals, such as catching punts and forward passes, passing, falling on the ball, tackling, blocking, charging in the line and using the hands when on the defensive. Coach Gilbert is also giving some chalk talks in which he explains the rules and discusses all the possible conditions to be met in a football game together with the solution for each case. Taken all in all this spring practice is very important and it is absolutely necessary for every man to come out every Tuesday, Wednesday and Friday nights with the determination to put everything he has in the practice.”

**NEWS OF OTHER COLLEGES**

A private hotel has been equipped by the athletic association of Dartmouth for the accommodation of visiting teams.

Berkeley students will erect a union building in the near future which will contain a co-operative store, a dining room for men and women, a stage for dramatic performances, and student publication offices. The expense will be met by the profits of the store and by a tax of $1.00 a semester on each student until the building is paid for.

The Alumni of the University of Texas have organized an association, to be known as the Students’ Loan Association, for the purpose of raising $100,000 to assist needy students to finish their education.

An unknown heiress worth $500,000 in her own right, with an annual income of $50,000 is said to be at large on the campus of the University of Oregon. The male student body is in a furore to discover the identity of the “beautiful incog.”

President Ellis, of Ohio University, has suggested that examinations may be abolished, beginning next year. President Ellis believes that daily work should be the basis of grading.
Interesting Technical Articles of the Month

ELECTRICAL WORLD, March 17.
relay Practice of Large Systems.
Types, arrangement and settings of instruments used for the protection of distribution networks, with an account of the discussion at the Chicago meeting of the A. I. E. E.

Motor Drives in a Screw and Bolt Plant.
By L. J. Lamberger. Convenient arrangements of 184 induction motor drives which represent an average load of 170,000 Kw-hrs. per month with a monthly output factor of 30 per cent and a demand factor of 45.5 per cent.

March 24.
Electricity vs. Other Power for Coal Mines.
By Cornelius Weber. The results obtained in a Western coal mine by changing from steam to electro-steam operation, with the data on electric and air operation and the cost of using locomotives in place of rope haulage.

March 31.
Advantages of Rock Island for a Government Nitrate Plant.
By H. S. Putnam. Available water power, nearness of fuel for auxiliary steam plant, central location, transportation facilities, abundance of labor and protected position form reasons for selecting this site.

Electric Automobiles.
The field of the electric vehicle in competition with the gasoline car and the horse carriage in Great Britain. Several excellent reasons for its displacing the gasoline car, particularly for city service.

MACHINERY, April.
Tool Room System.
By Franklin D. Jones. This article is a review of the different systems adopted in many well organized machine building plants of various classes and sizes to insure proper care, promote rapid delivery of tools, and to prevent loss of productive time resulting from misplaced tools or poor equipment.

March 24.
Manufacture of Steel Balls.
By Edward K. Hammond. The second article on this subject, taking the reader thru the complete process in manufacturing steel balls.

RAILWAY MECHANICAL ENGINEER, April 5.
Southern Duplex Locomotives.
An explanation of the construction of these engines. The running gear and machinery of retired engines is being applied to the tenders of Mikado locomotives.

AMERICAN MACHINIST, April.
Machining an Aeroplane Motor Crank Case.
By Fred F. Bowen. Some detailed operations and the time required for performing them by regular machine shop methods. These show how aeroplane motors can be successfully handled in moderate-sized lots in any well-equipped shop.
Economy in Hacksaw Blades.

By Frank E. Merriam. The power hacksaw is now so extensively used and so necessary in machine shop practice that its economical operation is of great importance. The selection of hacksaw blades has heretofore been considered of little moment, but with their more extensive use and the increased price of tool steel the subject is beginning to receive the consideration it merits.

ENGINEERING RECORD, March 31.

Hydrogen in Oxyacetylene Tanks.

An interesting account of an investigation into the cause of explosions in oxyacetylene welding which led to the conclusion that the accidents were due to the presence of hydrogen.

Effects of Exposure on Tar Products as Reported by Federal Chemists.

The usually accepted laboratory tests are shown to be faulty as an index of permanence of materials for pavements. Changes due to oxidation, molecular rearrangement and to inter-reaction are shown to play an important part.

ENGINEERING AND MINING JOURNAL, March.

James E. Harding. Difficult operating conditions on the Comstock brought about by great heat, badly swelling ground and highly acidulated water are described. The methods of unwatering a shaft that has been under water 35 years are given.

MUNICIPAL ENGINEERING, March.

Concrete Sewer Failure.

By M. T. Cantell. The article tells why the concrete sewer is a failure unless constructed in the proper way. Shows the great value of a properly constructed sewer of this type.

Power, March 27.

Jacketed Tank Type of Self Cooling Transformer.

A description of a self-cooling transformer, using a jacketed tank to provide a large cooling surface.

ELECTRICAL REVIEW, March 31.

Electrical Power for Operating Bridges.

Illustration of the dependability of electricity for the operation of a group of five trunk-line railway bridges, all using central-station service. Description of electrical installations and methods of operation.

Possibilities of the Electric Furnace.

By Thomas R. Hay. A comprehensive discussion of the advantages of electric furnaces, their installation and operation.

GENERAL ELECTRIC REVIEW, April.

Electrical Machinery Tests on Specifications Based on Modern Standards.

By H. M. Hobart. An article on the drafting and circulation of standardization rules.

SCIENTIFIC AMERICAN, April 7.

Airmen and the Weather Bureau—Partners.

By C. L. Edholm. The meteorological work undertaken at the San Diego army aviation school.

The American Merchant Marine.

By Robert Dollar. Where it will stand upon return of normal times.

SCIENTIFIC AMERICAN SUPPLEMENT, April 7.

The Metric System.

By Geo. Frederick Kurry. The international language of weights and measures.
BOOK REVIEW


Twenty years ago the physicist thought that the underlying principles of natural philosophy were fairly well established; and that further discoveries could only be expected where more refined measurements were possible, and these principles merely amplified. At that time the domain of the physicist, so far as he was concerned with the constitution of matter, was outside of the molecular; while that of the chemist was the study of the molecular, and outside of the atomic. In the study of intra-atomic phenomena the physicist seems to have become the pioneer. Recently, discoveries have been made in the constitution of the atom, which promise to revolutionize many of the theories of both the physicist and the chemist. These theories were supposed to have been fairly well established. There is every reason to believe that we are on the eve of many more far reaching discoveries. That these discoveries should be of interest to the engineer, ought to be apparent in the light of the statements “a simple calculation shows that the total energy given up by radium and its products during transformation is about a quarter of a million times the energy obtained by burning an equal weight of coal. To make this statement a little more vivid, the fact might be noted as an illustration that a large ocean steamer could make one passage on a few pounds of radium and its products.”

The book from which the quotations, above were taken is the interesting little volume written by Professors Comstock and Troland. The book is written in two parts, and is ideally arranged for one, who understands the simple laws of physics, to get a fairly comprehensive notion of what these wonderful discoveries mean. If he wishes to make his notions of the subject still more comprehensive, he may study the second part. The first part consists of eleven chapters; while the second part is divided into fifty-six sections. The second part is explanatory of the first, and, requires a greater familiarity with the problems of modern physics, in order to be intelligible.

Every great epoch in the history of the development of Physical Science has had its Michael Faraday. Nothing, could be more entirely appropriate than the authors’ method of designating the chief exponent of this epoch. We find the frontispiece to be a portrait of Sir J. J. Thomson.

THE ORIGIN OF BOCK BEER

The season of Bock Beer has rolled around and became another happy memory. Did you ever hear about the origin of that famous soothing syrup?

Bock Beer dates back to the time when the mighty Zeus ruled the ranch on high Olympus. Zeus was the cause of it all. It seems that this celebrity had hocked his watch for a spring supply of the celebrated ambrosia, which is often referred to as the nectar of the gods. Before he kicked in with an order, however, tough luck overtook him. He happened to run in with his old side kick, Thor, who inveigled him into a game of craps and trimmed him right. Poor Zeus was up against it. Having been separated from the cash derived by the hocking of his watch and being sore put for a small quaffine to slake his thirst he cast about
for some other means of obtaining the much needed beverage. But he was out of luck. Zeus in spite of his chesty position had the name of being something of a short-horse and none of his friends felt like slipping him any change because the old boy had worked them too many times before. Finally in desperation he summoned Slazerhops and Barleymaltus, a couple of Chemical Engineers who had been but recently assigned to the weather bureau and who with characteristic methods had been messing up everything in general around that department.

He told them that he wanted a good near-ambrosia and invited them to go to it, offering a prize of a slightly used Ford and a pair of woolen wristlets for the most tasty potion to inspire the bacchanalian revels.

Then there was great commotion around the vicinity of Olympus. Chances for the prize were about 50-50. Barleymaltus was conceded to be the best student, but Slazerhops was a practical man. Slazerhops evolved a draught that was a humdinger, but Barleymaltus dug out his old dust covered Organic and burned midnight oil for two weeks. When he brought out his wassail Boss Zeus and all the sub-gods took about three sips and handed him the prize. Barleymaltus named his draught for the robust and Falstaffian Bacchus, therefore Bock, Bock Beer; perfectly plain, isn't it?

There was no argument about the prize. After three sips the bold Leander swam the Hellespont. After one mug Hercules grew ambitious for the job Atlas was then holding down. After two draughts Horatius held the bridge, held it with one hand it seems, and Achilles, convalescent from his injured heel, donned his winged cap and did a loop the loop from a garage in the public square at Athens.

The formula of this brew remained a secret for many years, until the sage Gambrinus, a German ruler, rescued it from the Killjoyians, the first prohibition society on record.

WHAT THEY SAY

Red: “A bugler is always needed, but then I got an education.”
Thiry: “I know where there’s a nice quiet cove down south.”
Rolshausen: “My shape will get me in the cavalry.”
Toelle: “It’s awful to be shot.”
Izzy: “I’ll make maps here.”

Jap: “What’s the assignment, Gray?”
Pinky: “Chapter eighteen.”
Jap: “What’s it on?”
Pinky: “I don’t know.”
Later in class.
Weaver: “Where are you reading that Professor, I can’t find it?”
Prof.: “That is the first page of chapter eighteen.”

Briggs: “If they’ll just keep off the campus!”
Seed: “I’ll join the aero corps. They live high.”
Eddy: “I’m a shark on the lathe.”
Austermiller: “I’ll stay home and take care of the woman.”
Gray: “I want a nice ship where I won’t have to be out in all kinds of weather.”

Wente, commonly known as “Dutch” is seriously considering a change in nick name. We suggest “Frenchy,” “Ski,” “Tommy,” or “Bull.”

R. P. I.

Local: “Do any of you guys want to read these bum jokes before I turn them in to Fritz?”
Readers: “No, then all the interest in the next issue would be gone!”
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HEARD IN THE RANKS.

“For the love of Mike, keep your distance!”
“Ain't my fault, Bruning seesaws back and forth too much.”
“For Heaven's sake, make Leathers follow me!”
“Watch Woodruff, don't try to step all over the Major's heels!”
“S-s-s-t Fat, slow up a bit. Jab him in the ribs, Jap.”
“Oh Hell!”

Eve picked fresh costumes every day,
And changed them twice or maybe thrice,
Yet Adam had no bills to pay,
Oh Paradise, Oh Paradise.

R. P. I.

Artist's Son: “Hello Dad, smoking a cigar.
Sold a picture?”

Artist: “No, my overcoat.”

R. P. I.

“Fessor give Richie a black mark!”
“Were do you get that stuff?”

“That's another one!”

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At a late meeting of one of the most spirited sessions of the Senior class in Gas Engines at 1:00 p.m. on Thursday, the time of the day and week when things are at such a delightful ebb of wide awake and catch it all conditions, the Seniors had taken their seats and seemingly, to Professor Wischmeyer, were there for the sole purpose of digesting their dinners. After three-quarters of an hour of faithful lecturing on governor balls and throttling governors directed at one man after another until almost all were in comfortable condition of perfect rest, Wischy abruptly said or it is thought he said—no one was in a fit state to catch the exact words—"You fellows have the advantage of me because I can't sleep when I talk."

R. P. I.

Soph: "Going to enlist."
Junior: "Don't know yet. Going down this afternoon and look the nurses over."

R. P. I.

Maxim: Never undertake anything that you can't get anyone to do.

"Who gave the bride away?" asked Mrs. Jones of her daughter, who had just returned from the wedding.

"Her little brother," replied the daughter; "he stood up in the middle of the ceremony and yelled, "Hurrah, Blanche, you've got him at last!"—New York Times.

R. P. I.

Friend: "What's wrong Bill?"
The Misanthrope: "Wrong? I lost a bloomin’ bet, 'ad to stand drinks, got a bad crown in me change, and blow me if I didn't knock over me beer."—Tit-Bits.

R. P. I.

Rev. Shybird: "I had such a curious dream last night. I dreamt I was in the Garden of Eden."
Miss Kensington: "And did Eve appear as she is generally represented?"
Rev. Shybird: "I—or didn't look."

R. P. I.

One: "He says she is a woman of means."
Two: "She is. She means to marry him."
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Kitty: "What is it you don't like about me?"

Gordon: "That red headed fellow's arms."

R. P. I.

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"Now, these are artificial lakes."

"Gee, they look like real water."

R. P. I.

"It's an extended corridor with no ultimate termination," mused 'fessor, as he patiently plodded around the revolving doorway.

R. P. I.

"You can't get blood out of a turnip," quoted slopay to the persistent collector.

"That may be correct," replied the husky collector, "but I have frequently extracted gore from a beat."

R. P. I.

"Look at that leading man, he's cross eyed."

"That's nothing, look at the leading lady, she's peroxide."—(Infantry Charge!)

Schlaman: "I'm going into the aero corps. I don't want to wallow in no trenches."

Optimist: "You won't wallow, but you'll probably put an awful dent in 'em."

R. P. I.

Said Fanny the lady from Siam To her lover who hailed from Priam, To kiss me of course You will have to use force But Gawd knows that you're stronger than I am.

R. P. I.

He could tell without a stagger, in a manner that was swagger, how to finance a nation, while speaking from the stump; but when it comes to giving his wife and kids a living, it becomes a local issue, and you bet he slumps the slump.

R. P. I.

She: "You lied to me. Before we were married, you told me you were very well off."

He: "I was, and didn't realize it."

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