CHRISTMAS CONCERT—

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Glee Club and Orchestra

Alma Mater

It is requested that all make a special effort to be seated in the Auditorium at 10:10 sharp, so that the program may be completed in its allotted time, and in order that the trampling feet of late comers will not be a cause of disturbance.

Sing Cruiser Song

The concluding number on the program, "Roll Cruiser Roll", was composed by Mr. Erickson for the dedication of the Snow Cruiser in Grant Park. Unforseen difficulties, however, caused cancellation of the dedication, thus making the concert the occasion of the song's debut. The cruiser song, incidentally, has been made famous by the Pi Nu Epsilon pledging activities. The Musical honor society required that each of its pledges carry a music stand around the campus upon which was a hand copied reproduction of the song with the title inscribed in large letters. The printed programs which will be handed out before the program will contain the words of the carols in which the audience will join.

Art Institute Tomorrow

On Wednesday, the musical clubs will present a program in the Art Institute at 12 o'clock noon, before the public in attendance that day. The boys of the musical clubs will be dismissed from class at 11 o'clock. After the concert, which lasts one hour, they will be the luncheon guests of the Art Institute at the Art Institute restaurant.

Photograph of the Musical Clubs consisting of Glee Club and Orchestra under the direction of O. Gordon Erickson, taken at last year's concert at the Goodman Theater.

U.S. Is Training Thirty Techawks In Flight Classes

Through the help of the Civil Aeronautics Authority, the high-flying Armour Techawk has recently acquired thirty new pairs of wings, for the students in the Civilian Flight Training Program are well on their way towards becoming licensed private pilots.

50 Hours Flying

Armour's portion of the approximately 11,000 civilian pilots have already mastered the necessary theory of flight, civil air regulations, and air navigation courses required, and are now engaged in studying meteorology. These, and similar classes, will consume a total of 72 hours. Ground school classes, taught by Professors Wells and Penn, meet every day from Monday through Friday on the campus. Commercial flight instructors, approved by the C.A.A., give 50 hours of flight training at the Ford airport in Lansing, Illinois. Although there is a shortage of instructors, Smilin' Jack in the comics, and six aviators in real life, underwent the government tests last week. In spite of the shortage, every student has been in the air several times.

"You Take Her"

E. L. Hass, a fledgling member of the program, tells of the unanimous interest of the entire group in the instruction, and relates a few of his experiences. The very first time he was in the air, Hass expected to sit back and admire the scenery while the instructor flew the plane. Suddenly, the instructor turned the controls over to dumbfounded Hass, and said, "Here, you take her". In his astonishment, the junior "Fire Protec" almost made Adam's apple sauce out of his larynx, but managed to guide the plane. Another, more serious difficulty encountered, was his inability to talk back to the instructor, due to the omission of a microphone from the student's equipment. Thus, the instructor talks to the student, but the student can't utter an audible sound over the motor's roar. In spite of this handicap, Hass believes he and his 29 Armour "birds of a feather" are taking advantage of a wonderful opportunity, as well as realizing a universal boyhood desire to become an aviator.

Armour Institute is on the very first list of schools selected, because of its qualifications. With the idea of stimulating private flying in this country as a means of promoting commerce and contributing to the progress of aviation, the government, through the authority of the Civilian Pilot Training Program, is providing a free civilian pilot training course in 355 colleges throughout the United States.

Heald Addresses Chi Epsilon at Initiation

Chi Epsilon, national honorary civil engineering fraternity, formally initiated one senior George Olufsen and two juniors, LeRoy Goetz and Roy Jacobsen, last Wednesday evening. The initiation and the banquet which followed were held in the Chicago Room of the Central Y.M.C.A. Present for the occasion were President H. T. Heald and Professors P. C. Huntly, J. C. Penn, and R. L. Stevens.

Heald Speaks

After the ceremonies and the banquet President Heald spoke to the members and guests on the vital topic, "Is Engineering a Profession." During the course of his discussion, he pointed out the various problems facing the engineer and his professional status and the steps being taken to solve them. At present a commission has been formed in Washington to lobby in the interests of engineers in general. It is by activities such as these that members of the engineering profession can cultivate an improved public opinion.

At the close of the formal part of the evening's activities, the group adjourned to a loop theater, where they witnessed the latest Hollywood thriller, "The Tower of London."

Amplifier Story in "Electronics" Issue

Description of a new type of amplifier, perfected in Armour's radio engineering laboratory by Professor A. W. Sear, will appear in an early issue of "Electronics." Prof. Sear is an authority in the field of radio, and has been active in this field for many years.

No Galvanometers

This instrument, when used in conjunction with a low sensitivity meter, will detect D.C. potential differences of about 0.0000005 volt. Measurements of such low voltages have formerly been made with suspension galvanometers of extremely fragile construction. Such galvanometers, besides being expensive, were quite clumsy, requiring vibrationless mounting and an observing telescope. Indications were slow and necessitated a great deal of manipulative skill.

Overcomes Instability

While the use of vacuum tubes for amplifying small A.C. voltages has been highly developed, attempts at D.C. voltage amplification have not been very successful because of instability in tube characteristics. Professor Sear uses a special method for overcoming this difficulty; the voltage to be measured does not control the tubes directly, but is used to set up transients which are amplified, and rectified mechanically. By this means it is possible to read the D.C. polarity. The effect of "drift" in tube constants is negligible.

The apparatus, as developed, is capable of being made completely portable. It is rugged, inexpensive, and easy to operate. Its quick response makes it especially suitable for thermal E.M.F. measurements. Other applications are as balance indicators for D.C. bridges and potentiometers. With suitable changes, the device can also be used for control work.

S.A.M. Speaker Praises Labor

Mr. Harry Scheck, a member of the Conciliatory Service of the Department of Labor, spoke to the second meeting of the Society for the Advancement of Management, on the subject of "The Function of the Service in the Settlement of Labor Disputes." He said that there were two things that caused practically insurmountable barriers in the settlement of these controversies, and they were the newspapers and attorneys.

Hindrance by Lawyers

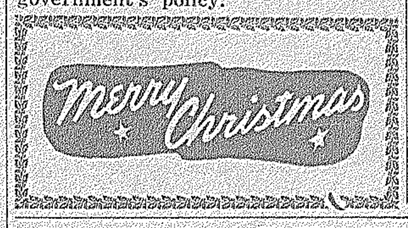
In the case of the newspapers, the desire for sensational material causes them to play up the emotional side of the case. The hindrance caused by attorneys is mainly in the minute analysis and word discrimination in the case of contracts and agreements. As far as this board of men is concerned, it is the spirit and not the letter of the law that should be binding. In the event that either or both of these groups can be prevented from becoming involved in the case, a definite and equitable solution can be reached in a very short time. For this reason the Conciliatory Service has never received nor encouraged publication of their activities.

Wagner Act Passage

According to Mr. Scheck, the Wagner Act would never have been passed because of labor alone, but was brought about by the unscrupulous acts of managers and men immediately superior to the employees. These acts of discrimination are now indirectly punishable by the National Labor Relations Board and this group cannot only force the re-employment of the fired men but also fix the extent of damages caused by this unemployment. Conciliatory Service is no part of this organization.

No Closed Shop

In the opinion of either the manager or the labor unions, their can be no such thing as a closed shop. The choice of joining either a company or a labor union is entirely up to the man, and both groups are open to American citizens. But the unfair practices used in the past to influence this decision have occasioned the government's policy.



Profs. Cleveland And Copeland Talk To Physics Society

The Physics Department of Armour Institute was well represented at the quarterly meeting of the American Physical Society by Drs. P. L. Copeland and F. F. Cleveland. Dr. Copeland presented a paper on "The Anode Effect as a Function of Temperature," a subject which has held his attention for some time. Dr. Cleveland's paper, "Depolarization Factors of the Raman Lines of Some Derivatives of Phenylacetylene," was organized in collaboration with Dr. M. J. Murray of the Department of Chemistry.

Charging Surface Lowered

After extensive research with vacuum tubes, Dr. Copeland found that as heat is applied to the anode, the magnitude of its charging surface is decreased. This is due to the inability of the particles to penetrate the layer of oxygen and nickel which surround the anode as the temperature increases. This explains why the amplification factor of a tube falls as the temperature is increased. Dr. Copeland's activity in this phase of physical research has attracted the attention of R.C.A. tube experts. These men have expressed their desire of having the subject delved into even more deeply, by Dr. Copeland, as an aid in the design of more efficient vacuum tubes.

Molecular Activities

The paper delivered by Dr. Cleveland is of as great importance in the field of chemistry as it is in the field of physics. In his affliation with Dr. Murray, he has devised a method for investigating more thoroughly the molecular activity of solutions. By photographing the spectrum of a beam of light, from a mercury lamp, which has passed through a filter and thence through a solution of the material in question, a great deal about the molecular nature of the substance can be determined. On allowing the beam to pass through a sheet of polaroid, this same apparatus will give the depolarization factor of the substance. In their work, Drs. Cleveland and Murray have used phenolacetylene and eleven of its derivatives. They will now study the solutions of various other substances with the same apparatus.

Frosh Discuss Green Caps During Meeting

"Wearing of the Green" was the topic of a lively discussion conducted by the freshmen class at their class meeting, held last Friday. Many of the freshmen have expressed the opinion that they would willingly wear green caps and follow in the footsteps of their predecessors. The class feels that the wearing of green caps is a fine custom which has lent much color to Armour and at the same time been a large factor in uniting the freshmen into one unit. It is a means of identifying the members of the class and striking up new acquaintances.

The troublesome factor of wearing green caps is that the classes in the past have not whole heartedly adopted the custom. There have been a few dissenting students who have balked at wearing the caps. This has resulted in friction due to fact that the sophomore classes have tried to force the custom upon the freshmen class. A vote will be taken and the question decided.

BROTHER RAT—

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side the play requires the construction of three complete sets each of entirely different scenes. Due to the initial space provided by the stage and position of the curtain, a novel arrangement of flats is to be used. Another outstanding feature of this semester's production is that it is the first major three act play to be staged entirely by students. In the past the three act plays have been directed by members of the English department when this was possible. This year the players were without this assistance, due to the absence of last year's director, and so they assumed the responsibility of producing their own major play. To assist them in this work, the players have elected the Gamma Theta fraternity, a newly organized honorary dramatics group, as their sponsor.

Senior Mechs To Test Engine

Senior mechanical students have their Christmas vacation all planned out for them as a result of the annual boiler efficiency tests, and the tests on the Corliss engine, being run this week. Long hours of calculations await their eager efforts (eager, my eye) and the long awaited holiday will find them in mech lab pouring over Hirn's analysis, combined indicator cards, and the mechanical and thermal efficiency problems.

Runs Once a Year

The machine which will be used in these tests is one of the more interesting pieces of apparatus to be found in the school, that big green Corliss in the west side of the steam lab. Only for one week each year does this engine turn its wheels. For all the rest of the time it is greased up and let stand until the next class rolls around.

10 Per Cent Efficiency

Although of moderate power, about fifty actual horse power, the Corliss is one of the biggest engines in the entire steam lab. It is a bit of irony that right next to this mass of metal stands a small turbine, but one whose output is more, by five horsepower, than the great Corliss. Efficiencies of the Great Green Monster run in the neighborhood of 85% mechanical and 10% thermal.

Performance Standard

While 10% may seem to be a pitifully small amount of the available energy, the Corliss is one of the most efficient of all the steam engines that have been constructed. Operating under a good vacuum, with its excellent method of valve control, the Corliss has been a standard of performance for all steam engines of the reciprocating type for many years.

Special Engine

Practically the entire engine is of a special design, intended for experimental purposes. A special heavy frame and steam jacketed cylinders are features. Built by Allis-Chalmers shortly after the turn of the century, this one engine represents an investment of about $7,000, and if one went to buy a similar piece at the present time it would cost about $15,000. Most of the parts are made by hand and require much fitting, and cutting. The finest workmanship goes into the making of the valves because they are the key to the operation of the entire machine. Involving several push rods and a maze of rocker arms, a set of dash-pots, and accessories the valves are a lasting tribute to the man who invented this method of handling the steam and whose name the engine bears.