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THE ROSE TECHNIC.

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No. 3.

THE TECHNIC.

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NOTICE TO SUBSCRIBERS.

Hereafter we shall follow the general rule regarding subscriptions, and shall continue sending THE TECHNIC to subscribers until notified to discontinue.

AROUSSED at last, the Rose Scientific Society has taken its first step this year toward following out the intentions formulated by its charter members two years ago. The election of officers, an account of which is given in another place, insures at least a first meeting for the coming term, and let us make this meeting one that will cause the rest to be successful. Of the advantages of the meetings, only a few are aware.

Heretofore, the programs were arranged to correspond with the articles that were written, as the papers presented at the meetings were, in a measure, voluntary. The voluntary paper is always the best, but the great difficulty encountered at the very outset is to find the man who is running about with a paper in hand asking to present it at the next meeting. The fact of the

matter is, that he is always just hustling around the corner when the Obtainer of Subjects comes in sight.

A slight change has been made in this regard, for the future meetings. A program will be arranged by the council, assisted by Dr. Mees, with the subjects assigned to members of the Society. The program for the whole term will be made out and published. The meetings will be held once a month at an hour taken from class work.

The fear of being called upon, a feeling entertained by some, is in most cases, a result of pure laziness; lack of energy required to spend a few hours outside of the regular work. To be sure, the students of Rose have no small amount of work, the curriculum being arranged to keep them busy; however, the opportunity of investigating subjects which run parallel to the Institute work should be sought for, rather than avoided. The use of apparatus and instruments is granted for such investigations as can be conducted in the laboratory, and assistance from the members of the faculty may be obtained at any time. Think of the results that might develop from such original research. Thoughts and points may be brought out, which, followed up at a later time, may perhaps lead to new discoveries, and open paths to wonderful inventions.

* * *

IT is with much pleasure that we are able to announce the continuance of the course of lectures next term. Those who were fortunate enough to hear those of last year, will surely welcome the good news. Besides being interesting and instructive, they helped to turn our minds for a time from the routine of student life, and in many cases gave us an insight into things natural without the use of integrations, coefficients, factors of safety, and formulæ that meet us on every side. The lectures will not be so frequent as before, which is greatly to be regretted.

THERE will soon come before the Athletic Association the question of making an effort to obtain the State Field Day Meet at Terre Haute next spring. There is a diversity of opinion on the matter, for although the students in general are practically unanimous in wishing to see the meet here, there are some of the older members, taught by past experiences, who are by no means in favor of working for it. Rose has practically had a monopoly of all the meets since the State Association was organized and therefore one of the main questions at issue is, do we wish to continue in the old rut? Heretofore this question has been of secondary importance. The various Indiana colleges have always been perfectly willing to allow Rose to obtain the meet, and, although Butler has invariably signified her willingness to take it in the event of no other college making a bid, there has been no real opposition. This year, however, if we make application we will meet with vigorous resistance from at least one college—Earlham has already declared her intention of working for the meet and their main argument is that as they have faithfully supported the Association since its organization, and have taken an active part in every meet, it would be but a practical recognition of their just claims to give them this opportunity to prove that they have athletes of merit, and to permit them to enter more men into the contests than in previous years. For five years the Earlham contestants have crossed the State to show their interest in state athletics, and the problem which now confronts the athletic associations of the different institutions is this: Is the inconveniencing of one college five times equal to the inconveniencing of five colleges once?

Rose men know what a vast amount of work and responsibility is connected with this entertaining of the colleges at the State Meet, and before making any decision, it is our duty to closely study all sides of the matter. Will our men be willing to do the work which the obtaining of the meet must necessarily entail? Can the Athletic Association, in its condition of financial bankruptcy, assume the responsibility which would be

thrust upon it? Above all, if there is another contestant in the field, would we have a moral right to make the application?

These questions and many others must be given earnest study before the decisive meeting in January and it is the duty of every student to voice his opinion in the matter before that time.

* * *

THE Smithsonian Physical Tables, a book prepared by Dr. Gray, has just been received by him. We find in it a volume of very great value and one especially so to engineers and students of engineering institutions. A copy is on file in the library, and we think that every student of Rose will find it a valuable book to add to his own library, and one that may be continually brought into use.

* * *

DR. GRAY attended the meeting in New York of the American Society of Mechanical Engineers. He makes the following mention of the meeting:

"The annual meeting in New York City of the American Society of Mechanical Engineers, was held from the first to the fourth of December, at the society rooms. The meeting proved very successful, the attendance exceeding five hundred and including many of the most prominent mechanical engineers and steel manufacturers in the country.

The president, Mr. John Fritz of the Bethlehem Iron Works, delivered a highly interesting and instructive address on, "The Progress in the Manufacture of Iron and Steel in America, and the Relations of the Engineer to it." Mr. Fritz sketched briefly the changes which have been introduced in the manufacture of iron and steel during the last sixty years. At the same time he called attention to the great advances in machine shop methods, since the days when the mill-right was depended on for repairs to machinery which in almost all cases, were composite structure of wood and iron, capable of doing any of the roughest kind of work. He compared the days when the mechanic's outfit consisted almost entirely of a two-hand chisel, a sledge, a chipping

hammer and chisel, a file and a ratchet drill; when the lathes had wooden shears and all the work was done by hand; when screws were all cut by chasers and corrected for drunkenness by means of a tool called a doctor, with the present condition of things where machine tools of almost any degree of refinement or size are at the disposal of the engineer to enable him to carry out his designs. As an illustration of the magnitude to which machine tools had reached, he showed a diagram of one of the large lathes in the Bethlehem Iron Works. This lathe was capable of taking in an ingot weighing approximately 100 tons, its cutting tools were one inch by six inches and the lathe was capable of operating twelve of these large cutters simultaneously. Comparison was made between the blast furnaces of 1840, which were capable of producing fifteen to thirty tons per week, with the present furnaces which produce from two to three thousand tons per week. The total production of iron in this country in 1840, which was about 287,000 tons, was compared with the production in 1895, which was about 6,400,000 tons. Many interesting stories were told as to the early difficulties encountered in the manufacture of steel and as to the introduction of the Bessemer, the Thomas and the Siemen's-Martin processes.

The program of professional papers is given below:

- Bessemer, Sir Henry. An Historical and Technical Sketch of the Origin of the Bessemer Process.
- Bonner, Wm. T. Ancient Pompeian Boilers.
- Kerr, C. V. The Moment of Resistance.
- Boyer, Francis H. Work done daily by a Refrigerating Plant, and its Cost.
- Thurston, R. H. Promise and Potency of High Pressure Steam.
- Jones, F. R. and Goddard, A. L. Experimental Investigation of the Cutting of Bevel Gears with Rotary Cutters.
- Laird, J. A. The Calibration of a Worthington Water Meter.
- Shuman, Francis. Contraction and Deflection of Iron Castings.

- Seaver, Jno. W. A 200 foot Gantry Crane.
- Shaefer, J. V. Washing of Bituminous Coal by the Luhrig Process.
- Benjamin, C. H. Friction H. P. in Factories.
- Halsey, Fred'k A. Some Special Forms of Mechanical Computers.
- Wood, M. P. Rustless Coatings for Iron and Steel.
- Lane, H. M. A Method of Shop Accounting to Determine Cost.

Illustrated Presentation of the Report of Progress upon Tests of Fire-proofing Material by Mr. H. de B. Parsons, member of the Society's Committee on this subject.

- Christie, W. W. The Efficiency of the Boiler Grate.
- Hale, R. S. Efficiency of Boiler Heating Surface.
- Goss, W. F. M. Paper Friction Wheels.
- Ball, Frank H. Steam Engine Governors.
- Colles, Geo. W., Jr. Metric vs. the Duodecimal System.
- Waldo, Leonard. Aluminum Bronze Seamless Tubing.
- Waldo, Leonard. The Photographing of Machinery.

Of these papers, probably the most interesting was that by Sir Henry Bessemer on the history of the Bessemer process. His paper naturally introduced many references to the other processes, and much information as to the difficulties which have been successfully overcome in the manufacture of steel. The paper gave rise to considerable discussion on the question of priority of invention and considerable dissatisfaction was expressed as to the sweeping claims which Bessemer made for himself in the paper. There was, however, a general consensus of opinion among those best able to judge, that Bessemer is entitled to the lion's share of the honor. The paper was read by Professor Thurston, and was discussed by Messrs. Durfee, Sterling, Hunt, Kent and others.

The program as a whole was good, and most of the papers will well repay perusal when the volume appears.

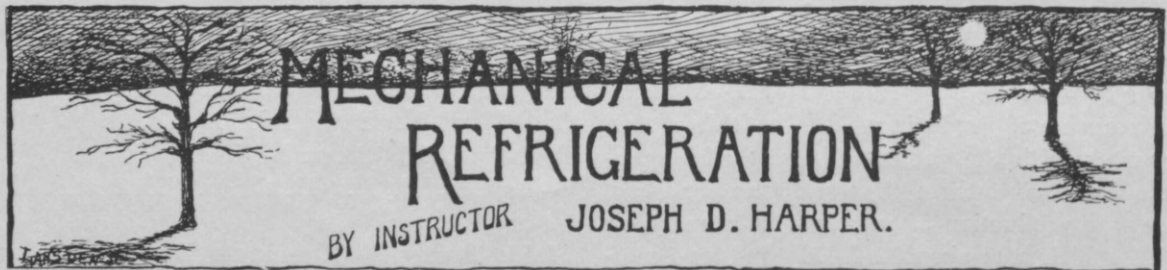
Professor Thurston's paper was an elaborate discussion of the probabilities of high pressure

steam and of the progress already made towards its utilization. Mr. Shuman's paper on the contraction or iron castings was of much practical interest and gave rise to considerable discussion. The same may be said of Mr. Wood's paper on rustless coatings for iron which drew out a discussion of several subjects. The report of the committee on tests of fire-proof materials, showed very

clearly how little dependence can be placed on iron, as such a material, particularly when the building is intended to contain combustible substances."

* * *

CHRISTMAS Greetings are extended to all by
THE TECHNIC.



Mechanical Refrigeration may be described as the process of reducing the temperature of a body, or keeping that temperature below the temperature of the surrounding atmosphere.

This may be affected in various ways, but on a commercial scale only one is in use; *i. e.*, the evaporation of liquids which have a low boiling point. Various liquids are used, such as anhydrous ammonia, liquid carbonic acid, liquid sulphurous acid, ether, Pictet's fluid, etc.; and the amount of cold that can be produced is represented by the latent heat of evaporation. Ammonia is most commonly used as the working substance, as it has no active chemical properties, can be liquified at comparatively low pressure and high temperature, and has a high latent heat of evaporation. In the present article the ammonia machines alone will be considered. They are divided broadly into two types known as the Compression System and the Absorption System.

COMPRESSION SYSTEM.

In the compression system the working sub-

stance or charge is in the anhydrous form, such as liquified ammonia gas. The operations are continuous and form a complete cycle; the working substance returning periodically to its original state.

Liquid anhydrous ammonia evaporates to a gas or vapor in coils of pipe called the expansion or refrigerating coils. The heat necessary for this expansion is absorbed from the air of the room to be refrigerated or from the salt brine in which the coils are submerged. Leaving the coils, the expanded vapor enters the compression pump, or compressor, where it is compressed to a dense vapor and forced into a second series of coils called the condenser. These condensing coils are cooled by running water which removes the heat absorbed in expansion and also that acquired in compression. Under the combined pressure and cooling, the ammonia condenses to a liquid and passes down to a small receiver. Here it is once more liquified to anhydrous ammonia and enters the expansion coils through a regulating valve to repeat the cycle.

COMPRESSORS.

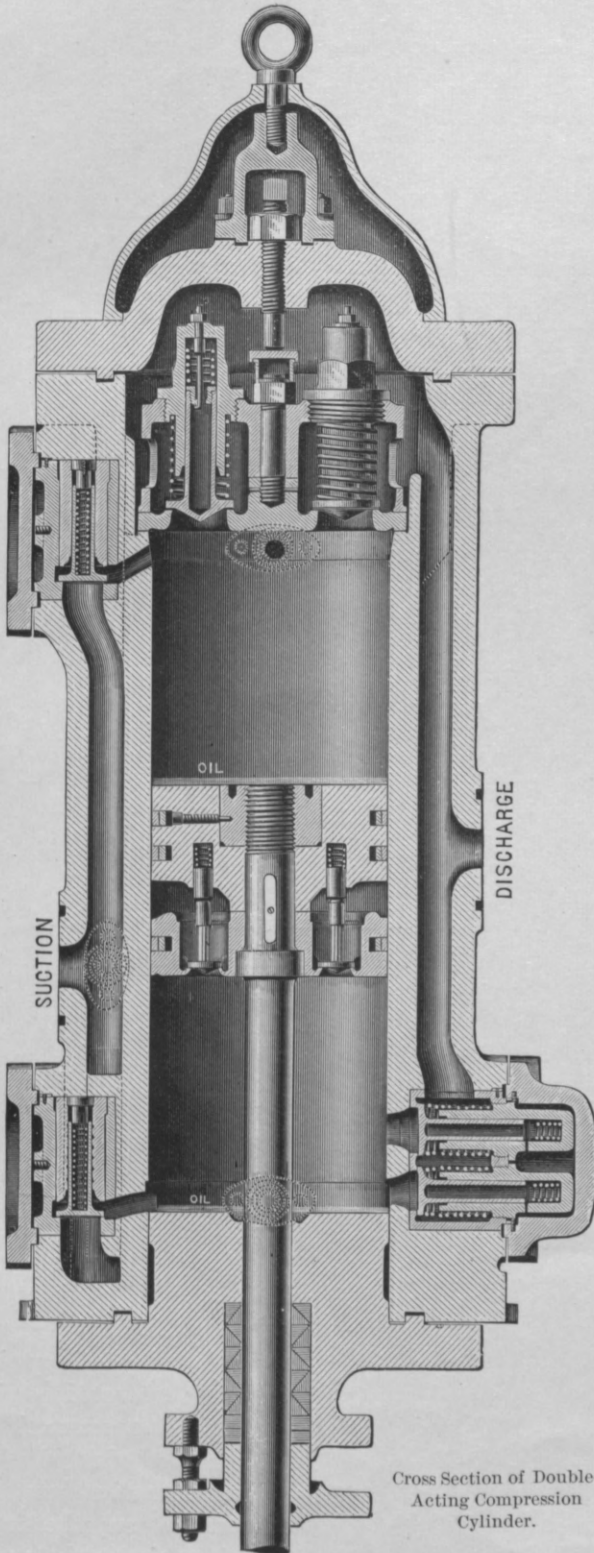
The compressor is generally worked directly by a steam engine of Corliss pattern, making from forty to eighty revolutions per minute. The compression cylinders may be either single or double acting and one or more in number. Double acting cylinders require extra long and heavy packing around the piston rod in order to resist the pressure and action of the hot ammonia vapor. All parts of *any* ammonia system must be of iron or steel, as copper, brass or bronze cannot be used in contact with ammonia.

Machines are rated either by their refrigerating capacity or by their ice-making capacity; the latter being usually taken as one-half the former. A refrigerating capacity of one ton per twenty-four hours, means that the machine will produce a cooling effect equal to that of one ton of ice at 32° F. melting to water at 32° F. The actual ice-making capacity of this same machine, however, will be about one-half ton per twenty-four hours.

The capacity of a compressor depends not only on its cubic capacity and speed, but also on the prevailing working conditions, *especially* on the temperature of the condenser and the expansion coils. Under ordinary conditions a compressor capacity of four cubic feet per minute may be taken as equivalent to a refrigerating capacity of one ton per twenty-four hours.

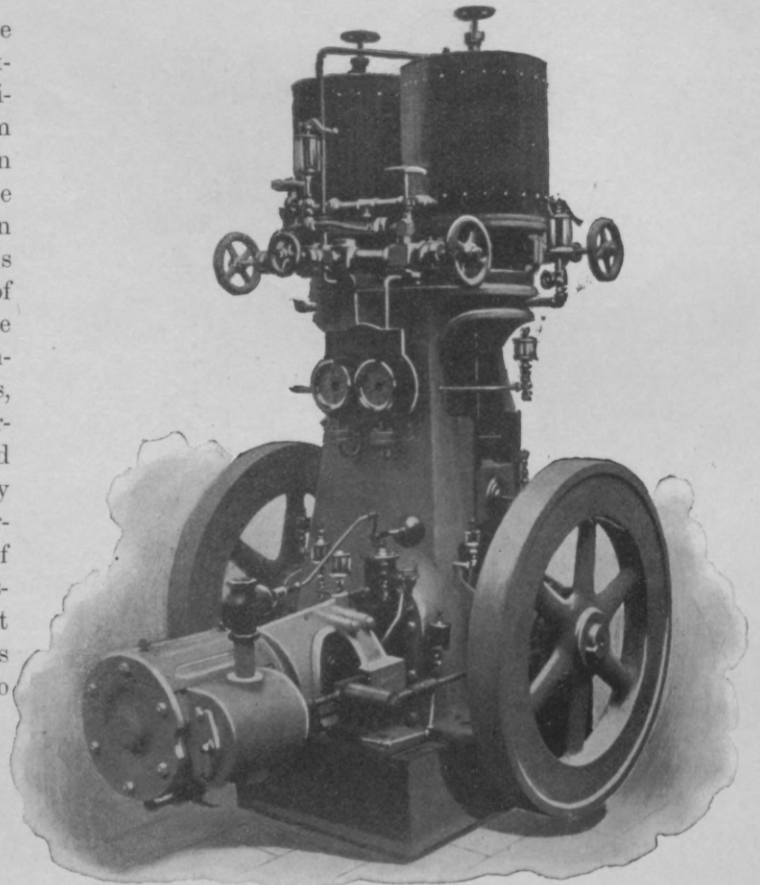
Construction details of compressor cylinders are similar to those of steam cylinders, especial attention being given to low speed and small clearance. Each acting end of the cylinder has two valves, one for the admission of the vapor and one for its escape to the condenser. The amount of compression is regulated by a spring or weights on the escape valve; the usual compression being from 150 lbs. to 170 lbs. per sq. in. The ammonia in the refrigerating coils cannot be expanded to a pressure lower than that necessary to lift the admission valve.

The lubrication of the compression cylinders is a rather difficult problem as the oil is not dis-

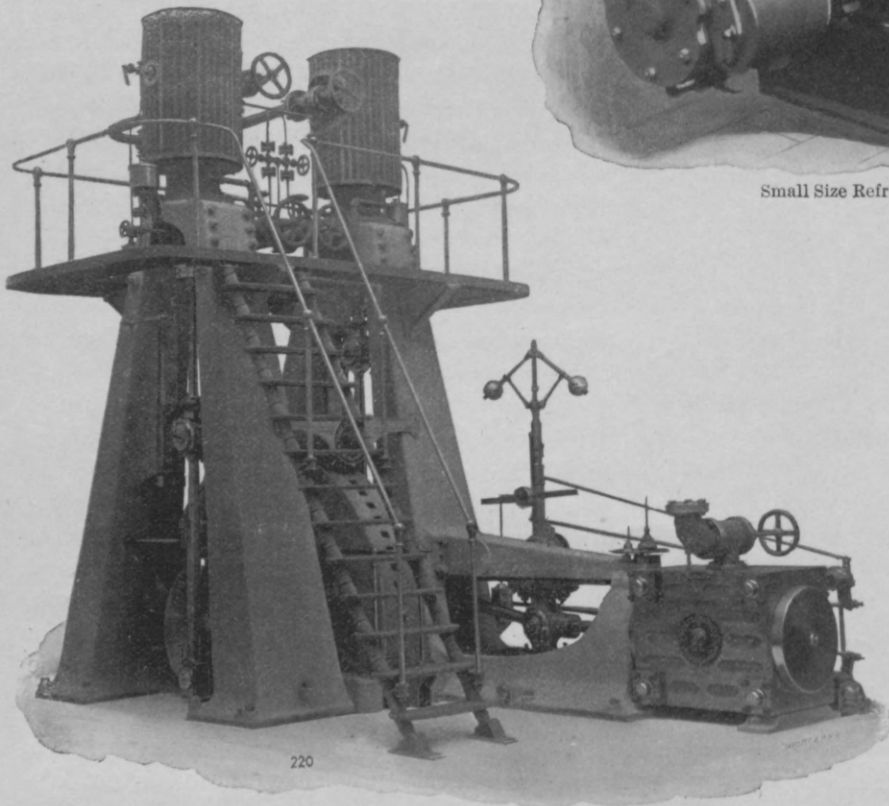


Cross Section of Double-Acting Compression Cylinder.

tributed over the entire interior surface as is the case with steam cylinders. Experience shows that it is almost impossible to keep a horizontal compressor from running dry on top, and for this reason the best modern practice favors the vertical type of compressor. Lubrication of the cylinders, though necessary, leads also to serious annoyance and loss of efficiency, as the oil is carried over by the ammonia to the condensing and expansion coils, and, collecting at the returns, clogs the machine. Oil traps and numerous devices, between the compressor and condenser, are in use, but are not entirely satisfactory. The best machines have arrangements for reversing the direction of the ammonia thus emptying the condensing coils, after which the oil is blown out by steam. A further objection to this lubricating oil is advanced by some who



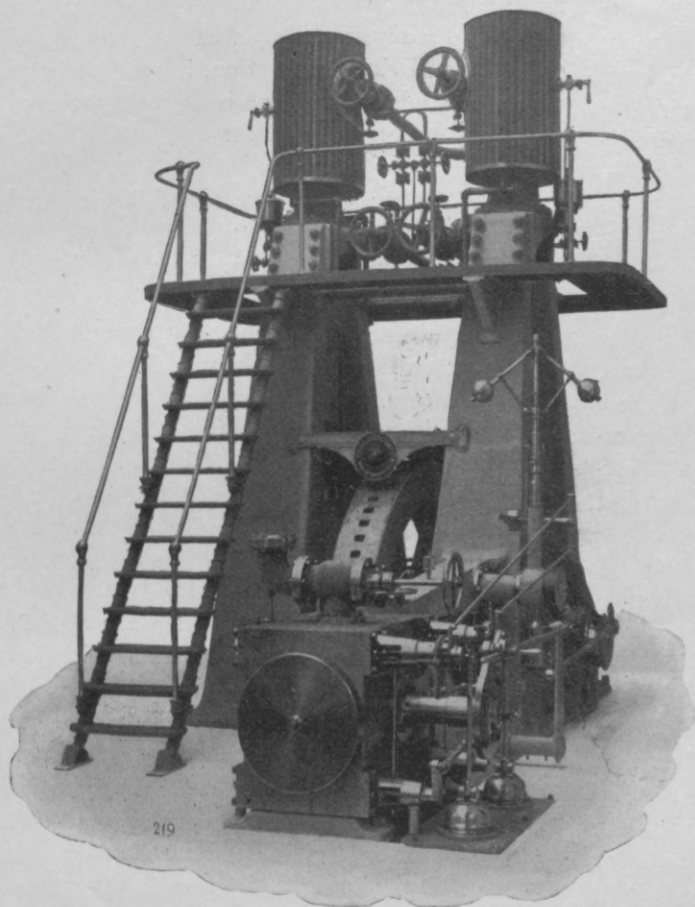
Small Size Refrigerating Machine.



50 tons Ice Making Machine with non-condensing Corliss Engine.

claim that while ammonia vapor is not combustible nor a supporter of combustion, yet, when this hot vapor is charged with oil, it becomes a combustible and explosive mixture. Some recent accidents seem to support this contention.

During compression a certain amount of heat is evolved and must be removed in order to keep the vapor in a saturated condition in the compressor. The different methods taken by various manufacturers to counteract superheating, have given rise to the vari-



90 tons Refrigerating Machine with Simple Corliss Engine.

ous types of machines known as dry compressors, wet compressors, water-jacket compressors, oil-seal compressors, etc., etc.

Wet compressors, such as the Linde, are those in which a surplus of anhydrous ammonia enters the expansion coils and passes unchanged to the compressor. There, by its evaporation, it takes up the heat of compression and maintains the vapor in a saturated condition. The pipe leading from the expansion coils to a wet compressor should, of course, be carefully insulated to prevent the evaporation of this surplus ammonia before it reaches the compressor. This precaution is often neglected and a frosted pipe results—a condition known technically as “freezing back.”

Dry compressors work without excess ammonia

and superheating is prevented in various ways. Some have single acting cylinders in which the gas has free access under the piston head, thus cooling the cylinder and piston.

The De LaVergne machines have vertical compressors in which refrigerated oil is circulated by a small pump, thus removing the heat of compression and lubricating the cylinder at the same time. Enough oil may be used to fill the clearance space, whence arises the term “oil-seal compressors.”

Water jackets, through which cold water or brine circulates, are also used to counteract superheating.

CONDENSERS.

The condenser consists of a system of pipes forming a coil into which the compressed ammonia vapor is forced by the compressor. These pipes are either immersed in a tank through which cooling water circulates or are hung up in the open air and have cooling water trickling over them from a perforated gutter above the top pipe. The former is called a submerged condenser and the latter an open air condenser. In passing through the condenser the ammonia vapor gives up to the cooling water the heat absorbed in the refrigerating coils and condenses to liquid anhydrous ammonia as previously stated.

Condensers are usually built of $1\frac{1}{4}$ to 2 in. pipe and are divided into sections. These sections are connected at both ends to common manifolds in such a way that one or more may be disconnected for repairs or cleaning without stopping the machine.

In a submerged condenser the hot vapor enters the coils at the top and the liquid ammonia leaves at the bottom. The cooling water should enter the tank at the bottom and pass out at the top. In the open air style the water drips over the pipes from the top and the ammonia enters at the bottom. A vertical manifold at the side

collects the liquified ammonia as fast as it is condensed.

As the efficiency of the condenser is a large factor in the economic operation of a machine, a generous condenser surface should be provided.

The necessary piping for condensing and expansion coils can easily be calculated theoretically as, in fact, can all other dimensions of refrigerating machinery. The working conditions, insulation, temperature of water, etc., modify these results so largely, however, that empirical rules based on experience are generally more accurate. Practice indicates that, for incoming cooling water at 75° F., which may be taken as an average working condition, 40 sq. ft. of condenser surface should be provided for each ton refrigerating capacity per 24 hours.

The amount of cooling water varies with the temperature and is ordinarily from four to seven gallons per minute, for each ton actual ice-making capacity per 24 hours.

Open air condensers require much less water than the submerged type; in many instances not more than one-half. This is due to the fact that *all* the water comes in contact with the surface to be cooled and especially to the cooling of the water by its own evaporation as it trickles over the pipes. All condensers should be built high and narrow rather than broad and low.

EXPANSION COILS.

The expansion coils are built up from pipe varying in size from one to two inches, according to circumstances. The surface of the coil is proportional, both to the cubic capacity of the room or tank to be refrigerated, and to the temperature to be maintained.

The quality of the insulation is such a large factor that experience is the best guide.

Roughly, the piping may be estimated from the following:

For brine tanks of ice-making plants, 250 to 300 running feet of 1½ in. pipe should be allowed for each ton of ice to be manufactured per 24 hours. One-half this amount for each ton refrigerating capacity.

For refrigerating rooms two systems may be

used; Direct Expansion, in which the ammonia expands directly in coils placed in the room to be chilled, and Brine Circulation, in which the ammonia expands in coils in a brine tank,—the cold brine being then pumped through coils placed in the rooms.

Liberal assumptions give the following rules for piping direct expansion:

One running foot of 2 in. pipe for each 10 cu. ft. of space in rooms to be kept at 10° F. to 20° F.

One running foot of 2 in. pipe for each 20 cu. ft. of space in rooms to be kept at 32° F.

One running foot of 2 in. pipe for each 60 cu. ft. of space in rooms to be kept at 50° F.

Or it is often assumed that 300 ft. of 1¼ in. pipe will distribute one ton of refrigerating capacity and maintain 4,500 cu. ft. of cold storage capacity at 32° F. to 35° F..

Brine circulation requires 1.5 to 2 times as much piping as direct expansion. This is due to the higher temperature of the brine and its slower circulation.

Lower temperatures can be maintained by direct expansion, which in many ways is superior to brine circulation for refrigerating purposes. The latter, however, admits of the plant's being shut down for several hours, as for repairs, while the brine pump continues in operation,—the large brine tank acting as a storage reservoir.

All coils in cold storage rooms should be built in sections connected to common manifolds, and arranged for the thawing off of the collected frost which impairs the absorption of heat.

ABSORPTION SYSTEM.

In the absorption system the condenser, expansion or refrigerating coils, and general details are the same as for the compression system. Also the operations taking place in this part of the machinery.

The difference lies in the nature of the charge and in the operations taking place after the ammonia leaves the expansion coils, and before it reaches the condenser.

The charge is strong *aqua ammonia*, usually 28° to 30° B., and the series of operations form a continuous compound cycle.

The aqua ammonia is heated in a still or generator and NH_3 is driven off at a pressure of from 120 lbs. to 180 lbs. per sq. in. Passing out of the top of the generator to the condenser, this ammonia vapor condenses, under the pressure and cooling, to liquid anhydrous ammonia.

Entering the expansion or refrigerating coils it performs the required work precisely as in the compression system, and leaving these coils, it enters the absorber. Meanwhile, the weak ammonia liquor, from which the NH_3 has been

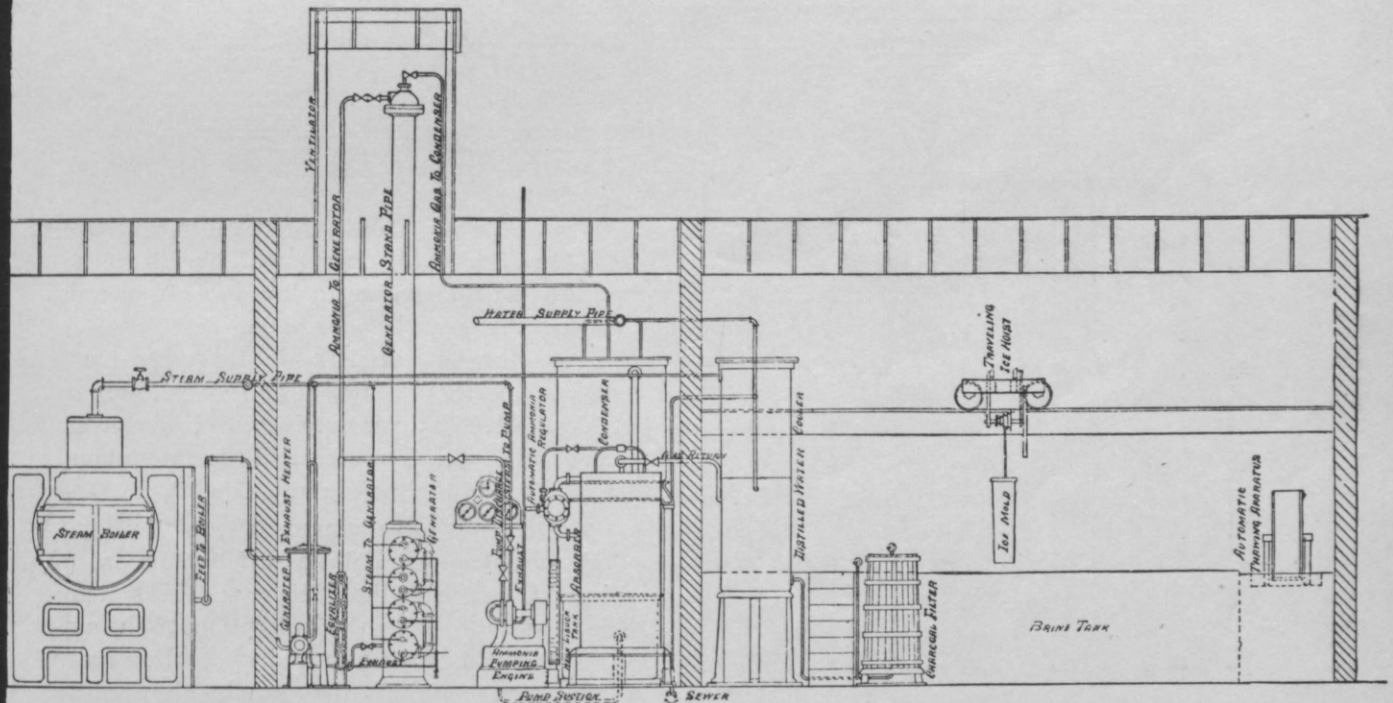
generator, the gas is again driven off and the cycle repeated.

GENERATORS.

Stills or generators, are built in a variety of shapes, the main object being to drive off as much of the gas as possible and have it free from watery vapor.

The heating is always done by steam coils within the generator.

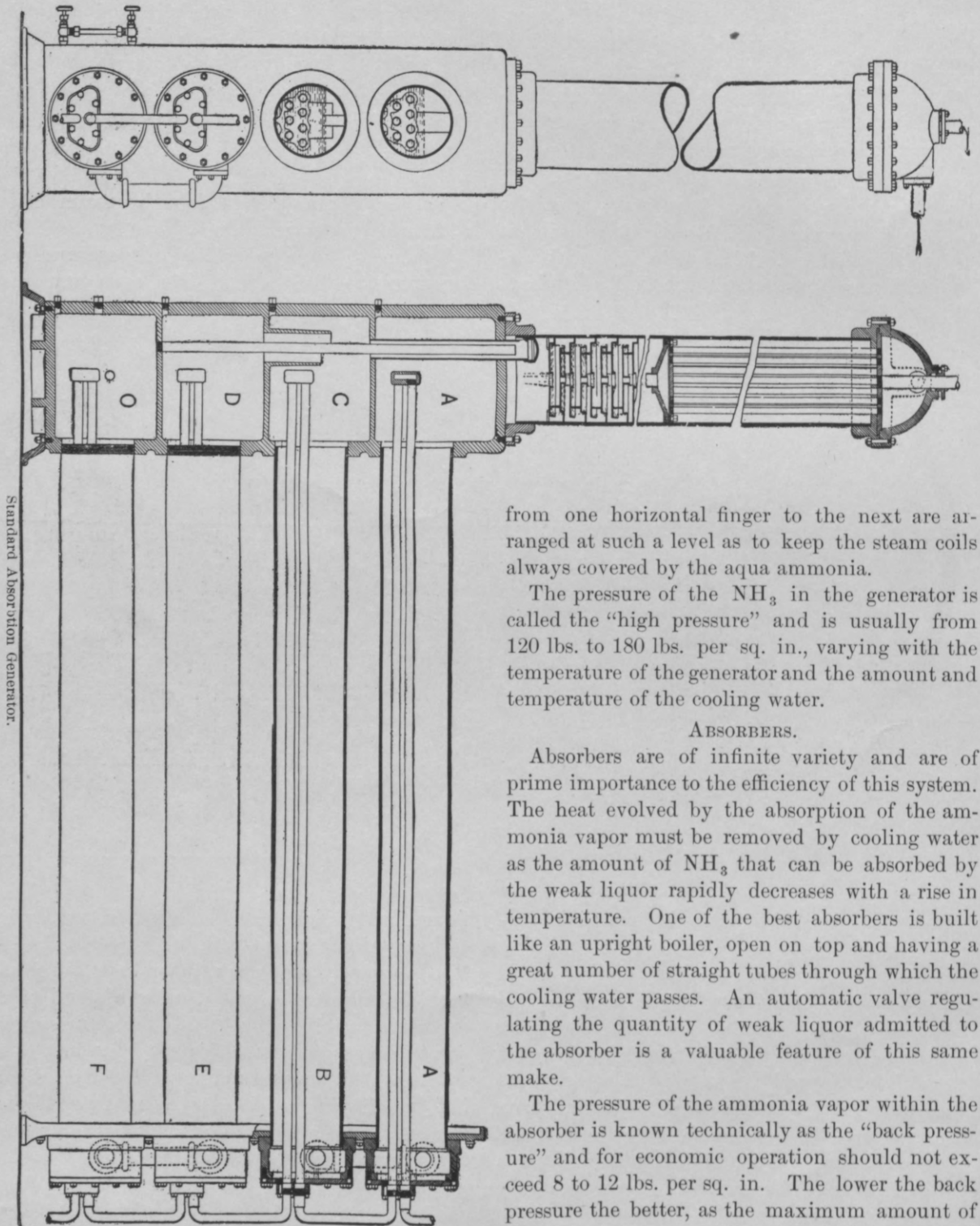
The most efficient generators are those arranged for successive distillations. The aqua ammonia



Side Elevation for Absorption Ice Plant.

driven off, is forced out at the bottom of the generator by the pressure of the gas above. This weak liquor passes through a series of pipes called the exchanger, then through a cooling coil and finally enters the absorber. Here the weak liquor re-absorbs the ammonia vapor entering from the expansion coils and becomes again strong aqua ammonia. This strong liquor is pumped from the bottom of the absorber by a small ammonia pump to the top of the generator, passing through the exchanger on the way. Having reached the

flows through large horizontal pipes or fingers, each containing a steam coil, and is repeatedly distilled, leaving a very weak liquor to escape from the last or lower finger. Usually a stand pipe containing a coil is added. The incoming strong liquor circulates through this coil before reaching the horizontal fingers and is heated by the hot NH_3 passing up the stand pipe on its way to the condenser. Also this coil serves to dry the gas as the suspended watery vapor is deposited on the surface of the coil. The overflow connections



Standard Absorption Generator.

from one horizontal finger to the next are arranged at such a level as to keep the steam coils always covered by the aqua ammonia.

The pressure of the NH_3 in the generator is called the "high pressure" and is usually from 120 lbs. to 180 lbs. per sq. in., varying with the temperature of the generator and the amount and temperature of the cooling water.

ABSORBERS.

Absorbers are of infinite variety and are of prime importance to the efficiency of this system. The heat evolved by the absorption of the ammonia vapor must be removed by cooling water as the amount of NH_3 that can be absorbed by the weak liquor rapidly decreases with a rise in temperature. One of the best absorbers is built like an upright boiler, open on top and having a great number of straight tubes through which the cooling water passes. An automatic valve regulating the quantity of weak liquor admitted to the absorber is a valuable feature of this same make.

The pressure of the ammonia vapor within the absorber is known technically as the "back pressure" and for economic operation should not exceed 8 to 12 lbs. per sq. in. The lower the back pressure the better, as the maximum amount of

work will be done in the expansion coils when the anhydrous ammonia expands to as low a pressure as possible.

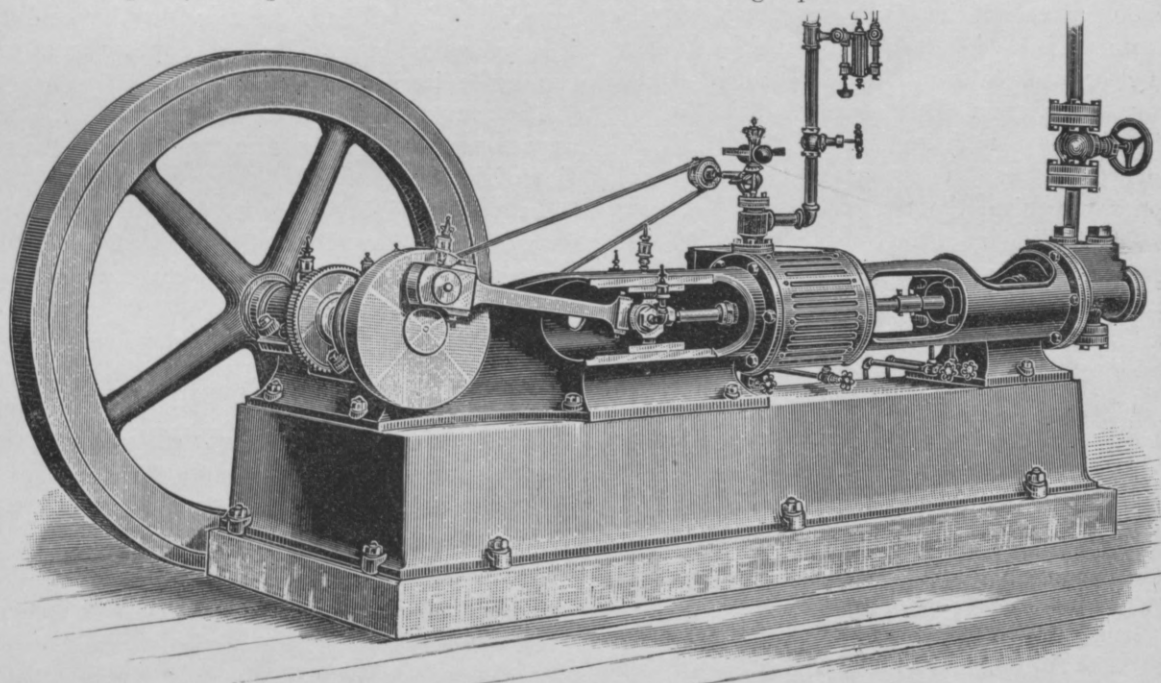
It is a noticeable fact that many of the earlier builders of absorption machines failed to appreciate this feature and built machines to work with a high back pressure. Probably because increased pressure increases the amount of gas that will be absorbed at a given temperature.

Modern practice is in the direction of increased absorber capacity and greater area of contact for

ing conditions—i. e., strong liquor 30°B., weak liquor 14°B—a plant of ten tons actual ice-making capacity per 24 hours, requires a double acting pump cylinder 3 in. diam. and 8 in. stroke, making about 25 strokes per minute.

The packing around the piston rod must be extra long and heavy, as the liquor is pumped against the high pressure in the generator.

The pump should always be lower than the bottom of absorber to prevent any lifting effect on the strong liquor.



30 ton Standard Ammonia Pump.

the gas and liquor, thus holding the back pressure down as low as possible. Back pressure also varies with the temperature and amount of cooling water and the temperature of the expansion coils.

AMMONIA PUMPS.

The ammonia pump is the only moving part in the absorption system and is a small affair running at slow speed. The size of the pump cylinder and the speed depend not only on the size of the plant, but also on the strength of the strong and weak liquors. Under average work-

EXCHANGER.

The exchanger or equalizer, is a device to save the heat carried away from the still by the weak liquor by imparting this same heat to the rich liquor on its way to the still. It consists merely of a coil of double pipes, one within the other. The hot weak liquor passes through one pipe and transfers its heat to the cool rich liquor passing through the other pipe in the opposite direction.

WEAK LIQUOR TANK.

The weak liquor, before entering the absorber,

is usually further cooled by passing through a submerged coil. The water used to chill this coil is commonly the same that has been used to cool the absorber.

For both systems *all* parts should be of the very best material and extra heavy.

Probably more compression machines are in operation in the United States than absorption machines, but for the manufacture of artificial ice, 80 per cent. of the plants use the absorption system. Distilled water *must* be used in the cans if a clear marketable product is desired. In the absorption system the steam from the heating coils of the generator is condensed to furnish this distilled water. In the compression system, economy requires the use of the exhaust steam from the cylinders of the compressor engine. The lubricating oil must be removed from this exhaust steam by the so-called oil traps and as yet a satisfactory and inexpensive method of *actually* removing the lubricating oil has not been devised.

The plate system of ice making, however, does not require the use of distilled water and for large plants seems fairly successful.

The application of mechanical refrigeration to ice-making, cold storage, etc., is so simple that a description of the methods is omitted from this sketch.

A comparison of the two systems, Compression and Absorption, is difficult, as local conditions and the nature of the work largely determine which style of plant should be used.

Where cooling water is expensive or becomes very warm during the summer months, the compression system is probably better. For the amount of compression given to the ammonia vapor can be increased to suit the conditions.

For ice-making purposes the absorption system seems to be generally preferred. Often the absorption system is installed under adverse conditions by arranging to chill the cooling water before use. This is cheaply done by allowing it to trickle over rods or shallow trays exposed to a draught of air. Where water is very expensive it may be used repeatedly by adopting suitable cooling devices.

The compression system is more imposing in appearance, but usually requires the close attention of skilled attendants.

In technical journals devoted to refrigeration interests about four-fifths of the space is given to the troubles of the compression system and the remedies therefor.

The operating cost of large plants under first-class management is practically the same for both systems.

Machines using other substances than ammonia for the working mediums are numerous, especially in Europe and present many interesting features. Their general construction, however, and plan of operation does not vary materially from that of the ammonia machines.

[The author is much indebted to Sulger-Vogt Machine Co. of Louisville, Ky., Frick Co. of Waynesboro, Pa., and De La Vergne Co. of New York, for the use of their cuts.]





Miller, '95, writes some interesting notes about the Louisville men. We give below a part of his letter: "Glad to hear of the eleven's success this year. I am sorry you could not arrange a game with the athletic club here. Perhaps you would be interested to know that Troxler is with the Louisville Railway Company, as are Mundy and myself. Mundy is superintendent of the power station. I am the foreman of the repair shop. I find life now quite different from college life, here we do not have even three unexcused. Speed, '95, is with his father as purchasing agent of J. B. Speed & Co. Speed, '94, is in the electrical firm of Wood & Speed, and is doing well. Barton, ex-'95, is with the Southern Railway, at Washington, as is Coope, ex-'96. Robinson, '95, is electrician for the Southern Railway, with headquarters at Knoxville, Tenn."

O. E. McMeans, graduate of '96, and present instructor in department of drawing, was married to Jennie W. Fox at the home of the bride's parents southeast of this city, on Thanksgiving afternoon, at 3 o'clock. The wedding was a quiet and charming affair, the ceremony being witnessed by some twenty friends and relatives. Lunch and refreshments were served, immediately after which the bridal party took the 5 o'clock train for Richmond, and other points in Eastern Indiana. Upon returning, after a stay of a few days, Mr. and Mrs. McMeans entered their new home at 1333 North Eighth street, where they

will be at home to their many friends after December 15th. THE TECHNIC joins their many friends in offering hearty congratulations.

At a meeting of the Rose Tech Club of Indianapolis, December 5th, four new members were admitted: Fogarty '92, Brown '94, Shaneberger '95, and Huthsteiner '93. Three state associations meet there during the holidays, the Indiana Academy of Science, Indiana State College Association and State Teachers' Association, and the Club has a surprise in store for the faculty of Rose when they go over to attend the meetings.

On November 27th Morton C. Andrews was united in marriage to Miss Flo Menifee, at the home of the parents of the bride, State Line, Ind. Mr. Andrews was instructor in the civil department in '94-'95, and is now superintendent of the Williamsport Stone Co., Williamsport, Ind.

THE TECHNIC extends congratulations.

Brown, '94, was called home Monday, December 7th, by the sad news of his mother's death. He remained in the city about a week, and was seen at the Institute several times, where he was conducting a carbon analysis.

Hood, '85, has been engaged during the past summer with a series of pump tests, and last month read a paper on that subject before the Kansas Irrigation Association at South Bend, Kas.

Frohman, '94, is traveling for O. Hommel & Co., Pittsburg, Pa., manufacturers and importers of bronze and aluminium powders, gold-leaf, lacquers, etc.

Fogarty, '92, is now superintendent of the Cam-

bridge City Punch, Shear and Roll Co., Cambridge City, Ind.

Carr, '96, is soon to take the position of superintendent of coach department at the car works.

Bixby, '92, has severed his connection with the Metallic Manufacturing Co., of Indianapolis.

P. W. Klinger, '96, is at present in the milling business with his father in Greenville, Ohio.

Burtis, '95, has taken a position with the Automatic Coal Recorder Co., of Denver, Colo.

Wells, '96, and Beebe, '96, have removed their office to the Rose Dispensary.

Allen, '93, has changed his offices to the Baldwin Block, Indianapolis.

Harris, '96, has obtained a position with the Armour Co., of Chicago.

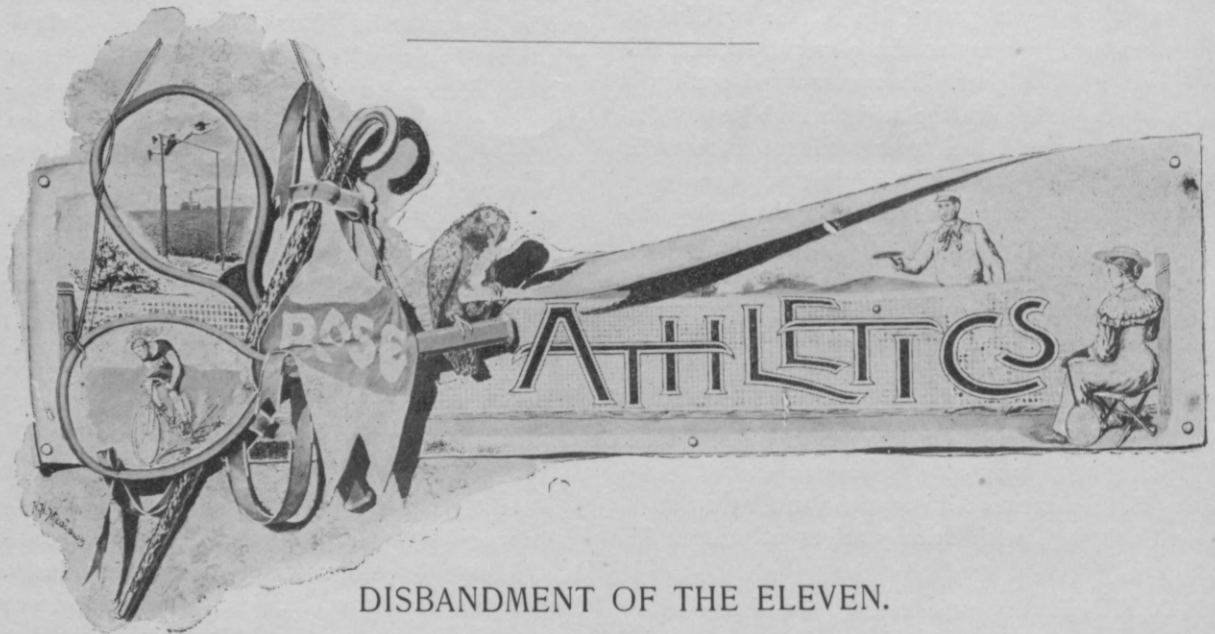
Rock, '92, has become an engineer in the U. S. revenue service, and is stationed on the Pacific coast.

Rice, '96, is with the Western Union Telegraph Co., of New York City.

Rose, '92, is with the C. C. C. & St. L. R. R. Co., at East St. Louis.

Huthsteiner, '93, rejoiced in the arrival of a daughter last month.

Werk, '96, was in the city recently, the guest of Wells, '96.



DISBANDMENT OF THE ELEVEN.

"Sacred to the Memory of the Football Team.
Died November 20, 1896."

Such were the sad and solemn words which met the casual eye of the student as he sauntered by the bulletin board on the date mentioned. He stopped in amazement; it was incredible he told himself; it could not be. What! our team, which had worked hard the season through, had held its own well, and which bade fair to wind up the year with a good game on Thanksgiving day, could it

disband? It certainly could! But how it did, very few clearly understand. From the very beginning of the season the manager had been incessantly jumped upon for his reluctance to schedule games. For reasons already known, Rose was entered into no regular schedule, and this made it necessary to depend entirely on the open dates of other colleges for games. Two chances came in a bunch, one offer from DePauw and another from Indiana University, but that

excursion to Louisville cut such big holes in the team that no one dreamed of accepting either of them. Then came the game with Indianapolis University; after that, nothing in sight. It looked discouraging. Then came the offer from DePauw for a Thanksgiving game here or there. A meeting was hastily called, the offer considered and finally accepted, despite the opposition of some members of the team. There was vigorous practice for several days until November 20th, the fatal day, when a telegram from Indianapolis was received asking for a return game on the morrow. Here was a chance to seek revenge on the enemy's field; here they longed for date that the men had talked about till they were weary, here was what the manager had written a hundred letters to get. Surely we'd go. But, alas, flat opposition from most of the men met the offer. The management stood aghast; what did the men want? They answered that what they didn't want was to be defeated, bruised, battered, scattered; that they weren't in condition to play; that not all the men could go; more particularly, that the Sophs wanted to play the High School on the next day and some of the regular men would be needed; that was important.

The captain raved and tore his hair. He cursed, pleaded, argued and commanded, but to no purpose. Some of the men remained obdurate and threatened all sorts of dire things if acceptance was wired. What to do? The management scratched its head and thought hard. Did the team want to play any more at all? Well, they'd toss up a dollar to find out. That settled it. Such indifference could not be tolerated. With tears in its eyes, the management announced that all games would be cancelled and the team could consider itself disbanded. Dramatic and effectual.

Such is the history of the team's death. Surely we can not sufficiently condemn the action of team and management. The latter should have held the men together at any cost and is to be blamed for at least not holding to the Thanksgiving game. The team is to be criticised for its inconsistency and lack of interest; things have

come to a pretty pass when school spirit is subordinated to class feeling or when prospective defeat causes the men to shrink from playing the game. The action of the team will have anything but a salutary effect upon football at Rose, and undoubtedly the men who were most active in the disintegration of the eleven will next year most deeply regret their action. Ye football men ponder over it. Ye '97 manager take heed.

ATHLETIC WORK.

Every man who expects to take part in the State Field Day next spring, should come back after the holidays with the intention of going into the gym to commence regular training for his event.

Heretofore, Rose men have entered Field Meets without having had half the necessary training.

The reason was, as then stated, they had no place to train until spring was far enough advanced to allow for work out of doors. As we now have the gym, practice may be had in every event, or in work which will be of assistance in that event.

A man cannot train directly in the gym for throwing the hammer, but he can, by proper work, get his muscles and wind in good condition; these are the first and fundamental requirements in hammer throwing.

A full set of hurdles cannot be placed in the gym, but two or three can, and practice upon these, with a small amount of out-door work, will make a man quite an expert hurdler. As proof of this, I point you to the man who has carried off the honors in the hurdle races of the last several State Meets. Some of his friends told me that all of his training was done with less than half the required number of hurdles.

For men whose intention it is to enter the runs, fifteen times around the gym is a distance of over one-half of a mile. One cannot get the speed by running indoors, but he can get the lung capacity and the motion.

A gymnasium shot is soon to be purchased, and this, with the exception of a vaulting block, will make nearly complete the apparatus needed for indoor work.

After the holidays each class will be asked to elect a captain for its athletic team, then during the winter term several athletic contests between the classes, and possibly one or two with outside teams, will be held, the list of events for the State Meet being followed out as closely as possible.

A. G. SHAVER, '97.

Manager of Field Sports.

FRESHMEN PLAY BASKETBALL.

Saturday morning, November 28th, during the regular gymnasium hour, Physical Director McMeans being absent, the Freshmen played basketball, Sec. A against Sec. B. The line-up was as follows:

SECTION A.	POSITION.	SECTION B.
Hegarty	R. F.	Kidder. Capt.
Pfleging, Capt	L. F.	Helmer.
Huthsteiner	C.	Richardson.
Hanley	R. B.	Avery.
McCosker	L. B.	Appleton.

Umpire—Meriwether, '00.

Referee—Stilz, '98.

Timekeeper—Mees, '00.

Section A won by the score of 11 to 0. The main feature of the game was the goal throwing of Pfleging and Hegarty. The playing showed that several of the Freshmen will make good material for the school team when it is organized.

THE THANKSGIVING GAME.

If any doubts existed prior to the game on November 26 as to which class team was entitled to the school championship, they were surely destroyed when '99 again defeated '98 by the close score of 6-4 on that date. When, earlier in the season, the Juniors suffered defeat at the hands of the Sophomores, it was generally thought that had each half been ten minutes longer the Juniors could not have failed to score, and might possibly have won the game. On Thanksgiving day there was time and plenty of it, but the Juniors never had a ghost of a chance of winning. They were clearly out-played at every point and their only score must be accredited to carelessness on the part of the Sophomores, rather than to scientific playing.

The game had been extensively advertised by

the Juniors, as the receipts were to go toward defraying the expenses of the "Modulus '98," and in spite of the rain which fell intermittently throughout the time of play, a good sized crowd was out to see the fun.

The toss was won by the Sophomores, and they chose the south goal, thus having the wind in their favor. At promptly 3 o'clock the referee's whistle blew, and Austin's toe sent the pigskin thirty-five yards into the '99's territory. Trumbo caught and bunted back to '98's fifty yard line, where the ball was fumbled and '99 secured possession of it. In this half both teams bucked the line incessantly, recourse being had to end plays in but two or three instances, and these invariably resulted disastrously to the side using them. The playing was execrable and there was any amount of fumbling. The blame for this can be largely laid to the slippery condition of ball and field, still it was easily seen that the men of both teams were excited and were unable to settle down to steady work. The ball seldom got more than a few yards from the center of the field in this half and the lack of long runs or brilliant plays made the game without interest.

But in the second half, everything was changed. Trumbo kicked off beautifully to Austin on the twenty yard line. Austin caught and carried the ball forward ten yards. '98 was unable to gain ground and the ball was given to '99 on downs. '99 now played in a different style and with more snap. Stone circled R. E. for ten yards and Kittredge went around the left for five more. This brought the ball to the twenty yard line, and it was again given to Stone, who, protected by a fine interference, ran the end for a touch down. Stone kicked goal.

Montgomery kicked off ten yards to Thompson. Thompson advanced the ball two yards before being downed. Kittredge, Stone and Jumper then carried the ball around the ends and through the center successively and '98 was rapidly shoved down the field. It looked liked another touch-down for '99, when in some inexplicable way, Lansden broke through, seized the ball as it was about to be carried around left end, and ran

the whole length of the field for a touchdown. Austin failed at kicking goal.

Trumbo kicked off to '98's fifteen yard line. The ball was fumbled by Pirtle and Roberts, and no ground was gained. '98 rallied, and for the first time, made good gains around the ends. Ford and Roberts each made several yards and for the time being, '99 lost all control of itself so that the Juniors gained ground at will. The game was called with '98 in possession of the ball at about the center of the field. The line-up:

'98.		'99.
Scott	R. E.	McLellan
Hubbell	R. T.	Schwed
Kidder	R. G.	Schwable
Montgomery	C.	Thompson
Freudenreich	L. G.	Keyes
Whitten	L. T.	Davis
Austin	L. E.	Edwards
Stilz, Pirtle	Q. B.	Trumbo
Ford (Capt.)	R. H. B.	Kittredge (Capt.)
Roberts	L. H. B.	Stone
Lansden	F. B.	Jumper

Substitutes, '98—Pirtle, Voorhes; '99—A. Kidder, W. Krebs.

Thirty and twenty-five minutes halves.

Umpire: Lufkin, '97.

Referee: Franklin, Y. M. C. A.

Injured: Stilz, metacarpal bone of left hand broken; Austin, left ankle sprained; Ford, fracture of proboscis.

MEETING OF DIRECTORS.

The regular monthly meeting of the Board of Athletic Directors was held in Dr. Mees' office Friday noon, December 4. All the directors were present with the exception of Howell, '99.

After routine business had been transacted and the old complaint of scarcity of dues listened to, on motion of Hellweg, '97, it was decided to elect the managers of the various school teams for the succeeding year. First, came the election of football manager. Shaver, '97, nominated Lansden, '98, and Appleton, '00, nominated Ford, '98. After some discussion, Ford's name was withdrawn, and Lansden being the only candidate in the field, was declared elected. For baseball manager, Lansden nominated Hubbell, '98, who was elected by acclamation. Pflieger, '99, was nominated by Hubbell for basketball manager, and

there being no other nominations, was declared elected.

It was decided to hold the election for captain of the next season's football team on the next day between the hours of 10 and 12 A. M., at the office of the Registrar of the Institute, the men entitled to cast votes being the eleven regular members of the team and the four regular substitutes. There had always been some confusion at previous elections, and this method was adopted as the most satisfactory one.

Pflieger stated that a city basketball league was to be formed, and that if it was so wished, Rose Tech might be represented in it. Some discussion ensued in regard to having basketball games in the gymnasium. While the conveniences for seating spectators at such a game would not be of the best, it was thought that at least one hundred could be accommodated. It was considered advisable to formulate some plan for raising money to meet outstanding debts, and it was suggested that games in the gymnasium would be the best way in which to do it. The meeting then adjourned to the first Friday in January.

ELECTION OF FOOTBALL CAPTAIN.

Between the hours of ten and twelve o'clock on Saturday morning, December 5, the election of the captain of the football team took place. Ballots were dropped into a box at the office of Registrar, and after all had voted, it was opened by the officers of the Athletic Association and the ballots counted. There were three men in the field, Austin, Ford and Lansden, all of '98. The first named having received a majority of all votes cast was declared elected.

A SUMMARY AND AN OUTLOOK.

In looking over the football season and comparing the results achieved with the prophecies made early in the year, we may say that everything turned out as was foretold. To be sure, some unexpected things did happen. We never imagined for a minute that we'd defeat Wabash on her own grounds, nor did we expect to develop

a team that could do such good work at certain times, as did ours, and the possibility was not dreamed of for an instant that the men would quit work and take to eating pie and smoking cigarettes before the season was much more than half through. However, no one was disappointed in the team itself. Back of the line unexpected strength in center plays was developed, but the less said about the interference around the ends, the better for the reputation of the individual players. Expectations of Meriwether's hitting the line and punting the ball were more than realized. This year's experience, and added weight will make him a formidable man behind the line in '97. The students knew what to expect of Ford, and were not surprised at his brilliant playing. He was everywhere all the time, hitting the line like a cannon ball or running the ends like a steam engine. There is no use disputing that he runs and plays harder than any man on the team, and is the hardest of all to stop. Kittredge, at the other half, was an experiment, and a successful one. While his excellent work in the first game led us to expect better playing than he showed later on, it may be said that he filled his position well. Lufkin, as captain and quarterback, was clearly the life of the team at all times. His leadership, though not so heady at times as it might have been, was very satisfactory, and contributed largely to the success of the eleven. The tackles, Whitten and Hubbell, constituted a pair whose equal it would be hard to find anywhere. Both did splendid work in breaking through and tackling in every game played. The center men, Rypinski, Thompson and Hubbell, were unfortunate in playing positions where it is difficult to do anything brilliant. That they more than held their men at all times, is praise enough. Austin's work at left end, was much better than during the '95 season. He was especially good in blocking and breaking interference at right end. Hellweg's work fell below that of last season, but he did fairly well at breaking through and tackling. The four subs, Lansden, McLellan, Pflieger and Jumper, all had opportunities to play, and all did good work when called

upon. They will be available material for next year's team.

The outlook for the '97 season should be encouraging to even the most pessimistic. Even without the assistance of '01, there will be a good team. Only three of this year's eleven will not return, and their positions can be filled without much difficulty, as the following line-up will show: R. E., Jumper or Stone; R. T., Hubbell; R. G., Davis; C., Thompson; L. G., McLellan or Pflieger; L. T., Whitten; L. E., Capt. Austin; Q. B., Lansden; R. H., Ford; L. H., Kittredge; F. B., Meriwether. Need any one fear for Rose's reputation with a line-up like that?

It is too bad that many good men did not show up until late in the season. Trumbo and Huthsteiner both did excellent work, the former, in the last '98-'99 game, where his great breaking through and tackling excited much comment, and the latter, at regular practice just before the team disbanded, where by his good tackling, he showed that though a novice, he had fine football material in him. These men should be closely watched next year.

NOTES AND COMMENTS.

There is a great deal of interest being taken at present in basketball, and the beginning of next term will probably witness considerable enthusiasm in organizing the school team. It will be a difficult matter to decide what men will constitute this team on account of the number of players and the impossibility of getting them together at one time to compare their work. If Rose enters the City League, she will stand a good chance of coming out of every game with the score in her favor and at the end of this season the pennant will certainly be hers.

The election of Lansden, '98, as manager, and Austin, '98, as captain of the football team for the succeeding year, insures early and active work when the fall term opens in '97. When one considers that the captain of the team is here obliged to act also as coach, it must be conceded that a better choice could not be made. This is the first year in many that the election to fill

these offices has taken place before the last moment. Usually, the men are elected after school begins in the fall, giving them no time for the preparation of their work.

The average weight of the football team was 165.8 pounds; the average height, 5 feet 9.7 inches; the average age, 20.4 years. These figures compare very favorably with those of teams which may be said to be in the same class.

The football men put on their war togs the afternoon of December 5th, and sat for a picture at LeClear's photograph gallery. It was probably the last time the fifteen men will ever get together.

We are a little behind-hand in mentioning the following item, but as it does not appear to be generally known, it may still be of interest. On November 7th at Georgetown, B. J. Wefers of Georgetown University, made two new amateur world's records, one in the 100 yards dash and the other in the 300 yards dash. In the former event he covered the distance in 9 3-5 seconds. In the latter, in 30 2-5 seconds. These records are official and will probably stand for some time.

FOOTBALL AT OTHER PLACES.

In the championship game, Princeton won from Yale by a larger score than was expected. The giants had the Elies completely at their mercy from start to finish, and gave them a fearful drubbing. This game, like most of the others in the east, was played on the Saturday preceeding Thanksgiving, a custom which is very much in

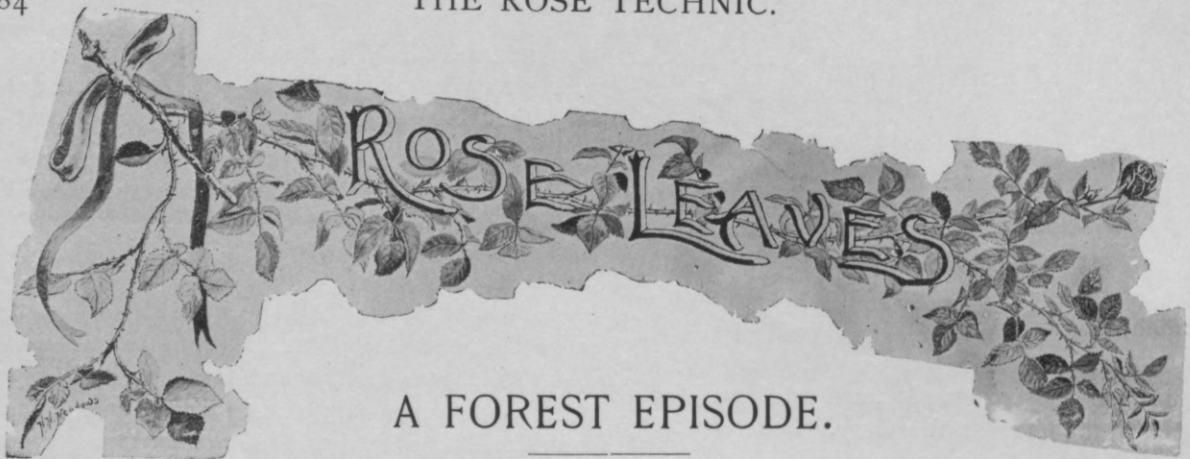
favor there. The Harvard-Pennsylvania game was a very desperately fought one, and it was not until in the second half that Pennsylvania outplayed her opponents. Brown put up the best game of the season against the Carlisle Indians and defeated them badly. There is no doubt that Brown may be classed with Yale, Harvard and the other big teams.

In the west, Ann Arbor's defeat by Chicago, caused a great deal of surprise. As a matter of fact, Michigan clearly outplayed the Chicago team, and it was only Hirschberger's marvelous punting that lost the game to them. At one time he made a goal kick from forty-five yard line. Wisconsin's tie with Northwestern may be laid to the fact that the previous Saturday's game with Minnesota had taken the keen edge from her playing. No team can play two such severe games in one week and do justice to both. The following are the scores of some of the most important games:

Princeton 24—Yale 6.
 Pennsylvania 8—Harvard 6.
 Wisconsin 6—Minnesota 0.
 Chicago 7—Michigan 6.
 Northwestern 6—Wisconsin 6.
 Pennsylvania 32—Cornell 10.
 Purdue 4—Illinois 4.
 Brown 24—Carlisle 0.
 Indianapolis A. A. 14—Indianapolis U. O.
 De Pauw 10—Miami 6.
 L. A. C. 30—State College 4.
 Chicago 18—Northwestern 6.
 Purdue 18—Notre Dame 12.

DAUNTLESS.

A Freshman was asked
 By a man upper classed,
 If he feared the exams. Replied he:
 "Of fear there's no need
 With a good little 'steed'
 They sculpture no ice-bergs with me."
 —" '00."



A FOREST EPISODE.

J. H. HELLWEG, JR., '97.

It was in the early part of November, '92, that a party of us young fellows determined to make the most of the remainder of that hunting season in attempting to get a few of the deer which inhabited the forests of Northern Wisconsin.

Deer had been unusually numerous that season, so our expectations of having good sport were well grounded, and it did not take us long to decide where the hunting field should be. The Spider Lake region was famous for the variety and quantity of wild game to be found there, and as it was but a short distance from town, some nineteen or twenty miles, we would find no difficulty in reaching the place. The timber within a radius of ten or twelve miles of the lake had not yet been cut, and being extremely wild, the region gave every evidence of living up to the reputation given it by various hunters who had found true sport there.

On a bright, breezy morning we left the town. There were about fourteen inches of snow on the ground, and the speedy horses pulling our sleigh made but little of the distance to the lake, so that in less than three hours we reached the stopping place where we were to make our headquarters while on the hunt. The landlord, a shrewd, uneducated backwoodsman with but one eye, gave us a hearty welcome, and after charging his man to take care of the horses, he led the way to a log cabin which he had dignified by the name of "The Spider Lake Resort." We went into the general sitting room and spent the time till din-

ner in pumping our host to find the location of the best hunting grounds. After dinner some of the boys went out after "washkish," the Indian word for deer, but I was satisfied to hang about the place chatting with the men and listening to the many interesting yarns of life in the woods they had to tell.

A little before sundown, the boys, with one exception, came straggling in, but there was no game in sight. Just about dark, however, the last one stumbled into the cabin carrying on his shoulders the carcass of a medium sized doe. Of course we wanted to know all about how it happened, and while taking off the skin, he gave us full particulars.

We were all a good deal worked up by this occurrence, and long before dawn of the next day were up and dressed, and before the sun rose, were ready to take to the woods.

My luck was abominable. I never even caught sight of the red coat of a deer or the bushy tail of a fox. I tramped the woods the whole day long with but a short stop for lunch, and never had the satisfaction of seeing a single living creature. When I got back that night I was tired and disgusted. I was ready to throw up the job, but the sight of three fine deer shot by the other boys made me determined to get one on the morrow. I again made an early start, but the day's experiences were simply those of the day before, and it was a very discouraged mortal that sneaked into camp that night, only to see two of my compan-

ions gloating over the result of the day's work—a pair of good sized bucks.

The next morning before starting out for the day's hunt, I said, "Boys, I'm not coming back until I get at least one deer, if it takes me a week." They laughed, wished me good luck, and went cheerfully off, confident that they would be able to show something again that night.

I then stowed away several huge sandwiches in the capacious pockets of my loose-fitting, gaudily-colored mackinaw, strapped a blanket on my back, and after telling the landlord not to be alarmed if I failed to return that night, threw my gun over my shoulder and started out.

The day was an exceptionally fine one for that time of the year. There was not a cloud in the sky, and the sparkle of the snow in the bright sunlight, made the scene one of dazzling brilliancy. A soft, south wind was blowing, and the temperature being only about 25° F., I had no occasion to use my gloves. I struck off into an entirely new district, and tramped the whole morning, only coming across a few deer tracks in all that time. I was getting hungry, so sitting down on a fallen tree, I took out one of the sandwiches and munched it very contentedly. The scene about me was rather a wild one. The tall pines on every side reaching up from 100 to 150 feet, their branches brilliantly green even at this season of the year and partly covered with snow, made a sort of dim twilight in the vast forest, and the wind sighing through the tops of the virgin trees filled the whole region with the mournful sound that is only heard in the depths of the primeval forest.

I was at the top of a goodly elevation, and had a fairly good view of the forest within a radius of about 150 feet. After eating my lunch I sat quietly for a few minutes, while a feeling of awe and lonesomeness gradually crept over me. Suddenly I was startled into activity by the crackling of brush at the bottom of the hill, and looking in that direction, my eyes met a sight that made the blood pulse wildly through my veins as I quickly raised my rifle to my shoulder. A splendid three-year-old buck, his head surmount-

ed by a magnificent pair of antlers, was sauntering leisurely but suspiciously through the woods, now sniffing at the ground, and again throwing up his head and drawing deep, long breaths of the pure, cold air.

Catching sight of me at the same instant, he tossed up his antlers, and with a fierce snort, went crashing through the forest. I leveled my rifle at the fleeting patch of red, and with the pull of the trigger, sent a 45-90 bullet in pursuit of the animal. Another fierce snort told me that the shot had told, and quickly running down to where the deer had been standing, I closely examined the tracks. They clearly showed that he was running on three legs, but the absence of any traces of blood, led me to believe that he had received no vital injury. I sighed inwardly, and debated whether it would not be best to give up the chase, for it would certainly be a long one. But my determination of the morning came to mind, and I decided to see the end of the adventure. With a long, easy stride, I set out, stepping as rapidly and lightly as my moccasined feet would allow, over windfalls, through brush, around swamps, on and on, but never catching sight of the object of my chase. At one time I came across a spot where he had but a short time before been lying down, and the sight of the snow, still damp from contact with his warm hide, gave me renewed energy, and I hastened on. Meanwhile, the sky had become overcast with leaden gray clouds, and a few flakes of snow sifting through the tree tops, warned me that the chase must soon terminate. The woods were now more open, and traveling was easier than before. The numerous stumps and an occasional old logging road told me that I had wandered far from camp, and was now in the magnetic ore region of Round Lake. It was getting so dark that it was with difficulty I could distinguish the tracks of the deer, and the snow, now falling damp and heavy, promised soon to obliterate them entirely.

It was, therefore, with great satisfaction, that suddenly from a little rise of ground, I saw the buck but a short distance ahead. I raised the rifle to my shoulder, and another shot roared

through the woods. But it was too dark to get good aim, as I could hardly see the sights on the gun, and the shot had no effect. The deer was gone, and there I was, at least fifteen miles from camp, tired, hungry, entirely disheartened, with no game, and my compass rendered useless. It would be foolishness to try to reach camp that night, so with a little groan I decided to make a night of it in the wild forest. The rustle of the falling snow and the distant howling of wolves sent a little shiver through me, and one can imagine with what pleasure it was, that while looking about for some brushwood suitable for kindling a fire, I ran across a long low cabin, which upon inspection, proved to be the sleeping shanty of a deserted logging camp. It would be just the thing, I thought, and with a lighted match, I at once proceeded to see how things looked inside. On a rude shelf I discovered a remnant of a candle which I lighted, and by its help examined the interior of the cabin.

In a cupboard at one end I found a good many articles, such as were used in backwoods house-keeping. In other parts of the room I found many things which gave evidence that the shanty had but lately been used as a habitation by some one who kept house in a most slovenly fashion. The cabin contained but a single room, at least 75 feet long by 35 broad, tiers of bunks being arranged on either side and at the far end. A large portion of the front end was taken up by an immense fireplace, at one side of which was heaped a large quantity of firewood.

I soon had a roaring fire going, and sitting down on a bench before it, munched away hungrily at one of my remaining sandwiches. Then I mused for a while and at length, worn out by the hard day's tramp, stretched myself out in one of the bunks at the far end, and soon fell into a deep sleep.

It must have been several hours later when I suddenly found myself wide awake. No sound but the subdued crackling of the few remaining embers on the hearth could I hear as I lay for some time gazing at the bottom of the bunk above, wondering what mysterious influence

could have awakened me at that time of the night, when the sound of a deep chuckle caused me to turn quickly toward the fireplace, and there I saw something that at first literally caused my heart to stop beating, and then to send it pulsing away at a fearful rate.

There, in the middle of the room, was the most curious and hideous creature I had ever seen. I suppose I must call it human, but an animal the remembrance of whose awful shape and countenance sends a shudder through me this day. Short legs and long body and arms; all incased in the heavy skin of a deer; body bent until its dangling hands almost touched the floor; stooping shoulders and a fearful face covered with a thick growth of matted hair; a mane, I can call it nothing else, of incredible length, falling over its low retreating forehead and stooping shoulders. In short, it was a fearful thing, and as it careened slightly from side to side, hideously chuckling the while and advanced slowly toward me with an indescribable shuffling movement, it was little wonder that I found myself unable to make a single motion and could only watch the creature with a fascinated gaze. It came nearer and nearer, and as it approached fright left me and courage took its place. With a quick movement I jumped from the bunk and reached for the rifle standing at the head. Turning toward the fireplace, expecting to see the creature close upon me, I was amazed to find the cabin entirely empty. The fire had blazed up slightly and by its intermittent glare, I closely examined every part of the room, but with no success. It was absolutely certain that I was the only occupant. I drew a bench to the fire-side, and after putting on fresh fuel, sat down to cool off and think. Thinking made me drowsy and soon I stumbled back to the bunk, dreamingly determining to find out all about it in the morning, and it was not long before I was again fast asleep. As before, I had not been sleeping many hours when I found myself wide awake. Hardly knowing what to expect, I fearfully turned toward the fireplace and there saw the same horrible creature, more fantastic in garb, more hideous in countenance

than before. Truly, I felt my blood congealing. Try as I might, I could not shake off the spell which seemed to hold me down and I was compelled to watch the weird actions of the awful thing. The same careening motion, the same diabolical chuckle, the same contortion of the features, thrilled me through with horror. The unsteady flickering of the subdued flames cast wavering shadows and served to heighten the wierd and ghastly appearance of the uncanny beast, as it slowly shuffled towards me. My imagination gave it huge and grotesque proportions and the creature soon lost all semblance to a human form. Nearer it came, and now in its right hand appeared a large hunter's clasp knife, waved to and fro, with a rhythmic movement, to accompany the regular motion of the hideous form. I could no longer endure the torture of suspense, but it required a mighty effort to shake off the spell of fear which bound me to the wooden bunk. A quick leap to the floor, a hasty seizing of the rifle, an unsteady aim, a nervous pull of the trigger, and then a reverberating roar filled the cabin, a cloud of smoke rose to shut off the view of the front part of the room, and deep silence ensued.

The rapid beating of my heart was gradually stilled, and the roaring fire I soon kindled, helped to dispel the feeling of fear which had possessed me for some time. A careful search resulted as before, there was nothing to be seen. However, as it was impossible to sleep any more, I spent the remaining hours till dawn, musing over the marvelous adventure which had befallen me, and and wondering what could be the explanation offered to clear away the mystery.

The coming of daylight dissipated all feelings of depression and fear, and after a close study of the pocket map I had with me, I started off on my tramp to the headquarters. It must not be imagined that I left without any attempt at a solution of the mystery. I found the bullet of my rifle imbedded in one of the logs which formed the front part of the cabin, and that caused me to believe I had shot wild of the mark. Scratches and loosed clumps of mud on the chimney of the

fireplace, clearly showed the method of the creature's escape; but there all traces ceased. The snow had fallen till but an hour before and all footprints which might have existed were now covered. It was useless to look further and I wasted no more time in prolonging the search.

When within two miles of the stopping place, I was lucky enough to get a shot at a pretty doe, and it was with no small degree of satisfaction that I stalked into the cabin with the carcass over my shoulders. The boys had not yet returned from the day's hunt, so I spent the time questioning the host about the abandoned camp, and suggesting the possibility of an inhabitant. He said that several years before, a condemned murderer at the county jail had escaped and taken to the woods; that at various times the neighboring reservation of Indians had reported having seen a strange looking wild man in that vicinity, but that no credence had been given their tales.

This was enough to satisfy me that my adventure had been a real one, but I kept it closely to myself, and it was not until several months later that I told the story to my friends. I would not have done so then, had not the spring thaws revealed the body of the creature to a party of wandering Indians who took it to town as a great curiosity. It had evidently been frozen to death at some time during the severe winter, for it was found out in the open, not far from the cabin in which I had my exciting experience, and there was no sign of injury on its body. The plain light of day divested it of many of the horrors which my excited imagination had lent to it that night; still, it's long stay in the woods where it must have lived like a wild beast, had given it all the appearance of one, and no one person would have wished to encounter it there.

AN IMPERSONATION.

I first saw the light of day on Irish soil in the year 1843, and so am yet in my youth, or indeed in my babyhood, as maturity is reckoned among my relatives to whom the life of a generation of humanity is but a day. Born in 1843; ten years later I had a change of swaddling cloths, and in

1866 I was given my first short clothes and made presentable to the public, and since that time I have been handled, cared for and re-dressed by a few wise men who thought they knew how to care for such a child as I. I was born in the Royal Society of Ireland, but have never been courted by men as becomes one of my high parentage, and few indeed have made a pet of me. Many of my brothers are well known and are active members of educated society and right popular, too. They are gifted people, but frank and easily approached so that they win many friends, where I, being of a more retiring nature and harder to become familiar with, am treated with cold respect, or even openly slighted.

A few men of keen discernment, who have watched me closely and studied me carefully as I developed, have seen that I was destined to become a giant, even in my own family of giants and have done what they could to help me. One of these wise men brought me to Rose a few years since, and has been trying to introduce me into polite Sophomore and Junior society, but they are an indifferent lot and but very few of them ever learn to love me as they should. They snub me, although I am well dressed in a new suit given me by my benefactor and always wear the coat of arms which is only a proportionate representation of my importance. However, I do not feel their neglect very keenly, as I am a great favorite with the wise man who brought me hither and I am happy in his society and think he is never better pleased than when playing with me or talking my praises to those sleepy Juniors.

Those who know me best, take most delight in me, for I am not only ornamental but useful in the extreme. But only let one of the children of men learn to know and understand my nature and I will work for him such wonders as are rarely seen in this day. When a man becomes my intimate friend, I can open the eye of his mind to sights he never saw before and enable him to read the mysteries, beside which, those of the Mahatmas become mere trifles. I am more penetrating than the famed X-ray and so simple in nature that my simplicity is my difficult attribute. I am a labor

saver, and those who find me will be rewarded an hundred fold for their effort. The Juniors who rise early and seek me till the midnight oil burns low, will have a pipe-line with my benefactor, but woe to him who slights my claims for behold he will be flunked bitterly in the exams.

I need not say who I am, if my description is faithful I will be recognized; if the description is not clear another Junior has failed in his undertaking.

CALE WAMSLEY, '98.

DINNER TO THE '99 FOOTBALL TEAM.

On Sunday the twenty-ninth of October, the class football team of '99 enjoyed a dinner at the Terre Haute House at the invitation of the '98 Modulus, a result of the Thanksgiving football game. When it was found that the school team would not play on that date, the business manager of the Modulus was not slow to take advantage of the fact, and it was suggested that '99 be challenged to a game and the receipts go to the Modulus. '99 agreed to this and at once set out to help '98 advertise the game, and the two teams succeeded in getting quite a crowd on the campus to witness the game.

After the game had resulted favorably to '99 Captain Ford of '98 called the players together and invited them to dinner at the Terre Haute House on the following Sunday, and it is needless to say the invitation was accepted.

The members of the team were notified that the dinner would be served at 1:30 P. M. and were requested to meet in the lobby at 1:45 P. M. but they were somewhat more prompt than was expected of them, and with the exception of Teddy Thompson all were present at a quarter past one.

They sat down to the table about a quarter of an hour later and now the waiters have some idea of the eating capacity of a football team. Almost the entire bill of fare was ordered by each one and they seemed to consider it their duty to consume everything ordered. Davis, however, does not know bear meat when he eats it, for after devouring almost a haunch of that animal he turned to the waiter and asked, "When are you going to bring on the bear?"

Every body enjoyed the feast and appreciated the presence of a number of '98 men who were there to keep them company, and a number of '99 men were heard to say, "When you want another game for the Modulus, just let us know."

STATE Y. M. C. A. CONVENTION.

To those who have never attended a convention of the Young Men's Christian Association, it is hard to give an idea of what it is like, and harder still in a limited space. But the four delegates from Rose to the Crawfordsville convention last month, can assure them that such a convention is not slow in any sense of the word, but is something to be enjoyed by all who attend. The Associations of Crawfordsville and Wabash College are to be congratulated, along with the officers of the State Committee, on the success of the convention, and the people of Crawfordsville are to be thanked for the delightful entertainment and cordiality of reception which was given every delegate. To Mr. Stacy, the State Secretary, is due the credit for the preparation of the splendid program which was so fully carried out.

The convention opened Thursday and closed Sunday night, Nov. 22. Among the more prominent speakers were Professor Graham Taylor of Chicago; L. D. Wishard, the first College Secretary of the International Committee of the Y. M. C. A.; Gilbert A. Beaver, son of ex-Governor Beaver of Pennsylvania, and College Secretary of the International Committee; C. K. Ober, another international secretary; A. M. Wight of Fort Wayne, and "Jim" Burwick, the railroad conductor. Professor Taylor's addresses on "Social Problems" and "Practical Christianity," were very fine. He has remarkable powers as a speaker and probably no man in the United States is better prepared to discuss these subjects than he is. L. D. Wishard has just returned from a tour of the colleges of the world. He arrived in this country from South Africa about a month ago. His report of the progress of students in other countries, especially those of the far East, was very interesting and encouraging.

Gilbert A. Beaver won the hearts of all the col-

lege men. His extensive knowledge of the conditions and problems and work being done by the 525 colleges all over the country which have Associations, makes his opinion and advice especially valuable; and the new plans that he suggested, especially for Bible Study, are already being adopted by the Indiana Associations. His plans for systematic, progressive study are very good. The course that he dwelt upon most was Professor Sharman's "Life of Christ." This course has been adopted by the Rose Tech Y. M. C. A., and the course of study will commence the first of January.

Mr. Beaver spoke at the college conference, and Sunday night at the closing meeting. He also had charge of the large men's meeting which was held Sunday afternoon in the Y. M. C. A. auditorium, where most of the conventions were held.

L. D. Wishard was one of the most interesting speakers of the convention. His Bible hours, as well as those of Mr. Ober, formed one of the most attractive features of all meetings. He is a graduate of Hanover College and has been identified with Association work in the colleges of this country and of the world for more than twenty years. He opened the eyes of a good many people when he described the students of foreign countries. They are far more capable than they are generally given credit for being.

"Jim" Burwick was one of the most popular speakers. He is just the man for the place he occupies among the railroad men. The work of the railroad Y. M. C. A. is spreading through this and other states. An elegant new building for the railroad Association is soon to be built in St. Louis by the railroad companies.

Friday evening a reception was given the delegates in Yandes' Hall, of Wabash College, which of course was an enjoyable event, and ended with a great variety of college yells given separately and all at once.

The closing session of the convention was held Sunday night in the auditorium of the Y. M. C. A. building, which was packed to its limit. The closing service consisted in the delegates and members of the convention, about 300 in all, join-

ing hands around the room and singing "Blest be the tie that binds."

PIERSON, '97.

The room of the R. P. I. Association at 927 North Seventh, will be open to all members of the Institute during the holidays; a supply of magazines and papers will be on hand and all are welcome.

LIBRARY NOTES.

ALBERT A. FAUROT.

It seems to me that the great majority of our students have not yet learned how to use the library, and consequently do not appreciate the benefits to be derived from a free circulation among books. The 8,000 volumes stacked upon our shelves contain some things each of us would like to know and many things all of us ought to know. The question is, how can we find what we want. Unfortunately, the books are not and never have been properly classified and catalogued, consequently there is no means at hand by which it can be ascertained just what the library does contain upon a given subject. A card catalogue is now in course of preparation which the librarian believes will be found of use to the students. The books on Mathematics (Sec. M.), Physics (Sec. P.), Engineering and Technology (Sec. E.) and Chemistry (Sec. C.) have been classified and catalogued so that if the author's name, or the title of the work is known, any book may readily be found. This catalogue is for the students' use and you are invited to use it as much and as often as you wish.

Other aids at hand in finding articles on any given subject are:

- (1) Poole's Index to Periodical Literature; a very valuable reference work. You should become acquainted with it.
- (2) Index of Current Engineering Literature V. I. 1884-'91.
- (3) Catalogue of current literature in each number of Engineering Magazine.
- (4) Digest of current technical literature in each number of Electrical World.

(5) Catalogue of Engineering Literature in Wisconsin Engineer.

There are still other library aids available, about which I may have something to say at a later date.

At the request of a number of students, I give a few of the more important library regulations. It is the aim of the library management to make the library of the greatest benefit to the greatest number of students, hence it is the desire to make the books as accessible to the students as possible.

As regards circulation, the books are divided into three classes:

- (1) Reference books, which may not be taken from the library, including dictionaries, encyclopædias, catalogues, indices, rare books, and all other books of a strictly reference character.
- (2) Books limited in circulation, which may be drawn out, for one week only, by special permission from a member of the faculty. This list includes magazines and periodicals; books in sets that are costly or difficult to replace if lost and other works which for any reason, it is not desirable to place on the general circulation list.
- (3) General circulation list, including all other books. These may be kept out two weeks and renewed for one week, provided there is no other call for them.

Current numbers of periodicals may be drawn out at the close of library hours, 4 P. M., but must be returned promptly at the opening of the library on the following school day.

The fine for retention of a book over time is 2 cents per day and the librarian is under no obligation to notify the student that the book is due.

Students are reminded that the library is a common study room, and that all conversation, except with person in charge, is out of place and an intrusion upon the rights of others.

Any abuse of library privileges in any way, may subject the student to debar-

ment from the use of the library at the discretion of the librarian.

The library hours are from 8:30 to 11:10 A. M., and 2 to 4:10 each school day.

New books received in the library:

- (1) Patton, H. B.—Lecture Notes on Crystallography. Golden, Colo., 1896.
- (2) Holmes, G. K., and Lord, T., Farms and Homes; Proprietorship and Indebtedness in U. S. (Part of Eleventh Census of U. S.). Washington, 1896.
- (3) Gray, Thos., Smithsonian Physical Tables (concluding part of Vol. 35 of Smithsonian Miscellaneous Reports).

THE BOILER TEST.

On November 7th, the steam engineering section of the Senior class, tested one of the shop boilers under the direction of Professor Wagner. This boiler was manufactured by the Atlas Engine Works of Indianapolis, Ind., and is used to run the Brown and Westinghouse engines.

Preparations for the test commenced at 8:00 A. M. The boiler was brought up to its ordinary working pressure, and the necessary appliances put on. A few minutes before 9 o'clock the fire was drawn out, and then kindling, which had been weighed, was put in and a fresh fire started.

Readings of water level, steam gage, draft gage; temperatures of flue gases, out side air, calorimeter and feed water were taken every fifteen minutes throughout the test.

All water fed to the boiler was weighed. The water level was brought to the same point at the end of the test as it was at the beginning, then the fire was drawn and was found to consist chiefly of ashes and clinkers. The moisture in the coal was determined and allowed for, and the coal equivalent of the wood used to start fire was found.

The principal dimensions of the boiler are as follows:

Diameter of shell	54 ft.
Length of shell	16 ft. 7 in.
Number of tubes	31
Diameter of tubes	3 $\frac{3}{4}$ in.
Length of tubes	16 ft. 7 in.

Total heating surface	600 sq. ft.
Area of grate surface	18.78 sq. ft.
Ratio of heating surface to grate area	32

The following are the results of the test:

Duration of test	9 $\frac{1}{2}$ hours.
Total coal charged to boiler	2717.35 pounds.
Per cent. of ashes and clinkers	18
Total combustible	2213.35 pounds.
Total weight of water fed to boiler	14,348.5 pounds.
Per cent. of moisture in steam	2.28
Total water evaporated into dry steam	14,061.55 pounds.
Equivalent evap. from and at 212° F.	16,733.2 pounds
Factor of evaporation	1.19
Average pressure at boiler by gage	84.81 pounds.
Average pressure at boiler absolute	97.44 pounds.
Chimney draft, inches of water18
Average temperature of external air	37.9° F.
Average temperature of boiler room	67.64° F.
Average temperature of feed water	58.64° F.
Average temperature of flue gases	356.8° F.

Evaporation under actual conditions:

Per pound dry coal	5.18
Per pound combustible	6.35
Equivalent evaporation from and at 212°F. per pound,	
dry coal	6.16
Rate of combustion, pounds per hour per square	
foot of grate area	16.07
Steam per square foot of heating surface per	
hour	2.6 pounds.
Commercial horse-power actually developed	54

The analysis of the coal used has not yet been completed.

On November 21st, the steam engineering section also made a test of the Ericsson hot air pumping engine, which is used to pump water from the cistern just outside of the main building up to the supply tanks on the fourth floor. The test lasted from 11:06 A. M., until 4:15 P. M. During this time the fuel used was seven pounds of wood, five pounds of soft coal, and nine and one-half pounds of coke. It is proposed to make another test, using gas for fuel.

THANKS.

The members of the football team of the class of '99 wish to express their thanks to the class of '98, for the dinner they enjoyed so much, on Sunday, the twenty-ninth of November, at the Terre Haute House. KITTREDGE, Capt.

POLYTECHNIC TELEGRAPH NOTES.

The company has recently added ten jars of battery to the line, making a total of thirty-five jars for main battery.

McLellan, '98, Moore, '97, McCosker, '00, Krebs, '99, and Wiley, '98, have joined the line.

Total number of members on the line up to date is twenty-one.

Schwed, '99, Appleton, '00, Larson, '00, and Instructor McMeans, who was one of the former members, are contemplating joining soon.

A directory (revised) is one of the things promised in the near future.

The line was given a thorough overhauling recently by an expert lineman.

Brachmann, '98, and Townley, '00, have purchased new relays of Western Union type.

A few nights ago a 500-volt wire dropped on the line in some dark alley and caused some "fire-works" in several offices. A noted freshman, who happened to be in one of the offices at the time, was so visibly impressed at the sight of the forked blue flame shooting in all directions off

the relay that he immediately fell on his knee and commenced to pray.

Meyer, '97, is in the market for a new sounder, the "trolley" having played havoc with his old one.

There is a general tendency among members to be careless about the size of wire used in their rooms, and the manner in which they connect it up; also in not properly closing the switch after using the line. Let every member be careful in this regard, and remember No. 18, B. & S. gage, is smallest size wire allowed for inside work.

Delays caused by "open circuit" are serious now that there are so many members, a good many of them being new ones.

ROSE SCIENTIFIC SOCIETY.

The first meeting of the Society was held Thursday morning, December 10, in the Museum. The election of officers for which the meeting was called resulted as follows:

J. H. Hall, '97—President.

H. B. Stiliz, '98—Secretary and Treasurer.

H. S. Heichert, '97 }
J. E. Hubbell, '98 } Councilmen.

*LIST OF ADVERTISEMENTS.*

We wish our readers to patronize those who patronize us.

BICYCLES.

Dayton Bicycle, W. D. Morris & Co., agents.
Richmond Bicycles.

CANDIES.

Baur's Pharmacy.
I. V. Preston.
Chas. White.

DRUGS.

Baur's Pharmacy.
Oak Hall Pharmacy.

FURNISHERS AND TAILORS.

Engle, The Tailor.
Schluer & Foulkes.
Thorman & Schloss.
Tune Bros.
L. B. Root & Co.
J. T. H. Miller.

FLORISTS.

John G. Heintl.
 Hunt, The Florist.

LAUNDRIES.

Columbian.
 Hunter.
 New Method.

MUSICAL INSTRUMENTS AND MUSIC.

W. H. Paige.

STATIONERY AND ENGRAVING.

Baur's Pharmacy.
 Duncan & Co.
 Dreka.
 Wright, Kay & Co.

PHOTOGRAPHERS.

A. A. LeClear.
 D. H. Wright.

TICKET BROKERS.

Griffith & Miller.
 L. D. Smith, Ticket Broker.

UNCLASSIFIED.

Hulman & Co., Dauntless Coffee.
 Cleveland Forge and Iron Co.
 George Ehrenhardt, Barber.
 John Elder, Barber.
 Eimer & Amend, Chemicals and Chemical Apparatus.
 T. J. Griffith, Shoe Dealer.
 Chas. Mayer & Co., Football and Gym Supplies.
 Vandalia-Pennsylvania Line.

Exams!

A Merry Christmas to everyone.

Professor Peddle has a new wheel.

Coal, \$3 per pound. It comes high, but, etc.

Fry, '97—"Isn't the percentage of moisture in water a hundred?"

Wiley, '98, spent Thanksgiving at his home in Paris, Illinois.

The football team had their pictures taken Saturday. LeClear did the work.

"Plug brothers plug, plug with care,
 Plug in the presence of, etc."

Now that football is all over, we are perfectly willing to get down and "plug."

X-rays were tried on Stilz's injured hand, but no definite results were obtained.

The weather is doing us a favor, keeping us at home during the evenings for study.

In language class Camp translates "Ist hier schon die," as "It is here shown."

Whitten, '98, will spend the holidays with Lansden, '98, at his home in Cairo, Illinois.

Junior—conjugating the French verb *donner*: "Je donnai, tu donnas" a pause, then "I dunno."

When the Christmas "exams." come, it is time

for the girls to be getting out their sprigs of mistletoe.

Instructor McMeans has joined the ancient order of benedicts. Account of the ceremony in another place.

Mrs. S. P. Burton, registrar, returned last week from her visit with her sister, Mrs. W. L. Ames, of Worcester, Mass.

How many of us have seen a locomotive with the four eccentrics on as many axles? Shaver will tell you about them.

Instructor Harper admits that he is going to spend Xmas at Ft. Wayne, but nothing will induce him to talk more on the subject.

Professor W.—"Now I gave full credit on that question to those who mentioned my hobby."

Camp, (excitedly)—"Ich habe."

Jumper, '99, will be careful to put his laundried articles in a safe place, when he ties knots in those of others in the gymnasium.

A new set of lockers for the gymnasium are in the course of construction at the shop. We hope to have them by the first of next term.

It is rumored that Thompson may be asked to play half-back next year, on account of the brilliant run he made in the '98-'99 game.

Keyes, '99, cleaned his bicycle chain and hung it up to dry, and while he waited he took his wheel down stairs to ride it down town.

The two red and black flags which adorned the north goal in the Thanksgiving game were both confiscated. One by Howell, the other by Davis.

A Sunday or two ago, the afternoon was spent quite enjoyably at Professor Wickersham's by a number of the men in singing over college songs.

While passing the railroad crossing on Locust street, T—k—r asked: "What are those men putting sand into the steam dome on that locomotive for?"

Sparks from the telegraph wire—Z. to HM.—"Say, what does it mean when one gets a letter from a girl with a yellow flower in it?" Ans.—"Nit."

One of the down-town firms threw a football from the top of a high building once every half hour Thanksgiving Day. It was redeemable with a turkey.

Dr. Noyes—"This German isn't very hard, I seldom use a lexicon to read it."

Ned—"Well, I never use anything but a dictionary."

Prof. Wagner—(explaining some deep theory)—"I may be going too fast. Am I shooting over your heads?"

Pierson—"No, sir."

Rose Tech has received another title. A gentleman looking for the Institute stopped one of the men on the street and asked, "Can you tell me where the Coloclynic is?"

The Junior class wish to state, with regard to the coming examinations, that they have *all* the faith and hope, and trust that the faculty have *all* the remaining virtue, charity.

A Junior civil thought he'd startle scientific men by building a suspension bridge that would turn a curve. He spent several hours of hard thought on it, but finally gave it up.

The "D. D." boarding club of North Seventh street, has made up a handsome pool to go to the man who guesses nearest his own average in the

coming "exams," all guesses to be turned in before the eighteenth.

Patterson, ex-'96, who was forced to give up his studies on account of ill-health, has returned from the West for the holidays. He intends taking a course in mining engineering at the Missouri School of Mines.

Dr. M.—(in mechanics class)—"Mr. Townley"—no response—"Townley." Townley (suddenly awaking,) "Yes, Sir." Dr. M.—"State, if you please, in a few words what I have been talking about for the last fifteen minutes."

Lufkin, '97, has had quite an "eye" on him since the Indianapolis game; however, it is improving, and will soon be all right. This, with Stilz's accident, were the only serious mishaps during the whole football season, at Rose.

Two of the Seniors, after making three very careful laboratory determinations of the same thing, were quite astonished when Professor Kendrick said their results were unsatisfactory on account of their being too near the true value.

The shop force were startled recently by a great disturbance taking place in the dynamo end, and were thunder struck to see Ben *run* across to shut off the steam. The cause of it all was that he had started the alternator without taking off the dynamo cover. No fatalities.

The arc lamps in the gymnasium have been changed from the shop circuit to one of the city circuits, so we can have light now at any time. They were, however, cut in on the incandescent system, and we now go through the exercises to the merry tune of an alternating arc.

Newbold, '97, while out superintending some work on the Polytechnic telegraph line a short time ago, was standing on the ground giving instructions to the linemen who were perched on poles belonging the Electric Light Company. A citizen, seeking information, stopped and asked, "Why did you lay off so many linemen last week?" Newbold, (promptly)—"Merely to cut down expenses."

It was a conundrum. If each of two snakes,

weighing ten pounds apiece, starts at the other's tail to swallow him, one swallowing twice as fast as the other, what will be the weight after the operation is ended? When some one suggested that as one swallows twice as fast as the other he will eventually get outside of both snakes, the combination would, therefore, weigh thirty pounds, his own weight, plus the two he swallowed, Roger said, "Well, that really never happened, did it?"

A LETTER TO SANTA.

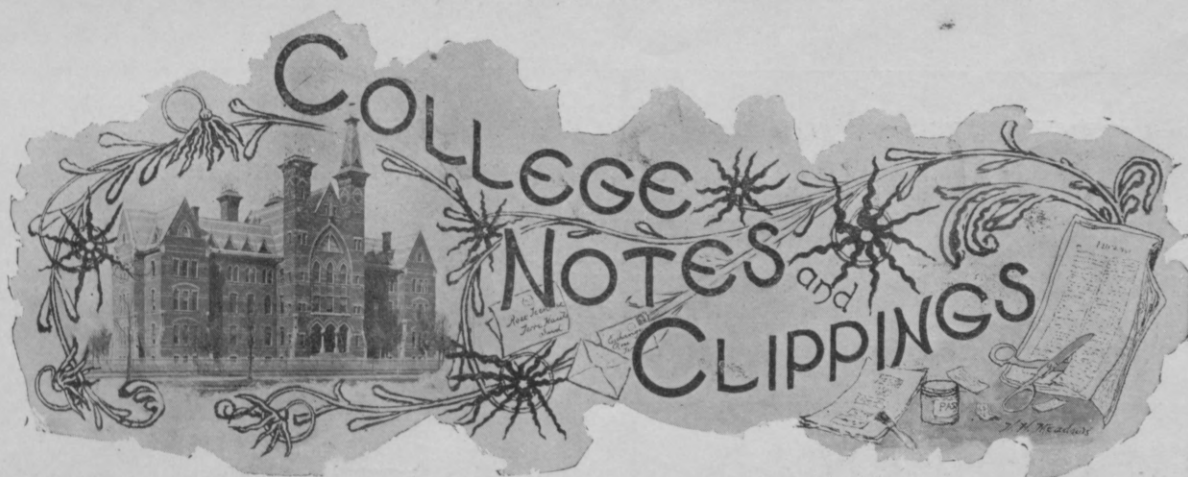
Dear Santa:—You should be generous

On this day of joy and mirth,
So please step off the Terra Firma
And present me with the earth.

—'00."

The daily papers have given the account of the

strange disappearance of Flickinger, '99, from Worcester Polytechnic Institute. Flickinger is an ex-Rose man, having completed his Freshman year here, and entered Worcester last September, as a Sophomore. He was well known by everyone here, and universally liked by all who knew him, and it was greatly regretted when he left us. Some say that he has joined the Cuban insurgents, but that is hardly probable. It would be hard for those well acquainted with "Flick" to picture him before a Cuban army; others say that he has joined some western theatrical company, but we have no faith in either of these, or any of the other rumors that are being circulated. However, we hope nothing serious has befallen him, and that something definite as to his whereabouts will be ascertained shortly.



Johns Hopkins has closed its doors to women.
Tulane University offers a new course of study, that of sugar chemistry.

President Elliott favors changing the course at Harvard to three years.—*Ex.*

Brown is the only college in America which offers a course in German.—*Ex.*

The University of Pennsylvania intends to organize a 'Varsity basketball team.

The *High School Journal* of this city is a very bright little paper. It is edited weekly by the Juniors.

At the University of Toronto both Rugby and Association football games are played.

An upper-classman at Syracuse recently sold his chapel seat to a Freshman for \$2.25.

The first Carlisle Indian team was organized three years ago, with no coach and trainer.

If you have plenty of good points about you the world won't sit down on you very hard.—*Ex.*

There were ninety-four candidates for positions on the Harvard Freshman football team this year.

Almost all the Eastern colleges report a decreased attendance this year. Whenever any gain

\$5 This is the way five dollars looked
 When my father's cash I burned;
 But this \$5 is the way that fiver looks,
 Now \$ that it must be earned.
 —Cornell Widow

She frowned on him and called him Mr.
 Because in fun he only Kr.;
 And so in spite,
 The very next night,
 This naughty Mr. Kr. Sr.

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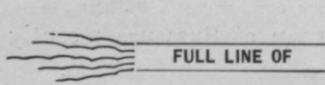
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