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Rose Technic Staff
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THE ROSE TECHNIC

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THE TECHNIC

TERMS

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The present TECHNIC staff met May 2 and held the election for the staff for 1909-1910, and we take great pleasure in introducing our successors to you at this time:

Nathan A. Bowers, Editor-in-chief.
Benjamin G. Elliott, Assistant Editor.
James A. Shepard, Reviews.
Paul F. Stokes, Alumni.
Frank E. Mooney, Athletics.
Erich A. Mees, Junior Locals.
Carl J. Krieger, Sophomore Locals.
Herman J. Madison, Artist.
Fred H. Kornfeld, Business Manager.
Harry B. Messick, Assistant Business Manager.

Mr. Bowers has been extremely successful as Assistant Editor during the past year, as has been shown by the excellent articles that have appeared in the Rose Leaves Department each month, and we feel certain that Mr. Bowers will get out one of the best volumes of THE TECHNIC that has ever been printed.

Mr. Elliott, the new Assistant Editor, is without previous experience on THE TECHNIC, but we predict that the Rose Leaves will be in capable hands.

Owing to Mr. Shepard's interest in current events in the engineering world, we feel sure that this department will also be well conducted next year.

Mr. Stokes, Alumni Editor for next year, will be found well fitted for the position, owing to his wide experience with the Alumni this year as Business Manager.

Every one that is acquainted with Mr. Mooney realizes that athletics will be well taken care of next year, for there is no one in school who has taken a wider interest in athletics than Mr. Mooney.

Locals next year will again be taken care of by Mr. Mees and Mr. Krieger, whose abilities along these lines are too well known for further introduction.

Mr. Madison, the new Artist, whose artistic

talent is well known, will undoubtedly hold down that job with credit.

Mr. Kornfeld and Mr. Messick are both without previous experience on THE TECHNIC, but the business end of THE TECHNIC next year will, no doubt, be conducted in the same able manner in which it was this year.

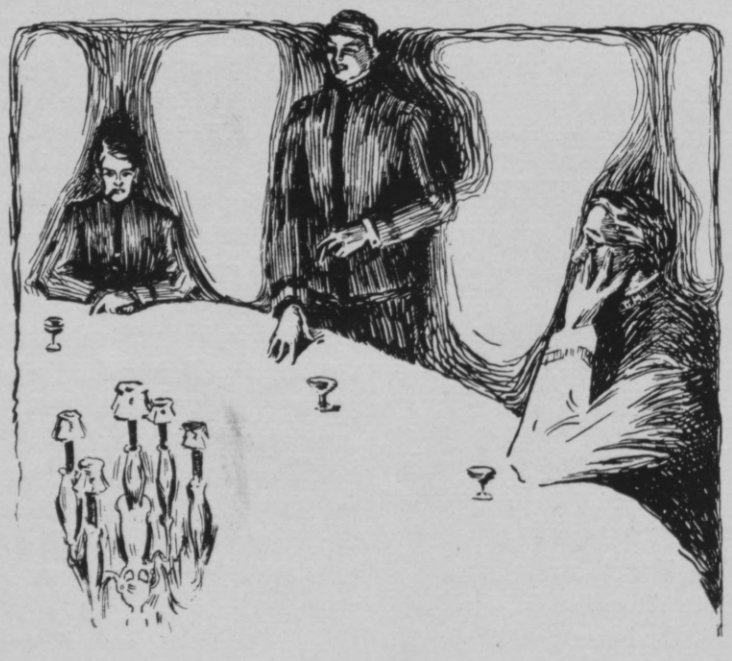
The new staff as named above was entertained at a banquet at the Terre Haute House by Mr. Bowers. It was the pleasure of the present editor to be present on this occasion, and from the plans discussed at that time it is safe to say that Volume XIX will be one of the best ever published.

In conclusion we wish to thank the student body, the Alumni and Faculty for their support during the past school year. We also wish to thank the retiring staff for their excellent assistance, and also the business manager, for whom it can be said that he never mentioned money to the editor.

* * * *

The usual Commencement exercises have been somewhat elaborated upon this year in honor of the twenty-fifth Commencement of the Institute. They will cover three days, June 8th, 9th, and 10th.

One feature of the exercises this year will be the publication of an Alumni booklet, containing writings of all student organizations, and a history of the Institute and each of the Alumni.



UNFAIR COMPETITION

By Arthur M. Hood, '93.

The average engineer, sooner or later, becomes associated with a manufacturing concern, and a great many times is consulted as to the best manner in which goods shall be placed upon the market. It may perhaps be interesting, therefore, to get a brief view of the general tendency of the courts in their decisions relative to the rights of competitors in business.

In the early days of trade, before the great mass of consumers could read, it was common for merchants and manufacturers to put upon their goods some arbitrary sign, such as a cross, a star, a dagger, a crescent, etc., in order that the average unlettered consumer would be able to recognize the product of each particular manufacturer, and thus be able to judge, by reason of his past experience, of the quality of the merchandise. Such marks are known as "trade-marks," and almost universally are marks which in themselves have no quality of description of the goods upon which they are placed.

It is, I suppose, understood by nearly every one that no manufacturer or dealer has the right to place upon his own goods a trade-mark, of the kind mentioned above, which has been previously adopted by some other merchant or manufacturer. Such an action is very clearly an attempt to deceive purchasers, and both the English and American courts have always jealously guarded the rights of the public in this respect, taking the ground that, while the merchant has a right to laud his goods and perhaps trade upon the credulity of the public, yet, nevertheless, he does not have a right to make any misrepresentations in any effort to convince the public that they are getting the goods of some other manufacturer instead of his own.

Within recent years, however, there has been a very distinct tendency, especially in the United States courts, toward the proposition that no manufacturer or merchant has a right to take any steps, in connection with the sale of his product, that will render it possible for the ordinary and average purchaser to be deceived into the belief that he is getting the product of some other manufacturer. The reason for this is two-fold. First, the public itself is deceived by such actions and thereby damaged, and, second, the merchant or manufacturer, against whom the unfair competition is directed, is robbed of business which he would otherwise have obtained, and upon which he would reasonably be expected to have made a profit.

Perhaps one of the most interesting cases is that of Enterprise Mfg. Co. vs. Landers *et al.*, reported in 124 Federal Reporter, page 923. In this case the Enterprise Manufacturing Company had, for many years, manufactured and sold a very complete line of coffee mills, which were not patented, but which contained various distinctive features, both as to structural details and as to external appearance, being numbered in a particular way according to size, and being ornamented by paint and otherwise. The company

had a practical monopoly in this product, and it was generally recognized as of high quality and satisfactory operation. The defendant in the case bought a complete line of the Enterprise coffee mills, used the castings for patterns, and thus reproduced a line of coffee mills exactly like those of the Enterprise Manufacturing Company, and he proceeded to decorate them in the same way, so that nobody but a skilled observer could tell the difference between the two products. The defendant placed his own name upon his mills in a somewhat inconspicuous place, and contended that, there being no patents upon the Enterprise mills, he had a perfect right to do what he had done and appropriate to himself as much of the trade of the Enterprise Company as he was able to get.

The Court, in commenting upon the scarcity of decided cases having a particular bearing upon the questions raised, said:

"Let me suggest that the reason so few cases are found from which earnest ingenuity can ever claim to find countenance for such action as that which is herein divulged is because *experienced business men do not, as a rule, attempt such a thing.*"

And then proceeded to quote from a prior case, in which the Court had said:

"Business men of ordinary acuteness who wish to establish a distinctive reputation for their goods with the public, who seek to have such goods so arrayed that they will always be unmistakably recognized by the public, certainly do not begin by assimilating the elements of their design to those of some competing manufacturer; when they are found doing this, it must be assumed that for some reason or other they prefer to have the goods arrayed, not in a distinctive dress, but in one resembling their competitor's."

The Court then proceeded to say that the defendant had no right to so closely copy the "Enterprise" goods that the *ordinary observer might be misled* into a belief that, when purchasing such goods, he was getting the "Enterprise" mills, and the defendant was therefore enjoined from proceeding as he had done.

In another case an attempt was made by one manufacturer to prevent another from manufacturing and selling repair parts especially designed for substitution in machines made by the first manufacturer, and it was attempted to apply the doctrine laid down in the case above mentioned, but in this case the Court held that any manufacturer had the right to make repair parts for any patented machines of another's manufacture, so long as they were marketed under such conditions as not to deceive the purchaser into a belief that he was obtaining parts from the original manufacturer.

In another case a manufacturer of locks deliberately and intentionally copied a high-priced lock of another manufacturer, copying the form, size, coloring, lettering, and even the details of finish, so that the retail purchaser could hardly tell one from the other, and he was compelled to discontinue such copying on the ground that, while he perhaps had a right to use any one or perhaps two of the different details, and to copy them, yet, "when all of the prominent ones have been appropriated * * * he has gone a step too far." * * *

Another case involved the "Prest-O-Lite" tanks, which are now commonly in use on automobiles. In this case the defendant was charged with purchasing Prest-O-Lite tanks, recharging them, and reselling them under such conditions that the new purchaser supposed he was getting Prest-O-Lite tanks and gas. The gas which was used for charging was ordinary acetylene gas, but the proofs showed that the Prest-O-Lite tanks are of peculiar construction, being filled with fibrous asbestos and a certain percentage of acetone, which serves as an absorbent for the acetylene gas, and fills the interstices between the fibers of asbestos so as to prevent the accumulation of large quantities of free gas within the tank, which might result in disastrous explosions.

In this case the Court held that while the

defendant has the right to purchase Prest-O-Lite tanks, which had not been sold under a specific reservation to prevent such sale, yet, nevertheless, the defendant had no right to resell the tanks under such conditions that the purchaser would be under the impression that he was buying a Prest-O-Lite tank.

In another case, a manufacturer of automobile lamps complained that another manufacturer had copies of the lamps manufactured by him in such a way that they could not be told apart, and a preliminary injunction was granted, pending final hearing, preventing the defendant from marketing such an unfairly competing lamp. The Court said in that case, however, that it was of the opinion that the doctrine of unfair competition was being pushed to the utmost limit in the case, and that, if it should appear on final hearing that the injunction operated to stifle legitimate competition rather than to punish unfair competition, they would not hesitate to dissolve the injunction.

It will be seen from the above cases that the courts are insisting that a manufacturer is not at liberty to stand aside and permit another manufacturer to go to all the expense and labor of developing a trade in any particular unpatented article, and then to step in and copy his product so closely that the average observer would or could be deceived.

Sometimes the proposition comes up as to whether a manufacturer is at liberty to use his own name in connection with his product, and it is surprising to many to find that there are cases where a manufacturer can not, without proper explanation, use his own name in connection with his product. Perhaps the most interesting case along this line is that involving the trade in "Baker's Chocolate." As early as 1780 a Dr. James Baker began to manufacture chocolate and other products of cocoa, and he was succeeded in business by Walter Baker, who later organized the present Walter Baker & Company. The product of these persons became known as "Baker's Chocolate," and up until 1894 no other person by the name of Baker engaged in the manufacture of chocolate or cocoa compounds, so that the name "Baker's Chocolate" came to be universally recognized as designating the product of the original manufacturer.

In 1894 a William Henry Baker began to put upon the market chocolate and other cocoa products, and they were put up and labeled in such a way as to cause his goods to be generally accepted as "Baker's Chocolate." After litigation extending over a considerable number of years, the Court required William Henry Baker to put upon every package of his product the statement that "William Henry Baker is distinct from and has no connection with the old chocolate manufactory of Walter Baker & Co."

Somewhat later the original Baker found a wholesale grocer in Chicago, who was handling the William Henry Baker products, which were properly marked in accordance with the previous decrees of the courts, but this wholesale grocer was handling the William Henry Baker products as a substitute for the original "Baker's Chocolate," and when customers came in and asked for "Baker's Chocolate" they would be told that "We have two Bakers. Which do you want?" And when told that the customer wanted "the best," they would deal out the William Henry Baker product.

The Court in that case required the wholesale grocer to take a special care in handling the William Henry Baker products, to see that each and every customer was fully advised of the exact relations, so that if a customer wanted "Baker's Chocolate," he would be given the product of the original Baker.

In another case an inventor of a shoe sold his patent and the right to the use of his name in designating the patented product. Later he obtained other patents for improvements in the shoe, and began to market such shoes under his own name. The purchaser of the original patent complained, and the Court required the patentee, in the marketing of his improved shoes, to give customers notice that the shoes which he was

then marketing were not the original shoes which he had previously patented.

Many instances of unfair competition of this kind could be given, and it is difficult to lay down any rule which will fit all possible cases; but, as a general proposition, it will be safe to proceed along the line that no manufacturer has a right to put his goods out in such form or with such ornamentation or markings that the average purchaser will be or could be deceived as to the actual origin of the goods.

In other words, honesty and fair dealing are considered by the courts to be basic principles capable of enforcement; and when these principles are violated the courts visit upon the offender a "punishment to fit the crime" and make a repetition of the offense dangerous as well as unprofitable.

ELECTRIC TRAIN-LIGHTING

By H. R. Canfield, '06.

The lighting of steam railway trains by electricity has brought into existence a new engineering art, absolutely unique in the character of the problems it presents, problems which appear, at first glance, to be unworthy of the serious attention of a trained engineer, but which, in the end, tax his skill and ingenuity.

The whole proposition admits of treatment and solution from several directions of approach, and naturally the art has put forth a variety of branches; so that we have to-day in use the "head-end system," supplying electricity to the whole train from a single plant with a generator on the locomotive or in the baggage car, and modified according to the employed means of regulation, arrangement of storage facilities, and the nature of the prime mover—steam reciprocating, steam turbine, gasoline, etc. And we have the "straight storage system," employing storage batteries only, charged at the end or at convenient points of the train run. Another system is known as the "axle system"; and some very interesting comparative literature, both practical and theoretical, is now in publication covering these and other systems of generation, storage, and distribution for train-lighting purposes.

This article will not undertake a discussion of the comparative advantages and disadvantages of the several systems, but will be limited to a brief discussion of the "axle system" alone, and for this purpose a selection from the six or seven systems now in use in this country of two representative systems has been made. These are the Adlake-Newbold Electric Car-lighting System, by the Adams & Westlake Company, of Chicago, and the Bliss Electric Car-lighting System, by the Bliss Electric Car-Lighting Company, of Milwaukee. The general features and fundamental problems of axle lighting, the unique requirements of design, and the treatment of these in the two systems selected will be taken up in turn.

In axle-lighting practice each car of the train is supplied with a complete system of its own, comprising a generator located preferably beneath the car, and driven, usually by a belt, from one of the car axles; a storage battery and lamps in circuit with the generator; an automatic switch and an automatic regulator for controlling the output of the generator; and a "pole changer" for maintaining constant polarity in the system when the direction of car motion, and, hence, of generator rotation and polarity, are changed.

The lamps are supplied from the generator, or from the generator and the battery when the car is running, and from the battery alone when it is not running or when it is running below a certain predetermined speed.

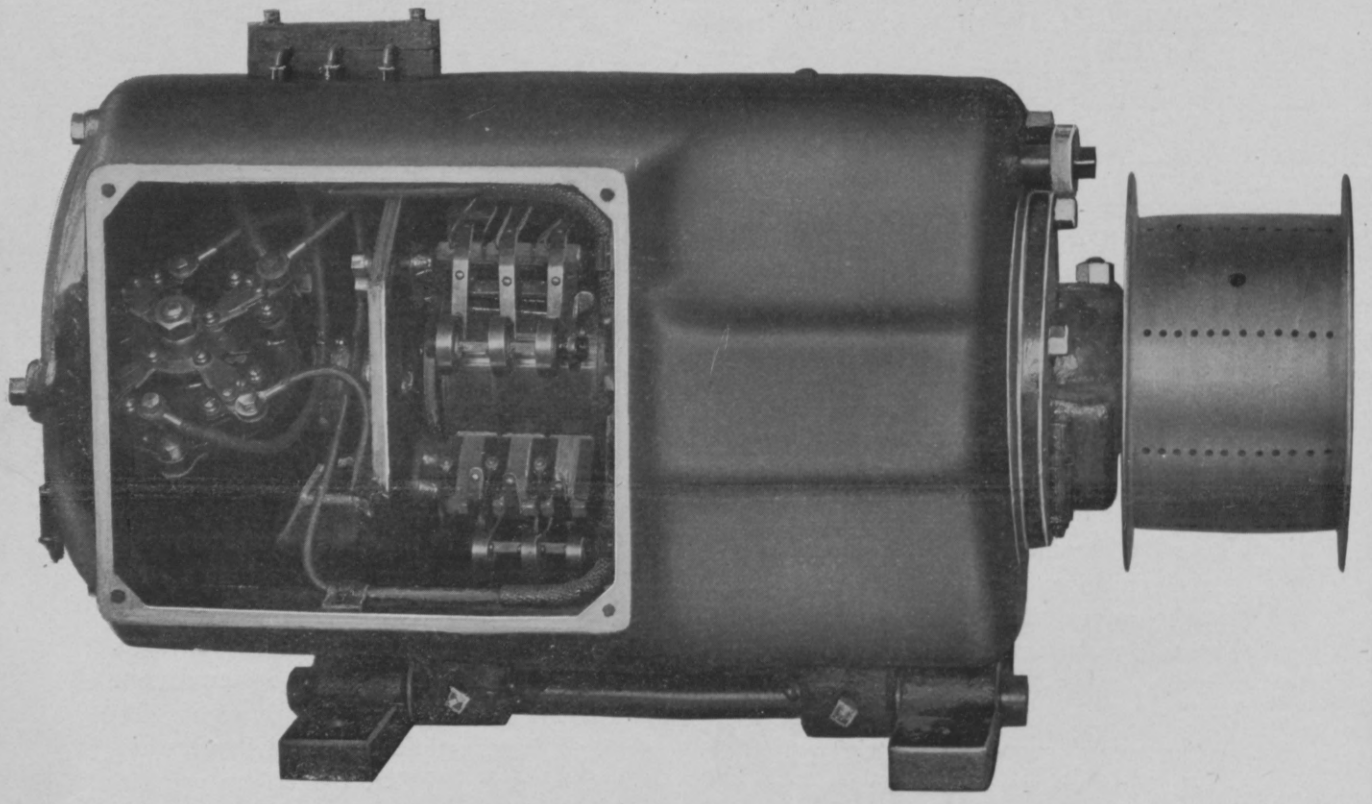
The practice of driving the generator from the car axle introduces at once the unusual feature of variable speed generation, and this condition, coupled with the use of a storage battery, makes the regulation of the generator output to meet service conditions the most important problem to be considered. The various operations which this regulation must accomplish and prevent are as follows:

1st. The current load must never at any time be permitted to rise above a predetermined value, this value being, of course, the maximum load required at any time to perform all the functions of the system.

2d. The generator load must be regulated properly to charge the battery alone; or to charge the battery and supply the lamps; or to "float" the battery and supply the lamps; and it should be able to shift from one condition to the other without manipulation or change of adjustment.

3d. The generator voltage impressed on the battery must be sufficient to charge it; this will be higher than the voltage the battery will give on discharge; and, since it is desirable to have the lamps operate either from the battery at discharge voltage, or from the generator direct, means must be provided to prevent the charging voltage from being impressed on the lamps.

4th. If this difference between charging and discharging voltages be in any way affected by the amount of current flowing, then the "means" provided to compensate for it must be regulated as the load varies.

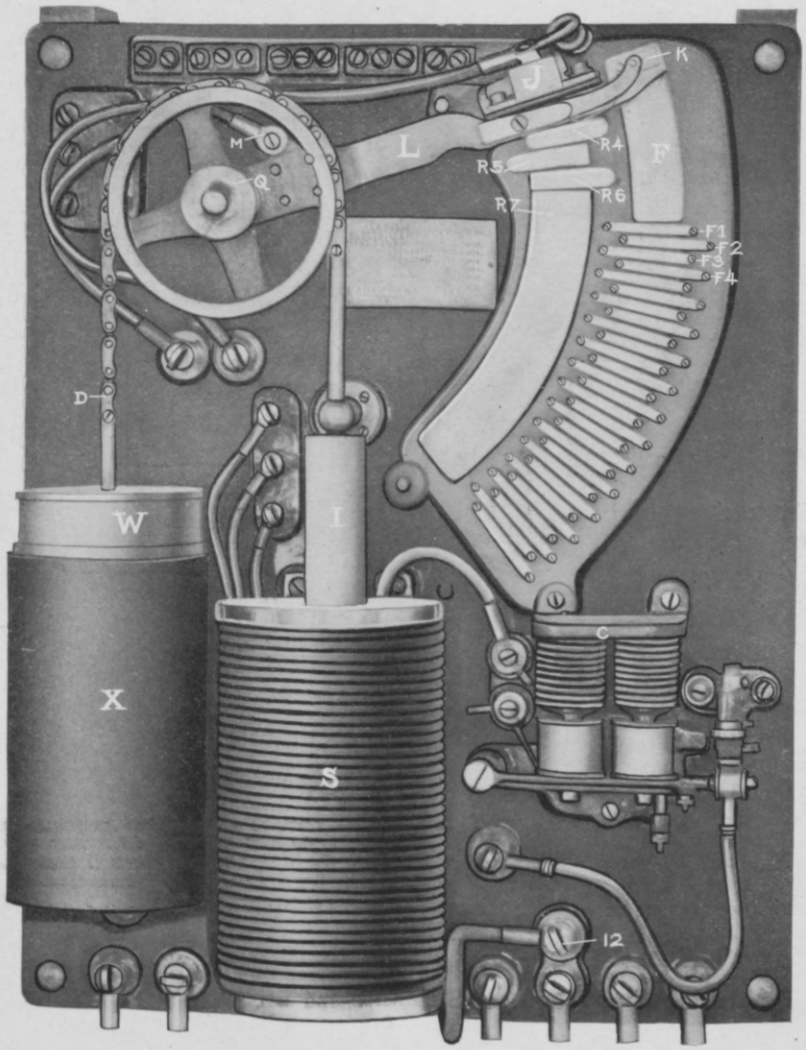


Newbold Generator, with inspection plate removed, showing internal parts, pole changer in left end.

5th. The main generator circuit must be disconnected from and reconnected with the system when the generator voltage falls below or rises to that of the batteries.

load to increase somewhat as the lamp load comes on, so that the battery will not have to carry the lamp load when the generator is operating.

8th. Since the car may go in either direction,



Newbold Regulator, as mounted for use.

6th. The generator load must be so regulated that the battery will never become destructively discharged nor excessively overcharged, no matter what the schedule of the train service, and means of regulation must readily adapt itself to adjustment for a change of schedule.

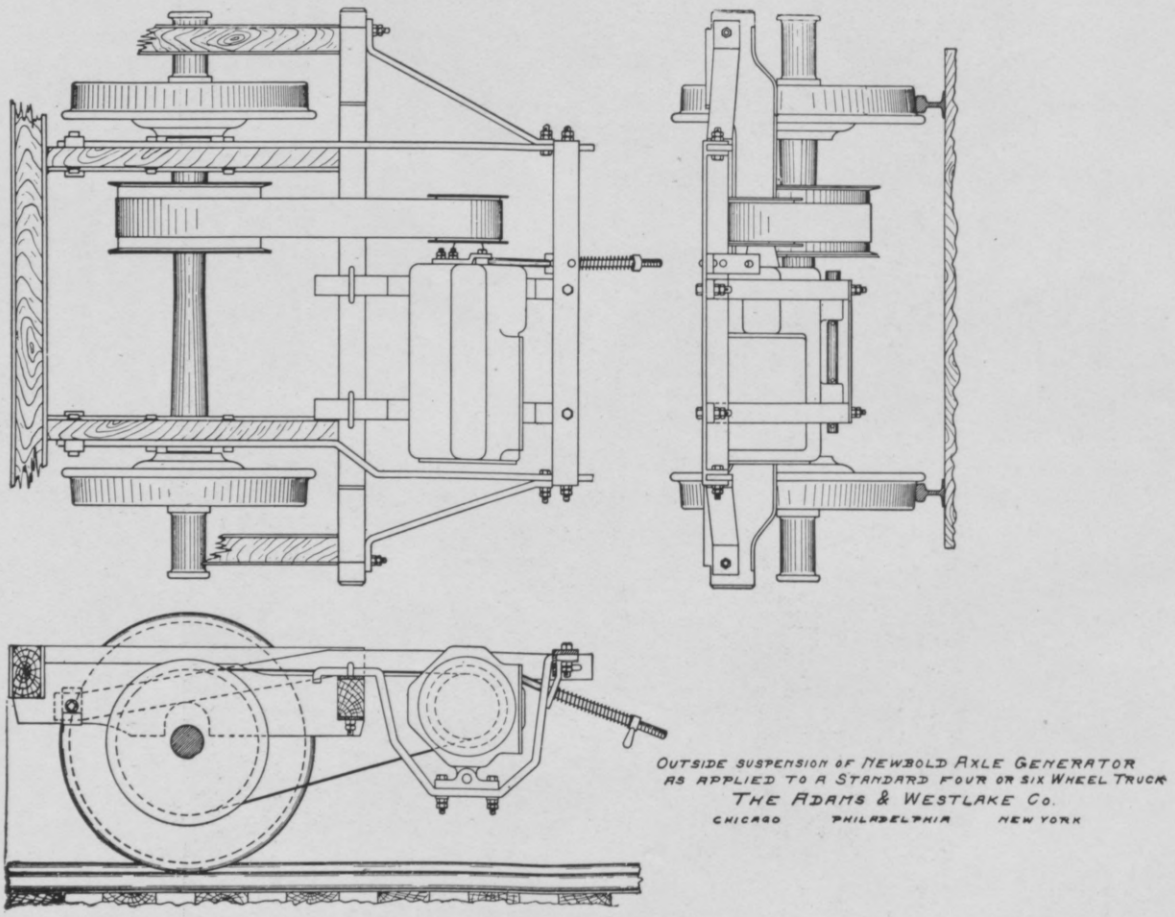
7th. It must be possible for the generator

and since a storage battery is in circuit with the generator, the terminals of the generator must be reversed at each reversal of car direction.

9th. To be practical, these operations must all be automatic.

Most of the other problems encountered are mechanical. If the generator is driven, as usual,

by a belt from a pulley on one of the car axles, the "suspension" of the generator must be such as to keep the generator pulley and the axle pulley in alignment as the truck turns on curves; and the location of the generator must at the same time admit of easy access to its parts. The generator end of the truck and provided with means for adjusting the tension on the driving belt; the generator is completely enclosed in a steel case with removable inspection plates; the pole changer is a mechanical device operated from the generator shaft. The generators are shunt wound, and



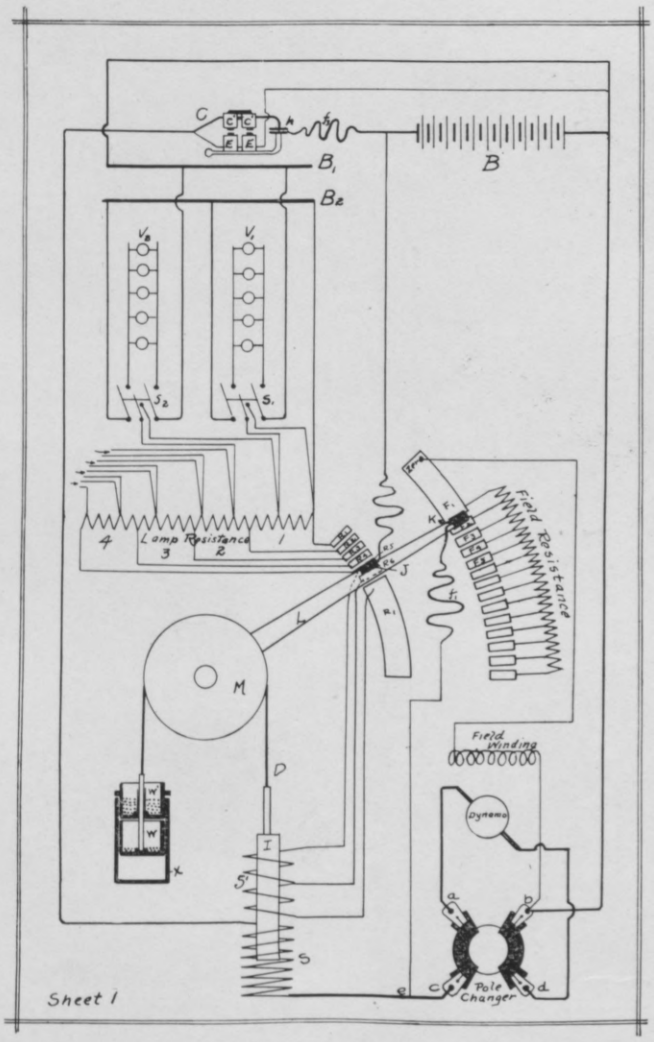
Newbold Suspension and Drive.

and any other exposed auxiliary apparatus must be dust and moisture proof, and if suspended from the truck must be designed to hold lubricating oil and to take up severe thrusts under violent longitudinal vibrations.

In respect to the two systems under consideration, there are several features in common: the same general form of suspension is employed, and consists of a steel frame secured to the inner vary in capacity from 2.5 to 3.0 kilowatts at either 30 or 60 volts. The automatic switch is simply an electromagnetic switch connected across the generator and wound to operate to close or open when generator voltage reaches a predetermined point rising or falling. The distinguishing characteristics of these systems lie in the methods of regulation and in the construction of the automatic regulators by which these are

accomplished. The regulators are illustrated and give a general idea of the appearance of the actual apparatus, but the operation will have to be considered in connection with the corresponding theoretical diagrams.

a sprocket wheel M; the pull of the plunger I is balanced by weights W and W1 acting in a vacuum dash-pot X; the wheel M has a radial arm L which carries two brushes, J and K, which move over segmental rows of rheostat contacts;



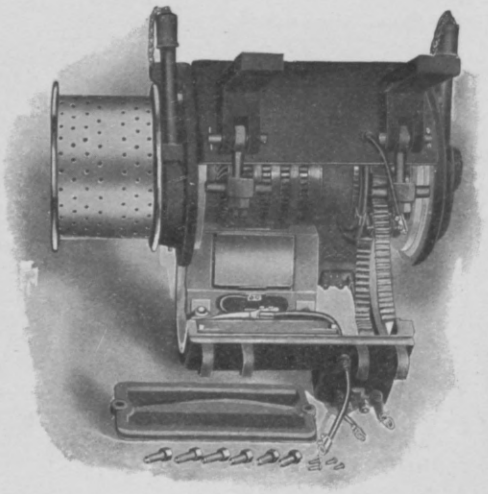
Newbold Theoretical Wiring Diagram.

In the Newbold regulator the parts will be easily recognized in connection with the diagram, since the same reference characters are used on both regulator and diagram.

A solenoid S acts upon a plunger I suspended vertically therein by a chain D which runs over the dynamo, pole changer, field winding, field resistance, "lamp resistance" are plainly marked, and the battery is shown at B, the lamp circuits at V1 and V2, and the automatic switch at C.

The automatic switch C is closed by the fine coils C1 whenever the generator voltage reaches

a certain point, and when closed the main current, flowing through the coarse coils E, holds the contacts firmly together. When the switch is open the lamps are supplied from the battery, and when it is closed the lamps and battery are both in parallel across the dynamo terminals.

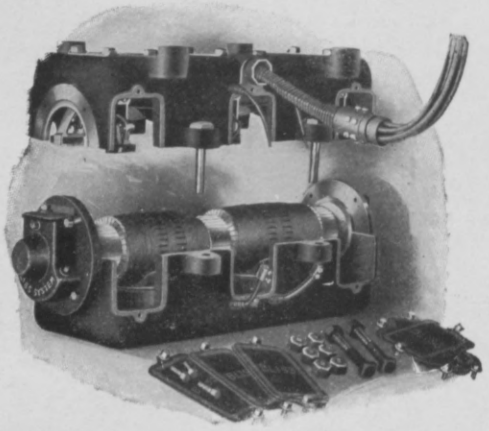


Bliss Generator, side view, showing lower frame swung down, exposing internal parts, armature remaining in upper frame.

It will be noted that the rheostat called "field resistance" is in series with and controls the current in the generator fields, and that the rheostat called "lamp resistance" is in series with the lighting mains and controls the voltage on the lamps. When the arm L moves down over the contacts under the brushes J and K, it cuts in resistance in both these rheostats; note, however, the arrangement of the segments of the two rheostats: when the automatic switch is closed, the main dynamo current flows through the solenoid S, and if this current attempts to rise above its predetermined constant value, the plunger I will pull down the arm L, and by means of the segments under the brush K will will cut in field resistance and weaken the generator field and restore the current to its normal value; at such times the weights in the dash-pot X balance the pull on the plunger and keep it steady.

When the dynamo first reaches the critical voltage, that is, the voltage of the lamps, say at fifteen or twenty miles an hour, the brushes J and K are both at zero; when the voltage begins to rise above this value to approach the full charging voltage required at the battery, it becomes too great to be impressed safely on the lamps, so that the first downward motion of the arm L will cut in "lamp resistance" under the brush J; when the full charging voltage has been reached, no more lamp resistance is needed and no more is cut in, as shown by the segments, and, as no higher voltage at the generator is needed, field resistance is cut in from this point on in the rising speed of the generator.

As will be seen, the current to the lamps all flows through the bank of lamp resistance; as each circuit of lamps is turned on, the lamp current is correspondingly increased, and to prevent the voltage drop through the lamp resistance from increasing proportionately, a section thereof is short-circuited by a third blade on the circuit



Bliss "Bucker" Regulator, with lower frame removed, showing motor and bucker armatures in lower frame.

switch as each circuit is turned on; this keeps the voltage on the lamps constant.

A reverse winding is put on the solenoid S, and, as shown, has terminal contacts under the brush J just below the lamp resistance contacts; when these turns are cut in by the movement of the arm L, the lighting current flows through

them and tends to counteract the tendency of the solenoid S to cut in field resistance, so that when lamps are burning and the dynamo is operating the solenoid S will be less sensitive and will permit the dynamo to increase its constant load and to carry the lamp load without drawing upon the battery-charging current.

The weight in the dash-pot is in two parts, one acting while the lamp resistance is being cut in, and both after it is cut in; so that by adjusting these weights, the sensitiveness of the solenoid S and, hence, the full charging current on the battery and the total generator output can all be nicely adjusted.

Another method of controlling the lamp resistance is sometimes employed to the same end: each circuit of lamps is provided as before with a section of lamp resistance, independent from the rest, and a two-blade circuit switch is employed; the operation of closing the switch to turn on lamps throws the circuit of parallel lamps as a whole in series with the section of resistance.

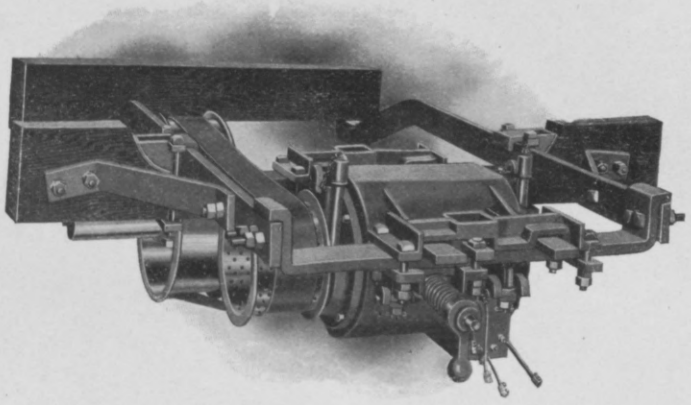
The action of the pole changer to maintain constant polarity in the system, as before mentioned, can be understood from the Newbold diagram; the black segments are made to revolve through ninety degrees, while the light contacts remain stationary.

The mechanism by which this is accomplished comprises a worm on the generator shaft meshing with a gear which is automatically thrown into and out of operative connection with a knife switch arranged in a way very similar to the arrangement of the parts in the diagram.

The zigzag curves connecting leads to the brushes J and K represent flexible conductors.

The regulator is mounted up inside the car in a suitable cabinet, open for inspection, as shown in the illustration.

The Bliss regulator in the lower part of the diagram consists of a small motor and a small generator mounted on one shaft, the generator part having two separate windings and two separate commutators; the little generator part is known as the "bucker"; the bucker, motor, main generator, lamps, "generator switch," or automatic switch, battery, an emergency switch, an automatic-switch resistance, and an adjusting shunt are all plainly shown in the diagram.

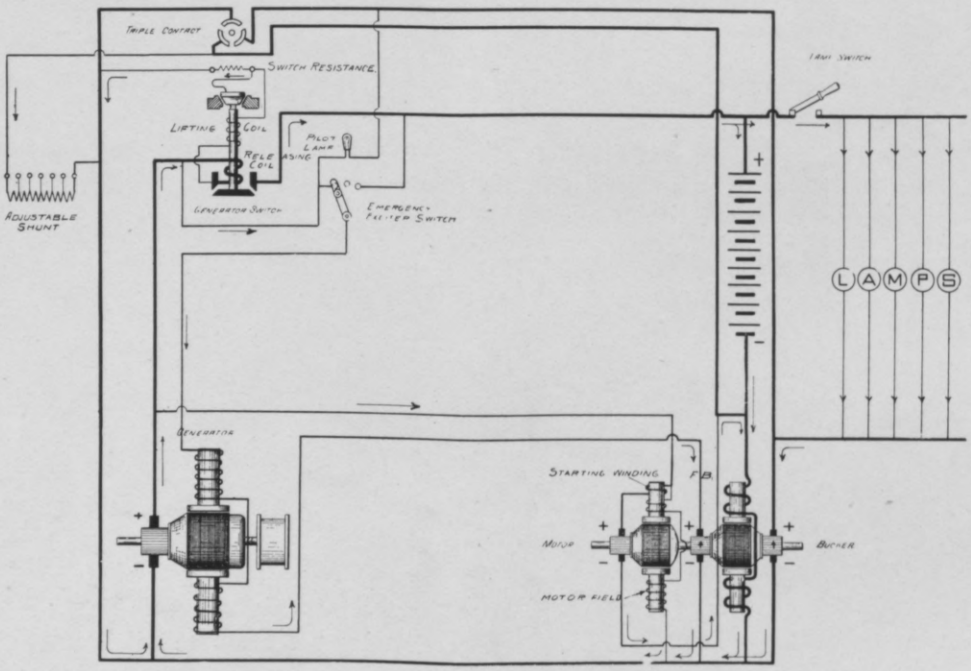


Bliss Suspension and Drive.

The automatic switch is closed by the fine coil when the generator voltage reaches that required by the lamps; the motor, which is always in the generator circuit, has at this time attained its full speed, which it maintains approximately constant; one armature winding, of fine wire, on the bucker is in the generator field circuit, and the other, of coarse wire, is in the lamp circuit; when the generator voltage rises above that of the bat-

tery and current flows through to charge it, it also energizes the field of the bucker and causes it to generate a counter voltage in both the dynamo field and in the lamp circuit; as the generator voltage attempts to rise above the charging voltage the counter voltage of the bucker fine-wire armature weakens the dynamo field and keeps the voltage down; when the voltage of the generator is sufficient to properly charge the battery, and is too great to be impressed upon the lamps, the coarse-coil armature of the bucker "bucks" the impressed voltage on the lamps and keeps it down to a safe value. By this arrangement the battery may at all times receive a full charging current independent of the number of lamps burning, because a variation in the lamp current will momentarily vary the current through the battery and the strength of the bucker field, and, hence, the strength of the dynamo field, and so vary the output of the generator accordingly. The lamp load is thus carried independently of the battery when the generator is operating.

The automatic switch carries a triple contact in addition to the main line contacts; in the diagram this is repeated, in plan, for clearness; these contacts are open when the main contacts are closed, and are otherwise all connected together. Their purpose is to short-circuit the coarse-coil armature of the bucker and its field when the dynamo is not operating, so that the lamp current from the battery will not suffer a drop in voltage by passing through them, and also to render the bucker inactive when the dynamo is below operative speed.



Bliss Theoretical Wiring Diagram.

The output of the generator is adjusted by means of a variable resistance, or "adjustable shunt," connected across the bucker fields. It diverts current from the bucker field according to adjustment, and, since the bucker counter voltage controls the generator fields, this shunt will control the output of the generator through wide variations.

A switch resistance is arranged to be put in series with the find winding of the switch when

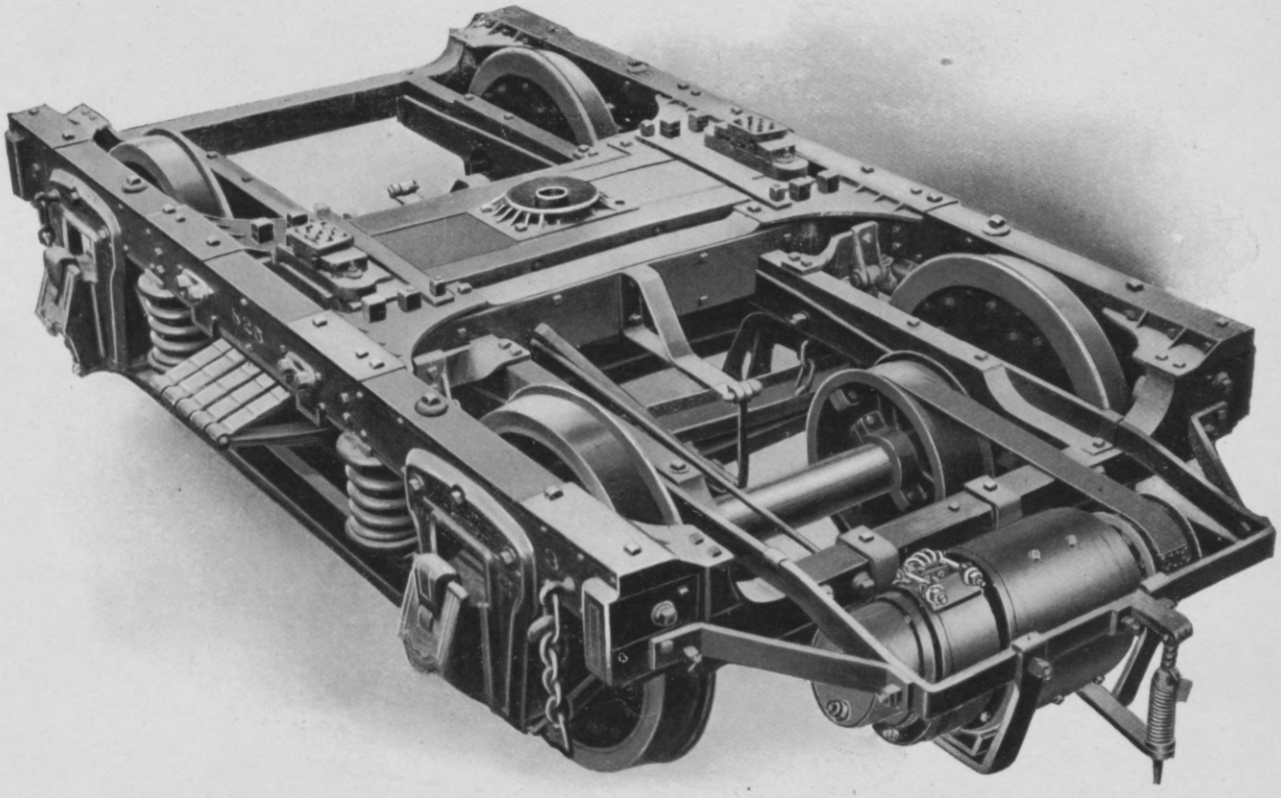
the switch is closed to prevent heating and to permit the switch to open more easily when the generator voltage reaches its predetermined "critical" value.

The emergency switch is merely a means through which the generator fields can be initially excited from the battery in case of a loss of residual magnetism.

The pole-changing mechanism consists of a suitable annular carriage surrounding the generator commutator and carrying the brushes, and adapted to revolve about the commutator on frictionless bearings; when the armature changes the direction of its rotation, the friction between the brushes and the commutator revolves the brushes around through the pitch angle, where they are stopped at the commutation plane.

The regulator is mounted under the car body and enclosed against weather, dust, and moisture.

The Consolidated Axle Light System, by the Consolidated Railway Electric Lighting and Equipment Company, of New York, should have a place in this discussion, since the Newbold, Bliss, and Consolidated are generally considered as the three most prominent in the practical art. The writer was unable, however, to secure cuts and a wiring diagram to explain properly the operation of the system, so it was omitted. The general principle, however, is the same as that employed in the Newbold system in that the generator output and the lamp voltage are controlled by rheostats and the lamp load is put upon the generator when the latter is operating by the employment of reverse windings on the actuating parts.



"Consolidated System" Suspension, showing generator and drive as used on car truck.

W. E. BURK, Louisville, Ky.;
————————, Terre Haute, Ind.;
S. S. WALES, Pittsburg, Pa. (Munhall);
A. E. MICHEL, New York, N. Y.;
W. F. FREUDENREICH, Chicago, Ill.;
J. J. KESSLER, St. Louis, Mo.;
J. H. HALL, Cleveland, O.;
H. A. SCHWARTZ, Indianapolis, Ind.

Advisory Committee of Rose Polytechnic Alumni Association.

A LETTER.

LOUISVILLE, KY., April 30, 1909.

To Mr. Alumnus (particularly to you who have "skipped" attendance on Commencement exercises in recent years, and who are generally in arrears as to old-time interest in Rose).

MY DEAR SIR: I direct you in care of TECHNIC to insure delivery, for surely you have not "fallen from grace" so far as not to be a subscriber to our excellent standard-bearer and reporter, THE TECHNIC.

Attention, please. Get your pad and pencil, for here is an order.

I am chairman of the Advisory Committee, a full-fledged standing committee of the Alumni Association, and as such want to *advise* you, and later on seek your advice as well.

First, the advice or order. On June 8th, 9th, and 10th of the present year there is to be a baseball game, a reception and ball, a commencement, a banquet, a business meeting, and the biggest aggregation of Rose men that Terre Haute has ever had the honor of entertaining. All these, along with a number of encores and extras and surprises too numerous to mention, constituting the program for the Twenty-fifth Anniversary Commencement of Rose Polytechnic Institute.

To see and enjoy the whole performance will cost but a little car fare and a little effort. The investment is so good that I advise and *order* you to make plans now and fail not to attend.

The Class of '96 has engaged Professor Hathaway's room for headquarters, and will defend against all comers on the baseball diamond. You had better apply for rooms without delay while there is yet space.

Wake up now and do not be a "flunker." There will be something doing in your line, whatever your line may be.

Besides, the Advisory Committee is going to make a report at the business meeting, and we want you to hear it while it is hot.

Your committee deems it proper at this time, however, to refresh your memory as to its purposes, and to state one or two recommendations it has to offer at this time.

The Advisory Committee is a standing committee of the Alumni Association, consisting of eight or more members, the members representing groups of Alumni that are found in different cities and localities, the number of members depending upon the number of "wide-awake" groups.

The committee is somewhat permanent in structure, its senior member retiring each year, to be succeeded by new appointee of the President of the Alumni Association at the June annual meeting. For eight years, then, each member should study conditions and be an efficient factor in promoting the welfare of Rose Polytechnic Institute.

The Alumni Association meets but once each year. Those who attend the business meeting invariably show deep interest in the affairs of the Institute and derive much mutual benefit. But the meetings are too infrequent to afford continued coöperative interest. Hence your Advisory Committee has been established to serve in the interim, continuing the Alumni good-will and effort throughout the year. This committee expects you to correspond with it—to hold meetings by mail, as it were. There are many little suggestions and items of information that come to the minds of the Alumni through their experiences in the respective work upon which they are engaged, which, if collected, would have real

value toward promoting the interests and welfare of R. P. I. and be of mutual benefit to the Alumni as well.

You are invited to communicate any such information or suggestions to any member of the Advisory Committee. This committee will properly consider your suggestions and information, very much as would be the case at an Alumni meeting, and all advisable action thereon will be taken.

It is not generally realized how important our Alumnii body has become.

Consult your catalogue and note the vocations represented by the Alumnii.

Surely we should become more interested in Rose and in ourselves as a body, intermingling our opinions, coöperating our efforts, and become mutually benefited, as well as serve our Alma Mater, as is our duty and her due. Rose rejoices and benefits as well in the success of her Alumnii.

We have engineers in every line of the broad interpretation of that term.

We have among our numbers inventors, and lawyers to patent our inventions. Yes, and capable lawyers to defend us in our mistakes and troubles as well.

Consider the splendidly-trained, though inexperienced, men coming from Rose each June. See to it that they secure employment without delay and start them on the way of broadening their experience.

Experienced and inexperienced, they all come from the same mold. Mutual coöperation will result in benefit all around, and reflect in no uncertain way as a great good to Rose Polytechnic Institute, the mold to which we all owe so much.

Now your committee urges you:

To communicate freely, personally and by letter, to its member whom you may know best, and who may be most convenient, in any suggestions or information which, in your opinion, might improve or promote the welfare of the Institute or its Alumni body.

To organize a local "Tech Club" wherever there may be a handful or more of you located near to each other. Six or eight of such "Tech Clubs" are now organized. Socially and otherwise they are a satisfaction and a means of mutual benefit. Read papers and swap opinions at the club. It is healthy practice. Get your "Tech Club" on its feet; report each meeting of your "Tech Club" briefly to THE TECHNIC for publication. They want to hear about you at home.

When your "Tech Club" gets in real earnest, apply for a representative member on the Advisory Committee. Talk and act through him, and if you can't attend Commencement each year, see to it that your Advisory Committeeman at least goes to Terre Haute and brings back with him a good account of the happenings. Pay his way for him, or make him pay or "beat" his own way; either plan, but go somehow he must to represent you and his constituency.

Count the number of Alumnii in your immediate local "group." You will perhaps find more noses than you think. Get the men together at once and organize a "Tech Club." Then drop *me* a line. We want to report as many organized groups as possible at the June meeting.

The Advisory Committee wants more organization all along the line, and more "Tech Clubs" through which it can both speak and listen. We are the telephone exchange; use us.

Without waiting for your organization, however, send along any suggestions and information that you may think worth while as affecting and promoting the welfare of Rose and of ourselves. We want to digest them before Commencement. We already have a few important matters to submit, but we want more. Will see you in Terre Haute in June, I hope, and will then offer to you our Budget of Advice.

Awaiting your reply,

Am sincerely yours,

W. E. BURK,

Chairman Advisory Committee.

No. 1412 Hepburn Avenue, Louisville, Ky., April 30, 1909.

ALUMNI NOTES

Martin N. Troll, '01, who has lately been engaged in reclamation work near Seattle, Wash., is visiting in Indianapolis.

E. Paul Wickersham, '08, recently with the Grand Rapids Gas Light Company, is now with the Bu-ick Automobile Company, Flint, Mich.

George F. Nicholson, '06, of Seattle, Wash., has received an appointment on J. P. Morgan's railroad in Alaska.

F. H. Cash, '07, has accepted a position with the Republican Iron and Steel Company, of Virginia, Minn.

Leon Goodman, '05, and Charles McCormick, '04, have taken the exclusive agency of a new building material company in Des Moines, Ia.

George T. McCormick, '08, will leave for Europe about June 1st on business for the Kay & Ess Company, of Dayton, O.

Any Alumnus who possesses a copy of THE TECHNIC of April, 1901 will confer a favor on the staff and Institute by communicating with the librarian. This number is all that is lacking to complete the set of bound volumes of THE TECHNIC in the library.

KANSAS WHEAT

FRED C. KRUGER, '09.

Opening Wheat Land to Settlement.

When the ocean-to-ocean railroad crossed Kansas the door of opportunity seemed to open to all classes, from the eager adventurer to the earnest homesteader; all wanted a share of this land, that might be had for little more than the mere asking. A settler could obtain a deed to a quarter section by filing a claim on it and residing thereon for six years, provided he put ten acres under cultivation the first year and increased this by a nominal amount each season. This was called a homestead claim. An additional quarter section, called a timber claim, could be secured by planting ten acres of timber thereon and caring for the trees the first three years. This latter method represented a plan of the Government to start some timber in a region almost devoid of trees.

The "company" (the Union Pacific Railroad) also sold land at very low prices. This was possible, because the Government deeded every other square mile, through which the new line ran, to the company by way of encouragement. Such a method resulted in the selection of a route through the choicest lands. Then the land was advertised broadcast over the country and described in highly promising terms, although it then was a treeless plain, inhabited only by nomad Indian tribes and herds of buffaloes. The usual horde of adventurers came, were enthusiastic for a time, and then, when they met the real hardships of the new life that faced them, like the sower's seed which had no depth of earth, they wilted in the noonday sun. The company, seeing their new settlements dying, offered inducements to the Russian peasantry to come over and settle along the right of way. Great numbers of these took advantage of the offer, and, since wheat farming had been their occupation for generations, they had good success in the new country. The company took a promissory note from each peasant in payment for enough land for his family to work, and he was allowed to pay this note in labor for the company. To the present day the Russian's life and methods are much the same as they were when he first settled. He still

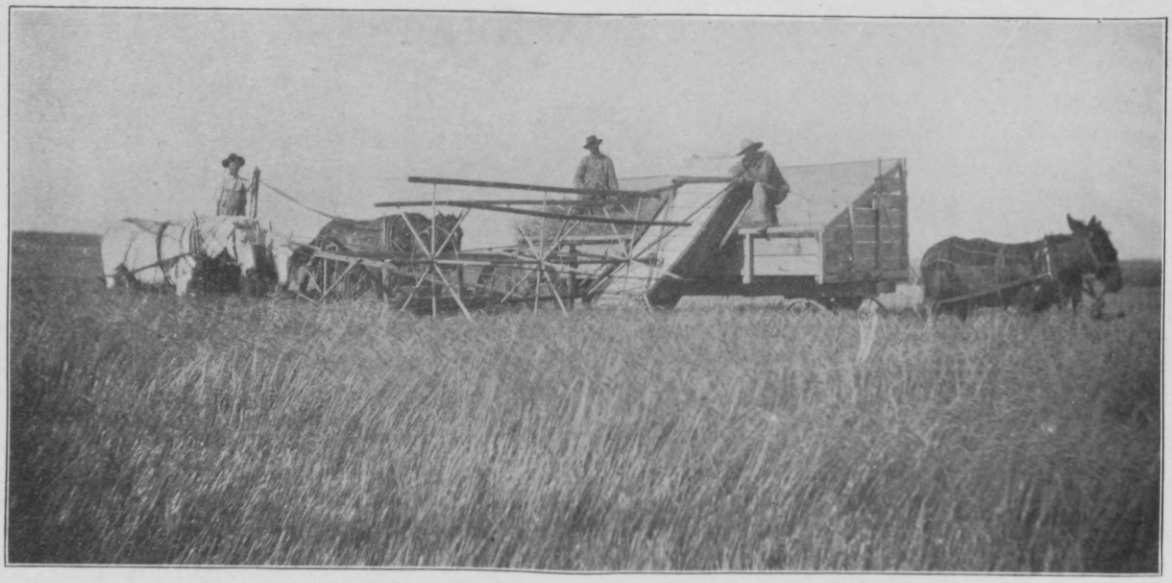
lives in his little mud or stone house, and his wife and older daughters may even yet be seen plowing and working in the fields with the men.

Then, too, among the early settlers were men of determination, who, in the face of hard times, buckled down to do battle with privation and hardship. These, in the later development and progress of the State, have reaped large reward.

Wheat Farming Methods.

Western Kansas is now one of the most important wheat regions of the States, although the rainfall is far below that which would be required for any methods of farming other than those peculiar to this region. The most favored grain is commonly called the hard winter wheat. It is planted in the fall, and thus receives winter and spring rains, which constitute about all the rainfall for the year. The first seed of this variety of wheat was imported by the company from Russia; they found that in a certain section of the Volga River basin, of remarkably similar climatic conditions, best success was had with this long-bearded wheat. Both the Volga River and the Western Kansas regions are subject to strong, steady trade winds, and these would rapidly thresh out the kernel of the ordinary grain. The beards of the preferred variety, however, serve as cushions, and prevent injury to the kernel when the heads strike against one another in the breeze.

The first hard-wheat crops were enormous, but profits were only nominal, because the settlers could realize only twenty-five cents per bushel. The flour mills had only stone burrs, and would pay no more for a wheat so hard to mill. When the superior qualities of the hard wheat as a food were appreciated, rolling mills were introduced, and better times for the farmer began.



A hard spring wheat has lately been introduced by the Kansas State Agricultural College which is a great drought resister, and although its yielding qualities are less than the winter wheat, it will often give fair yields where the other variety refuses to grow at all.

The general method employed in preparing the soil for the winter wheat is to plow immediately after harvest—in late July or August. The soil is very dry, forms clods, and would commonly be declared, by Eastern farmers at least,

as unfit for working. But the grain needs the benefits of the first rains, and long practice has taught Western Kansas farmers how to handle dry soil so that no delay occurs in the farm operation; it is deemed no hardship to constantly work in the hardest, baked earth.

A very successful scheme is that which divides a farm into two portions, raising a crop on each every alternate year. The idle division is treated thus: in the spring, when the weeds have well started on it, they are plowed under and the field left to grow more. Later in the season the second crop of weeds is also turned under, thus fertilizing the land by its own decaying products. This method is called summer fallowing. The crop realized by summer fallowing is more than twice that of the usual method, and since the time required to harvest a poor crop is not much more than that for a good one, a double yield is reaped in a single harvest. Another recommendation of this method is, that the grain gives a better test in weight per bushel and a greater per cent. flouring value.

A custom prevalent to some extent is that of seeding unplowed land when any cause prevents its usual preparation. As much as one thousand acres is sometimes "risked" in this manner by men who are termed "grain hogs." Farms have been seeded without plowing for four successive years. Such tracts of land well deserve the name of "insect incubator," for insects multiply and develop far more readily where the soil remains undisturbed throughout the year.

Harvesting.

In many regions a self-binder is used in harvesting, but in Western Kansas the straw has no value other than as "roughness" for domestic animals, and a header is employed. This machine is designed to cut off only the wheat heads, but may be adjusted to cut long straw in case the wheat is "lodged" by storms. It is, of course, desirable to cut as short heads as possible, in order to avoid unnecessary expense on straw. The horses are hitched behind the header, so as not to trample the grain, and the driver guides the machine by means of a "rudder." A swath ten to eighteen feet wide is made, the heads falling on an endless canvas belt conveyer, which takes them via the elevator to a specially-designed "barge." This barge is moved independently of the header, and is replaced by another when loaded. A great deal of time is saved by the use of the header, since the heads are stacked from the barges as soon as cut; thus, when the header has finished, the wheat is already in stacks, out of danger of storms and ready for the thresher.

The binder is not greatly favored, because it requires more machinery than a header to cut the same acreage per day, and the "kickers" shell out a considerable quantity of grain.

Then the sheaves set up in shocks behind the binder are liable to become scattered by the wind, or, the heads being exposed to the weather, the kernels may become bleached, thus lowering the market value of the grain. Then, too, the shocks on the field prevent the farmer from plowing, should he wish to do so before the arrival of the thresher. At this time the grain is inclined to go through a sweating stage, either in the stack, or, if it has been threshed immediately after cutting, it may do so in the bin. The sweating process generates a gas that is liable, by spontaneous combustion, to set it on fire.

Insect Pests.

The wheat grower has to contend with many variety of insects which damage the crop both by injury to the plant and by direct attack on the kernel itself. Chief among these are the locust, the Hessian fly, and the cinch bug. They are more numerous some years than others, probably because of the difference in severity of seasons.

The Hessian fly—so called from the erroneous idea that the Hessian troops brought it to America in the Revolution—is a small dipterous insect which deposits its larvæ between the base of the lower leaves and the stalk of the wheat. A field infested with this fly has a pale green appearance, the blighted straws lodge readily, and

the kernels do not fully develop. The best plan for preventing this pest is to burn all straw and stubble as soon as the threshing is done.

Two species of locust are common, the winged variety, or Rocky Mountain locust, which drifts with the wind from field to field, and another which travels on foot.

When the winged locusts appear in large numbers they often lay incredible devastation in their wake. Some years ago a locust pest fell upon this wheat region and swept a broad swath clear of all green things as far south as the Gulf of Mexico, where a storm swept them into the water.

The habits of the second variety are better known, and, as a rule, they do not sweep down unexpectedly in a mighty swarm. They deposit their eggs in the fall in such soil as has not lately been disturbed by cultivation, whence the land of unscrupulous farmers is the breeding ground of new broods. Their method of attacking the grain is to begin at the top of the stalk and eat down. It is on record that a fifty-acre field of barley a foot high was entirely eaten in a single week by this pest.

The cinch bug, although very small, multiplies very rapidly, especially in old grass or drifts of rubbish that are left undisturbed through the winter. Their damage to the grain is by drawing the sap from the young stalk. The only successful preventive is to burn off its probable sheltering places early in the fall.

In the early days prospects were brightened when mills were promised which could handle and pay well for the hardiest grain. Now great government irrigation schemes are under way, which promise an even greater advance on the scale of progress and profit, and Western Kansas bids fair to remain still a land of golden future.

Y. M. C. A. NOTES.

It is a fact not generally appreciated that Rose Poly has one of the best Y. M. C. A. handbooks in the country. They have some twenty-five exchanges from the important colleges, and the Rose book compares very favorably with any of them, and is better than a great many. Work has been started on the handbook for 1909-10, and many new ideas will be incorporated in the issue which will greatly enhance the value of the publication. The issue will be in charge of G. M. Curry, '09, and I. R. Ralston, '09, assisted by Edwards, '10; Albrecht, '12, and S. Heer, '12. New ideas from students tending toward the improvement and increased usefulness of the book will be welcome.

REVIEWS.

Value of Exhaust Steam.

A concise way of stating the value of exhaust steam is that every six pounds of it is worth as much as one pound of coal, plus fireman's wages, plus interest and depreciation on boiler plant, plus six pounds of pure boiler-feed water. That is, provided you want the steam for heating, drying or similar purposes.—*Power and the Engineer.*

Ferro-Titanium Rails.

Ferro-titanium rails, which received considerable newspaper attention a few weeks ago, when the 1909 order for rails for the New York Central Lines was placed, were first made in this country in November, 1907, at the works of the Maryland Steel Company, and since that time other companies have run many heats, particularly the Lackawanna Steel Company, which has supplied several thousand tons to the New York Central Lines. The peculiarity of the rails is that they contain little or no titanium, in spite of their name, and in this respect differ from nickel and manganese steel rails, which contain certain carefully-attained percentages of nickel and manganese. * * *—*Engineering Record.*

Coal Gas Made in United States.

According to the reports in the Geological Survey, 58,000,000,000 cubic feet of coal gas was made in the United States during 1907 by 513 companies. Of this product, 54,600,000,000 cubic feet sold for $36,327,897.—*American Machinist.*

...ATHLETICS...

BASEBALL.

E. I. S. N. S., 1; Rose, 3.

In the first game of the season the muchly-feared Eastern Illinois Normal team came over, and, with the much-touted Tarble battery at work, went down in defeat to the tune of 3 to 1. The day was cold, and errors on both sides were frequent. Backman was in fine form and only allowed the "Suckers" three hits, and caused thirteen of them to fan the atmosphere. Tarble also pitched a good game, but errors behind him gave us a good lead. Hadley retired after this game, and has not been seen in a uniform since, as his physical condition will not permit it. Mooney was then shoved over to the initial sack and Bradford took his place at second.

THE SCORE.

E. I. S. N. S.	A.B.	R.	H.	P.O.	A.	E.
G. Tarble, c	3	1	0	10	0	0
Ivy, ss	4	0	0	0	0	0
N. Tarble, p	4	0	0	2	5	0
Nichols, 2b	4	0	1	2	2	0
Hawkins, cf	4	0	0	0	0	0
Fleming, lf	4	0	1	0	0	0
Taylor, 3b	4	0	1	0	1	0
Corzine, 1b	4	0	0	9	0	3
Vaughn, rf	1	0	0	1	0	1
Totals	32	1	3	24	8	4

Rose.	A.B.	R.	H.	P.O.	A.	E.
Ahrens, rf	3	0	0	0	0	0
Mooney, 2b	4	0	1	2	1	1
Lawler, c	4	1	1	15	3	0
Backman, p	3	2	2	0	3	0
Shook, ss	3	0	1	1	0	0
Webster, lf	3	0	0	0	0	0
Hadley, 1b	3	0	0	4	0	3
Wyeth, cf	2	0	0	1	0	0
Barrett, 3b	3	0	0	4	0	1
Bradford, rf	1	0	0	0	0	1
Totals	29	3	5	27	7	6

SCORE BY INNINGS.

E. I. S. N. S.	0	0	0	0	0	0	0	1	0	—1
Rose	0	1	0	0	0	2	0	0	*	—3

SUMMARY.

Struck out: By Backman, 13; by Tarble, 8. Bases on balls: Off Backman, 3; off Tarble, 1. Hit by pitched ball: Wyeth. Sacrifice hit: Shook. Stolen bases: G. Tarble, 2; Nichols, Backman, Shook, Wyeth. Double play: Lawler to Barrett. Umpire: Armstrong. Time of game, 1:45.

Purdue, 8; Rose, 3.

Backman proved an enigma to Purdue at Lafayette on May 15 for five innings, but in the sixth, for some unaccountable reason, he blew up and allowed the "Boilermakers" five runs, while up to that time Rose had held them blanked and had shoved across three markers. "Back" simply

could not stop the slugging of the Purdue batters, and in the seventh gave way to Frisz, who proved more effective. The features of the game were the home runs of Boltz and Tregress. Wyeth made several sensational catches in center field, which brought the applause of the entire crowd. We only wish the boys had another chance to play Purdue this year, as we are certain that the game would result much differently. But no chance.

THE SCORE.

Purdue	0	0	0	0	0	5	1	2	*	—8
Rose	0	0	1	0	2	0	0	0	0	—3

SUMMARY.

Batteries: Purdue, Shade and Sargent; Rose, Backman, Frisz, and Lawler. Struck out: By Shade, 6; by Backman, 2; by Frisz, 1. Bases on balls: Off Backman, 2. Home runs: Boltz, Tregress. Two-base hit: Barrett. Hits: Purdue, 10; Rose, 3. Errors: Purdue, 2; Rose, 1. Umpire: Meyers. Attendance, 1,500.

Indiana, 6; Rose, 5.

After allowing Indiana a big lead early in the game by a number of errors, Rose Poly came back strong in the ninth and came within one of tying their opponents on Rose campus. As it was, they made three runs without a sign of a hit in this session, and made the score 6 to 5 in favor of the State boys. A number of errors by Rose men in several innings gave Indiana a lead which she should not have had, but the "Engineers" tried bravely in the last inning to make this up, and they came very close to doing so. Backman, in the box for Rose, had his opponent, Johnson, beaten at every turn, but the men behind him slipped in nine errors. Backman struck out eleven men and gave two their bases on balls, while Johnson made eight men fan the air and gave free passes to three.

In the final session, Webster, the first man up, popped up one to short right, which the first baseman should have gone after, but he left it to Howard in right, who dropped the ball after making a long run. In the chase after the ball Webster landed on second. Frisz knocked one down in the diamond to Johnson, who hesitated in throwing, and allowed Frisz to land on first, while Webster took third. Wyeth shot a swift one to Berndt, who let it through him, and Webster came home. Watts batted for Barrett and dumped one to Johnson, who again hesitated long enough for Frisz to score, but threw the batsman out at first, while Wyeth took third. Bradford grounded out to first and Wyeth came home on the play. Mooney ended the agony by striking out.

Backman, Lawler, and Mooney pulled off a pretty double play in the fourth. The bases were full when Winters came to bat. He grounded to Backman, who threw Sutphin out at the plate, and quick as a wink Lawler had relayed the ball to first in time to catch Winters.

THE SCORE.

Indiana.	A.B.	R.	H.	P.O.	A.	E.
Thompson, c	5	1	2	8	2	1
Driver, 3b	5	1	1	2	1	0
Johnson, p	4	0	0	0	6	0
Paddock, lf	5	1	1	0	0	0
Sutphin, cf	5	2	3	0	0	0
Berndt, ss	5	0	1	0	1	1
Cunningham, 2b	3	1	1	4	4	0
Winters, 1b	4	0	0	10	0	1
Grant, rf	3	0	0	0	1	0
Howard, rf	0	0	0	0	0	1
Totals	36	6	9	27	15	4

Rose.	A.B.	R.	H.	P.O.	A.	E.
Bradford, 2b	4	0	0	1	0	1
Mooney, 1b	4	0	0	8	0	2
Lawler, c	4	1	1	12	2	2
Backman, p	3	0	2	0	2	0
Shook, ss	4	1	0	2	3	3
Webster, lf	3	1	0	1	0	0
Ahrens, rf	1	0	0	0	0	0
Wyeth, cf	4	1	1	0	0	0
Barrett, 3b	2	0	0	2	3	1
Frisz, rf	2	1	1	0	0	0
*Watts	1	0	0	0	0	0
Totals	31	5	5	27	10	9

*Batted for Barrett in ninth.

SCORE BY INNINGS.

Rose	1	0	0	0	0	1	0	0	3	—5
Indiana	0	0	2	1	0	1	0	1	1	—6

SUMMARY.

Bases on balls: Off Backman, 2; off Johnson, 3. Struck out: By Backman, 11; by Johnson, 8. Hit by pitched ball: Bradford, Barrett, Johnson. Sacrifice hits: Bradford. Stolen bases: Lawler, Webster, Thompson 2. Double play: Backman to Lawler to Mooney. Two-base hits: Backman, Wyeth. Umpire: Grim. Time of game, 2:10. Attendance, 500.

DePauw, 0; Rose, 4.

Playing errorless ball and making great speed on the bases, Rose Poly shut out DePauw on Rose campus with four points to their credit. DePauw made more hits than Rose, but they did not come at the right time to make runs, and loafing on the base lines cost a chance to score. The five errors chalked up to the "Methodists" were all costly and meant runs for Poly.

Bradford put up the best game of the day for Rose. He got two putouts and seven assists without the sign of a bobble. He registered two of the four hits made by his team and stole three bases. All of the rest of the players put up excellent games, and on account of it the old score against DePauw is wiped out.

THE SCORE.

DePauw.	A.B.	R.	H.	P.O.	A.	E.
Bryant, ss	4	0	0	1	4	1
Jewett, c	4	0	1	7	1	0
Holderman, 1b	4	0	2	13	1	1
Collins, p	4	0	0	0	2	0
Overman, cf	4	0	1	0	0	0
Harmon, lf	3	0	1	0	0	1
Hardin, rf	3	0	1	2	0	0
Crouch, 2b	3	0	1	0	2	1
Henderson, 3b	3	0	0	1	4	1
Totals	32	0	7	24	14	5

Rose.	A.B.	R.	H.	P.O.	A.	E.
Bradford, 2b	3	1	2	2	7	0
Mooney, 1b	2	0	0	14	0	0
Lawler, c	4	0	0	4	2	0
Backman, p	4	0	1	2	3	0
Shook, ss	3	1	0	1	2	0
Webster, lf	3	1	0	1	0	0
Frisz, rf	4	0	0	0	0	0
Wyeth, cf	4	0	1	2	1	0
Barrett, 3b	3	1	0	1	1	0
Ahrens, rf	0	0	0	0	0	0
Totals	32	4	4	27	16	0

SCORE BY INNINGS.

DePauw	0	0	0	0	0	0	0	0	0	—0
Rose	0	2	0	0	0	0	2	0	*	—4

SUMMARY.

Struck out: By Collins, 7; by Backman, 4. Bases on balls: Off Collins, 3. Stolen bases: Bradford, 3; Barrett, 2; Shook, Crouch. Umpire: De Haven. Time, 1:30.

Indiana, 5; Rose, 3.

Indiana University again proved its superiority over Rose Poly by winning a closely-played contest with a score of 5 to 3. Neither team scored until the fourth inning, when Cunningham, of Indiana, walked, stole second, and scored on an error. Berndt scored for Indiana in the sixth inning on an error by Barrett.

Poly followed the two Indiana scores with three runs in the seventh inning. Webster singled, while Watts went to first safe on an error, which scored Webster. Watts then advanced to third on an error by the Indiana pitcher. Mooney then hit a two-bagger after Wyeth had gotten on base, and Wyeth and Watts scored. This was the end of the Poly scores for the day.

After the seventh inning Indiana succeeded in overcoming the lead of Rose and put three more runs across, making five.

THE SCORE.

Indiana.	A.B.	R.	H.	P.O.	A.	E.
Driver, 3b	4	0	0	1	0	1
Thompson, c	5	1	2	13	1	0
Johnson, p	4	1	2	1	1	1
Paddock, lf	4	0	0	2	0	0
Sutphin, cf	4	0	1	1	0	0
Berndt, ss	4	1	1	0	0	0
Cunningham, 2b	3	1	1	1	3	0
Winters, 1b	4	1	0	7	0	0
Lewis, rf	4	0	0	1	0	0
Totals	36	5	7	27	5	2

Rose.	A.B.	R.	H.	P.O.	A.	E.
Bradford, 2b	4	0	0	4	2	1
Mooney, 1b	4	0	1	9	0	0
Lawler, c	4	0	0	8	1	2
Backman, p	4	0	2	0	1	1
Shook, ss	1	0	1	0	2	1
Webster, lf	3	1	1	0	0	0
Watts, rf	4	1	0	2	0	1
Wyeth, cf	3	1	0	1	0	1
Barrett, 3b	4	0	1	0	1	3
Totals	31	3	6	24	7	10

SCORE BY INNINGS.

Indiana	0	0	0	1	0	1	2	1	*	—5
Rose	0	0	0	0	0	0	3	0	0	—3

SUMMARY.

Hits: Off Johnson, 6 in nine innings; off Backman, 7 in nine innings. Struck out: By Johnson, 10; by Backman, 9. Bases on balls: Off Johnson, 3; off Backman, 2. Stolen bases: Driver, Thompson, Paddock, Berndt, Cunningham (2), Barrett, Watts, Wyeth. Two-base hit: Mooney. Three-base hit: Shook. Umpire: McWalters.

E. I. S. N. S., 1; Rose, 2.

Rose Poly defeated Eastern Illinois Normal for the second time this season by the score of 2 to 1. Each team made five hits and three errors, but the visitors' hits came when hits meant runs. Throughout the game was a pitchers' battle between Tarble and Backman, with the odds slightly in favor of Backman. Tarble had the best of the strikeouts, with eleven to his credit, while Backman fanned seven. The only score made by the Normal team was a result of a showing of temper by Bradford, the Rose second baseman, who became enraged at a decision of the umpire and threw the ball over the catcher's head. Another run might have been scored on the same throw had not the runner thought the play to be a trick.

THE SCORE.

E. I. S. N. S.	A.B.	R.	H.	P.O.	A.	E.
Hawkins, cf	4	0	0	1	0	0
Ivy, ss	4	0	0	1	5	0
G. Tarble, c	4	0	3	11	1	0
Nichols, 2b	4	0	0	2	1	1
N. Tarble, p	2	0	2	1	1	0
Fleming, lf	4	0	0	1	0	1
Taylor, 3b	3	1	0	0	0	1
Hill, 1b	2	0	0	9	0	0
Cassell, rf	3	0	0	1	0	0
Totals	30	1	5	27	8	3

Rose.	A.B.	R.	H.	P.O.	A.	E.
Bradford, 2b	4	1	1	1	0	0
Mooney, 1b	3	0	0	13	0	0
Lawler, c	3	0	1	7	2	1
Backman, p	4	0	2	3	5	1
Shook, ss	4	0	0	0	4	0
Webster, lf	4	1	0	0	0	0
Watts, rf	1	0	1	0	0	0
Wyeth, cf	1	0	0	0	0	0
Barrett, 3b	2	0	0	3	1	1
Totals	26	2	5	27	12	3

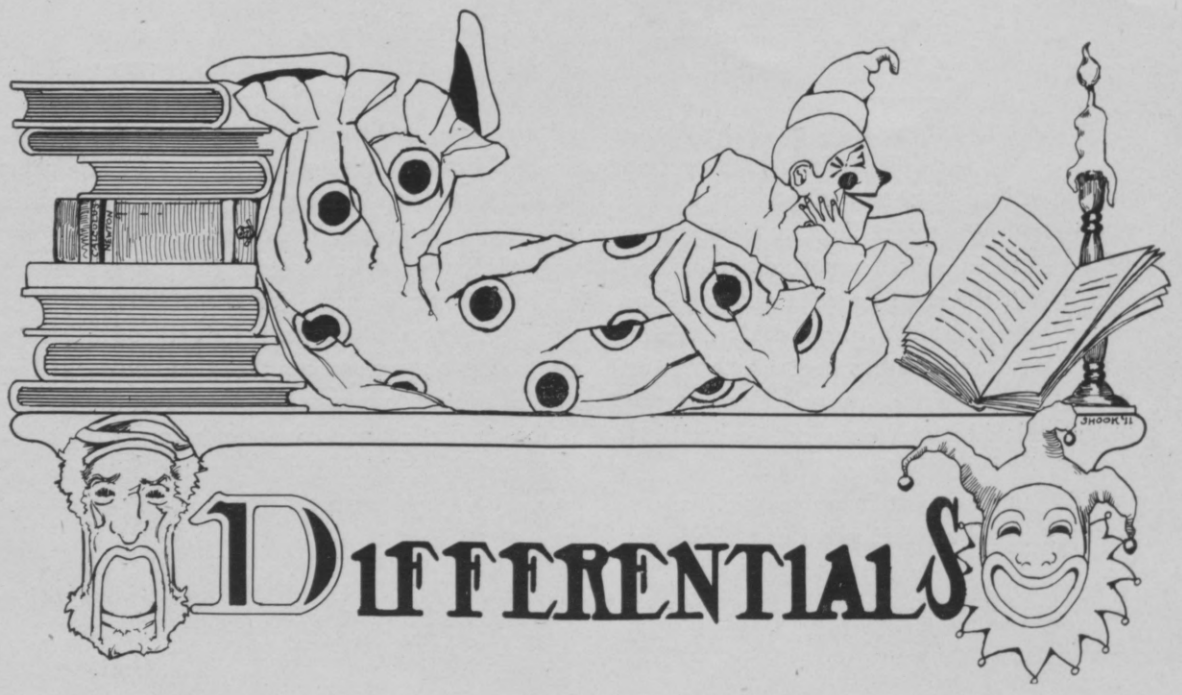
SCORE BY INNINGS.

Eastern Illinois.	0	0	0	0	0	0	0	1	0	—1
Rose	0	0	0	0	1	1	0	0	0	—2

Base on balls: On Tarble, 1. Double play: Backman to Barrett to Mooney. Struck out: By

Backman, 9; by Tarble, 9. Umpire: Church. Time, 1:40. Attendance, 400.

Dr. White called a meeting of all the rooters in school for one evening, a short time ago, for the purpose of instilling some ginger into them in the rooting and attendance lines, and only about half of the men in school reported. Now, fellows, this is not the right spirit to show. Those that were there started a great deal of enthusiasm, and Joe Davidson has been elected as yell leader for the rest of the season. Get busy and help in the yells, because he can not do it all himself, even if he is fairly large. Then, again, the team needs your support in a financial way, so find yourself a girl and bring her out. We don't care if you bring two or three. Then when you bring one of the fair sex, teach her to root and do a little of it yourself, because she will like you all the more, and we guess that will help. "Doc" said in his talk that when he was in school he would have been ashamed to go to a game without female company, and on the dead, that is the way the boys feel in most of the colleges. Let's make it that way here, for it certainly is a very pretty custom. The team is doing good work for us, and let's show our appreciation and make this one of the most successful seasons in the history of baseball at Rose. Also, don't forget the track meets; they will be some class, too. "Doc" has struck the keynote; now it is up to us to do our part.



Roommate (2 a. m.)—What is this card in your hat?

His Roommate—Why, that was the wine list, but now it's my table of contents.—*Armour Fulcrum.*

Get Waggie to tell you about life in an Owensboro hotel during a rain storm.

Ask Shaw what he saw through the microscope.

AIN'T IT?

"You sing a little song or two,
You have a little chat;
You make a little candy fudge,
And then you take your hat.

You hold her hand and say 'Good-bye'
As sweetly as you can.
Ain't that a hell of an evening
For a great big healthy man?"

—*Ex.*

THE BITER BIT.

And behold, it did come to pass that there entered into the peace and quietude of the Freshman Class a spirit of mischief. And it was so. And verily I say unto you, this Freshman Class did journey that morning unto the abode of bad smells, known to the faithful admirers thereof as the Chemical Laboratory. And behold, upon entering therein this evil spirit of mischief did exert itself with overwhelming violence. And the result thereof was as follows:

Several desperate and foolhardy young men betook themselves within the precincts of a commodious torture hall, known as the Lecture Room, which adjoineth the abode of bad smells. And upon being ensconced therein they did bolt and lock the massive portals, that the Lord High Torturer (one Dr. White) might not effect his entrance. And great was the rage of said Dr. White upon finding the passageway barred. But, stay; there is yet more. And thereby hangeth the tale. Certain members of the band of miscreants within effected their escape by means of a secret passage, and did appear before the learned doctor

with innocence shining from their eyes. But, lo, certain others, wishing to create an impression of having been blameless, or, what is more probable, being afflicted with frigid pedal extremities, remained quietly seated in the spacious torture hall. The Lord High Torturer entereth by means of a master key; exceeding great is his wrath at beholding the would-be innocents. With cruel blows and stern countenance he expelleth them forever from the abode of bad smells. Being unaware of the pranks of the other escaped youths, he suffereth them to go unpunished. And verily it was so.

Moral.—Great is a man's mistake when he sticketh not with his class.

Poet—What are the four sweetest words in the English language?

Cynic—Inclosed please find check.—*Ex.*

Markley wants to know if the orchestra is going to sing at the twenty-fifth Commencement.

Struck—How is your grade in light?

Bowers—Oh, nearly invisible, due especially to achromatic aberration.

Jo, in his earnestness, says so many little things backward—like the proverbial "road so straight you could see a little red dog a mile long"—that after you get used to him you can often guess just what he really means. We know that a "little bubble of liquid" can advance through a "hollow tube" and rebound from "an air gap of cast iron," and we can "imagine a little ice and a chunk of water supported by a silk wire." But we are still wondering how a body of soldiers can "march at the rate of forty miles per hour, keeping a straight front."

This aberration of Jo's led to a popular version of his biography being recited lately to the "Sons of Rest." It began thus: "At about the age of six he was born in a little country village in the heart of a large city."

It has been reported that Jackie laughed aloud six separate and distinct times.

Prof. Peddle (in Machine Design)—This equation will hold irrespective of the number of spokes.

Nick—How'd one spoke do?

"Mac" (reading grades in Applied)—Back, 76; Bowers, 76; Butler, 76.

Bowers—Talk about your spirit of '76. But the spirit soon subsided.

Rush—Oh, well, Struck, you won't be here next year, anyway.

Struck—The deuce I wont; I'll be here as long as you are, and maybe longer.

Waggie—Explain the flat-rate system of lighting.

Mooney—System used by flat owners.

Shaw (in great confusion)—Gee whiz, I bumped my crazy bone.

A Tardy Observer—What's the matter with Shaw?

Sutliff—Oh, nothing; he bumped his head.

Struck—Didn't you ever hear of Lord Calvin or Newton?

Spoon—Sure. Wasn't Lord Calvin and Newton the same guy?

Electrical—Now, you wise civil, what is a dry battery?

Civil—A package of dried currents.

Saving by Purifying Water.

In a plant containing eleven horizontal return-tubular boilers, each rated at 80 horse power, and said to be generating altogether 1,600 horse power, a water-softening system in connection with an open heater using exhaust steam was installed. Previous to the installing each boiler was cleaned once every four weeks, the operation requiring the service or attendance of six men. With the purifying system at work each boiler is cleaned once in every eleven weeks, the operation being performed by one man in a very short time. No hard scale forms in the boiler, and only a very slight amount of smudge is gathered. The amount of soda ash used is about eleven pounds a day, which is about equal to the amount of sulphate present in the water.—*Power and the Engineer.*

Progressiveness and Asininity.

There is really a very narrow line of separation and real, commendable progressiveness and a stupid belief in one's ability to upset natural laws. The same underlying spirit produces both the brilliant investigator and discoverer and the pitiable dupe of his own ignorance who firmly believes in perpetual motion and the creation of energy — that is, unwillingness to accept as final the dicta of other seekers after knowledge. If we all were content with the fruits of investigations made by dead-and-gone physicists and engineers, there would be no more progress in applied physics and engineering; neither would there be the perennial crop of perpetual-motion and similar misguided inventors.

There is one supreme test, however, which invariably differentiates an intelligent investigator from a self-centered fool: the application of established natural laws to his ideas. The work of the former type of man is always in conformity with the fundamental laws of nature which have been proved to be sound, while that of the false prophet is always based on a false distortion or total disregard of all physical laws applying to his problem; the former never tries to upset the laws of gravity and of the conservation of energy, whereas the latter always manifests a lofty contempt for theory and a valiant determination to force tribute from nature without giving up an equivalent.—*Power and the Engineer.*

The Care of Commutators.

Several times we have heard of operating engineers who claim to use emery habitually for smoothing the commutators, and with no bad results. One well-known contributor to our columns says he has used it for years without any resultant difficulty whatever, and we do not question his veracity in the slightest degree. The number of men who have reported favorable experience with emery, however, is small, the number who have brought trouble upon themselves is large. In a practical operating experience of nine years the present writer has never but once seen

emery used for the purpose mentioned without producing worse trouble than that which it was intended to cure; the exception was explained by the facts that no lubricant was used on the commutator and the mica between the bars was unusually thick and of just the quality to match the copper in its rate of wear. Wherever a commutator is lubricated, the use of emery is liable to be followed by "leaks" across the mica strips which separate the commutator bars. Of course, there may be cases where this does not happen. There have been many cases of recovery by persons who have received shocks from circuits of deadly voltages, but this does not prove that caressing a bare high-tension conductor is a safe habit to form.—*Power and the Engineer.*

Colonel Harvey Ceases the Sea-Level Argument.

The Panama Canal work on the lock-level plan has had no stronger or more outspoken critic than Colonel Harvey, President of Harper Brothers. Through the various journals of this great publishing house he has done more than any other single individual to create a feeling of distrust regarding the safety of the Gatun dam and the practicability of a lock canal. It is therefore appropriate to quote here, as emphasizing the statements printed last week regarding the canal, a part of the speech he made at the recent annual dinner of the Alumni Association of Stevens Institute: "I have been among laymen, and, although they were entirely conscious of laymen's deficiencies in scientific pursuits, they had an instinctive feeling that ultimately, perhaps many hundreds of years hence, the sea-level canal would be the safest and surest thing. I did not feel it was desirable that even Mr. Noble, however distinguished he might be as an able engineer, should designate the men who were to accompany Mr. Taft, for Mr. Noble had served on previous commissions. But I firmly believe that the engineers whom Mr. Noble designated were not only the most competent engineers in matters of this kind in this country, but engineers of whose absolute sincerity and good judgment there could be no question. What business have we laymen, when the questions have been settled by the best men in the country, to put our useless, ignorant views against what they say is the right thing to do? I consider the canal plan now settled. It is the duty of every American to stand in all sincerity behind the Government in this matter and behind the people who are doing the work down on the Isthmus and not handicap, distress and harass them at every point in the game."—*Engineering Record.*

Licensing of Engineers.

The licensing of engineers is proposed in a bill recently introduced in the Idaho House of Representatives. It goes further than anything hitherto attempted by such legislation, for it divides the licensees into five classes, beginning with those able to perform all engineering work done by civil engineers and ending with those able to engage only in land surveying. The bill provides that, after June 1, 1909, no work required by statute to be done by a surveyor or a civil engineer shall be legally valid unless done by a person holding a license for such work. All persons now holding a land surveyor's license under the Idaho code are to be considered as holding a fifth-class or surveyor's license under the proposed law. All persons who desire to carry on other kinds of engineering must satisfy a board of examiners of their fitness for such work. This board is to consist of the State Engineer and "two other civil engineers of thorough training and experience," to be appointed by the Governor. This board may determine the fitness of a candidate for a license for any grade by an investigation of his record, training and experience or by a written examination. Such a proposal seems hardly justifiable; it carries the idea of protecting the public far beyond anything ever

attempted in the legal or medical profession. The most that has seemed advisable in either of them is to ascertain that a candidate for a license to practice has passed through a certain amount of study without which he can not successfully carry on the most elementary legal or medical work. The public has a right to demand protection from ignoramuses. It must not expect to have all its thinking done for it by commissioners, however. A man who engages a poor lawyer has only himself to thank for his poor judgment in making his selection; there is no more sense in grading engineers by special licenses than in grading lawyers. It is evident that before long there will be laws in most States requiring engineers in independent practice to be licensed. There is one good argument of this, which is covered by the proposed Idaho law. Anybody who has done much surveying knows that a great improvement in conducting and recording such work is desirable in order to make property records more accurate. The Idaho law proposes that, in the case of every public or private survey except those relating to the retracing of subdivision of cemetery or town lots, permanent monuments must be set and a copy of the field notes must be filed with the county surveyor. Something of this sort is desirable. It often happens that the only definite information regarding monuments on streets is in the possession of a private surveyor, whereas the county or city should have complete records of all surveys of public property, and the boundaries of private property ought to be permanently indicated except in the case of town lots. This will save much controversy and keep out of the courts a large part of the many suits over boundary lines. —*Engineering Record.*