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HORIZONTAL

1. Consumed (Colloq.)
2. A conception
5. Path of a point
9. He's in the shop
11. Opposite of "aint."
13. Furnishes the dough
14. The old man
16. In the matter of
17. In this era
18. Printers' term
19. Near
20. Two hundred
21. Greek letter
22. Rest (obs.)
23. Point of the compass
24. "He drew it" (Abbr.)
25. Boy's name (Scot)
26. A conjunction
28. Topographic Engineer
29. Against
30. Man's name (Abbr.)
32. Term in math.
33. England's chief defense.
34. Girl's name
35. Musical note
36. Use loud pedal (Abbr.)
37. Country in So. Europe (Abbr.)
38. Demolish
39. My first word
40. A kind of verse
41. Fondle
42. Like pulling teeth
43. An outer garment
44. More boorish
50. Salesmen
52. At least 960 sheets
55. An Indian tribe
56. A class in R. P. L—middle character
   is ampersand
57. Ma wrapped in a woolen coat.

VERTICAL

1. A popular course in R. P. I.
3. As far away as possible
4. Good to eat
6. Works
7. Made a saint
8. A people of So. Europe
9. A curved line
10. Where the boys take their "ease"
12. An engineering saint
13. Devoured
14. Inborn
15. Branch of physics
16. Sauer kraut, natural style
17. Ventilated
18. Man's name (Abbr.)
19. "We all"
20. Not left
21. Ditch
22. Boy's nickname
23. Kitty's nickname
24. A tie
25. A transportation line (Abbr.)
26. Not so
27. A college course (Abbr.)
28. Maker of this X word puzzle
The Unity of the Universe

Dr. B. A. Hoolett, Ph. D.

Professor of Physics, Rose Polytechnic Institute

Since the dawn of civilization thinking man has sensed the unity of the universe. Many great philosophies have been built up in the search for the fundamental law and for the ultimate structural unit of the universe. More than six hundred years before the beginning of the Christian era the Greek philosopher Thales of Miletus taught that all material substances were but varying forms of a fundamental element and that all natural laws were but the manifestations of a simple universal law of life. He it was who also suggested that the newly discovered phenomena of the strange attraction of amber for light objects might be a key to the presence of the elemental substance. How prophetic this statement of the future of electricity!

During the long dark Middle Age this belief in the ultimate structure of matter kept alive the spirit of the alchemists, who for the highest love of knowledge sought the riddle of the universe or for the lowest love of wealth sought to turn base metal into gold. Whatever their purposes and apparent failures it was their work which laid the foundation for our modern experimental science.

Years later this belief in the unity of nature was again manifest in the startling work of Charles Darwin and his contemporaries in the study of living organisms. They recognized the simple cell as the fundamental living unit out of which all plants and animals have developed, from the lowly ameba to complex man. Whatever may be our views as to how such development and differentiation came about, there is no denying the fact that we are all built of the same lowly bricks of life.

The past quarter century has given us a marvelous new insight into the structure of inorganic matter. This really began with the almost simultaneous discovery of X-rays and radio activity by Roentgen and the Curies and the discovery and isolation of the negative electron by J. J. Thomson. The latter discovery, with the invariant mass and the proof of the invariant mass and the proof of the invariance of the elemental substance. How prophetic this statement of the future of electricity!

Nature has reluctantly shown the scientist her building blocks of the inorganic world, but has she shown any indication of an organized development or evolution as seen in the study of living organisms? The structural relations of the atoms would suggest that possibility. In the phenomena of radio-activity we have the degenerations of complex "elements" into more stable and more simply constructed systems. It is indeed significant that each radio-active product in the degeneration series from complex uranium to lead, has its own definite place in the periodic scheme of the elements. Many of the authorities on radio-activity have suggested the probability that this phenomenon is common to most elements, but the process is so slow for most, and our means of detection so crude that we observe only the more spectacular cases. But if a steady degeneration of these complex atoms is continuing under...
present conditions, the question at once arises as to how they were formed originally. There is some evidence of a constructive process in the study of the spectra of new stars.

Occasionally in the heavens appears a flash of light where a new star has been formed by a violent collision between two wandering celestial bodies. These show a marked change in spectra in a relatively short space of time which indicates a development of the heavier atoms in the adjustments following the release of the enormous quantities of energy exchanged in such collisions. Thus the age-old cycle of all living organisms seems repeated in the inorganic world. First the birth and development of new elements, slowing up into radio-active decadence to finally end by death of the existing system in the glorious rebirth of new.

Next let us examine the structural system of the inorganic world a little more closely. Beginning with the atoms we have miniature planetary systems with the positive nuclei as the “planets” and the negative electrons playing the role of the “moons” revolving in their orbits around the nuclei. These atomic groups in their molecular aggregations in turn form systems somewhat similar to our solar system. If the matter exists in a gaseous or vapor state, these molecular groups move about according to the laws of probability; consequently collisions frequently occur. If such collisions occur between molecules moving with sufficient speed, disruption or ionization takes place. This in turn may lead to new groupings or new chemical compounds as we call them.

Knowing these facts and encouraged by the observed motion of our own solar system and of various others through space, Dr. Moulton of Chicago has applied the laws of probability to the motions of such solar systems in large star clusters. Such computations seem to check past observations to remarkable degree. Then perhaps at sometime in the far distant past two possibly cold and dead solar systems met in their mad rush through space and as a part of the resulting disruption our present solar system came into being. During the millions and millions of years since that spectacular event the system has gone on cooling, developing and dying as the fires burned lower while the mad dash back and forth through our particular star cluster continued. Some day millions of years hence, probably long after this little droplet we live upon is cold and devoid of organic life, our system will brush too close to some other flying neighbor near our path and a new solar system will blaze out in all the glory of rebirth.

Again we have the cycle repeated, glorious birth, though in violence and travail, development, decadence, and finally death in the process of rebirth. Thus there seems to exist the same structural scheme and life history from the infinitely small dimensions of the electron to the infinitely large dimensions of the countless stellar systems far beyond our milky way and thru life cycles measured in millionths of a second to life cycles measured in countless millions of millions of years.

Man can not contemplate such a scheme of things without feeling a vast pride in being a conscious part of such a gigantic living organization. Neither can he appreciate the vast simplicity of this organization without feeling an awful sense of his own personal insignificance in such a grand scheme of life.

How little can he expect his personal wishes and desires to affect the inexorable laws to which he must bow willingly or otherwise! Yet how great the hope held out by the promise that the end of each cycle means but the beginning of a newer and better development! Whatever our religion or creed this evidence of the unity of the universe can point to but one explanation—God.

The Junior College and its Effect upon Technical Education

Were You Adequately Prepared to enter Rose? Here is Discussed a Solution of this Problem Which Concerns Both Engineer and Student.

Professor of Chemical Engineering, Rose Polytechnic Institute

The Junior College and its Effect upon Technical Education

"John White, A. M., Ph. D.

Were You Adequately Prepared to enter Rose? Here is Discussed a Solution of this Problem Which Concerns Both Engineer and Student.

Professor of Chemical Engineering, Rose Polytechnic Institute

The Junior College and its Effect upon Technical Education

'THE WRITER had the privilege of attending, as delegate from Rose, the thirtieth annual meeting of the North Central Association of Colleges and Secondary Schools which was held in Chicago, March 17-21, and was much impressed with the serious purpose of that association and the intelligent and broad-minded way in which it is seeking to advance the cause of education.

In particular it was apparent that in recognition of a real desire, there is a rapid increase in the number of junior colleges within the limits embraced in the North Central Territory, some twenty-one states. These junior colleges are supposedly capable of, and are prepared to do the work embraced in, the first two years of the standard college curriculum. It is evident that their existence is welcomed by many of the larger colleges and universities as one way of relieving the overcrowded conditions which is so prevalent today and which is imposing a serious strain financially.
These junior colleges appear to have developed in response to a demand for a broader educational opportunity than the standard college now offers. The reason for this is that the latter is forced by circumstances to adopt some more or less rigid method of selection of students by which a considerable number of those who are capable of, some further educational opportunity than is offered by the high school are denied the privilege because they neither have the inclination nor perhaps possess the requisite qualifications for pursuing the more highly specialized and technical training given in the latter years of the college.

Whatever may be responsible for the development of the junior college, it is evident that they are here already in considerable numbers and rapidly increasing; here to stay, they must be reckoned with, and if possible utilized as an asset in the development of the future plans of the colleges and universities. This was the thought that impressed the writer as he listened to the discussion of plans and policies at the meeting of the North Central Association, and in particular his thoughts naturally turned to a consideration of the effect which it will have upon Rose. There are, if he is correctly informed, not many junior colleges in Indiana, but they are bound to come if the demand exists, and it is of the future, not of the immediate present, that we should have chief concern.

Let us consider in the first place whereabouts in the educational system the junior college belongs and in what respects it can be of value to Rose, as well as to other technical colleges. Is the junior college to be affiliated with the college or with the public schools; in other words, are its policies and practices to be those planned to meet the requirements of college students, or as a part of the general educational program of the secondary schools?

The situation at the present time is undecided, though there seems to be a leaning on the part of the junior colleges toward the secondary school affiliation. This may be perhaps due to the indifference hitherto exhibited by the standard college toward the junior college and therefore the lack of any co-ordinated effort on their part to aid the junior colleges in the shaping of their educational policies. Realizing this and attempting to find a place and recognition for themselves, the junior colleges have rather tended to attach themselves to the secondary schools. At first their reception was lukewarm, but judging from the results at the recent session of the North Central Association, the barriers have been broken down, and a movement is now in the process of development whereby the junior college will be incorporated in and become a part of the secondary school educational plan.

Perhaps the best evidence of this and at the same time an idea of how it is to be accomplished, as well as its bearing upon subsequent college work can be found in the Report of the Committee on Standards for Re-organization of Secondary School Curricula which was submitted at the recent meeting as a preliminary report of progress, was accepted in principle and the Committee continued. It is impossible to give the whole report within the confines of this article, but extracts and a summary of its significant points will be freely used.

The Committee states at the outset that “it is committed to the principle that six years shall be devoted to elementary education; further, that secondary education should include the work now being done by the junior high school, senior high school, and junior collegiate. The work of these schools covers a period of eight years. One of the problems as we conceive it, is ultimately to reduce the time devoted to secondary education to six years.”

The committee then, after outlining the ultimate aims of such secondary education, among which may be specially mentioned vocational guidance, that is, “acquiring knowledge which functions directly in the development of dispositions and discovery of abilities,” recommends, “that the number of units required for college entrance be reduced from the present requirement of fifteen to eleven or twelve; and that the work constituting these units be confined to the last three years of the secondary school.”

From these statements of the Committee’s recommendations it is evident that it considers the junior college as a part of the secondary education program and that it aims to so adjust this program that the whole period of time devoted to it is to be reduced from eight to six years, three of which will be devoted to preparation for college entrance. It is not clear how the committee proposes to accomplish this, and it would seem impossible of accomplishment unless every high school had a junior college associated with it. The next report of the committee ought to be enlightening on this point.

How will the junior college affect Rose? This is a pertinent question and one requiring an answer. Assuming that the junior college is to be qualified for, and is to do most of the work now given in the freshman and sophomore years of the standard college, the existence of junior colleges in any considerable numbers will tend to minimize, or do away entirely with much of the work, and the required equipment now used for such work in the first two years. It is probable that some provision would always have to be made for caring for such students as do not come to Rose by way of the junior college, but the numbers thus to be cared for would be relatively small. Should this eventuate, Rose would be relieved of a heavy financial burden.

One of the most significant points in the committee’s statement of aims is that of a development of the vocational objective, and in their expanded outline they have developed in a qualitative way an excellent arrangement of illustrative material, such as is calculated to aid the student in reaching a decision as to his future vocational occupation. This provision would seem to be one that should of great benefit to professional schools like Rose. It is well known that a considerable percentage of the students entering the Institute each year are at the time of entering in an uncertain state of mind as to their object in coming. There then ensues the “weeding out” and re-adjusting process which is wasteful, un-economical, and often most disheartening to both students and parents—sometimes ending an educational opportunity for the student as well.

Could the student who enters not only be given the fundamental training in the sciences, mathematics, English, history, etc., and could he at the same time
Mr. Lyons—

The question of the Great Lakes—St. Lawrence waterway is, indeed, a great issue and therefore we should consider, not only the glowing promises of reward, but also the dangers and difficulties that must be met in its construction.

The negative is resting its case upon three points:
1. That the proposed canal is not necessary and would not solve our transportation problem.
2. That such a canal is not a sound financial investment.
3. That the construction of this waterway would lead to dangerous entangling alliances.

As the first speaker on the negative, I shall endeavor to prove to you the first point.

Let us look for a moment at two of the basic contentions which the proponents of this plan ordinarily make. They say that it is possible to construct and necessary to construct this waterway. I wish to be entirely fair in my argument, so I readily grant that such a work is possible. To do otherwise would cast reflection upon one of the noblest of the professions—that of engineering. But the question of necessity is an entirely different issue.

The value of such a canal is admitted even by its advocates to lie largely in the exportations of grain from the Middle-Western states. Admittedly our grain exports of 1920-1921 were large. But let us compare them to exports of today. We find, according to the last “World’s Almanac,” that in 1924 we shipped out less than one-fourth as much raw foodstuffs as in 1921. Interpret those figures for yourselves. This United States of ours is becoming a manufacturing nation and is conserving all its own products. When Russia takes her place again as a great exporting nation, these figures will drop still lower.

If we should construct the St. Lawrence waterway, how many years would it be before we should have another Erie-Wabash canal on our hands?

But, for just a moment, let us assume that we shall again ship great quantities of grain to Europe. It takes four weeks for an ocean freighter to go from New York to Liverpool and return. It would take at least eight weeks for this same vessel to go from Duluth, through the proposed canal to Liverpool and back, a distance only one thousand miles greater. The reason for this delay lies in the tortuous channels, and the sixteen locks that the vessel must go through in the canal route. A freight train can go in five days a distance which would take four weeks through the canal. The farmer is crying for rapid transportation as well as cheaper freight rates. It is evident that the canal cannot give him this.

We are living in an electrical age. Railways find that electrification is cutting their operating costs in half. Can we not reasonably believe then that freight rates will drop materially in the next few years?

Railway improvement is not the only solution to this transportation problem. We have another channel in our own country, built for this very purpose. It is the barge canal from Duluth to New York, via Buffalo. So far, this waterway has had no chance to demonstrate its worth. It was opened only a short time before the war and taken over by the United States during the war. Government operation made rates very high, just as it did in the case of railroads. New York has spent $165,000,000 to construct this waterway from Buffalo to the Hudson. Barges and steamers are being built rapidly, and prominent engineers have assured us that transportation by this route will soon be as cheap as it could possibly be by the proposed St. Lawrence canal. Our railroads with this barge canal are shaping themselves to do for us what the St. Lawrence might do ten years hence. We have for the use of our farmers the best railway system and the most modern inland waterway ever constructed.

Sound economics, good sense as well as fiscal considerations counsel us to give our railroads and the New York barge canal a chance.

Because transportation by the Great Lakes canal would be very slow, because our railroads are shaping themselves to give better and cheaper service, because the barge canal will greatly reduce shipping congestion, because our grain exports for which the canal is to be built are decreasing: We of the negative contend that the St. Lawrence waterway is unnecessary and will not solve our transportation problem.

Mr. Schlossberg—

I consider it a privilege to be able to present to you the negative side of this very vital question. “Resolved, that the United States should favor the building of the Great Lakes-St. Lawrence Waterway in co-operation with Canada.” My colleague, the first speaker on the negative, has shown you why such a project is not necessary. The last speaker on the negative will show that it will lead to entangling international relations, and it is my privilege to show that it is not a sound financial proposition. I shall show this by presenting the following points: first, it will not pay for itself; second the taxes would be excessive; and third, it will not reduce freight rates.

As a basis for my arguments, let us try to arrive at the cost of this project. The original estimated cost of the New York State Barge Canal was fifty million dollars. The actual cost was one hundred
sixty-five million, three and one-half times the first estimate. The final cost of the Panama Canal was three times the estimated cost. Our engineers, though they are considered the greatest in the world, cannot agree on the cost of the proposed project. We have reputable estimates ranging from one to $3,000,000 Engineering to one of $1,400,000,000 by one engineer in the "Scientific American" of July, 1924.

We readily admit that the engineers are becoming much more accurate in their estimates than they were years ago, but I ask you, in light of past experience, is it unreasonable to accept the highest estimate as the final cost of the one of the most stupendous engineering feats ever attempted?

But while we are speaking of cost, let me ask you this, do you know that the United States will have to pay nine-tenths of the expense of the thing because this wonderfully level-headed commission which advises us to go into this project has decided that the cost shall be proportionate to commerce and population in the two countries? Think of it! We pay nine times as much as Canada who will derive more benefits than we, for a permanent project to be built, not in this country, but almost wholly within a foreign land. This means that the taxation per family will be in the neighborhood of $38, or that you as manufacturers and engineers will have to pay much more than this amount for a waterway, which will be totally useless to thirty states and for which eighteen states are spending enormous sums because someone has made them believe that it is going to benefit them.

It is maintained by the proponents of this project that it will pay for itself. The power plant which they propose to build has a capacity of 1,500,000 hp. This power, it is said by one authority can be sold on the switchboards of New York City for $17 per horsepower and for $26 per horsepower by another critic on the same subject. Assuming that this energy can be sold at the high figure of $26, there would be an annual income of $39,000,000. Let us subtract from this the interest and depreciation on the original investment at 12% and we have an annual deficit of $4,000 -ton capacity, and what will be the result? Perhaps the toll to the already increased rates would shift all this traffic which is supposed to go through the canal to the New York Barge Canal, the railroads, and to the lake boats. Now is its possible for this project to pay for itself by means of tolls charged?

Is it possible to pay for it by the proceeds from the hydro-electric power? No! Then where, I ask you, is to be the source of income for this waterway, and how, I ask you is this project to pay for itself?

Perhaps I should apologize for having used so many figures, but I do not. You are men who are accustomed to dealing with cold hard facts. I only ask you to look at them carefully before you allow your legislators and your congressmen to vote for a project which will surely tie a millstone of taxation around the neck of each of us.

This project will not pay for itself, will not reduce freight rates, and will cause excessive taxation. It therefore is not a sound financial investment.

Mr. Dorsey—

My colleagues have shown to you, in spite of what my opponents have said to the contrary, that the Great Lakes-St. Lawrence Waterway Project is not necessary and not a sound economic investment for our government. I wish to present the third big issue of our argument, which is, that the United States should not favor the building of the proposed waterway in co-operation with Canada, because Canada will derive the largest benefits and can use it as a means of enticing us into a dangerous union.

As engineers you may favor the project, because you wish to see this great engineering feat accomplished, but gentlemen, as we are all citizens of these great United States, I ask you to stop a moment and let us consider this question as a civic problem.

Much attention is paid to the engineering and financial aspects, but little or no consideration is made for diplomatic relations. This, I consider to be the greatest factor in the whole problem.

First, let us see why Canada is willing to spend two hundred million dollars ($200,000,000.00) in helping us to build this waterway. It is because she will be benefited and improved at the expense of the United States. Montreal will be at the mouth of the canal; hence it is evident that she will become a metropolis. Trade will be taken from New York and other eastern ports and turned into Montreal and Quebec. Should we scrap our harbors and build others in Canada? In other words, should we rob ourselves of millions of dollars worth of trade each year, discard our own harbors and then build up the cities and harbors of a foreign country?

Gentlemen, don't you see what would happen? Such conditions will immediately cause trouble and discontent in our own country.

History proves that basically all wars can be traced directly or indirectly to commercial jealousies or desire for territorial expansion. I do not say it will cause a war between us and Canada, but it will promote jealousies that might end disastrously.

Canada is more or less under the rule of Great Britain, and it is England's policy to be ever alert, to secure every advantage, that in time of diplomatic rupture or war she can dictate her terms. For proof of this statement, I but refer you to the past to her aid of the South during the Civil War.

At present the United States and Great Britain work in harmony, but can we predict what will be our relationship twenty—yea—ten years from now?
It will be necessary before the project can be put under way, for the two nations to sign a binding treaty. By this means we will be entangled in the interest of Canada and Great Britain; we will be bound to do as they advocate so as to keep peace and friendly relations. Is this not one of our chief concerns, to keep from entangling ourselves in foreign policies and was this not the reason why we refused to enter the League of Nations and the World Court?

If Great Britain and Canada should engage in a war with another nation, they would from necessity use the canal for the transportation of war supplies, hence our use of it would become limited. Canada’s foe would, if possible, send over aerial attacks and try to destroy Canada’s frontier and the canal. Would we stand by and see a project destroyed for which we had just spent millions of dollars? Would we not have to ally ourselves with Canada and Great Britain for the protection of the canal and our interest in it? Gentlemen, this is not wanted by our citizens and must be avoided.

The first concern of a nation, even before the prosperity of her people, is their safety. She must protect them from difficulties and dangerous diplomatic entanglements. The safety of our nation will not permit us to enter this proposal.

The words of George Washington contain lessons that should be cherished in the heart of every true American citizen, and perhaps at no other time could they be more usefully remembered than at the present moment. He thus expressed himself:

“Against the insidious wiles of foreign influence, the jealousy of a free people ought to be constantly awake, since history and experience prove that foreign influence is one of the most baneful foes of republican government.”

“This great rule of conduct for us in regard to foreign nations, is—in extending our commercial relations, to have with them as little political connection as possible. Why by interweaving our destiny with that of any part of Europe, entangle our peace and prosperity in the toils of European ambition, rivalship, interest, honor or caprice?

“It is our true policy to steer clear of permanent alliances with any portion of the foreign world.”

The world is changing ... you—looking at it calmly, not as engineers, but citizens of the United States would not declare yourselves in its favor.

Crash!

For the fourth time this year Bill Harris kissed the boards with more or less serious results. In Professor Wischmeyer’s class the other day Weary Bill was assuming his usual posture and with a small, well placed force someone, we say, someone, moved Bill’s center of gravity past the critical friction angle and the action of gravity did the rest.

Y. M. C. A. Notes

Election of Officers

The annual election of officers for 1925-26 was held March 25 following a special meeting of active members at which time the work of the nominating committee was sanctioned. The officers for the ensuing year are as follows:

President—Clarence Ellis, ’27.
Vice-President—Norman Cullen, ’27.
Secretary—Donald Swanagan, ’27.
Ass’t Secretary—J. L. Montgomery, ’28.

The faculty members of the Advisory Board are:

Prof. Settles.
Prof. Faurot.
Prof. Peddle.
Dr. Sousley.
Prof. Wischmeyer.

Mr Paul Bogart was elected business member of the Board and Rev. LeRoy Brown was chosen to represent the Ministerial Association. Dr. Wagner as ex-officio member completed the Advisory Board.

Present plans call for a special dinner meeting of the “Y” for April 10 at which time the installation of officers will be held. The Rose Tech Y. M. C. A. looks back upon its past two years as successful ones and every thing points to an even better organization for the coming year. A great deal of the success of the “Y” in the recent past years has been due to efforts of the retiring president, John Barr, as a result of which the Rose Y. M. C. A. has accomplished several movements of note for the benefit of the student body.

The Indianapolis Conference

The annual Y. M. C. A. Training Conference was held in Indianapolis March 27, 28, and 29. There were present about 125 students and faculty members representing 18 colleges of the state of Indiana. The meetings were held at Indiana Central University on Friday and Sunday and at the Indianapolis Y. W. C. A. on Saturday in conjunction with the Y. W. C. A. Conference.

The time was spent in constructive talks, discussions, and the outlining and explanations of the principles and methods underlying “Y” work. Each school presented different problems and their solutions. The high points of the Conference were an address by “Pat” Meales, private secretary to Sherwood Eddy, and a series of lectures followed by open discussions, by Dr. Artman, a member of the faculty of Chicago University. His subjects were timely and forceful, dealing with real live college problems.

Five delegates from Rose attended the sessions. They are: Lowell, Mueller, Lee Akers, Charles Cutter, Clarence Ellis, and “frosh” Montgomery. (“Monty,” proved his worth in taking care of all luggage, hats, etc., and says that he got a lot of good out of the Conference.)

President Wagner, Prof. Settles, and Prof. Wischmeyer attended the Saturday sessions and heard Dr. Artman’s talks and discussions. As a whole the Conference was very beneficial in setting forth the real purposes of the Y. M. C. A. Both faculty and students were greatly impressed and it is hoped that the result will be an increased active cooperation on the part of both.
We Do Not Need a Dormitory at Rose
A. L. Kepler, '28

The REASONS in favor of a dormitory at Rose seem at first to outweigh those opposed. Let us then consider the question from the negative standpoint.

The present enrollment of the school is about 216 men. Rose is a small school. Its size does not warrant the erection of a "dorm." Out of an enrollment of 216, about 142 are men whose homes are in Terre Haute and so, naturally, cannot be considered. The remaining seventy-four are men from out of town. Of these approximately thirty-one are men living in fraternity houses, and live within commuting distance of the school. This leaves but forty-three men who board somewhere in the city. Do we need a dormitory if it is to house but forty-three men? Hardly.

In connection with this matter of the dormitory the advocates for such a project have mentioned transportation as a present difficulty. If we did not have adequate means for transportation, this would be a vital question. But the present transportation facilities are numerous and have served in the past. They cause little more than a slight inconvenience. No need for a "dorm" on that account!

A dormitory would be a gamble at the present time; a gamble with the growth of the school. Rose needs other facilities first in the shape of other school buildings, to provide for a larger enrollment which would then necessitate the building of a dormitory.

Mr. Deming was an astute gentleman who peered into the future. Did he will the money to the school for a dormitory housing fifty-five men?

Rose has just emerged from a building movement, and after all the excitement of moving and launching the school in its new location, has settled down quietly and begun to breathe easily. Once again the school is running smoothly and functioning properly. Apparently all needs are satisfied and Rose is content to run on, indefinitely, until the need for expansion and natural development again manifests itself.

Schools have a habit of getting into a rut and staying there, satisfied with the present and ignoring the future; often until long after a need has become an absolute necessity. Can it be said that Rose is in such a rut?

If I remember correctly the original plans for the new Rose, they called for the present building as the shop building together with administration, recitation, laboratory, student, and fraternity buildings profusely scattered over the campus. These are, indeed, fine plans and are much wanted by all, a larger and better Rose with a student body a thousand and strong.

If this Rose is not a mere dream and this is the real intended progressive program—then I say build a dormitory, a fine one, not for fifty-five men, but for two hundred students of the new Rose that we all hope for.

Rose Polytechnic Institute
Needs a Dormitory
James G. Payne, '28

The ROSE POLYTECHNIC INSTITUTE obviously is in need of help. Somewhere, there are some weaknesses which retard school movements; that hold the school in a rut, and, that push some good men from a work in which, perhaps, they are most talented. Rose has not improved in school spirit, has not decreased that average of failures after the final examinations, and has not overcome that uninviting atmosphere that causes some good elements, or prospects for engineers to hesitate in accepting Rose as the school. It is easy to eliminate the school standards, that are no higher than the standards of most good schools, the faculty that is of the select, and the buildings and equipment that are elaborate and nearly complete, as being responsible for this condition. It is possible, however, that the life of the student outside of school is to blame for most of the failures and for the student's poor support to the school organizations. Because of the poor spirit that still exists, the freshman, on entering the school, is given the wrong impression of the system and does not find the things in Rose that he left in his high school; loyalty, real companionship, and the help that all beginners need, and he is discouraged to start.

If, on account of poor transportation service, the student is caused to neglect his school work; if occasionally, in an effort to reach home early he is exposed to bad weather, becomes ill, and has to be absent from his classes; or, if the sympathy that he sometimes gets from home, helps him to forget his objective and to neglect his work, then there must be some means of correcting these influences.

A dormitory is the cheapest remedy for Rose's illness. It will eliminate poor transportation service, and it will tend to cultivate a community fellowship spirit that will reinforce the school and school activities. The dormitory will give the men in it a new phase of life, will broaden their opportunity to compare ideas and will give them the experience of mixing with men in a man's way that all engineers will need back of their professional life. For the student that has not learned to study or who habitually allows unnecessary amusements to interfere with his studies, the dormitory regulations will help him in a pleasant manner. It will be the home of a live body of men willing to bring most of their home interests to their new home and they will be inspired to construct rather than destroy the good things in school life.

Each year there will be a welcome extended to the newly enrolled that will build in them an unquenchable spirit of keen regard for Rose, that will strengthen their purpose and, perhaps, give them more faith in the people of the world for whom they are to work. With all the attractiveness, all the complete school environment, and all of the necessary influences that a dormitory will bring to Rose, there is no limit to the standard heights to which Rose might aspire, and as school dormitories are past the experimental stage, Rose can not lose on an investment of this kind.
Dry Cells as a Source of Direct Current for Radio Apparatus

Charles N. Cutler, E. E., '27

Some practical data obtained from tests at the 9-CZT Radio Station

DIRECT CURRENT batteries consist of one or more dry cells connected in series or parallel to give electrical energy. This energy is obtained thru a chemical action within each cell from sal ammoniac and zinc chloride acting upon the zinc case of the unit, whence the energy is collected upon a carbon pole in the middle and distributed into a circuit. The amount of current obtained depends upon the amount of zinc exposed to the action of the chemicals. Graphite is present in the cells to offer a path for the current and some oxygen carrying material is used to keep the current constant. After a drain upon the cells, each seeks to recover its strength by a process called "depolarization" and it is just this action which presents an important subject for consideration in radio "B" batteries or any other batteries supplying current to radio apparatus and consisting of dry cells.

Dry cell batteries, unlike storage batteries, are not rechargeable: it is impossible to solidify the zinc, and when once used must be thrown away. Sometimes when batteries seemingly reach a worn out stage, that is, their voltages are reduced to a minimum for the operation of radio tubes, there is left in them some voltage which we amateurs use to operate the buzzer modulators on our transmitters. This can be done, since the voltage of the cells together gives a potential great enough to magnetize the buzzer lever.

Since any faults within the units of the batteries are apt to cause leaks of serious consequence, it is necessary that good dry cell batteries have the following characteristics:

1. Individual cells must be noiseless throughout their entire life.
2. All connections must be positively and rigidly soldered.
3. A thorough insulation between units is essential.
4. The battery must be water proof and moisture proof.

"B" batteries to be efficient and noiseless must have at least these fundamental characteristics. Any other traits which they may have are not particularly essential.

In the majority of receiving sets today, three types of batteries are used; the "A" battery, supplying a constant voltage and a high amperage to the filaments of the vacuum tubes; the "B" battery, supplying a high voltage and low amperage for the purpose of charging plates of the vacuum tubes positively; and the "C" battery which I shall discuss first.

This type of battery which has recently been found to be useful, especially in the new circuits, is sometimes called the grid bias battery. Maximum amplification may be obtained by the use of a "C" battery. Whenever an excessive plate voltage is used, a grid bias battery is essential to prevent the distortion of signals. To do this the grids of the vacuum tubes must be negatively charged. The plate is always positive, while the filament is positive at one end and negative at the other. The control is made through the grid, which acts as a balancing element when it is negatively charged, but when this element becomes positively charged, the balance is destroyed. The voltage drop across the rheostat is sometimes used to keep the grid negative, but when a high plate voltage is used, this drop is insufficient. Accordingly, we insert between the grid return and the negative filament a battery called the grid bias or "C" battery. The voltage that this battery must supply depends upon the amount of plate voltage used. An extra "C" battery for each tube is not necessary.

The use of such a "C" battery reduces the drain of current from the "B" battery, and thus makes for greater economy of operation. For instance, each detector tube draws 2 milli-amperes and each amplifier tube operates at 6 milli-amperes. Using 90 volts on the plates of the amplifier tubes and a "C" battery of 4.5 volts, the tubes would draw but 5 milli-amperes as compared with 14 drawn before. Thus the battery drain would be reduced approximately two-thirds by the use of a bias battery.

One of the greatest difficulties encountered with "B" batteries is that of corrosive punctures and leaks. Now with an ordinary vacuum tube the amplification constant is approximately 8, or to be more specific, the mutual conductance is 485 and a plate impedance of 12,500 to 16,500 when a plate voltage of 40 to 100 is applied. We then see that by the time the signals which are amplified reach the loud speaker, any noises caused by internal leakage in the "B" battery become enormous.

A "B" battery to give efficient service should not be excessively small, nor should its voltage depreciate with idleness. Although there are very small "B" batteries on the market manufactured by reliable concerns, they should be used only in small portable sets where extreme compactness is desired. In such a case, the service obtained should not be expected to approach that from a higher capacity battery. All "B"
batteries should, however, be so built and carefully sealed as to allow no leaks or corrosions to occur during the period of their useful life. This is the chief factor to contend with as the source of the so-called static noises heard from so many sets. In reality these noises are, in no few instances, from dry cell batteries, the chief offender being the “B” battery.

One of the foremost battery manufacturers uses a seamless zinc container for the negative element in the construction of the individual cells. These cells, when completed, are enclosed in moisture proof wrappers giving individual insulation and are then securely connected in series. The function of the water-proof partitions is to confine moisture, if present, to each unit cell. Such a practice prevents internal leakage of current from one unit to another. The whole battery is filled with sealing wax in order to prevent movement between the cells and encased in a heavy water-proof insulating material, generally paraffined cardboard. The covering is one of the most important parts in battery construction as it has already been pointed out that a leaky battery is worse than none.

To test “B” batteries or any other low capacity batteries in which there are dry cells, an ammeter should never be used. It makes a short circuit and wastes in a few seconds a tremendous amount of energy which has been bought and should be saved to operate the receiver. An ammeter measures the current that is being taken out of a battery and not the potential force in the battery itself. An ammeter test is therefore worthless so far as giving the measure of the battery’s condition. Since the resistance of a 22.5 volt battery is 5 ohms and that of a vacuum tube 10 to 30 thousands ohms, it is apparent that an increase of say 5 ohms in the battery circuit would have a small appreciable value in comparison to the combined “B” battery and tube circuit. The important thing to know is the voltage of the battery at the plates and a voltmeter of over 10,000 ohms resistance offers a solution to the question. Low resistance voltmeters are often inaccurate and should a battery read 22.5 volts on the scale of such an instrument the actual voltage at the socket terminals may be several volts more. When applying the voltmeter to the battery terminals, care should be exercised in doing this as quickly as possible, since a prolonged reading will only tend to short the battery through the meter.

Sometimes a check upon the voltages of the “B” batteries may be obtained from the action of the signals produced, that is, their strength in the headphones. However, this is not a thorough test since the current from the “A” battery may be weak. In this case an investigation of the “A” battery is necessary. The ability of this battery to deliver direct current energy demands single consideration. I shall, therefore, discuss the phase of the subject in a future article relating to the use of direct current as filament supply in both transmitting and receiving sets.

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Tempus Fugitatis

A: (putting hand to his vest pocket): “Say is your watch going?”
B: “Yes; isn’t yours?”
A: “Hell, no; it’s gone.”

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How Was This

One of our country correspondents, telling about a fire in his town, wrote: “The Fire Department was called, but not much damage was done.” Capper’s Weekly.
We regret to announce the death of Prof. John A. Parkhurst, who was a member of the first class graduated from Rose. His sudden death came after a life dedicated to the service of his fellow men. He was a member of the scientific staff of Yerkes Observatory.

Hubert G. Kilbourne, Managing Director of the Moblack Tool and Machine Manufacturing Corporation, Boston, Mass., was recently married.

H. E. Wiedman, Consulting and State Chemist, St. Louis, Mo., lectured before the Soldan High School. He represents the American Chemical Society, which has furnished speakers for High Special meetings.

C. B. Trowbridge has changed his address to 1349 Greenleaf Ave., Chicago, Ill. Wm. R. Heick has moved from Louisville, to Prospect, Ky.

Merle R. Reed last week was promoted to the position as superintendent of motive power for the northwestern division of the system of the Pennsylvania R. R. His headquarters will be in Chicago, Ill. "Deacon" Reed, as soon as his graduation from Rose in mechanical engineering, went to work for the Pennsy, and has risen steadily in position ever since. He has been serving as master mechanic of the Logansport division. He was chosen from among thirty splendid mechanics for his position.

F. N. Hatch is Supt. of Construction for the new public market of St. Louis, which is to cost $1,300,000. He is a member of the American Society of Civil Engineers.

Edward J. Ducey now resides at 142 Smithfield Court, Canonsburg, Pa.

Charles F. Harris has moved to 7850 Burnham St., Windsor park Station, Chicago, Ill.

Henry C. Gray has given up his position with the Pennsylvania R. R. at Zanesville and is now at 1436 Sixth Street, Terre Haute, Ind.

Richard F. Bergman's address is now 5601 Woodmamo, Chicago, Ill.

Antonio de Gouvea has left Lloyd's in New York, and is now an industrial engineer at San Paulo, Brazil. His address is Rua Veiga Filho 5 A, Sao Paulo, Brazil.

W. C. Woodling resides at 3127 Reekle St., Indianapolis, Ind.

A. A. Geiger has moved to 730 South 40th Street, Louisville, Ky.

The engagement of Miss Mary Frances Pine to Warren M. Hussey Jr., was recently announced. Warren Hussey, his father, graduated from Rose in '92, and his grandfather was for many years a member of the Board of Managers of the Institute. Miss Pine is the daughter of Benjamin H. Pine '03, the present Bursar of the Institute.

The address of E. F. Jaenisch has been changed to P. O. Box 22 Louisville, Ky.

Nous ex-'22 is with the Southwestern Bell Telephone Co., and is studying law at Washington University, St. Louis, Mo.

J. L. Tygart has left the Chicago Pneumatic Tool Co., and is now located in the chemical engineering office of the M. K. T. Lines, Railway Exchange Building, St. Louis. He is the Grand Secretary of the En.

Lester Garrett is with the Pennsylvania R. R., at Columbus Ohio, working under Head Gray. Loser has moved to 1252 Stanton Ave., Whiting, Ind.

George B. Lake ex '27 has moved from California to 86 Ira Avenue, Chicago Heights, Ill.

**NEXT MONTH IS THE**

**Annual Alumni Issue**

All Alumni are asked to contribute notes of interest for this issue.
Stake out your claim in this field

ONE field where there is still undeveloped territory, still room for pioneers, is the electrical industry. This will be encouraging news to the man who thinks he was born too late.

If your aptitude is technical, there are years of usefulness ahead of you in helping to design, construct and operate public utility lines. And too, fast-growing markets for electrical apparatus call for more and more college-trained men in the manufacturing end of this industry.

Or if your interests are along commercial lines, there is a broad opportunity for you here in the various departments of purchasing, accounting, distributing, selling and advertising.
The Junior College

Dr. White's article in this issue on the subject of the junior college calls to our mind the cry that is heard each year from students who are inadequately prepared to enter a technical school, such as Rose. There is an apparent gap between training in the high school and the system of study and subjects of a college of engineering. To fill this gap, both college and high school authorities are advocating the junior college. Some of the subjects now included in the freshman and sophomore years of a technical college are included in the curriculum plans for these junior colleges, which may in the future become a part, or at least function co-operatively with the present high school system.

Under the present system the majority of students from both large and small high schools come with an unprepared mental attitude to assume their studies in college in a purposeful manner. Far-sighted educators have seen a need for further and more intensive secondary school education to better fit the student to begin studies leading toward a profession career. The junior college is practically an untried experiment in Indiana, but is functioning in other states.

Through its introduction two results are to be hoped: that a student will be better fitted to positively begin his technical training, and that higher and more complete college courses be offered. Thus a man will be more advanced and his training in the technical school will be directed with the end in view of developing an engineer of the highest possible culture and refinement, fitted to grapple with engineering problems in practice. We shall, as engineers both embryo and practicing, keep our constructive "eyes" upon the developments of the junior college.

The 1925-26 Staff Greets You

Ulyssus in returning from Asia Minor was not in a bit more perilous position than the Technic Staff for 1925-26. On one side is Scylla in the form of practicing alumni, while Charybdis, the voice of the student body, lurks on the other. One thing is certain: The mirror of a school to the practicing world is that school's publication. The school paper is also a means of self-expression of the student body.

Now let us see what aims we shall hope to reach for the ensuing year. In the first place, the reflecting medium between our alumni and our Institute is the "Technic." Accordingly, we shall publish all important student activities and accounts of school plans to cause the "mirror" to reflect the true Rose to its alumni. The bond that holds a graduate to his Alma Mater also extends in another direction. It should be properly hold him to his fellow graduate and other Rose alumni. The one must understand what the other is doing, else there can be no adequate union. The "Technic" is for the interchange of ideas. In the future we shall endeavor to assemble material of a calibre that will cause each alumnus to eagerly expect the next number. To this end we shall publish as many alumni articles each as we can coax from its bashful membership. The alumni editor is planning to reach all Rose men, and promises an alumni section that will be more than just a record of changes of address.

"I am among you as one who serves," has often been written and announced, but to put it into effect is the concensus of the entire staff. To truly serve the past students, the present, and the future is our purpose.
Motion from All Directions

The trouble is that the boy on the end, in "cracking the whip", cannot go two ways at once. He tries to follow the line 'round and 'round, but a force is created which flings him off sideways.

So do the wheels of your motor car try to go merely 'round and 'round, but sliding against them sidewise at the same time is the whole weight of the car, pushed over by the very slope of the pavement.

Or look at a moving street car, lunging from side to side against the wheels. And you also know that a belt which is driving machinery never seems to run quite true; you can see it weave always from side to side, whipping the pulleys while they revolve.

In fact, there is rarely, if ever, any revolving motion which does not involve some of the sidewise or pushing motion called Thrust, which must be taken care of by the bearing or else there is compromise!

You can be sure that bearing compromise is avoided in the motor car, farm implement or industrial appliance equipped with Timken Tapered Roller Bearings because Timken Tapered Roller Bearings are inherently dual duty bearings. Timken Dual Duty is the ability to carry the motion or load from both directions—from ALL directions—all at once.

THE TIMKEN ROLLER BEARING CO., CANTON, OHIO

TIMKEN Tapered Roller BEARINGS
ST. PAT arrived "early in the mornin'"of the 17th via hand car and entered the Rose Portals full of pep and "rarin'" to go. He was immediately seized with deep gloom as he found the Institute well nigh deserted. True enough he recognized a few old friends in the form of faculty members, cigarette butts, chewing gum wrappers broken tests tubes, freshmen, and all such refuse.

The cause of his gloom will now be made known. You see it was like this: 'way back in 480 A. D., more or less, the saint gained for himself quite a reputation as an engineer and snake charmer in the Emerald Isle. Up to this time there had been no snakes either in Ireland or Rose Poly with the exception of Doc Sousley's pet cobra, Integral. But what was it that the patriarch found on the morning of the 17th? The horror of it is almost too great to print! When he entered the wood shop together with Integral, whom he had taken along as a body guard, they shivered down to their hips.

The place was alive with serpents, Elephantali-gatoria, Dinnysoreeyes, Pterodactyls, and horrible species of the bird known as genus Ick Mick, which has been known to carry off young engineers. St. Pat immediately made a note of this and ventured down to the boiler room. Yes, there were some more of them there. The barn was also crawling with at, slimy, green things. Knowing that these creatures rarely cause damage in broad daylight, St. Pat was prevailed upon to leave them, and leaped into a waiting wheelbarrow to be whisked down to the Indiana theatre.

There he saw sights which served to ease his green, (maybe red), eyes. A mind reading act by Hillis and Sherwood amused the audience until it was given the hook by Swartz. Booth and Browder then gave a McIntyre and Heath act with variations. One of the most elaborate acts ever given at a St. Pat's show was then presented by McKinney, Mitchell, Leake, Green, and several other members of the Theta Xi fraternity. This act was entitled, "A Night in the Fraternity House." Although we doubt very much that the study atmosphere portrayed is always so well preserved, some splendid musical talent was displayed. McKinney and his company gave some real Hawaiian selections and Mitchell offered several violin numbers. Green, the Hula-hula girl, made St. Pat wish that he had brought his dancing shoes.

Nicoson, Reinking and Nicoson gave several songs and dialogues. They had apparently some number 46 stout ladies skirts for trousers. The final stunt of the program was given by the student orchestra with Andrew at the piano. Brown and King, banjo, Trigg, saxophone, Carroll and Houk, cornet, and Carmack, drums.

It is said that some of the boys nearly lost their hearts and heads over Mitzi and her bevy of beauties. They were beauties too; but they braced up and bravely put on their acts, all for his sake, St. Pat supposed.

The Ancient Hibernian then picked up his black-thorn chileighleigh and went to a well known tea room at 6th and Mulberry for his evening repast. His real task was yet to begin. The reptiles were coming now. They were assembling at the Heming-way House and St. Pat lay in ambush until eight o'clock when the drive began. So orderly was the parade that even though some of the animals had had no food for days, St. Pat drove them down the crowded streets and kept them from devouring even so much as one Normal student. It was a great parade and the appreciation of the spectators more than rewarded the students for their days of work spent in making it possible.

The annual dance was held in the Rose gymnasium. The floor was crowded with the students, alumni, and faculty members who had come to step from "ten 'til two" as is the custom. The Grube-Benson orchestra of Indianapolis furnished the music and the gym was appropriately decorated in green and yellow with a large shamrock and various likenesses of St. Pat, himself, adorning the walls. It was the biggest dance ever staged on St. Pat's day at Rose.

St. Pat tried to drive Integral from the place but he escaped somewhere in Dr. Sousley's spacious desk to give the boys the ha-ha during the coming mid-terms. Of course everybody attended Wednesday morning classes.
Annie what are you doing down there?

Dunce — I believe that you are even afraid of your own shadow.

Dunce — Why shouldn’t I be it looks like a crowd following me.

The best I can father.

I hear they are going to draw away with sorority pins.

Why say it? Because there’s nothing to pin them to anymore.

281 — How far were you from the correct answer?

282 — Two seats.

Expansion of Dams.
The Athletic Outlook at Rose

In reviewing the fall and winter athletic program at Rose, one cannot look over the won and lost column and say, after the manner of a well-known soldier, "Veni, Vidi, Vici."

Very frequently it happens that some men will become greatly alarmed over the fact that their college has emerged second best from a contest on the gridiron or the hardwood. Their alarm becomes so great, at times, that it would probably exceed any feeling of pride in their Alma Mater which they would experience upon learning that one of her alumni had become distinguished in scientific or professional circles. In taking athletic failure so seriously, these men have lost sight of the purpose of the college.

Rose is primarily an engineering institution and not one for physical development. We do not deny the advantages of athletics in a college; on the contrary we wish to emphasize them. The point is: are we getting the most out of them that we can?

The principal advantages are two in number: the physical development to the student as an individual, and the benefit to the institution.

This last named advantage is purely a mercenary one. A successful season in athletics is as good advertising as a school can have. Some institutions in spite of what some coaches tell Prof. Martin to the contrary go even so far as to subsidize athletes in order that their teams may be successful. Since this is not the policy at Rose, we cannot expect to compete with other colleges and universities in which it is the policy.

The student at Rose, does however, get as much opportunity for individual physical development as he would anywhere. During the current school year, athletics at Rose have taken on more diverse forms than ever before. Boxing, wrestling, golf, and tennis have been introduced by Coach Clerk. Then there is the increased interest in sport among the freshmen. All of this is conclusive to the development of the individual.

The crying need at Rose is both moderation and expansion in athletics. This statement may seem, at first sight paradoxical, but it is obvious for several reasons. To begin with, we have sports which are too strenuous if indulged in in accordance with the present custom. A man who practices football three or four hours every day and plays in a scheduled game once a week is rarely in the mental condition in which an engineering student should be. For a forcible illustration of this point, we may consider the group of men who were dismissed from the Institute last semester for their failure to make the grade required by the faculty. The ratio of the number of athletes in this group to the whole number involved was very nearly unity. This discussion points to the fact that some of the so-called minor sports are really more beneficial than the more popular and strenuous ones.

In conclusion it may be said that although Rose does not keep pace with some of its larger rivals, the true value and purpose of athletics is not lost sight of.

Something on Football

The past football season Rose played eleven games, the Varsity nine, the Freshmen two. Rose won five games, total points scored—Rose 112—Opponents 199. We played both Indiana and Purdue. Indiana made 65 points and Purdue 41.

Due respect must be given the Freshmen team. They were allowed only to play two games, one against Wabash freshmen, the other against the powerful Linton high school team. Both were won and their opponents did not score in either game.

J. M. Bigwood & Son gave a gold football to the most valuable Varsity player, this was awarded to Robert I. Hall.

Coach Heze Clark gave a similar silver football to the Freshman who showed the best football spirit, attendance to practice, as well as being a No. 1 player. This silver football went to Robert E. Alexander.

"Although the following figures for the football season show a loss it is encouraging to note that we are approaching a condition where we might reasonably expect the receipts and guaranties to more than take care of the necessary expenses.

"The Athletic Director's salary has not been pro-rated for these figures."

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<tr>
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<tr>
<td>Bus Fares</td>
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</table>

| Loss for the season    | $633.18 |

All suits and shoes have been repaired, and carefully stored away for next season. The equipment account should be much less this coming year.

If the Alumni would like to have a similar sketch of the Basket Ball season, write in and let us know what you think.
THE continued satisfactory service of Hyatt Roller bearings in machinery of all kinds through the past thirty years is due to their anti-friction elements—the Hyatt rollers.

These rollers are wound cold from long, flat strips of high grade alloy steel. They are carefully heat treated to make them tough and hard and are then carefully ground to close limits.

A group of these rollers held in a strong cage and rolling between hardened steel sleeves or races constitutes a Hyatt roller bearing.

Due to the design of Hyatt rollers and to their superior steel and careful manufacture, the following advantages result.

**Friction reduction:** Because of their true rolling motion Hyatt bearings eliminate at least 50% of the dragging friction of plain bearings. This results in worth while saving of power and in long life.

**Durability:** The alloy steel rollers are of the proper hardness to give years of service under the severest conditions of loads and shock loads without appreciable wear. Some Hyatt line shaft bearings at the Greenfield Tap and Die Corporation are still in use after thirty-three years of continuous service. These bearings usually outlast the useful life of a motor car. They have been in operation over fifteen years in coal mine cars without requiring replacement.

**Lubrication:** The spiral slots in the Hyatt rollers continually spread the oil over all the bearing surfaces and being hollow the rollers afford ample oil capacity for three or four months operation in most machinery. This results in at least an 80% saving in lubrication material and labor.

In any machinery you design now or when you get into practical work after graduation it will pay you to carefully consider the advantages of Hyatt roller bearings.
Still in Service After 250 Years

A HUNDRED years before Napoleon was born, before his wars scourged Europe, before the French Revolution raged, this Cast Iron Pipe was laid, in the reign of Louis XIV, to supply water to the fountains of Versailles.

To the patient researches of M. Blanc, Chief Inspector of the Water Service of Versailles and Marly, into dust-covered volumes in the garrets of the Palace of Versailles, we owe the proof of its antiquity.

A report from the Director of the Water Service, M. Blanc’s chief, says: “From their actual state of preservation, which is excellent, excepting the assembly iron bolts, these conduits seem to be able to furnish service for a very considerable time longer.”

The high resistance of this Cast Iron Pipe to corrosion may be judged from the clearness of the fine “parting line” produced by the old horizontal method of casting.

The Junior College

(Continued from Page 5)

enter with certainty that he is preparing himself for the thing which he believes himself best fitted to do; then he would be prepared to immediately enter upon his profession training with the knowledge that such was his own choosing, and that to profit from it he must concentrate upon that particular phase of his training.

Should this situation develop, then Rose would become truly a technical or professional school in the sense in which the existing law and medical schools now are professional schools.

Furthermore, the opportunity would then present itself to enlarge somewhat upon the strictly professional side of the training and to introduce desirable courses that are now crowded out of an already too full and inelastic program. It is possible that the technical training might then be extended to three years, instead of two as at present, and thus solve one of the difficulties in technical education which has been complained of for a long time; too little time in a four-year program for an adequate engineering training.

Thus it appears that: if the junior colleges continue to develop, the time may come when the students entering Rose would all have been selected before entering, the uneconomical and disagreeable task of “weeding out” would be in large measure done away with, and presumably every student will have made one selection of his vocation at the time he enters. He will then be ready to address himself immediately to the task of securing the requisite professional training. Such a situation would certainly tend to raise the professional standard of Rose.

Supposing such a situation to develop, and it is a possibility, then it would seem that we, in conjunction with other professional engineering colleges, should endeavor to exercise some influence in shaping the plans and the policies connected with the fundamental training that our students are to get in the junior colleges; not leave this entirely to a commission, or a committee representing secondary schools alone. That seems to be the drift at present. The tendency at the present time in the better class of professional school, medical or law, is to require graduation from, or at least three years work in a reputable college before entering upon the professional training. Is not engineering as a profession of equal importance with law or medicine, and should not its devotees have an equally good foundation training? The writer thinks so, and thinks that we should follow carefully these tendencies in secondary and junior college education that we may turn them to our advantage whenever possible.

The ability to speak several languages is valuable, but the ability to keep your mouth shut in one language is priceless.
GOOD LIGHTING OF INDUSTRIAL PLANTS SECURES SAFETY AND EFFICIENCY.

The Code of Lighting for factories, mills and other work places of the State of New Jersey makes excellent recommendations of daylight for the proper lighting of industrial buildings.

Adequate daylight facilities through large window areas, together with light, cheerful surroundings, are highly desirable and necessary features in every work place, and they should be supplied through the necessary channels, not only from the humane standpoint, but also from the viewpoint of maximum plant efficiency.

Importance of Daylight.

The unusual attention to gas and electric lighting in factories, mills and other work places during the past few years; the perfection of various lamps and auxiliaries, by means of which an improved quality and quantity of lighting effects are obtained; and the care which has been devoted to increasing the efficiency in various industrial apparatus—all go to emphasize the many advantages and economies that result from vital and adequate window space, as a means for daylight in the proper quantities, and in the right direction during those portions of the day when it is available.

Three Considerations.

Three important considerations of any lighting method are sufficiency, continuity and diffusion, with respect to the daylight illumination of interiors. Sufficiency demands adequate window area; continuity requires (a) large enough window area for use on reasonably dark days, (b) means for reducing the illumination when excessive, due to direct sunshine, and supplementing lighting equipment for use on particularly dark days, and especially towards the close of winter days, (c) diffusion demands interior decorations that are as light in color as practicable for ceilings and upper portions of walls, and of a dull or matt finish, in order that the light which enters the windows or that which is produced by lamps may not be absorbed and lost on the first object that it strikes; but that it may be returned by reflection and thus be used over and over again.

Diffusion also requires that the various sources of light, whether windows, skylights or lamps, be well distributed about the space to be lighted. Light colored surroundings as here suggested result in marked economy, but their main object is perhaps not so much economy as to obtain results that will be satisfactory to the human eye.

Requirements for natural lighting:
1. The light should be adequate for each employe.
2. The windows should be so spaced and located that daylight is fairly uniform over the working area.
3. The intensities of daylight should be such that artificial light will be required only during those portions of the day when it would naturally be considered necessary.
4. The windows should provide a quality of daylight which will avoid a glare, due to the sun's rays, and light from the sky shining directly into the eye, or where this does not prove to be the case at all parts of the day, window shades or other means should be available to make this end possible.

As will be noticed in the above recommendations, large windows and proper diffusion of daylight are urged, in order to meet the demands of daylight lighting.

Shades may be eliminated and most efficient lighting obtained by the use of Factrolite Glass.

If interested in the distribution of light through Factrolite, we will send you a copy of Laboratory Report—"Factrolited."

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FRATERNITY NOTES

Alooa Tau Omega

Gamma Gamma is pleased to announce the initiation of pledges Curl and Neely of the class of '27, on March 16, also of pledges Drompp, Carmack, Barton, Crawford, and Reed of the class of '28, on March 30.

Brother McIntosh spent several days of the last week in March at his home in Louisville, Ky.

Brothers Nelson Shepherd and Bob Hall, who are now students at Indiana University, spent the week end of March 20 with the chapter.

The entire chapter is making plans to attend the annual state dance and banquet, which is to be held at the Severin Hotel in Indianapolis, April 24-25.

Among the recent visitors at the chapter house are: Brothers Kyle Anderson and Jake Maehling of Illinois Gamma Xi at the University of Chicago and Brother Pittman of this chapter.

Brother Joe Fox, '24, returned from Florida, Saturday; April 4.

Sigma Nu

Beta Upsilon's annual Dad's and Faculty Smoker was held on Friday, March 13. There were about thirty guests present despite the fact that the weather was exceedingly inclement. This yearly affair serves to bring the fraternity members, their fathers, and the faculty into closer contact. Smokes, a light lunch, and a general good time was the order of the evening.

Theta XI

Kappa held its initiation during the week of March 22 and initiated the following men: Hiram S. Dorsey, Boyd Fox, R. F. Pearce, A. Nehf, J. B. Smith, Roy Reece, and E. S. Johonnett.

Plans have been made to hold the initiation dance Saturday, April 11, at the Edgewood Grove Club House. The brothers are striving to make this the most successful dance of the season.

Recent visitors at the house are: Brothers Gorby and Carey of Beta, Bessel of Alpha, Hutchinson of Alpha Beta, and Schlaaman and Weinhardt of Kappa.

Alpha Chi Sigma

Iota chapter held a professional meeting Thursday evening, March 19. Dr. Howlett and Prof. Childs were guests of the chapter. This was the first opportunity the chapter had to meet Dr. Howlett. He gave an informal talk on the relation of chemistry and physics that was appreciated by the chapter. Prof. Childs' talk on the fixation of nitrogen was very interesting. Eats were served at a late hour, and the meeting adjourned after a very pleasant evening.

Theta Kappa Nu

On March 28, 1925 at the Hotel Deming the P. I. E. S fraternity was officially installed as the Theta Kappa Nu fraternity. All the active members were installed at this time as well as some fifteen alumni members. This completes the twenty-five years of P. I. E. S. as a local and starts the chapter era as a national fraternity. It is with somewhat of a sad feeling that P. I. E. S. leaves the Rose campus but this is overcome by the feeling that the new fraternity carries with it.

After the installation was completed, the members and guests adjourned to the Hoosier Nook where a delightful banquet was held followed by toasts from the alumni, guests from the DePauw chapter, and members. Orville Dunning acted as toastmaster. A stag party was held at the house that night.

On March 29, 1925, open house was held to which the public was invited. Faculty members and co-fraternities were entertained at this time. Singing and playing were the chief forms of entertainment. Punch and wafers were served as refreshments.

COLLEGE

COAT STYLE

The new "Britishers" of extreme type is either single or double breasted, straight back without waist suppression and shirt pockets set as low as possible, broad shoulders—snug hips.

Our Spring Line now on Display

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NEW SPRING

Hats and Caps
AT POPULAR PRICES

MEET ME BAREHEADED

BILL CODY
715 Wabash Ave. Terre Haute
WHAT IS A STEAM TRAP?

A successful steam trap should be a pas-sageway for water and a barrier to steam. It prevents the loss of any steam while it dis-poses of the accumulated condensation from pipe-lines and headers. Or drains receivers, drip pockets or steam using appliances. It is automatic, performing its important function without attention.

Steam traps of the right type, properly ar-ranged, will return hot condensation directly to the boilers as pure feed water. Conserv-ing the "heat of the liquid" of this condensa-tate, they effect large fuel economies. They are the most economical devices on the market for boiler feeding. Steam traps can also be used to draw condensation from low pressures or vacuums, discharging directly into a higher pressure, and meter-ing the discharge if desired.

Cranetilt traps perform these and similar functions in many important power plants, in chemical plants, paper mills and oil re-fineries. Their operation is fully described in a Crane publication entitled "Condensa-tion." We will be glad to send a copy to any engineering student who writes for it.
Prof. Parkhurst, Rose ’86, Dies

Prof. J. A. Parkhurst, Rose Tech ’86, after an efficient service of 25 years on the scientific staff of Yerkes Observatory, died at his home at Williams Bay, Sunday evening, March 1, after a short illness.

John A. Parkhurst was born at Dixon, Ill., Sept. 24, 1861. His family had come from Chautauqua, N. Y., His early education was accomplished in Marengo, Ill., where he lived until 1900, when he moved to Williams Bay. He studied at Wheaton College, from 1878-1881 and later attended Rose Polytechnic Inst., graduating in 1886 as B. S. For two years after his graduation he served as instructor in mathematics at Rose. He married Anna Greenleaf, of Terre Haute, in 1888.

He was engaged in business in Marengo, Ill., but spent this spare time in the study of the stars, making a name for himself as an amateur astronomer of unusual ability. He was a contributor of many articles on variable stars to the astronomical publications. During the summer of 1898, he worked on Yerkes Observatory, which was being erected within thirty miles of his home town, by Chicago University. In 1900 he became an assistant engaged in the measurement of the brightness and change of brightness of stars. He had the rank of instructor in the University of Chicago from 1905-1912, and of assistant professor from 1912-1919, when he became an associate professor of practical astronomy.

A volume of his researches on stellar photometry was published in 1906 and he contributed many papers to the Astrophysical Journal and other scientific magazines. He was in charge of an important part of the program for observing the total solar eclipses in Green River, Wyoming, in June 1918, and at Catalina Islands in September, 1923.

Science has profited by the faithful devotion of Mr. Parkhurst and the life of the community has been enriched by his active interest in its welfare.

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ON

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"The Explosives Engineer" is a magazine for users of explosives. Its subscribers are the officials, engineers, superintendents, and assistants of the large mining, quarrying, and construction operations. Practical men find it of great value and thousands have told us how much they appreciate it.

Its contributors, in addition to its editorial staff, are men in charge of important projects, nationally known engineers, and prominent scientists. The magazine is devoted to the technology of drilling, blasting, loading, and transporting of ores, coal, and stone. Its scope is international. Experiments and advancements in blasting practice are described, usually for the first time, by writers well versed in their subjects.

The engineering student will find it valuable to read "The Explosives Engineer" during his college days. There is a special reduced rate of $2.00 a year for students. Mail the coupon today.

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Enclosed is a money order (or check) for $2.00, for which send me "The Explosives Engineer" (regular subscription price $3.00) for one year, beginning with the current issue.

Name

College Class

City State
College athletic teams illustrate forcibly one truth—men achieve by inspiration. The bleachers' cry of "Hold 'em; Hold 'em!" has kept many a goal line uncrossed. "Touchdown! Touchdown!" has scored countless victories.

In an engineering organization like Westinghouse, this inspiration comes from engineering executives—men who correlate, organize, administrate, and inspire. They are engineers first, but engineers with the power to enlist the best of other men.

Many derived their own first inspiration from the Founder, George Westinghouse himself. He took a contract for electrifying the New Haven Railroad, for example, before the apparatus had even been designed. "Now I've dropped you into the middle of the pond", he told his engineers. "It's up to you to swim out".

There was plenty of swimming—but Westinghouse knew his swimmers.

As has been true since organization began, the demand for men who can develop into leaders is far, far short of the supply. Westinghouse welcomes them. All industry welcomes them. Organizations lead because men, in turn, lead them.

This advertisement is seventh in a vocational series, outlining the fields for engineering achievement in the Westinghouse organization. A copy of the entire series will be sent to anyone requesting it.
At the left of this group is Lieut. J. A. Macready, U. S. A., former holder of the world's altitude record. Just behind the propeller you can see the G-E turbine supercharger which kept the Liberty motor running in the thin air, six miles high.

Over the mountain by a mile

Year after year, plucky explorers try to climb Mount Everest, the world's highest peak, 29,141 feet high.

With a G-E supercharger feeding air at sea-level pressure to the engine, an airplane pilot can go far higher. Lieut. Macready has reached 34,509 feet over Dayton, Ohio. He would have soared over Mount Everest with more than a mile to spare!

The tasks attempted for centuries in almost every form of human endeavor have been conquered with the aid of electricity, with more than a mile to spare.

The impossible today will be accomplished by men and women now in college. The scientist and engineer are doing their share. It remains for men and women entering upon their life's work to profit by the new opportunities that are constantly appearing in every profession and vocation in the land.