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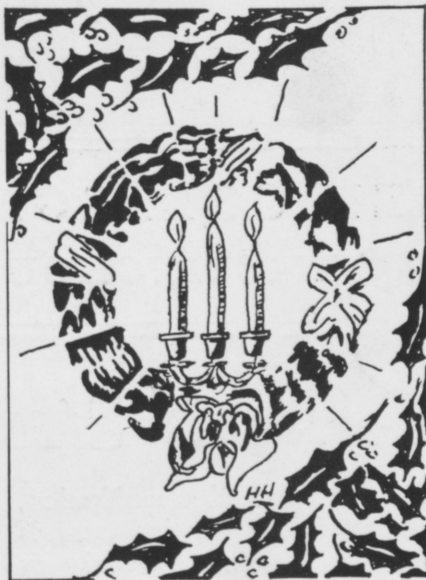
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The Rose **TECHNIC**

MONTHLY PUBLICATION OF THE STUDENTS
OF ROSE POLYTECHNIC INSTITUTE



DECEMBER
1927

VOL. XXXVII

TERRE HAUTE, IND.

NO. 3

MEMBER OF ENGINEERING COLLEGE MAGAZINES ASSOCIATED



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YOUNGER COLLEGE MEN ON RECENT WESTINGHOUSE JOBS

The Homestead Steel Mills

Where do young college men get in a large industrial organization? Have they opportunity to exercise creative talent? Is individual work recognized?

STAND on the hill-top near Homestead, Pennsylvania, and look out over the Carnegie Steel Company's vast works. Your eye falls on a huge new building, covering 30 acres. It is the structural steel department, and here electricity performs every mechanical operation in steel rolling from the soaking pits on through to the shipping department.

This Homestead electrification, predominantly Westinghouse, is one of the most notable in history — notable because of the number and size of the motors employed and notable because of new features of automatic control introduced for the first time.

This is a type of engineering that only an organization of the size and resources of Westinghouse can undertake. Achieving the stupendous, the never-before-

undertaken, is not rare here. Hence young men of capacity, of enterprise, of genius, are offered much to challenge their imaginations and abilities.

In one unit of the new Homestead Mill is a reversing motor rated at 8,000 h.p. and 40 r.p.m. (pictured above), the largest single-armature motor ever built. This motor and all the mill accessories are controlled by two men. They maneuver steel ingots as heavy as 30,000 lbs. There is a total of 336 motors in the new mill, of which 49,000 h.p. are main roll drive motors and 50,935 h.p. are auxiliaries.

Westinghouse



THE ROSE • TECHNIC

PUBLISHED MONTHLY BY THE STUDENTS AND ALUMNI OF ROSE POLYTECHNIC INSTITUTE • ♦ ♦ ♦



VOL. XXXVII

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TABLE OF CONTENTS

UNDER-SEA ENGINEERING: A FURTHER UNDER-WATER ADVENTURE	3
PATENT CONTRACTS - - - - -	4
<i>By H. A. Toulmin, Jr.</i>	
THE STUDENT ENGINEER'S ATTITUDE TOWARDS HIS WORK - - -	6
WHAT PRICE EDUCATION? - - - - -	8
<i>By Raymond Harris, c. e. '29</i>	
RESEARCH AND PROGRESS - - - - -	9
<i>M. Heing, ch. '28</i>	
EDITORIALS - - - - -	11
ALUMNI - - - - -	13
ATHLETICS - - - - -	14
FRATERNITIES - - - - -	16
HUMOR - - - - -	22

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THE ancient practice of allowing land to lie fallow for a season is now exploded, and a succession of different crops found preferable; the case is similar with regard to the understanding, which is more relieved by change of study than by total inactivity.—Clulow.

Under-Sea Engineering---A Further Under-water Adventure

IN THE November Technic there appeared an interesting letter from Mr. Nathan A. Bowers, C. E., Ph. D., '10, telling of an experience in diving, in the water along the coast of southern California. Here is another of Mr. Bower's inimitable letters.

Los Angeles, Calif.
May 1, 1927.

Dear George:

"On Wednesday I had another trip down under the briny and this time the crew gave me all the latitude I wanted. I stayed under about half an hour and blundered around a lot getting the feel of a new element and finding out how very clumsy and awkward one can be until he learns—learns to adapt himself to a new and strange condition in which he has almost no weight but meets with great resistance to motion.

"On this dive I dared to shut off the air altogether for brief periods when I wanted a few words with Blondy, the alert little chap up above on whom depended my prospect of seeing daylight again and who supplied me, for the time being, with the breath of life.

"It is astonishing how quickly the air in the suit fouls when the inlet is shut off. It seemed to me that just about two breaths and you're *through*. Then a sense of dizziness begins, there's a tense singing in the ears and the net effect is a feeling of instant and desperate need. Somehow, each time I re-opened the inlet valve after a brief hiatus of this sort I felt a great mental as well as physical relief. I suppose the real truth is I was afraid the valve would stick or that I might forget which way to turn it or some other foolish reason—anyway, boy, I'm tellin' ya that fresh air tastes good when you need it right bad!

"My destination was the inside of a 7-ft. concrete pipe whose top was buried a few feet below the floor of the ocean. A hole had been blasted in the top of the pipe with dynamite to serve as a man-hole. Before putting on the suit I had taken a good look at the ladder that disappeared in the waves and noted the direction and distance one would have to walk along the bottom to reach the spot where they told me the hole would be found. To make doubly

sure I would find it, I was to follow along a "shot line" that had been put down in the hole so divers could go directly to it.

"Going down was interesting. At first the sway and lift of the water makes it difficult to make sure you are really sinking. Then one begins to take note of various indications peculiar to submarine travel. Particles in the water, relative temperatures, decreasing amount of daylight and the action of the bubbles of air escaping from the helmet are all signs. I had an uncomfortable feeling that I was not going down perfectly plumb, but I wasn't quite sure, nor did I know just what to do about it anyway. I suppose I lit about like a puppy falling from his basket.

"On the bottom I could stand upright, at least. Here was land under foot once more; I decided diving wasn't so bad after all and I began to feel confidence. I was surprised that I could walk and didn't have to swim around—another case of convincing yourself that you "understand what you know," as Walter often says.

"The stream of bubbles danced merrily upward with comforting continuity, a little fish came up close to the windows and stared at me, pop-eyed. He opened his mouth rythmically as if he were jeering "Goop." I couldn't dispute the charge so there was no argument. For awhile I trotted around like an octagenarian learning to dance, in reality marvelling at what was to be seen and felt and mean-

while trying to gain a modicum of skill in "driving the car."

"Closing down the inlet valve to the minimum comfortable supply and opening the outlet valve with my chin caused the suit to close around me like a clamp and increased my specific gravity prodigiously. The other extreme of wide open inlet, with outlet held closed, swelled me up like the wash on the line when the wind fills 'em out, and then I could dance lightly but ponderously about on my toe tips. With suit deflated one can buck the continuous water movement and maintain respectable equilibrium; with suit distended one becomes the plaything of the surges and sways around drunkenly. 'Tis an art to drink and yet to



NEARLY READY TO GO DOWN
(Hyperion Pipe Job, So. Calif. Coast)

(Continued on page 20)

Patent Contracts*

Points of Law for the Contracting Parties

By H. A. Toulmin, Jr.

The author of the following article has been very closely associated with Dr. Wagner, president of Rose Polytechnic Institute, in the matter of patent litigation. Mr. Toulmin has the reputation of being one of the brainiest men of the country. As an example of his uniring energy, Mr. Toulmin went into the late war with no previous experience, and through his own efforts rose to the position of Colonel in charge of practically all American aviation in France.

—Ed. Note

OF all contracts that business men enter, the kind that provides the greatest number of chances for getting into subsequent trouble is the kind that has anything to do with patents. Compared to a patent contract, the ordinary contract is as simple as ordering a suit of clothes.

The experienced business man can foresee the various contingencies and conditions to be covered in contracts covering most of the ordinary commercial transactions. He knows what he wants, and ordinary judgment enables him to protect his interests in any contingency that may arise.

But conditions surrounding patents are different. They cannot be reasoned out like ordinary business transactions, because patents are largely governed by special, and to most men, unfamiliar laws.

The patent law is a separate branch with a separate set of lawyers—sometimes special courts—and always a hedgerow of varying technicalities.

Patents are not like ordinary commodities. Suppose you sell a carload of your product—shoes, or fertilizer, or breakfast food, or motor trucks, and take the buyer's note, "for value received." The transaction is wholly legal, and if the buyer has assets sufficient to cover it, the note is virtually as good as currency.

But in some states, if you take that same note in payment for a patent you not only cannot collect the note; but, if you discount it at your bank, you stand an excellent chance of going to jail.

In those states the note ought to bear on its face the stipulation, "Given for a Patent Right." For passing such a note one state provides a fine of \$500 and a jail sentence of forty days.

No amount of foresight could have warned you of so dismaying a fact. It simply must be known. Previous business and general legal experience don't help at all.

Take the situation of the manufacturer who contracted to buy a patent from the inventor. He got an assignment and put it in his safety deposit box. This assignment set forth on its face that the inventor had sold to the manufacturer the entire right, title and interest to his patent. In a few months the inventor, being hard up and not strictly honest, sold the same patent to another manufacturer. This buyer, being a careful man, looked up the official records and found no note of any pre-

vious transfer. He paid his money and got an assignment. But he did what the first buyer had not done—he had the transfer recorded. In time the first buyer discovered what had happened and tried to annul the second sale. But he was out of luck; for the law said: "No, you are required to put your assignment on record within three months. As you did not do so, the second innocent buyer could not be informed of your transaction by the government records. Therefore, under the law, he is the real owner of the patent."

Usually, the successful executive is an enthusiast. But it is wise, when dealing with patents, to put aside enthusiasm, and approach the deal coldly and calmly. For some unexplained reason, however, most people, in dealing with patents, develop such an enthusiasm that their feelings run away with their calmer judgment. Many a business man has learned that to buy a patent in haste is to pay a lawyer's bill at leisure.

You would not buy real estate without a definite specification by boundaries and description of just what you are getting. Use the same precaution when you buy a patent. When some inventor says that he will turn over to you all his inventions, don't assume that he will be a good fellow and do it. Make him put his promises in writing in great detail, telling exactly what inventions he will turn over to you and, preferably, specifying the numbers of his United States patent applications and patents.

Failure to exercise vigilance cost one corporation many thousands of dollars. A San Francisco inventor of complicated machinery contracted to turn over all his inventions in a certain line. For a number of years the inventor fulfilled his agreement. Then he ceased inventing, apparently because he was getting along in age. As nothing more was heard of him the corporation concluded that he was too old for further work and had retired.

Some years later the company was notified that it had infringed an important patent. The old contract was brought out and it was discovered that the line in which the inventor had contracted to invent was generally stated, but not defined in detail. As a result the new patent that the manufacturer was charged with infringing might prop-

* (Reprinted from BUSINESS, a magazine published by the Burroughs Adding Machine Company.)

erly belong to another class of invention, although related to the general business. The old contract did not bind the old man and his heirs, because, meanwhile he had died. There was only one course left for the company—to buy the patent it had unwittingly infringed.

When you contract with an inventor for the right to manufacture under his patent, or if you license another to manufacture under patents that you own, it is wise to expect that, some time in the future, for any of a dozen reasons, you may want to get out of the arrangements.

The market for a patented device may be killed by changes in public tastes. Later inventions may put the invention of today in the scrap heap tomorrow. Improvements in buggies that were thought to be highly valuable were rendered useless almost overnight by the advent of the automobile.

Can you get out of the contract? Are there provisions for cancelling it? Here is what happened to one well-known concern that failed to write in a cancellation clause:

A manufacturer of heavy machinery directed his engineers to test a new device. They reported so favorably that he entered into a binding contract to pay the inventor some thousands of dollars a year as minimum royalty for the exclusive license to manufacture and sell.

Too late, it was discovered that an operating problem, not appreciated at the time of the laboratory tests, rendered the product impractical. It even was hinted that this difficulty was foreseen by the inventor, himself.

Nevertheless, because there was no cancellation clause in the contract and because the inventor was unwilling to take back the property, settlement required a lawsuit. The all-told cost to the manufacturer was close to fifty thousand dollars.

If the patent you buy or under which you are licensed proves valuable, others may try to use it without paying for the right to do so. Specify in your contract who is to prosecute such trespassers on the patent rights. Who is to pay for the lawsuits? Who is to bring them? Who is to share in the recoveries? To win an infringement action, you must present a solid front.

I know of a case in which an important and very valuable automotive accessory was infringed for years and hundreds of thousands of dollars of profit were lost, both by the inventor and his licensee, because of a heated personal dispute between them as to who was to pursue the infringers and who was to pay the bills for the pursuit. It was like Aesop's fable of the two dogs that quarreled over a bone with such interest in the fight that they failed to notice that in the meantime a third dog had found the bone and stolen it. Doubtless, that sort of see-sawing back and forth in court and out of it, between a hundred inventors and licensees, is going on in the United States every day, just because otherwise perfectly sensible men failed to determine, by the terms of their contracts, just how they were to protect themselves.

Many manufacturers never have occasion to deal with outsiders concerning patents; yet in virtually every factory some sort of inventive or develop-

mental work is going on. In such a situation, the employer has entered into certain contracts, written, oral or merely implied, with certain of his employees.

One manufacturer very carefully specified in his employment contracts that his employees should not disclose two inventions in certain specified lines that he then was manufacturing. As time went on, he entered into new lines without changing his contracts and having them re-signed.

When one of his men left, the manufacturer was confronted with the question as to whether the employment contract covered the entire line he was manufacturing, even though he did not definitely specify that particular line.

In this case the employee was held to be bound by his general relationship or trust, because he had been working in the development department. But that situation is unusual.

Some manufacturers feel that the safest course is to pass up patent protection entirely and rely on trade secrets. The pitfalls here are at least as numerous and as dangerous as those that lie along the patent road. Suppose you learn of a secret process and agree to buy it for say twenty-five thousand dollars. You give the inventor a check and he agrees to make the formula available in your business. You have cut loose from the legal protection of the patent law.

When you check what you can do to protect your secret you learn facts that you could not have foreseen. You find that, in actual fact, you must keep others from learning the secret so that you alone may enjoy the business of practicing this secret process. You must barricade yourself about with precautions to prevent any one of a half dozen contingencies from happening to your secret.

In the first place, who is going to be the secret's custodian? The purchaser of the secret, the inventor of it, a trusted employee or a trust company? Who is going to be responsible for maintaining the secrecy of the plant? Who is to mix the ingredients, keep the stores and buy the materials—duties that may give prying persons an inkling of what the secret is? What precautions must be taken for keeping unauthorized workmen from learning the secret? Who is to be responsible if the workmen do discover the secret and how are you going to keep them from telling it?

The only way to provide for these contingencies is by inserting proper provisions in your contract with the inventor. Even then you may encounter trouble.

Consider the sad case of a manufacturer who bought the secret of making an ingenious and valuable chemical compound that could be made in bulk by one man.

The inventor agreed to do the mixing in a separate room in the factory and contracted to stay in the employ of the buyer for a definite time.

But the manufacturer overlooked the advisability of depositing the formula with a bank or trust company; and he failed to provide for its being made known to anyone except the inventor.

In time, the inventor became dissatisfied with his contract. Hard feelings arose and the inventor

The Student Engineer's Attitude Towards His Work

THE situation presented by the poor attitude of the student engineer towards engineering subjects, and his lack of earnestness, enthusiasm, and endeavor in his work, is one that needs our closest attention. Every engineering professor has noticed the remarkable transformation which takes place in the man who has just graduated and taken a technical position of some responsibility. From an apparently irresponsible, careless, and disinterested student, having a knack for shirking his work upon the slightest provocation, he frequently, by some miracle though surely not without difficulty, develops into a wide-awake individual, full of ambition, and apparently keenly interested in his profession. There has evidently been a radical change in this man. Why was he not, as a student, full of ambition, eager to learn, and anxious for an opportunity to do extra work in order that his store of knowledge might be as great as possible? That this is not the prevailing student attitude has been realized by educators for some time, yet they have reached no agreement as to the specific causes for this condition.

Educators are too prone to look at the problem from the point of view of the teacher and lose sight of the student point of view, and here lies the difficulty of getting at the bottom of the question. It seems that since the problem so vitally concerns the student, the opinions the subject should of the student upon be given careful consideration. It was with this view in mind that this paper has been prepared, and the opinions given represent a point of view of a very representative group of students.

It is generally realized that the engineering students, with his existing attitude toward his school work, can not reap the full benefit of the training which his school offers to him. By not availing himself of the proper training while in school, he lowers the standards of his profession as soon as he becomes an engineer. The status of the engineer depends largely upon the start which his engineering training gives him. The economic loss caused by the placing of comparatively untrained men into the field where competent men are needed, should be eliminated. Not only is there financial loss, but the science of engineering has lost, in many cases, because the engineer, lacking proper school training, has advanced slowly, and at the peak of success is unable to allot the best years of his life to the advancement of his profession.

Surely, there is something more than mere indolence behind this matter of the attitude of students towards their work. There must be some underlying cause, or causes, which are not evident at first glance. The effect of the preparatory school upon the attitude of the student should come in for careful consideration. Then, the different phases of college contacts must be considered. What characteristics of the student himself might affect his attitude towards his work? What effect does the attitude of alumni or the faculty have upon student attitude? Before it is possible to advance any remedies for the condition it is necessary to determine the causes, and the causes can only be determined by analysis of the different aspects of preparatory and college life and their relation to student attitude.

Much of the fault must be attributed to the high school, or preparatory school. The high school student, long before he graduates, has been sentenced to an engineering college by his parents. In many cases the school has even been selected for him. For this reason, he takes his coming college career as a matter of course and is unable to arouse any enthusiasm over four extra years of study. He has no definite aim but merely knows that he is going to college. Here, the high school teachers should step in. The student has but a vague idea of

This timely paper was prepared by the students of the Rose Polytechnic branch of the A. I. E. E. for presentation at the regional convention at Chicago. The subject is of a great deal of importance to the present-day engineering student.

subjects which he should study in preparing for the engineering courses, but his teachers are indifferent and make little effort to point out the subjects in which he should specialize. With the idea of preparing students for college of liberal arts, and engineering and science, the high school does not place enough emphasis upon mathematics and fundamental science courses.

One of the gravest faults of the high school is that it fails to teach the student how to study. The high school student studies chiefly because he has a teacher standing over him. When this same student gets in an engineering college where all of his studying must be done outside of school hours, he enjoys a new freedom and perhaps does no studying at all. The result is that he spends his first two years trying to catch on and the second two in trying to catch up. In the high school there is no incentive to do any more work upon a subject than the teacher requires. The student is not encouraged to do any original thinking or re-

search. Thus, he does not gain initiative, or an ability to reason for himself. This fault is brought with the student into the engineering college to nullify the efficiency of his four years of work.

The inherent characteristics of the individual student are often to blame for his noxious attitude towards his studies. The boy has been reared in an environment which gives him a "happy-go-lucky" air incompatible with the serious study of engineering. Through his formative period he has cultivated a liking for social out-of-school affairs, movies, and other pleasurable functions which he finds he can not sacrifice for mere study. If he can not forego them, he is robbing himself of the time that he should spend on his studies after school hours. Not finding time to prepare for his class work, he loses all interest in his classes. He begins to copy his work for the day from some one who has found time to study. He feels that he is gaining something by doing this, but he soon finds that he is only losing. He loses the will to attack the problems, and thereby loses any enthusiasm and interest he may have had towards the subject.

The general impression appears to be that a college is a place to have a good time, and many are attracted to college with this in mind. Often these men are the popular fellows of their class, and the possible good students are influenced by them to the extent that the class and school standards are lowered. Others have the natural feeling that since they are paying to go to school, they should be allowed to spend their time as they choose. They feel that they are paying for an education, and that it is up to the school to educate them. Still others, realizing that there will be heavy responsibilities fall on them when they get on the job after graduation, tend to evade the evil day and, as students, to shirk all responsibility. This tendency seems one of the most serious aspects of his attitude. The tendency probably can not be blamed on any one of the foregoing factors but on all of them. Certainly his early home training and his high school life have, in too many cases, actually shielded him from tasks that test his dependability. The student who will not assume the responsibility that his engineering practice courses thrust upon him can hardly be expected to assume responsibility in the engineering profession.

The alumni years out of school may have considerable influence upon the way in which the student views his work. By this is meant not the attitude of the alumnus towards his profession but his attitude towards his college training. The younger alumni particularly are always dropping around to see the boys, taking great delight in recounting the times that they tied the goat in the president's office, or the great game they had with a powerful rival team. Thus, they over-emphasize the importance of the good-times of college. Questioned by some curious student regarding the value of his scholastic training, the gay alumnus passes lightly over its importance and says that he hasn't used any of his college-acquired information yet. He belittles his college work, forgetting that it is not the function of the engineering school to fill him up with information which he will use as needed on the job. He does not stop to think that the purpose of the college was to train him to think

constructively along engineering lines. The alumni, then, as anxious as they are to have the old school occupy a prominent place, defeat their purpose by instilling in the students a poor conception of the purpose of study.

The attitude of the faculty can be a large factor in whether or not the student is going to get out of his college training to which he is entitled. That the incoming college student is lacking in aims seems pretty generally realized by the college faculty. Yet, there is little effort on the part of the instructors of the earlier classes to remedy this defect. Except for the welcoming address by the dean or the president, in which a great deal of advice is given, the faculty does not seem to consider the matter, and the students are no more decided on a definite object than before. After the first two or three days, the instructors rarely mention the word "aim," and the students drift along as they always have. For this reason there are men in school today who never intend to take up professional engineering, but are merely finishing up their four years of school work in an engineering college because they had no aim until it was too late to change.

It is the fault of some faculty members that the fundamentals of a subject are not given proper stress. Then when the student gets deep into the more intricate and complex phases of the subject, he finds that he is seriously handicapped by lack of proper tools, and his interest wanes. Those teachers who place emphasis on fundamentals are not only insuring the interest of the student throughout the course, but insuring the fact that their course will mean something. Aside from the personality of the teacher himself, the uninteresting way in which the course is sometimes presented causes difficulty. The instructor who, for the last ten, fifteen, or twenty years, has stood daily before his classes and inflicted upon them a collection of dry-as-dust theories or filled the black-board with equations, should not wonder if the students lose interest. This professor is only too apt to fall into a rut, so that his theories and principles, sound as they may be, become moth eaten, and frayed at the edges. His course must have a thorough house-cleaning, and the old ideas must be worked over so that they may be presented in an interesting manner. Courses of theory especially, where the student is not shown any practical applications for the principles, are bound to prove boresome to the student, and interest lags. Certain members of the faculty, too, are apt to incite resentment. Professors who have the appearance of disgusting every student, and who do not give the student an even break, make themselves immediately unpopular. The great majority of students are honest, when they have a chance to be, and the shortest road to rebellion is through distrust.

What shall be the remedy for the present poor attitude of students towards their work? First, it should be realized that no remedy can cure immediately, but that a gradual cure is better than no cure at all. The preparatory or high school should be the starting place. Here, the realization that the student must acquire a definite aim before beginning his college career, must be drilled into

What Price Education?

By *Raymond P. Harris, c. e. '29*

IN LIGHT of the recent discussion appearing in magazines and periodicals throughout the country concerning the merits and cost of college education, it seems particularly fitting to review some of the more prominent views taken by the critics on these matters. Is the investment of four years' time spent in college away from an occupation productive in dollars and cents worthwhile? If a college education is worthwhile, how about the cost? How do fees and tuition at Rose Polytechnic compare with those charged at various other engineering colleges of the same enrollment?

The idea that a college education is intended only for the more fortunate in earthly possessions has become practically obsolete, for in this day and age, college educations have become democratized. It is the right and privilege of a democracy to enjoy the benefits of a college training, which is evidenced by the ever increasing host of students matriculating yearly. No more is a college training necessarily a gentleman's occupation.

Of course the matter of whether an individual is suited for a furtherance of his training period within the class room after he has been graduated from the high school is a matter of his particular individuality. If he wishes to train for a profession, or in case he loves to study and desires a further education, he should continue. It is charged that four years in college is wasted, is merely stumbling in the dark, that college makes the man impractical, keeps him aloof, creates habits of laziness that are detrimental to the practical contacts with the world outside, and a million and one other charges which bear no proof.

That education is an investment for which no price is too high is classically shown by former President Hyde of Bowdin in his statement that:

"To be at home in all lands and all ages; to count Nature a familiar acquaintance and Art an intimate friend; to gain a standard for the appreciation of other men's work and the criticism of one's own; to carry the keys of the world's library in one's pocket, and feel its resources behind one in whatever task he undertakes; to make a host of friends among the men of one's own age who are the leaders in all walks of life; to lose oneself in generous enthusiasm and cooperate with others for common ends; to learn manners from students who are gentlemen; and to form character under professors who are Christian—these are the return of a college for the best four years of one's life." Indeed education is a pearl beyond price in the world today! If education consumes the most valuable eighteen or twenty years of one's life, those years are spent in acquiring the most essential training there is.

When the first of September rolls around there is inevitably no end of discussion about the cost of education. Tuition fees, registration fees, and

expenses in general are the subject of many a "boring session." It is argued that the cost at Rose Polytechnic is far above that which would be charged at other institutions for four years training in engineering. The exponents of this view will bring up figure after figure to prove that expenses at Rose Polytechnic are far more than at any other school of note, and then—on the opening day, register right along with the rest of the students. So it is evident that they surely do not believe in their "logic," in reality, but are merely upholding their point for the sake of argument. However, the facts in the matter of the cost of an education at Rose will bear careful investigation, the light of such a search truly revealing the advantages which students at Rose Polytechnic hold over their fellow engineering students at other schools when the time comes for payment of fees.

In a table compiled by the Pennsylvania State College from data collected on all the leading engineering colleges in the country with a total enrollment under four hundred, the fact is brought home that Rose Polytechnic Institute ranks second only to Tulane University in having the smallest tuition fees of the entire group of schools. Twenty-seven of the leading technical schools of the country were included in the list considered, and Rose Poly has a tuition fee which is eighty dollars less than the next lowest in the table, with the exception of Tulane. Tulane University at New Orleans charges but a scant twenty dollars less than Rose Polytechnic. Which should close all discussion as to whether tuition at the institute founded by Chauncey Rose is excessive.

The critics disagree as to the total cost of a university training chiefly because they almost always disagree as to just what items will be considered in assessing a value. Some think all living expenses should be included, others assert that the student would be incurring incidental expenses such as those classed in this category even if he were not in college. Some state that the average total cost does not run much under \$10,000 for four years. This is hardly applicable to Rose Polytechnic where the average total cost cannot much exceed \$2,000. Nowhere should an education cost more than \$1,500 a year if the student exercises any care whatsoever.

Wherefore it is seen that a college education is not such an expensive proposition, and even if it were, it would be worthwhile. There are certainly no grounds to the argument that habits of laziness are encouraged (whoever said that didn't have Rose Polytechnic in mind), or that a training at Rose makes the student impractical. The return on the investment of four years in college, in addition to being worthwhile in dollars and cents, is that one is sent into the world with an understanding of living and fundamental knowledge of the best in science and arts.

Research and Progress

Conducted by M. Heinig, ch., '28

Power Operated Removable Fire Ladder

THIS ladder is known as belonging to the Metz type; it is built by Karl Metz of Karlsruhe, Germany. The power for the motion of the ladder is communicated from the truck engine by purely mechanical means to a transmission incorporated in a revolving turret carried on a double roller bearing. The entire ladder-motion mechanism, including the extending gear, is in the Metz type of ladder, contained in the gear case. Multiple-disc clutches, operated by hydraulic (oil) pressure are used. An arc construction is used to elevate the ladder. The two raising chains are driven by sprockets and are secured to both ends of the arcs, any tendency of the ladder to "buck" due to the wind or back pressure from the nozzle thereby being effectively checked.

Protection Against Obnoxious Noises and Vibrations of Machines

PROTECTION against noises and vibrations is a special branch of modern technics, which of late years has acquired considerable importance. The progress in this field is somewhat unique in that the empirical and, to a certain extent, intuitive, treatment of sound problems has been superseded by scientific treatment. In this branch of technics, one of the simplest, yet most fruitful, achievements, is the distinction between air-sound and earth-sound. The former refers to sounds traveling in the air and the latter refers to sounds traveling in solid bodies. Both of these are produced in all machines, and engines.

Vibrations are not only disagreeable due to their physiological effect but they are dangerous in the way that they set up mechanical stresses which are destructive to the structure in which they are housed. It is well-known that the continuous alternating stresses due to vibration are far more dangerous than static stresses, and the latest developments in material testing prove that the utmost importance is attached to the vibrational strength of a material.

The prevention of earth-sound has been of great importance in machine plants, the air-sound being of secondary importance. The chief method of preventing these vibrations consists of what is called vibration dampers. Such a vibration damper consists of a stationary casing which is bolted to the foundation or part of the building on which the machine is to be erected. Inside this casing, a second body is mounted in such a manner that can vibrate on springs and other materials that have a large capacity for storing up energy. The machine, which usually rests on several such dampers, is bolted to this latter body. This special arrangement allows of elasticity taking up the vibration of the machine. Owing to this connection to springs

and the special materials of high internal friction, the natural frequency of the machine will be aperiodic, thus excluding resonance. In this way the propagation of vibration is obviated.

(Abstracted from the Engineering Progress).

A Device for Detecting Traces of Mercury

THE detection of traces of mercury vapor has become important due to the use of mercury-vapor turbines in power plants. The principle of operation is based upon a reaction between selenium sulphide (a solid) and the mercury vapor, the reaction producing a colored substance easily visible to unaided eye. The selenium sulphide is applied as a coating on paper and exposed to the air to be tested for the vapor. If mercury vapor is present, the coating becomes blackened, the degree of blackening depending upon the time of exposure, the concentration of the vapor, and certain other factors which can be controlled. The test is extremely sensitive, as small a proportion as one part of mercury in 20,000,000 being detected.

By means of moving a strip of the coated paper by clock work past a jet of the air to be tested, a continuous and automatic record of the concentration can be obtained. By comparing the degree of blackening at any given point on the strip with a calibrated color chart, the concentration can be determined.

If an incandescent lamp is placed in front of the strip of paper and a photo-electric cell behind it, the amount of light reaching the cell will depend upon the amount of blackening of the paper. The transmitted light can regulate the readings of an ammeter, so that the concentration of the vapor can be determined either by observing the color of the paper or by reading the ammeter. It is possible to arrange the photo-electric cell circuit so that, when the concentration of the vapor becomes dangerously high, a warning signal will be given. This device was developed in the Research Laboratory of the General Electric Company.

The Economic Position of the Mercury Turbine

MERCURY is technically an ideal, but practically a rather questionable material for driving turbines. The latter is true due to its scarcity; and consequently, its expensiveness; the sensitiveness of its price to fluctuations in supply and demand; and its poisonous character in even small quantities.

The results obtained at Hartford led many people to believe that the use of this mercury unit would effect revolutionary changes, especially in reducing the production costs in the electrical industry. The fallacy of this view, was shown by the firm of Arthur D. Little, Inc., by pointing out the economic

situation in terms of the available supplies and the effect of its increased use on the cost.

Corresponding to an increase in consumption of mercury from 1,630,000 lbs. in 1913, to 2,230,000 lbs. in 1925, the price rose from \$.53 to \$1.10, thus showing its sensitiveness to change of demand.

The mercury unit experimented with generates two-thirds of its power with steam and one-third with mercury and requires 15 lbs. of mercury per kw. so generated. This means that if the mercury-steam turbine were to take care of an assumed annual new generating requirement for the electrical industry of 2,000,000 kw., about 10,000,000 lbs. of mercury would be required. This figure is approximately five times the present consumption for all purposes in the United States to merely take care of the normal yearly increase in electrical generating capacity.

Mr. Little estimates that if mercury units were to take care of one-fifth of the generating capacity, it would cost \$2 per lb. On this basis the capital cost per kw. for mercury would be \$30, which, based on coal at \$4, an average annual load 220 kw. hr. per kw. of capacity and the use of 2 lbs. of coal per kw. hr., would yield 17% return on the investment in mercury. This, while being a very fair saving, is not nearly large enough to be revolutionary in the cost of producing electric power.

(Abstracted from the Mech. Eng.)

Electrical Reproduction from Phonograph Records

LET us first compare the mechanical and electrical systems of reproduction. The main advantage of the latter lies in the fact that it may use amplifiers. In the old method of recording, the cutting tool was mechanically connected to a diaphragm which was actuated by sound waves, thus limiting the power for cutting to that which could be collected from the source of sound. In the case of electrical recording the power for vibrating the tool may be as great as needed.

In order to get sufficient amplitudes for cutting, a horn was used to concentrate the sound waves, a resonant diaphragm being used. Both of these produce distortion. In electrical recording, a sound pick up or transmitter without a horn is used. Its electrical output is small but can be amplified without appreciable distortion, and relatively large forces can be applied magnetically to the cutting tool, which may be heavily damped, thereby reducing its tendency to respond more to certain frequencies in the scale than to others.

In reproducing from the record, the possibility of amplification does not give the electrical system such a distinct advantage, since the reproducing needle is capable of delivering considerable force, unlike the sound waves. As far as quality of reproduction is concerned, both systems can be made to give a high degree of reproduction. The mechanical system is simpler: the electrical system is more flexible, has greater ease of volume control, and has possibility of greater volume.

The electrical process takes place in three steps (1) The vibration of the needle generates a voltage corresponding to the wave in the groove on the

record, (2) this voltage is amplified, and (3) an electrical loud speaker converts the electrical power back into sound.

(Abstracted from the Journal of the A. I. E. E.)

Bituminous Gravel Concrete in England

DESIRING to build a durable pavement and not having at hand any store quarries, but having large deposits of gravel, the Boro of Chelmsford, England decided to use the gravel if at all possible for a paving material. Experiments were made in the laboratory, and a product was obtained which is described as being a bituminous gravel concrete, a tar-asphalt matrix being used as a binding medium. The success of the pavement is said to depend upon obtaining a grading which will sufficiently fill up the voids so as to prevent the coarse, round aggregate from rolling and thereby affecting the stability of the pavement.

It was necessary to obtain a matrix of such a penetration as would insure that the pavement would not move under the traffic in hot weather as well as not being too brittle for winter. The grading obtained on the gravel used was 67% passing a 1¼-in. and retained on a ½ in. screen and leaving the remainder of 33% passing the ½ in. and grading downward. The matrix used is known as Mexphalte bitumen, 45 penetration E grade, giving for summer work a penetration of about 1.3 centimeters at 25C. in 5 seconds with a standard needle. The gravel is dried, heated to about 200 F., mixed with the tar-asphalt matrix, delivered to the road at about 180 F., spread in consolidated layers of 3" and rolled.

(Abstracted from the Public Works)

Patent Contracts

(Continued from page 5)

walked out with all the information. There was no provision by which the manufacturer, himself, could learn the secret. It took an expensive lawsuit to get justice for the manufacturer; and before the suit was over, the secret was known to everybody.

In an article like this it is impossible to cover every contingency that ought to be provided for in contracts having to do with patents. Following, however, are some general suggestions.

Contracts having to do with patents or processes fall into the following groups:

1. Outright purchases.
2. License agreements.
3. General employment contracts.
4. Inventors' contracts.
5. Machinery contracts.
6. New-product development contracts.

If you are on the buyer's end, here are some things to write into your contract for your own protection:

1. The title ought to be guaranteed by the inventor.
2. The contract ought to provide for cancellation.
3. There ought to be a provision specifying who

(Continued on page 25)

Published Monthly
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Rose Polytechnic
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The Rose TECHNIC

A Magazine Pertaining
to Engineering and
Allied Sciences

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The Term Engineer

THE word "engineer" has been much overworked during the past twenty-five years. So much overworked, in fact, that when a man says he is an "engineer," he may mean that he runs a locomotive, operates a stationary engine, wires houses, fixes radios, or does any of a hundred different things. The man who holds a position calling for any small degree of technical knowledge usually calls himself an engineer whether he is or not, and as a result, there are as many kinds of "engineers" as there are industries. This condition is bound to have its effect upon the engineering profession.

The medical profession has already built a barrier around the title "doctor," knowing full well the injury that could be done to the profession by quacks who professed to be doctors of medicine. The medical profession has had a hard fight of it, for the title "doctor" is ambiguous, and is carelessly flung around by those not members of the profession. The word "engineer," however, is not a title and it seems that it would be easy to define, and control the use of the word, applying the term only to men duly recognized as engineers by the engineering profession. Yet the medical man, and the lawyer as well, has fought a winning fight against the incompetents who carried the same name. In the engineering profession no such progress has been made, and the engineering profession suffers from the misdeeds and mistakes of the untrained man who calls himself an engineer.

While nothing has yet been done by the engineering profession as a whole, there is some agitation to do away with the term "engineer" as applied to certain jobs, and in this way tend to clear up some of the confusion in the mind of the layman as to just what an engineer is. One suggestion is that the drivers of locomotives, electric cars, steam tractors, and similar tractive machinery be designated as "runners," and that those in charge of stationary machinery be called "operators."

The need for this, and similar steps is readily

apparent, and it is to the profit of the public and to the engineering profession that these steps be taken.

Intermural Competition

WITH the recent formation of the intramural basketball league a new phase of activity has been opened up here at Rose, the need of which has been felt for some time. The larger universities and colleges have recognized the value of intramural competitions of various sorts, and in the last two or three years there has been a decided trend towards intramural athletics.

The reason for intramural athletics is four-fold. First, a greater number of students are given an opportunity to participate in athletics than is otherwise the case. For this reason the benefits derived from the contests are not gained by those on the varsity teams alone, but by a large portion of the student body. Second, these intramural competitions stimulate a healthy interest in athletics. Instead of having to watch games from the sidelines, the man with only ordinary athletic ability has a chance to get into a real game, himself, where he can try out his theories and match his skill with others. Third, it has been realized that intramural athletics can build school spirit if carried in the right direction. Students are given something to think about and discuss besides routine school matters, and as a result, they do not forget about the school as soon as they are off the campus. The fourth reason for intramural athletics is an important one in that these games often turn up men of athletic ability who otherwise would remain in the background. Then too, there is the increase of competition that is so necessary for successful athletic teams. The intramural leagues become feeders for the varsity teams, in time, and in this way the entire school is benefitted indirectly.

However, we must not over-emphasize the importance of the individual teams making up the league and lose sight of the larger interests of the

(Continued on page 25)

Home Coming

ROSE'S annual home-coming day was held this year on Saturday, November 19. The big day started off with an inspection of the main building and the dormitory, by the many alumni who had come back to their Alma Mater to make new acquaintances, and to renew the old acquaintances. These men, with several years of experience behind them, expressed themselves as being greatly pleased with the progress of Rose Polytechnic Institute in the past year.

Following the inspection of the building a luncheon was served at the Dormitory cafeteria for the guests. Then in the afternoon came the big football game with our ancient rival, Hanover. Although the game proved to be a failure in one respect, in that Rose was on the small end of a 12 to 6 score, it was never the less a game packed with thrills from beginning to end. The team put up one of the best exhibitions of football they have shown this year. Many of the old grads who were football men in their day expressed much pleasure at the battle the team put up.

Following the game a banquet was held in the dormitory for all the members of the A. S. M. E. present. After the banquet these men adjourned to a room in the main building where they were given a talk on "Color Photography" by Prof. Peddle.

Starting at nine o'clock in the morning, the home coming dance, sponsored by the Senior class, was held in the gymnasium. The music was furnished by Eddie Newlin's "Collegiates" and proved hot enough to limber up the most stiff bones to the unaccustomed effort of dancing. This dance was the final event of the program of one of the best home coming days seen at Rose Polytechnic Institute in several years.

A. I. E. E. Meeting

WHILE several rather informal meetings have been held in the last few weeks, mainly for the discussion of the coming Engineering Show, the first regular A. I. E. E. meeting of the month was held Wednesday afternoon, Nov. 16. A total of forty-one members were present at the meeting. The meeting was called to order by chairman Arthur Drompp and turned over to the program committee. A paper on "What the Engineering School Should Do for the Engineering Student, in the Opinion of the Professional Engineer," prepared by J. B. Smith, was read and discussed. A short talk was given by H. Carmack: "The Organization and Purpose of the A. I. E. E.," and the program was finished by a talk by C. Cash on "The Relation Between the Inventor and the Manufacturer." Discussion of plans concerning the regional convention to be held in Chicago on Nov. 28, concluded the business of the meeting.

Ten seniors planned to make the trip to the convention, where the Rose branch intends to take an active part in the program. A paper has been prepared by the local branch to be read at the con-

vention by James Payne, while Arthur Drompp will have charge of one of the discussion groups.

At a previous meeting, Wayne Kehoe was chosen to lead the Senior Electricals in preparation for the coming Engineering Show.

The Student Engineer's Attitude Towards His Work

(Continued from Page 7)

the mind of the high school student. Then for the benefit of those who decide to enter engineering schools, the last two years should be devoted to subjects which will send the man to the engineering college with an adequate preparation along technical lines. During these years, the habit of study should become crystallized. College methods of teaching should be used where practical in order that the transition from high school to college will not be too sudden. Above all, he should be given opportunity for original and constructive reasoning.

Concerning the alumni, a change from its present attitude seems extremely remote. About the only solution lies in impressing the students now in school with the fact that they should, as alumni, have an attitude different from that of the present alumni. This, of course, means slow work.

In the college itself, there is no bigger factor to be reckoned with than the faculty. With efficient teaching methods and interesting courses, the faculty can do a great deal towards bettering the attitude of the students. When it is necessary to add a new instructor to the faculty, his qualifications should be given careful consideration. A teacher who has a negative personality, or who can not expound his subject, can do a vast amount of harm. On the faculty rests the burden of making the students realize the necessity of assuming responsibility. More should be done to encourage students to take up responsible practical work during the summer in order that they get a close-up view of responsibility similar to that which they will bear when in the profession.

Until the conditions pointed out above have been remedied, until the suggested methods have been given practical application, it is safe to say that the present attitude of the student towards his work will not be improved. Until the prevailing student attitude is bettered, the engineering profession will fail to attain its deserved place among the other learned professions.

Youthful Intuition

Earnest had been very naughty and his father, quite disgusted, said, "You don't act as if you knew anything."

The little boy looked up quickly and replied, "People who know things don't have to act."

Judge: "You are charged with stealing a bottle of milk. How did you come to take this milk?"

Prisoner: "It was the first thing I ever took in my life."



*Rose Graduate Makes Dedicatory
Address as President of Engineers
Club of San Francisco*

DR. NATHAN A. BOWERS, Rose '10, presided at the dedication of the new home of the San Francisco Engineers Club as president; and made the formal address dedicating the new quarters. Dr. Bowers is Pacific Coast editor of the Engineering News Record.

Although the Engineers Club was organized but fifteen years ago, it has made rapid strides forward until it now has a total membership of 700, among which are included many prominent men such as Herbert Hoover, Secretary of Commerce. The new quarters are located on the two top floors of the Insurance Exchange Building at Pine and Sansome streets, one of the most advantageous locations in San Francisco, a splendid view of the bay being available.

Dr. Bowers traced the progress of the club from the time of its organization up until the present, as the first part of his address. He showed how the club had attained their present situation through the good work done by a large number of individual members. In urging the members to frequent the club rooms and in general improve the atmosphere of the society, Dr. Bowers stressed the great importance which every engineer would attach to friendliness to other people. This aloofness he blames as one of the great existing reasons for the misunderstanding which engineers are forced to cope with in every-day life. "The public has long been wont to picture the civil engineer as a man behind a transit instrument, and the true function of other branches of engineering has usually been equally underrated. This is unfortunate. Unfortunate for the public, most of all, because the public thereby loses the inspiration and the leadership that might be had from engineers. . . . I say this organization will fulfill an important mission if it helps the public to understand and to rightly appraise the work of engineers!"

The club is the focal point in San Francisco for the local activities of the technical societies of America. Twenty-seven technical societies meet there every month, thirteen of which are branches of national engineering societies. In addition to technical men included on the membership roster, non-technical men up to twenty percent of the com-

plete membership are permitted to belong to the club. This makes the club more than a mere technical society, as the membership includes business men and professional men such as lawyers, bankers and executives who are affiliated in some way with engineering activities.

Alumni Notes

'01

Robert K. Rochester, with the Pennsylvania Railroad, has been made General Manager of the Long Island Railroad.

'05

Merle R. Reed, master mechanic with the Pennsylvania Railroad, has been transferred from Fort Wayne to Logansport, Indiana.

'08

H. Earl Schmidt, formerly Sales Manager with the Holcomb & Hoke Manufacturing Company of Indianapolis, has come to Terre Haute as the General Manager of the Consolidated Manufacturing Company.

'10

Earl D. Hay was a recent visitor to the Institute. Professor Hay is head of the Department of Mechanical Engineering, and also Dean of the College of Engineering at the University of Wyoming.

Mr. C. M. Bercaw, B.S. in Electrical Engineering, District Manager, Cutter Electrical and Manufacturing Company, Chicago, recently donated a 4 ampere Auto U-Re-Lite Junior 3 phase circuit breaker to the Institute. The apparatus has been installed to take care of the motor of the deep well pump outfit where considerable trouble had been experienced in blowing fuses. The circuit breaker is adapted to carry a considerable excess of current for a limited time so that the excess current used in starting does not blow the fuse unless it continues for a sufficient length of time to heat the motor dangerously.

'18

Ralph E. Price is now located with the New York Central at Cincinnati, Ohio. He was formerly an estimator with the Truscon Steel Company at Youngstown, Ohio.

'21

William H. Junker was one of the principal actors in wedding which took place in Pensacola, Florida, Friday, October twenty-first, when he entered the bonds of matrimony with Miss Annie Mabel Tyler of that city. Mr. and Mrs. Junker are at home to their friends at 6080 Dryden Place, Pleasant Ridge,

(Continued on page 24)

A T H L E T I C S

Final Lost to Hanover by Score of 12 to 6

Clarkmen Stage Late Rally But Taste Defeat

WITH Rose in possession of the ball on Hanover's three-yard line, the score 12 to 6 against them and 45 seconds to play, the Engineers were handed a 15-yard penalty to put the ball in safe territory and pave the way for a defeat in the last game of the season just as it seemed that at least a tie or possibly a victory was within reach. Hanover depended upon a large amount of straight football and a powerful interference to make way for their advances and win from the Engineers whom they hold to be traditional enemies.

Injuries and other reasons took heavy toll from Rose power. Captain Jack Derry and Mike Ellis, both regular tackles, were in the tilt for only a short time. Derry has been in poor shape, following a recent injury, and was hurt on the first play of the game, forcing him to retire. Ellis got mixed up with Hanover's captain and the two were ejected in the first quarter. Bob Taggart, Marsh and others were not in the best of condition either.

The turnout of several alumni added a touch of color to the tilt, but the old loyal Rose men were doomed to disappointment and saw a bitter defeat in the face of tremendous odds. A weakened team had to play the game, but it was a team that had a lively punch and was headed straight for a tie or a victory when the unlucky break came and spoiled the day.

Hanover put over a touchdown in the first period. They took the ball from midfield down the stretch by straight line plunges that gained on every try until the goal line was crossed amid the cries and pleadings of "Hold 'Em" from students, alumni and other rooters.

In the second period the Hanover men annexed their second and last marker when Rose fumbled 30 yards from their objective and lost the ball to an alert visitor. A long end run that terminated in a touchdown was accomplished by Hammer.

Billy Leake got his passing arm working in the final quarter when he heaved several good ones to Eldred and Cooley, which mingled with some line bucks put the ball three yards away from Hanover's line. On the fourth attempt Clyde Marsh took the ball over for the first Rose score. A few minutes later the same had been accomplished and Rose was three yards for another touchdown. Then came the crisis and Rose suffered a 15-yard penalty that put the ball 18 yards away when there remained only a scant 45 seconds of play. As the final gun sounded it marked another defeat for the

Fighting Engineers who had fought so hard when two good men were out of the game and several others were in poor shape to fight before alumni and students in the finale of the year. Lineup and summary:

Hanover (12)		Rose (6)
Heatherington.....	L. E.....	Hauer
Duncan.....	L. T.....	Derry
Bakes.....	L. G.....	Harvey
Rockwell.....	C.....	Scully
Holmes.....	R. G.....	Martin
Easton.....	R. T.....	Ellis
Telle.....	R. E.....	Alexander
Buck.....	Q. B.....	Leake
Strothman.....	L. H.....	Taggart
Hammer.....	R. H.....	Cooley
Garriott.....	F. B.....	Marsh

Score by quarters:

Hanover	6	6	0	0—12
Rose	0	0	0	6—6

Substitutions—Rose: Gibbens, Bruce, Evans, Schaak, Bruce, Eldred. Hanover: Naab, Dill, Calhoun, Whitman.

Touchdowns—Marsh, Garriott, Hammer.

Officials—Referee, Ray Neal; umpire, Birch Bayh; head linesman, Julius.

Five Seniors Depart

Five seniors turned in their suits at the close of this Fall's football season, never more to don grid-iron raiment as representatives of Rose or another college. Five fellows who have conducted themselves well and who gave all in their power to the school of Rose and White are to depart from us.

Everyone of them was in the Hanover-Rose game fighting to the last ditch and suffering as much mental anguish as any of the various freshmen and others who fought on that day. In the line there were John Harvey and Virgil Martin who fought hard at all times and more than once were stumbling blocks to Rose opponents this year and others. Harvey took his fling at fullback often and met with good success. Alexander, who plays a sweet game at end, took part in his last tilt also. Bob's way of accepting passes from his flinger gave many an opponent heart quivers in his years at the school.

In the backfield were Taggart and Leake. Taggart is to many followers of the game "Red" Taggart, a fellow who can carry a ball and direct a team. Billy Leake's passing arm paved the way for a touchdown and the biggest part of another against Hanover. He has done well and will be missed.

Thus, five more Engineers pass on to the alumni ranks and will be with us no longer. We hope they accomplish their life aims as well as they played the game at Rose.

(Continued on page 24)



FLETCHER



Widely varied are the jobs leading up to telephone management.

Another quest for modern Balboas

COLUMBUS made possible Balboa, and just so Bell has made possible the pathfinders in telephony who are now turning his vision into reality.

They are pioneering at the drafting board, in the manufacturing departments, in the field and in the work which underlies all activity—manage-

ment. In executive and administrative control, in the supervisor's opportunity to guide and inspire, there is no limit to the possibilities of the progressive idea.

The questing spirit into new fields has achieved much, but the way remains open for men of the coming generation to carry the telephone industry to still greater heights of service.

BELL SYSTEM

A nation-wide system of 18,000,000 inter-connecting telephones



“OUR PIONEERING WORK HAS JUST BEGUN”

FRATERNITIES

THETA XI

KAPPA Chapter of Theta Xi takes great pleasure in announcing the formal initiation of Professor John B. Peddle as an honorary brother, on Wednesday night, Nov. 19. Professor Peddle is one of the best liked instructors at Rose, and the chapter is exceedingly proud of their new brother. The initiation was attended by the entire active chapter, Brothers Bessel and Washing of Rensselaer Poly, Wilcox of Purdue, and alumni Brothers Lyon, Zimmerman, Schlaman, Joslin, Matson, Woerner, and Collins.



The Theta Xi Mothers Club has been more active than usual, if possible, this month. Two meetings have already been held, one, the regular business meeting, and the other as a quilting party. With the wintry blasts not so far away the comforts were a welcome addition to the "dorm."

The annual Christmas dance, which is always one of the brightest spots on the T. X. social calendar, is being eagerly awaited. The affair will be held, as usual, just before the Christmas holidays, at Edgewood Cabin. Eddie Newlin's Collegiates will furnish the music for the affair. The plans, as they now stand, promise several of the novel features which have always made this dance so popular in the past.

Late dispatches from Cincinnati bring us the news that another brother has taken the fatal step, so Brother Junker's name goes on the long list of those who have fallen by the wayside. We extend to Brother Junker heartiest congratulations.

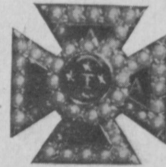
One of the most recent visitors to the house was Brother Harold P. Davidson, Secretary to the Grand Lodge of Theta Xi, who is on his way to attend the National Interfraternity Council at New York. Brother Davidson has been visiting as many chapters as possible on his trip east, and gave us very favorable reports of the chapters located in the west. Brother Davidson was here two days, Nov. 14 and 15, going from here to Ohio State.

Several of the brothers have been visiting during the past month. The bunch that visited Alpha Beta chapter at Illinois were greatly impressed by the new chapter house that is nearing completion, on the campus. Brothers Borries, Crawford, and Wilcox of Purdue, made the trip to Lafayette recently to take in a Big Ten football game.

Speaking of rambling wrecks, etc., the natives must have received a shock when ten Rose men rolled into Louisville the night before Thanksgiving. The annual pilgrimage to Louisville included Brothers Dorsey, Borries, Davy, Wells, Renfro, Nancrede, Shaw, Leake, Pellum, and Muntz, some going home and some going along for the ride. Needless to say, there were big doings in town over the week end.

ALPHA TAU OMEGA

ON December 3-4 Gamma Gamma will be host for the semi-annual conclave of Province XVII, which includes the chapters in this state. Brothers Carleton Starkey, Renfrew, and Hauber will represent Gamma Omicron, the Purdue chapter, Brothers Donald B. Woodward, Richard L. Griffith, and William Strain from Delta Alpha at Indiana, and Brothers Fay Graham,



Blake Cornthwaite, and Charles La Hue from Delta Rho at DePauw. In addition to these delegates, Brothers Frank M. Jeffery, Chief of Province XVII, and Wallace Sanborn, who is a charter member of Gamma Gamma and whose son, Wallace Sanborn, Jr., is a member of the Purdue chapter, will be guests of Gamma Gamma during the conclave. The Terre Haute Alumni will be represented by Brother Raymond L. Armstrong, while Brothers Arthur Drompp, Arthur Keiser, and Hubert Carmack will represent the local chapter. Each year a different chapter is host for the conclave. This year the conclave was to have been held at DePauw, but due to the incompleteness of Delta Rho's new chapter house which was started at the beginning of the school year, that chapter was unable to receive the delegates. The social committee is shaping plans for the entertainment of the delegates when their time is not occupied by the business meetings.

Hurrah! The plans for the annual Christmas formal are in the final stages of completion. When? Friday, Dec. 23, 1927. Where? Probably Edgewood Log Cabin. Music? Only the hottest band available. Favors? Marvelous! The social committee which is composed of Thomas Reed, Wayne Dodson, and Carl E. Ehrenhardt, has announced that the dance will be one of the best ever given by Gamma Gamma and consequently all the brothers are worked up to a high pitch awaiting the set date.

Among the alumni back for the Homecoming game were Brothers Frederick A. Curl of East Lynn, Ill., Joe White of Anderson, Ind., and John Jakle, of Springfield, Ill.

SIGMA NU

THE outstanding event of the last month, by far, was the Homecoming banquet held at the chapter house on the evening of Homecoming day.



Although a fewer number than were expected came back to Beta Upsilon and Rose, those that did return were brimming over with pep and fire. Those brothers back with us again for the annual dinner were Frederick W. Schroeder, St. Louis, Jack McDargh, Indianapolis, Ray

(Continued on page 18)



BLASTING THE TAMAMI TRAIL

THE Tamiami Trail, connecting Miami with Tampa, across the Everglades of Florida, is one of the greatest road building projects of all time. With its early completion, a nearly impossible stretch of territory will be spanned by a beautiful automobile highway.

In order to get material for the grade it was necessary to excavate a canal paralleling the right of way; and most of the excavation was through difficult rock formation. D. Graham Copeland, Chief Engineer, in charge of the work in Collier County, writes:

"Although the extremely varied texture of the rock was successfully drilled, little would be gained if the proper explosives were not available with which to shatter the rock in such a manner as to make it suitable for our purposes. More money can be wasted in a few minutes by the improper selection and use of dynamite than by any other errors in a

month. To the Hercules Powder Company, we turned for assistance in this direction, and as our rock problems varied almost continuously, that Company has sent its engineers here every two months or so to keep in close touch with the work, and to offer suggestions highly advantageous to us. There are only a few firms sufficiently farsighted to knowingly decrease their sales with the idea of helping their customers. The Hercules Powder Company is one of these few firms. We have used one solid carload of sixty percent nitroglycerin dynamite monthly for the last three years and, but for the kindly suggestions and efficient cooperation of that Company, we would unquestionably have used a much greater quantity with poorer results."

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Fraternities

(Continued from page 16)

L. Biller, Indianapolis, Carson Simms, Terre Haute, Baird F. West, Indianapolis, Elmer Dahlquist and Fred Nicosin, also of Terre Haute. Brother Ben Wilson was back in time for the hop, but owing to a holdover in Indianapolis, he was unable to make the banquet.

Following the banquet the old grads were heard from and then a program of songs begun. After all the fraternity songs holding popular appeal to the chapter had been sung, the alumni struck up some old tunes popular in the chapter at their time. Tale spinning further cut down on the precious time and was enjoyed by all the brothers until the session was adjourned so that those Beau Brummels who so desired could attend the dance.

Plans are being laid for the Christmas smoker which is to be held at the house for all alumni and active members who will be spending the holidays in Terre Haute.

Brother Hugh Holmes has received a letter of commendation from John C. Scott, grand historian, stating that the art work he received from him was worthy of especial mention, and that Brother Holmes' name will go down in the history of the fraternity which is now being written.

Brothers Carson Simms and "Tubby" Maxwell, two of our much esteemed local alumni, have both undergone operations for appendicitis this fall. Brother Simms is completely recovered, but Brother Maxwell is still slightly "under the weather."

THETA KAPPA NU

THE members of Indiana Gamma are centering their attention upon the province meeting which is to be held at the fraternity house on De-



cember 17 and 18th. Brother Wayne Watkins, '26 is the Archon of Gamma Province which includes the chapters in Michigan, Ohio, and Indiana. Through his efforts and the activity of our local chapter, we were fortunate

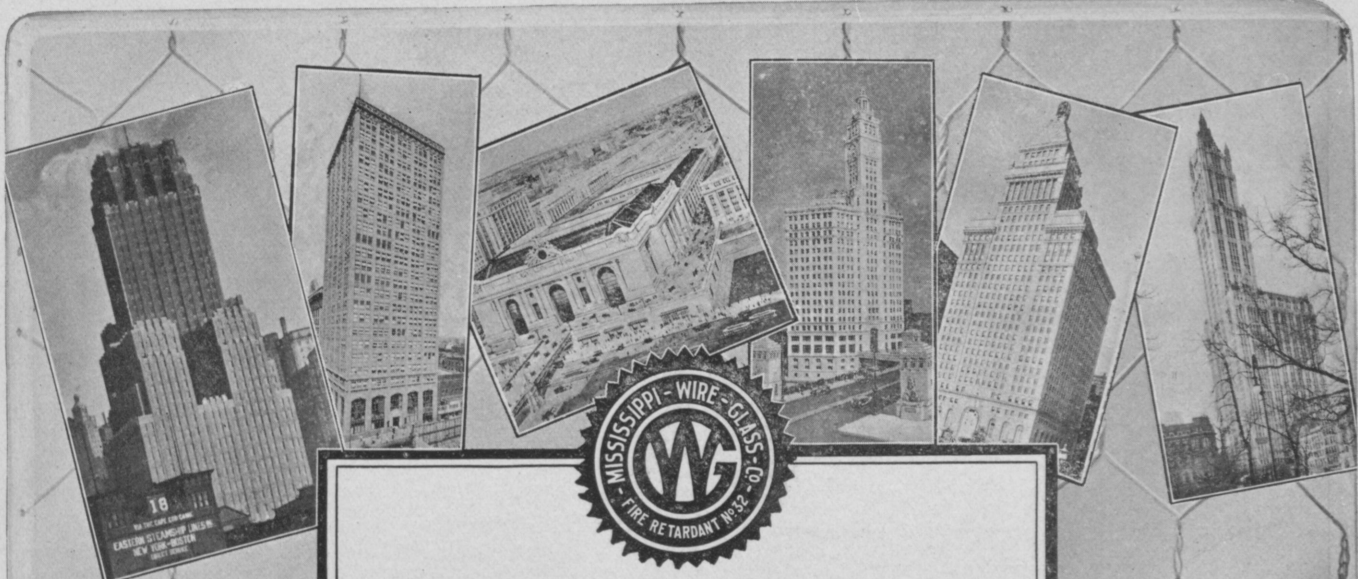
in securing the conclave and nothing has been left undone which would help in furthering its success.

Delegates from all of the chapters in Gamma Province will be present and we are assured of an additional large number of visiting brothers who have signified their intentions of helping put over the social parts of the meeting in an enviable manner.

At Christmas time the usual custom of our fraternity has ben to give an elaborate dance for the actives and alumni, at which time St. Nicholas, as the honor guest, has always been enthusiastically received.

The only differences between the dance to be given in connection with Christmas of this year and the former Christmas dances will be a change in name and a better and more elaborate dance. This year the dance will be held in connection with

(Continued on page 26)



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(Continued from page 3)

be not drunken.' Same applies to handling helmet air valves.

"But I was on an important mission, I told myself; I was on the way to get first hand information about the joints that had mysteriously failed in that great pipe down below. Thought of going deeper into the unknown brought a protest from somewhere inside me with the argument that I had gone far enough for today. But I started out bravely, pulling along on the shot line.

"Presently the shot line ended and in my hand was the iron casing with which it had been anchored! Forgetting to allow for the under-water law of gravity I had heaved too hard and pulled out my marker! Business of shutting off the air valve and asking for directions from Blondy up above. He, looking at the bubbles breaking the surface, said 'Go west about ten feet.' Thanks, awfully, I thought, and which way is west when you're down here—besides, I'm afraid I will go west if I don't watch my step.

"However, this is a small world, after all, and when I had wandered everywhere else on the ocean bottom I naturally fell into the shell-hole that marked the excavation I sought. About that time I was sorry I had found it because now came the problem of going into the pipe.

"Business of feeling cautiously with one iron-shod hoof for something hard in the bottom of the shell-hole. Sure enough; iron grated unmistakably on concrete. Awfully dark down in here but the exploring toe soon found a place where concrete was not alongside the place where concrete was. Said toe immediately returned to a place where concrete was.

"Here intervenes a long interval; nothing much going on out in the semi-darkness but inside the helmet a great brain storm. I insist, of course, that I never weakened in my determination to go on down and that I was just resting awhile. There was some gulping, a few mincing steps around the edge of the hole and I asked Blondy to pay out three feet of slack and then make the life line fast—I think I said 'Good and fast.' His matter-of-fact repeat of the order and the prompt arrival of the slack were encouraging.

"One last upward look, a grip on the life line that would have pinched a lighter line in two, and I slid down into the darkest blackness I ever hope to feel. So dark you could feel, hear, smell and taste it—vision alone was dead. The worst moment came with the discovery, as I scraped down past the shell of the pipe that had been blasted, that there were several sharp pieces of reinforcing steel protruding, and that immediately thereafter there was cold water inside my suit near I had slid by those points!

"I can't understand now why I was so surprised to find myself right side up, feet on the bottom of the pipe and actually able to walk in it. This was a great encouragement. I reminded myself gleefully that none of the engineers had been in here

and I felt that I had the trying part of my job licked. I moved up the pipe to one of the joints that have been the subject of so much speculation and when I actually felt the loose mastic and the separated edges of the sections, professional interest came to the fore. For awhile diving habiliments took their place as merely a means to an end.

"I was still in the pipe when Blondy asked if everything was all right and then suggested that Mr. Cooke thought I had better come up now. So back along the pipe and up through the jagged hole I bumbled (no other word describes it) this time clumsily but successfully avoiding the steel points. With suit distended, one tug on the life line and I was shooting lightly upward in a watery world of wondrous brightness and thence, more slowly, I crawled on up into God's sunshine itself.

"Instantly one emerges the sense of feathery lightness gives way to a leaden heaviness. With 180 lbs. of gear to carry, even lifting one foot slowly a short step up the ladder requires great effort. One is glad to reach the deck and sprawl over a bench while strong deft hands lift away one encumbrance after another.

"There's a lasting lure in the deep; once a taste, never enough. When the weights are off and one has returned to normal balance and law of gravity, the charm and novelty of the other element still lingers and one looks wistfully out over the surface and hopes to go below soon again.

"Here's hoping."



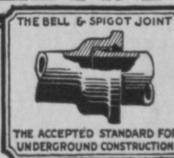
Resists Corrosion

THIS picture, taken in the salt marshes near Kearny, N. J., shows two lines of 30-inch Cast Iron Pipe replacing pipe made of other material. The alternate exposure to the action of salt water and air is a severe test.

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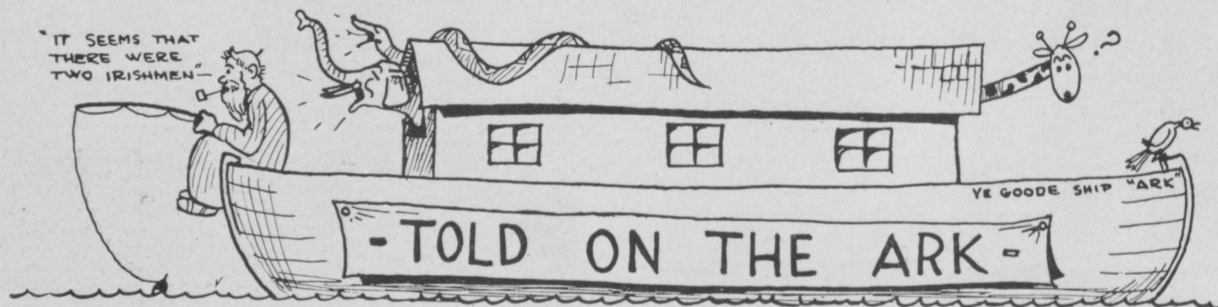
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He May Have Been Tutored

He: "This is my first time to be in love."

She: "Well, I must say that your kindergarten work is remarkable."

A Dwarf

She: "What would you call a man who hides behind a woman's skirt?"

He: "A magician."

Women have made one great contribution to science, by making the study of anatomy more attractive.

A Perfect Disguise

"Don't erase that x from the algebra problem," cried the movie mad student, "It might be Lon Chaney in 'The Unknown.'"

The wise-crackers won't be satisfied until somebody double crosses the Atlantic.

Two Irishmen were in prison; one for stealing a cow, the other for stealing a watch.

The former thinking to have some fun at the other's expense asked, "Pat, what time is it?"

"Faith aw, I'm not sure, Mike, but I think it's about milking time."

Judge: "Liza, you are up here for intoxication."

Liza: "Fine, Judge, bring on de intoxication."

Someone Hast tuh Rule

"My father is a member of the ruling family of England."

"You've got nothing on me, mine is a member of the Anti-Saloon League of America."

Frosh: "What's that string around your finger for, Professor?"

Doc: "Oh, I'm to get up early tomorrow and I may forget it."

Question: What is your idea of a soft job?—E. C. Job.

Answer: Being manager of a chain of barber shops in the House of David.

A kiss is like a rumor because it goes from mouth to mouth.

Knock-Out Drops

"So that was 'home run' hooch you had last night?"

"Yeah, one drink and you have to run like hell to get home before you fall down."

Sentry of Speed

Traffic cops are the halt of the earth.

What's in a Name?

What funny names our restaurants have for indigestion.

Chicago Again

"Does your husband still read those blood and thunder western stories?"

"No, we take a Chicago paper now."

Pleated Face

"She's so old she has a complete set of wrinkles."

"Yeah, you have to watch close to see which one opens when she speaks."

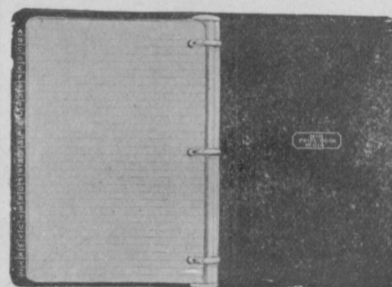
Flexible if not at a Standstill

He: "When is your birthday?"

She: "When will be most convenient for you?"

Question: I am going to visit my dentist soon; what shall I suggest that he use—chloroform or gas?—Iva Paine.

Answer: Ether is good.



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What Evolution Will Make Us

Willie: "Pa, what is a kangaroo?"

Pa: "Just a feeble attempt of nature to produce a safe pedestrian."

Murder!

A lot of chickens are killed along the roads leading into Hollywood, but many more are running around on them only half shot.

It: "How come you laughed all night?"

Other It: "I'm ticklish and I slept on a feather bed."

That's Usually the Case

Motorist: "I'm afraid that old tire is going to give out any minute."

Friend: "It'll hold up all right—we're too close to a garage for a blow-out."

Nor Convicted

Black: "There goes a blamed pretty woman."

White: "Nonsense, if she's pretty she's never blamed."

Regal Draper, As It Were

The saddest of all insects is the silk worm; he labors all his life to clothe the beautiful women, and dies with his work only half covered.

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659 WABASH AVE.

Intermural Baeket Ball

Loop is Organized

LAST year there appeared in this section of the Technic two articles, one a mere plea for more athletics and another of the editorial type. Both "stories" were prompted by the thoughts of this writer and seemingly had no effect whatsoever, like several other well-meant articles that appear in the Technic.

However, whether these stories had any urging influence or otherwise, there is to be intermural athletics, thanks to two lively Rose men—F. Hill and Kehoe. These two enterprising Engineers got their heads together and conceived the idea of a basketball loop. They began thinking a little harder and then came forth with some well-laid plans. Then they hied themselves to representatives of several fraternity and other factional groups of the Institute and left instructions to arrange teams to take part in some much-needed athletics.

Thus—we have the makings of an intramural basketball loop. At this time a schedule had been drawn up and five of six prospective teams already had been lined. There had been some difficulty in rounding up a sixth team, but it was hoped that the difficulty could be ironed out and the league got under way by Oct. 28.

The intent of this article is not to call attention to the fact that we have pleaded for action in this sort of endeavor, nor to take credit for what someone had done. But we do want to take this opportunity to call attention to what two others have accomplished and announce to them that their games will be heralded in the Technic and that the student

(Continued from page 14)

body is indeed fortunate that it has two men who are willing to devote time and energy in sponsoring an endeavor that is to benefit the students and not the sponsors individually. More power to you, boys!

Alumni Notes

(Continued from page 13)

Cincinnati, Ohio. Mr. Junker is a mechanical engineer with Harry Hake at Cincinnati.

'25

Edward G. Gray who has been employed by the General Electric Company as a student engineer since June 15, 1925, has been transferred to the Engineering Department of the Lynn Works. Mr. Gray's home is in Terre Haute.

Edward Rickleman, formerly a student engineer with General Electric located in Schenectady, is now in Detroit. He expects to be transferred to Fort Wayne, Indiana, after Christmas.

'26

Harry Lewis, student engineer with General Electric, has been transferred to Schenectady.

Max C. Sherwood, with the Bridge Department of the New York Central at Cincinnati, has been

transferred to Galion, Ohio, where he is in the office of the Division Engineer.

John S. Wells, former junior engineer with the Milwaukee Electric Railway and Light Company, Milwaukee, Wisconsin, has gone to Appleton, Wisconsin, where he is an assistant electrical engineer with the Wisconsin Michigan Power Company.

Edison G. White, with General Electric, has been transferred from Chicago to Detroit.

Joseph Utt, with the Commonwealth Power Corporation, Jackson, Michigan, was a recent visitor to the Institute.

ex '29

Garret V. Hutchinson has applied for entrance to the Santa Barbara State Teachers College at Santa Barbara, California.

Annual Home Coming Draws Small Attendance

The second annual homecoming held at Rose did not enjoy the large attendance of alumni that the first one held last year did; however, those who were back seemed to enjoy the day quite thoroughly. Those listed as returning for the big day were:

Joseph H. Carter, 1916; Benjamin H. Pine, 1903; Henry C. Gray, 1917; Carl Wischmeyer, 1906; John B. Peddle, 1888; Claude L. Douthett, 1909; Frank W. Pfleging, 1901; H. J. McDargh, Jr., 1923; R. L. Biller, 1921; Fred B. Ray, 1920; Fred W. Schroeder, 1924; C. H. Penno, 1921; W. C. Noelke, 1904; Baird F. West, 1927; Herbert E. Matson, 1926; J. L. Tygart, 1923; Joe White, 1925; E. Wayne Watkins, 1926; P. B. Curtis, 1918; Ralph A. Stuart, 1916; Ed. Hauer, 1924; E. J. Yansky, 1927; Walter L. Pennington, 1927; C. F. Harris, 1914; Harold O. Wimsett, 1911; Earl F. Kunz, 1927; Orion L. Stock, 1908.

Patent Contracts

(Continued from page 10)

is to be responsible for conducting litigation, paying for it and who is to receive the recoveries.

4. There ought to be a schedule of royalties, carefully worked out in workable form with proper provision for bookkeeping—this to avoid dispute over the amounts due.

5. It ought to be specified that new inventions along the same line shall be turned over without further compensation, or upon an agreed compensation.

If you are disposing of your contract rights or licensing a manufacturer, see that the contract covers the following:

1. A minimum royalty.
2. An arrangement for the return of the rights in case the buyer fails financially.
3. A cancellation clause.
4. A provision for adequate audit of the books of the buyer with a clear scale of payments, so that there will be no misunderstanding.
5. A provision for the protection of the patent interest by litigation when necessary.
6. A provision for the return of the property in

case the manufacturer dissolves and goes out of business.

Finally, as an employer, specify definitely when you hire a man, the following:

1. That anything in your line that he invents, either on your time or out of it, or with or without your materials, will be yours.

2. That he will sign all papers for patents in the United States and abroad that may be necessary relative to these inventions, both while he is employed or afterwards.

3. That he will reveal to you, promptly, all his ideas.

And finally, arrange to compensate him on some agreed basis, preferably at an extra rate, to induce him to think along the lines of your business and help you.

Intermural Competition

(Continued from page 11)

school. The rivalry of the various teams must be clean. Petty animosities must not be allowed to spring up between the different groups, for if this is allowed to happen, the intramural contests will do more harm than good.

But why confine the intramural contests to basketball? Bowling, track, golf, baseball, and "touch" football, in season, could all be the means of bringing together the various groups in intramural competition. Whatever the game, though, we should not lose sight of Rose. Let sportsmanship be the keynote.



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Fraternities

(Continued from page 18)

the Province Meeting and will be known as the "Theta Nu Gamma Province Dance." Through the cooperation of the different chapters in the province and our own social committee, the dance, which is to be held at the Edgewood Cabin, will be a combination of the best features of an inter-state dance and the features of our usual Christmas dance. The assembling of delegates and visiting members from all of the province chapters, together with a large percentage of our alumni and actives, will produce a spirit of comradeship and fellowship second to none. It is because of the interest manifested in the activities of our own chapter members that we do not hesitate to predict a huge success for both the meeting and dance.

The business parts of the meeting will be attended by some of the officers of the Grand Council. We are also expecting a good representation from the alumni club of Cleveland, Ohio.

The program for the conclave will be inaugurated with a business session at 11:00 A. M., Saturday 17th and will be followed by a luncheon at Root's Tea Room. The first part of the afternoon will be enjoyed by all of the delegates at a Theatre Party. At 4:00 P. M. a short business meeting will be held.

The Mothers Club of Indiana Gamma of whom we are justly proud, will be sponsors for the huge banquet to be given at the fraternity house at 6:30 P. M. Following the banquet, the dance will be featured at 9:00 P. M. and will continue until the small hours of the night.

At 10:30 A. M. Sunday 18th, the entire delegation will attend church in a body, after which the noon lunch will be served at the fraternity house where the Mothers will again have charge. The conclave will be brought to a fitting close by the holding of a large "Pep Meeting" in the afternoon after which the visiting brothers will begin their homeward journeys.

Several of the alumni were back for "Home-Coming" last month and on Sunday afternoon of November 20th, the actives and alumni met together at the fraternity house in an informal meeting. Brothers Garriott, Telle, and Naab of the Hanover football team were our guests for Saturday evening and Sunday.

Indiana Gamma of Theta Kappa Nu wishes to take this opportunity of wishing all of you a Merry Christmas and a Happy New Year.

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