Official Undergraduate News Organ of Massachusetts Institute of Technology

The Tech
M.I.T. Established 1881

A Record of Continuous News Service ... for ... Over Fifty Years

VOL. LII No. 69. CAMBRIDGE, MASS., MONDAY, DECEMBER 12, 1932. Price Five Cents

DR. R. D. BENNETT GIVES LECTURE ON COSMIC RAY

Demonstrates Existence of Mysterious Rays By Experiments

DRAWS CAPACITY CROWD

Apparatus Used In Cosmic Ray Expedition To Alaska Demonstrated

Experiments indicating that the mysterious cosmic rays are electrically charged particles and that they come from the lonely reaches of the universe at a speed of about 185,000 miles a second, were described by Dr. Ralph D. Bennett of Technology in the Society of Arts lecture at the Institute yesterday at 4 o'clock in Room 10-250.

Dr. Bennett, a member of the faculty in electrical engineering, is one of the scientists who participated in the recent world-wide survey of cosmic radiation sponsored by the Carnegie Institution of Washington and carried out under the direction of Dr. Arthur H. Compton of Chicago. Dr. Bennett's studies were made in the Rocky Mountains of the Pacific coast states and in Alaska. It was in this region that Allen Carpe lost his life in a crevasse in an attempt last May to scale Mt. McKinley for measurements of cosmic radiation.

Radiation Is Charged Particles

Describing the work of Dr. Arthur Compton and his own observations, Dr. Bennett said that their experiments indicate that the strange form of energy called cosmic radiation is at least partly composed of charged particles and that its origin seems to be in the remote regions of the universe. Other scientists have believed that cosmic rays come from distant inter stellar space and that they are in the form of protons or immaterial waves like light.

The fact that cosmic radiation varies in intensity according to the earth's latitude strengthens the belief that it

(Continued on page four)

Leave Posters On Boards Asks Dance Committee

A number of posters advertising the penny-a-pound dormitory dance were removed from the bulletin boards the day after they were posted. The dance committee deplores this fact, as the posters are rather expensive, and some return in the form of advertising is expected when a sum of money is laid out for posters. The committee has stated that it has no objection to anyone removing the posters on the day before or any time after the dance, but requests that they not be taken down two weeks before the date of the dance.

TECHNOLOGY MEN PLAY SANTA CLAUS

Will Assist Boston Post Kris Kringle in Wrapping and Assembling Toys for Needy

Technology students will be given an opportunity to play Santa Claus to the needy children of Boston next Sunday when "Tech Day" will be celebrated at the Boston Post Santa Claus headquarters at 100 Federal Street in Boston. Annually thousands of children are made happy by the work of the Post, which appeals to the Boston people through its news columns for funds and contributions and assembles large quantities of gifts and toys to be distributed to the less fortunate children on Christmas day.

This year it has become necessary to ask aid from groups and other organizations in wrapping and assembling the gifts. The men in charge of the work have felt that college students would be interested in such work and have set aside among others, "Tech Day" to be held next Sunday at 3:00 o'clock.

All Institute students are invited to come down to the headquarters at that time and help in the work that is being done. A large delegation is expected.

FRESHMAN BREAKS POLE VAULT MARK IN HANDICAP MEET

Donnan Clears 11 Feet, 6 Inches To Beat Record Set By Dixon Last Year

HORTON CAPTURES DASH

Furnishing the feature performance at the first indoor handicap meet held on Saturday afternoon, Gordon S. Donnan, '36, of Wollaston, cracked the freshman pole vault by clearing the bar at 11 feet, 6 inches. Donnan's leap bettered by two and three-quarters inches the former mark, which had been set up last spring by Harold Dixon, '35. Donnan later tried to clear twelve feet, and almost succeeded, his arm brushing the bar as he started to fall.

One of the other features of the day was the finish in the final of the 50-yard varsity and freshman dash, in which the five leaders were not more than two feet apart. The judges awarded the victory to Clarence R. Horton, '35, who had a handicap of two feet. Henry Runkel, '36, with a three-foot handicap, was second, being closely followed by Track Captain Dick Bell, '34, who ran from scratch.

Smith Takes 1000-Yard Run

Goochy Smith, captain-elect of cross-country, held an early lead to triumph in the 1000-yard run, which

(Continued on page four)

Educator Talks On Indian Problems At Lecture Tomorrow

President of Agricultural College In India Presented Under Auspices of T. C. A.

Speaking on "The Educational Problem in India", Mr. Higginbottom, president of an agricultural college in Allahabad, India, will deliver an address at 4:00 P. M., tomorrow, in Room 10-250. This, together with another address on Wednesday at the same time and place, is open to all members of the student body and is presented by the Technology Christian Association.

Mr. Higginbottom first went to India in 1903, and he first concerned himself with agricultural problems of the poorer people. After doing what he could to teach them more modern methods of farming and dairying, he returned to the United States.

After securing a Bachelor's degree in Agriculture from Ohio State University, and raising thirty thousand dollars from his friends, he returned to India in 1911 and established an

(Continued on page three)

G. W. Bailey Addresses M. I. T. Radio Society

Official Of American Radio Relay League Speaks On Amateur Activities

George W. Bailey, New England director of the American Radio Relay League, spoke Friday afternoon to the Radio Society in Room 10-200 on the subject of "Five Meter and Other Amateur Activities". Mr. Bailey is a leading experimenter in radio, himself being an amateur.

The American Radio Relay League is a nation-wide organization for the furthering of quick radio communication and better relations between amateurs. Nearly every amateur operator in the country belongs to the league, and it transmits messages free of charge to all parts of the world.

Machine Age Is Not The Cause Of The Present Depression — Kintner

Westinghouse Official Explains Relations of Machines To Employment

In a recent lecture, Mr. S. M. Kintner, Vice-President of the Westinghouse Electric and Manufacturing Company, explained the relation between labor-saving devices and employment. He pointed out that this subject is deserving of some consideration in the face of present conditions.

The mere fact that there are fewer people employed in many industries per unit of product means little, said Mr. Kintner. Many of the industries which employ labor-saving devices that enable firms to produce the same amount of goods with fewer men have risen from nothing. As an example, he gives the automobile industry. Fifty years ago, he pointed out, there were no automobiles to speak of, where today millions are employed in manufacturing, selling, and servicing automobiles.

The changes in source of power have revolutionized industry. Out at Hoover Dam, Mr. Kintner stated, there is a job greater than the construction of the Egyptian pyramids. With nothing but hand labor, the project could not even be considered. As it is, even with the huge amounts of power consumed in labor-saving devices, there is a respectable army of workers on the job.

New Equipment Needed

Much of the old machinery which was put away in the first year or so of the depression will be useless when it is next needed. The newer, faster, lighter, safer, and more efficient new machinery will have rendered old equipment obsolete. The replacement of old machinery with new, Mr. Kintner lectured, will alone go far to bring the return of prosperity.

Again we have the consideration of new industries which have not yet appeared. Just as electricity has been raised from an experimental subject, through the medium of street-lighting, factory power supplies, and telephone service, up to its present position where it is generally accepted as a necessity, might not other industries grow up under electricity in the same manner as, say, the theatre business has in the past. Ten years ago very few people dreamed of talking movies; today silent films are regarded as a novelty.

At the beginning of the nineteenth century, Mr. Kintner observed, the economist Malthus warned the world that unless the birth rate were decreased the population would not be able to produce enough food to support itself. He did not have the

(Continued on page four)

Basketball Team Defeats Newport Naval In Opening Game Of Season By 50 - 27

Kuryla Speaks On Silver and Gold Mining In Mexico

Film Of New Process for Making Wrought Iron Shown To Mining Society

Mining, metallurgy, and refining of gold and silver at Pachuca, Mexico were discussed at some length by Michael A. Kuryla, '36, at the last meeting of the Mining Society, Thursday.

Mr. Kuryla, whose father operates mines and cyaniding plants at Pachuca, is an authority on his subject. He traced the course of the ore from the mines to the production of the crude metals. After describing the refining operations he ended with a few statistics on the plant. This plant is the largest in the world to use cyanide in the extraction of silver from ores.

Pictures on the new process of producing wrought iron, released by the Byers Company, manufacturers of wrought iron, were shown. Wrought iron differs from mild steel in that it contains, mixed evenly throughout, a small percentage of silicious slag, the film explained. To the presence of this slag it owes its unique properties of resistance to corrosion and its fibrous structure. Up to now all wrought iron has been made by a laborious process. The new process makes possible the large scale production of this material.

New Process for Wrought Iron

Mild steel from the open hearth or Bessemer converter, shown in the pictures, is now poured into a ladle of

(Continued on page three)

GETTING NOMINATED AS RHODES SCHOLAR

Chosen from Large Group of Men From All Colleges In Massachusetts

Ivan A. Getting, '33, was nominated for a Rhodes scholarship Saturday when he was one of two men selected from a group of ten students from colleges and universities in the State of Massachusetts. Two men have been nominated from each of the New England states, and from this group four will be chosen tomorrow to receive the honor. Chief in the points considered in choosing the students are personality, character, and scholarship.

Getting entered Technology in 1929 as an Edison scholar. He is in Course VIII, and captain of the Institute Gym Team.

The scholars selected will go to Oxford University, England, in October of next year. They are elected for two years and have the privilege of a third year of study, either at Oxford or another recognized graduate school, if the scholar's record warrants a further grant.

RINGS ARE DELIVERED TO SENIORS THIS WEEK

Those who signed up for Senior rings this fall may redeem their sign-ups this Wednesday and Thursday in the main lobby where Mr. Frank A. Chace, president of the company which makes the rings, will collect the remainder of the money due on the rings, and deliver them to the Seniors.

ENGINEERS SCORE EASY VICTORY IN FIRST ENCOUNTER

O'Brien and Feustel Are High Scorers As Team Piles Up Early Lead

SCORE AT HALF IS 29 - 5

By Weldon M. Ray

Technology's varsity basketball team opened its 1932-33 season in the usual successful fashion Saturday night by outclassing an inferior team from the Newport Naval Training Station by the score of 50 - 27, in a game which was featured by the play of Co-captain Fred Feustel and Obie O'Brien, star forwards for the Engineers. The Naval Academy players, finding the Beaver defense too strong in the first half, began to shoot from farther out after the intermission and ran up a considerable score before the final whistle.

Coach McCarthy was liberal in his use of substitutes and every man on the squad saw plenty of action. One of the features of the game was the play of these substitutes; for while they scored only eleven points against the training-school group, they held the opponents to only two points. The defense of the varsity was nearly flawless near the basket but against long shots it was not very adequate, for the losers made three-fourths of their points from outside the foul line.

Passing Needs Improvement

The Beavers took almost no long shots, most of their scores resulting from dribbles or passes under the basket. The team as a whole showed a need of more teamwork and coördination, for while the scoring was high, much of it was due to individual play and brilliant dribbling. The passing was evidently the cause for this, because nearly all of the players at some time or other fumbled a pass at a point when a score seemed imminent. With a better developed brand of passing attack combined with a stronger defense for long shots and the type of individual play that they showed Saturday night, the Engineers should be able to present many difficulties for the strongest teams on their schedule.

The high scorer for the evening was O'Brien with a total of fifteen points, while Feustel was a close second with fourteen. Feustel's long shots were conspicuous by their absence, although he turned in one backhand shot from the corner of the court that was a beauty. Obie was particularly good at avoiding men to make his baskets, and several times intercepted passes which he converted into points.

Amenta, Shaughnessy Do Well

Pat Amenta and Tom Shaughnessy continued their rivalry for the doubtful guard position by scoring six points each and playing for about the same length of time. At the other guard post, Co-captain Adam Sysko turned in a good defensive game, breaking up a number of passes and making two nice shots from the corner of the court.

Bob McIver played a nice game at center, managing to get the jump on his opponent for most of the time that he played. Joe Oldham, whose ankle showed such improvement that he was able to play a considerable portion of the game, did well in place of Feustel and managed to convert several follow-ups into scores.

(Continued on page four)

A Record of Continuous News Service for Over Fifty Years

The Tech
Established 1881

Official News Organ of the Undergraduates of M. I. T.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

MANAGING BOARD

J. G. Hayes, '33 ... General Manager
B. H. Whitton, '33 ... Editor
D. H. Clewell, '33 ... Managing Editor
D. B. Smith, '33 ... Business Manager

ASSOCIATE BOARD

C. S. Dadakis, '34 ... News Editor
W. L. Wise, Jr., '34 ... Features Editor
D. Horvitz, '34 ... Make-up Editor
W. R. Churchill, '34 ... Advertising Mgr.
N. B. Krim, '34 ... Business Service Mgr.
W. Brown, '34 ... Circulation Manager

EDITORIAL DEPARTMENT

Editorial Board

C. W. Sweetser, '33 W. Sheppard, '33
R. J. Dunlavey, G F. W. Kressman, '33

Associate News Editor

R. Taylor, '34

News Writers

I. S. Banquer, '35 H. H. Dow, '35
R. J. Marks, '36

Sports Writer

W. H. Stockmayer. '35

Features Writers

P. G. Herkart, '35 S. T. Martin, Jr., '34
H. S. Mason, '35 D. V. Rubinstein, '34

Photographic Staff

W. H. Brockett, '35 E. V. Beede, '35

Reporters

J. A. Bartol, '36 H. L. Bemis, '35
V. T. Estabrook, '36 J. I. Hamilton, '36
A. E. Hittl, '36 S. Levine, '36
A. V. Mackro, '36 R. D. Morrison, '36
R. L. Odiorne, '36 F. S. Peterson, '36
M. A. Porter, '35 W. H. Robinson, '36
W. R. Saylor, '36 E. H. Scheftleman, '36

OFFICES OF THE TECH

News and Editorial — Room 3, Walker Memorial, Cambridge, Mass.
Telephone, University 7029
Business — Room 302, Walker
Telephone, University 7415
Printers' Telephone, University 0194

SUBSCRIPTION, $2.50 per Year

Published every Mon., Wed., and Fri. during the College year, except during College vacation.

Entered as Second Class Matter at the Boston Post Office

Member Eastern Intercollegiate Newspaper Association

BUSINESS SERVICE DEPT.

B. Goldforb, '34, Associate Manager
A. A. Frank, '35 J. D. Hossfeld, 35
S. H. Mieras, '36 R. G. Thompson, '36

CIRCULATION DEPARTMENT

D. F. Cobb, '35 J. D. DuRoss, '35
J. D. Loomis, '35 E. L. Pratt, '36

ADVERTISING DEPARTMENT

P. B. Beal, '35 J. L. Fisher, '35
R. B. Healy, '36 G. J. Pearson, '36
D. Stevens, Jr., '35 J. M. Teasdale, '35
O. C. Thelen, '35 I. S. Underhill, '36
H. R. Winkler, '36

WHEN GREEKS UNITE

SOME groups fail to maintain a continued existence because, although they have work to do, they become top heavy with organization. Others fail because they have nothing to do. A body with no functions is to all practical intents and purposes a dying body. Into the last class the Interfraternity Conference may partially be placed.

For some years now the activities of the Conference have been confined to running two or three dances a year and conducting several athletic tournaments among the houses that care to participate. Meetings have been held at which absolutely nothing of any interest or importance has been discussed. The functions of the I. F. C. are necessarily limited, and that nothing of interest comes up for consideration is not a cause for complaint.

In view of this condition the move of the Conference in suggesting that the number of meetings be decreased and that the *heads* of the various houses rather than other representatives attend seems wise. The few arrangements which must be made for the conduct of the I. F. C. business can be made at the fewer meetings, responsible men will be representing the houses if any action is to be taken, and the organization for a concerted move on the part of the fraternities is available if it is needed.

WHERE ARE WE GOING?

IN recent years we have become so accustomed to hearing that the engineer and the scientist are to be the next saviors of civilization, that it may be surprising to some of us that the proposition is not being enthusiastically accepted by the outside world. The fact that it is not, and that the picture painted by Stuart Chase and kindred prophets seems occasionally a bit too good to be true, should give us pause. For there are some who say that the picture is neither good nor true. Are we really on the right track?

Elsewhere in today's issue we quote a recent editorial comment of the *New York Times* which should be of more than passing interest to Technology. We have heard many times about the engineering mind and the story of its marvelous capabilities. We have been told that we are being trained to be rigorous thinkers, and that the fruition of the scientific mind will see the dawn of a new era in which the social and economic system of our time will be swept away as so much rubbish. Often in our own *T. E. N.* editors and contributors alike defiantly wave the bright banner of science in the face of the accumulated experience of the race, with the cry that "tradition", "creed", and "dogma" must give away before the twin archangels of "science" and "progress".

It is certainly pertinent to ask, as does the *Times'* columnist, where all this is leading us. The charge that scientists, as a whole, are working without purpose — and furthermore, that they are incapable of formulating a purpose — is a serious one. The fact is, that the "engineering mind" has become something of a tradition with us, and a tradition with perhaps even less foundation than those we decry. If the future of the human race is to be entrusted to scientists — and there is no doubt that they will play a much larger part than they do today — it behooves them to move with caution, and not continue to sail recklessly down the wind of their own self-flattery. Otherwise history may rate them as cosmic laughing-stocks.

STAFF ELECTIONS

The managing board wishes to announce the following changes in the staff: to the Editorial Board, Edward A. Michelman, G; to the advertising staff, Warren Sherburne, Jr., '36, and John D. Gardiner, '36; to the circulation staff, Elwood Koontz, '36; to staff reporter, Weldon M. Ray, '35; and the resignation of Herbert R. Winkler, '36, from the advertising staff.

Away goes the hockey team to the wild, gay city of the Empire State, and with it Manager Bull, who, we will have you know, lives in Yonkers where the banks fail.

Having thus a sort of tie-in with the place, it is hardly to be wondered at that he should send advance notices of the homecoming prodigal. It is also hardly to be wondered at that his aunt should be only too glad to reassure him that the fatted calf had been led forth to slaughter, the latchstring dangled without, and preparations for the great day completed.

As a matter of fact, she went even farther than this. There was also extended to George and such of his friends on the hockey team who cared to take advantage of the offer, a kind invitation to use the family pew on Sunday. We have a mental picture of Ranny Thomson and little Milliken stepping from arena to church pew, meanwhile exchanging the old fighting frown for sanctimonious saintliness, the while brother Bull lays aside his managerial worries to lead the team in prayer.

We note with sympathy the letter sent us by Mr. Streng, General Manager of the Combined Musical Clubs and in reply to same wish to say that, — THE TECH will undoubtedly personally chastise every fraternity that holds a dance within the time set for the next Christmas Concert, and we will even let the next general manager come and figuratively weep on our editorial shoulder, the while he rails at a stony and non-co-operating world.

In spite of the fact that Mr. Streng thought that nobody loved the Musical Clubs and they were all going out in the garden and eat wo-o-o-(snf)-o-rms, we note that the Concert was a financial and social success. Well, that's Africa for ye, m'lad.

It is with a warm and solicitous heart that the Lounger looks forth upon the world. A great feeling of spiritual and intellectual magnanimity fills our soul. For the first time since we left the old homestead with the three mortgages falling due, have we had a home-cooked meal.

Say on, you lugubrious and gloomy Nietzsche, away vile Schopenhauer, to what avail the Stoics? No longer can we look on the world and cry mournfully, "Vanity, vanity, all is vanity." The great secret will out. Pessimism has at last been revealed as only a form of indigestion.

AWAY FROM THE GRIND

With spotlights playing on silvery columns and the large ball in the main hall of Walker gaily revolving, more than two hundred couples danced until 3 A. M., Saturday morning, at the Christmas Concert and Dance presented by the Musical Clubs.

Dorothy Fowler, soprano, Warren Pease and Arthur Conn, banjoists, and Merten Neil, xylophonist, contributed to the main portion of the concert. Music for dancing was played by the Techtonians.

Unusual lighting effects were obtained by playing spotlights on columns which were covered with aluminum foil, the whole tending to give an odd and unique appearance.

Comics Favored

Several publicity students from Boston University recently conducted a survey of over five hundred business men. The resulting statistics revealed that the comic strip is the most widely read section of the daily paper. Display "ads" and photographs rate next in order, and editorials won fourth place.

Princeton Downs Hockey Squad In Fast Game By 3-1

Team Shows Great Improvement; Milliken Again Stars In Beaver Net

By WALTER H. STOCKMAYER

Showing a vast improvement over the form displayed in the struggle with B. U., a fighting Technology hockey team went down to a 3-1 defeat at the hands of the Princeton varsity last Saturday afternoon, in a game played at the Hobey Baker Memorial Rink in Princeton. This showing, made against one of the strongest sextets in the East, gives a better indication of the Beavers' strength than did the opening game, and emphasizes the power of the Boston University team.

Coach Vic Duplin was forced to make two changes in the lineup because of the leg injury sustained by Jack Carey, regular defense man, in the opening game. He shifted Eddie Sylvester to Carey's defense post, and brought up Roger Williams from the second line to take Sylvester's place at left wing.

Milliken Plays Fine Game

Frank Milliken once more proved to be the star of the game with his sensational work in the Beaver goal. Milliken had a total of 28 saves to his credit, and several times averted what seemed like sure Princeton tallies. The team's defense as a whole functioned very well, the Tigers being held scoreless in the final period.

The Orange sextet, composed largely of veteran players, took the lead midway through the first period, when Glazebrook, speedy center, took a pass from Boice to score in 12:01. Four minutes later, while Glazebrook was serving a penalty, Captain Johnny Hrones knotted the count for the Beavers with a fine individual effort. The Tigers threatened to score several times before the period ended, but each time Milliken's goal-tending marred their attempts.

Princeton Scores Two More

Princeton staged a determined attack in the second period and succeeded in scoring the two goals that proved to be the margin of victory. Captain Art Lane got the first in 7:04 on an individual rush, and Whitman caged the other from a scrimmage in front of the Beaver net in 13:54. For the remainder of the contest the Engineer defense was impregnable, but all of their scoring attempts were successful.

The Engineers were somewhat handicapped by the shortage of men as compared to the Tigers, since only ten players made the trip. The game was also marked by clean playing, only two penalties being called during the whole contest.

SEVEN CHAMPIONS CROWNED IN ALL TECH TOURNAMENT

Putnam Triumphs In Two Heavy Classes; Boyan Wins In 155-Pound

RICKS FINDS MATERIAL

By John I. Hamilton

Seven men out of a total of forty-three entries emerged the victors in the annual All-Tech wrestling tournament, which was brought to a successful conclusion last Friday afternoon. Although there were eight weight classes, Otto A. Putnam, '33, was victorious in both the 175 pound and heavy-weight classes, thus limiting the number to only seven champions. The tournament itself aroused quite a bit of interest in the student body, and there was quite a large crowd on hand to witness the last day's matches, when Dr. John A. Rockwell, '96, was present to congratulate the winners and present them with their gold medals.

N. E. Frosh Champions Win

In the 118-pound class, A. D. Marderosian, '35, last year's champion in the freshman New England Intercollegiate matches, gained a fall over George in 4:16. George, who is a freshman, put up a game fight, but was unable to cope with the experience of his opponent. J. E. Perry, '34, gained a fall after B. S. Malin, '34, whom he was wrestling had run up a large time advantage, thus becoming this year's 126-pound champion. H. M. Oshry, '35, and J. Loughman, '33, fought it out on fairly even terms until Oshry succeeded in getting a Half-Nelson and crotch hold, thereby pinning his opponent in 6:27. Oshry was also a New England Intercollegiate freshman champion, wrestling in the 135-pound class. In the 145-pound class, there were nine men entered, with J. P. Eder, '34, and F. V. Judd, '34, working their way to the finals. They were having a lively bout until Eder twisted his arm, forcing him to default the match to Judd.

Freshman Wins 155-Pound Title

Two freshmen, E. A. Boyan, and H. Christensen, fought in the finals of the 155-pound class. This match was so even that it was necessary to have two overtime periods, with Boyan finally emerging victorious, with a time advantage of 2:31. E. O. Hakala, '35, one of the members of last year's freshman team, gained a fall in 4:33, over I. R. Kusinitz, '34, in the 165-pound class. Putnam won the 175-pound class by default, as S. A. Prince, '34, who was to be his opponent, was injured the day before. Putnam also won the heavyweight class, but did not have such an easy task here, as he had to wrestle Jesse Schumacher, 250-pound Sophomore. After a great deal of straining and groaning, Putnam got a Half-Nelson, and slowly pinned his opponent, who put up a great fight.

Coach Jay Ricks was very pleased with the results of the tournament, as it uncovered some fine material for both the freshmen and varsity teams. He is hoping that Putnam, who has developed into a fine wrestler, will make the 175-pound class, thereby giving the varsity another very valuable man in this division.

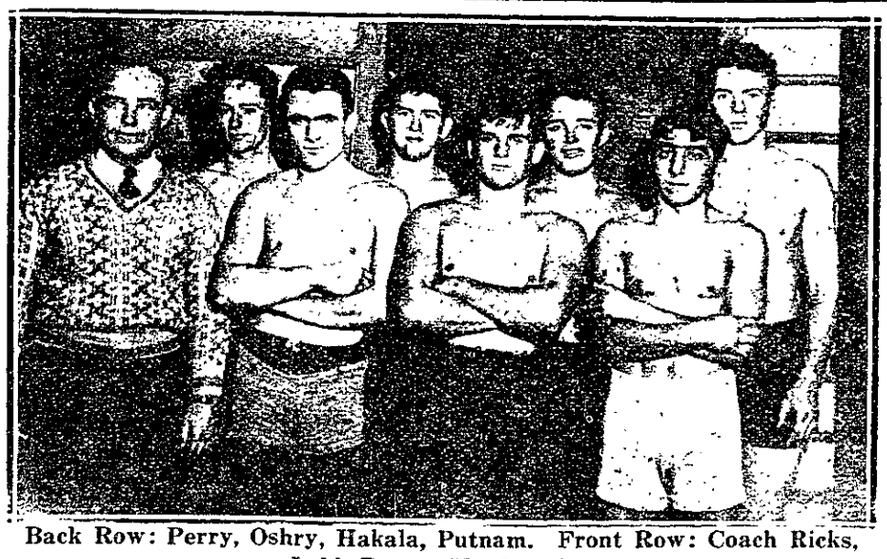
KURYLA SPEAKS ON MINING IN MEXICO

(Continued from page one)

molten slag prepared specially in an open hearth furnace. On its way through the slag, to the bottom of the ladle, the iron absorbs the correct amount. As the slag is poured off, the pasty bloom remains. It is pressed to free it from excess slag and then is ready to be milled. In the picture the remarkable machinery for doing most of the work automatically was clearly shown.

Coal mining in the anthracite district of Pennsylvania was the subject of the next film to be shown. In the first reel the geological processes culminating in the deposits of hard coal were demonstrated. The final reel dealt with the mining and the preparation of the coal.

VICTORS IN WRESTLING TOURNAMENT



Back Row: Perry, Oshry, Hakala, Putnam. Front Row: Coach Ricks, Judd, Boyan, Marderosian

Scientists In Absolute Control Of World Would Present Sad Spectacle

Engineers Are Machines, and Do Not Care How Their Work Is Used

The following quotation is from "Topics of the Times" in the NEW YORK TIMES of November 27, and is printed here as the expression of an opinion which should be of special interest to Technology students.

—Editor.

Science In the Saddle

Schenectady gave a Thanksgiving Eve party for the three most eminent of her distinguished collection of scientists in the laboratories of the General Electric Company. They were Whitney, the retiring director of research; his successor, Coolidge, of the X-ray tube, and Langmuir, to whom has just been awarded the 1932 Nobel Prize in chemistry. President Day of Union College paid tribute to the three men and said, among other things:

"Nothing in the world is so important as a man of distinguished mind. He is at once an insignificant part of the animal kingdom and a God-like observer and creator in the universe."

It will be noted that Dr. Day calls the scientist an observer and creator. He does not call him a statesman and ruler. That is as it should be. Scientists in absolute control of the world would be a sad and terrible thing.

Genius and Team-Work

Sinclair Lewis is not fond of the high-powered and well-dressed American executive. But Mr. Lewis rises above his prejudices in "Arrowsmith" when he tells us what happened with a change of administration in the famous McGurk Institute. As long as the head of the great research institution was the smooth and intelligent politician, A. De Witt Tubbs, the work of the institute's great scholars went forward in a spirit of fruitful co-operation. When the manager, Tubbs, is succeeded by the scientific genius, Gottlieb, the temple of research becomes a beer garden.

Science and Purpose

Much is being said and written today about the need of taking the government of the world out of the hands of politicians and handing it over to scientists, engineers, experts. The present sad state of the world is attributed to the lack of purpose with which it has been governed. It has been ruled (1) by selfish men, avid of power and of profit, but with no high social purpose in mind; (2) by stupid, ignorant, rule-of thumb men with no vision to guide them. If we want purpose, precise knowledge, exact methods, we must go to the men whose trade is with such things — the scientist, the expert, the engineer.

There is just one fallacy in this statement of the case. It confounds purpose with special knowledge. The two things do not necessarily go together. It is a mistake to suppose that Technocracy, government by scientists and engineers, will give us purpose. For it is the essence of the scientist's and the engineer's trades that they work without purpose.

He Has a Job To Do

Put an engineer in charge of the world, and he will still have to decide what kind of world to build. Your good engineer will build roads and power stations and tractor plants with equal enthusiasm for Joseph Stalin and for Herbert Hoover and for the Rajah of Sinderabad. Precisely because his mind is set on turning out the best job of which he is capable he is not concerned with the use to which his work will be put. The Soviet Government may use his hydroelectric power to build a Socialist régime, exterminate the individual home, and suppress God. The American people may use Giant Power to disseminate electric sewing machines, refrigerators and laundry machines, and so consolidate our "petty bourgeois" system of the home and the Capitalist System. The Rajah of Sinderabad may use electricity to illuminate the royal elephant stables while his people suffer from malaria and trachoma.

Your bacteriologist and sanitation engineer have no purpose. With equal enthusiasm they will fight diphtheria and malaria for Mr. Hoover, Mussolini, Ramsay MacDonald, Chiang Kai-shek, Stalin, Hindenburg, Hitler, Mayor McKee and the government of Manchukuo. What use these governments and institutions and Purposes will make of the little children saved from diphtheria when they grow up does not concern the engineer and bacteriologist—as technicians and scientists. They may be very much interested in their capacity as "an insignificant part of the animal kingdom," that is to say as men.

Playboys of the Cosmos

This lack of purpose is still more evident and unavoidable in the highest realms of science, in the domain of pure research. The scientific mind, as it ranges the universe under the urge of a splendid and insatiable curiosity, must not be halted and made to state what "results" it expects to attain. The scientist is not interested in results. He only wants to poke around in the universe. He only wants to fool around with things, as Faraday did with electricity or some unknown Chinese inquirer several thousand years ago did with block type. As with Faraday and the unknown Chinese pioneer of printing, this aimless experimental business may produce the most startling results. Pure research when translated into gunpowder and printing may kill a feudal civilization. Research translated into steam engines may build new civilizations. Then research translated into poison gas and bombing planes may once more threaten civilization. You never can tell what will happen when the scientist begins to nose around in the limitless domain of knowledge. But if you attempt to tell the scientist what he ought to find out about the world you ruin him.

Human Touch Wanted

Scientists are consultants in the business of governing the world. Their services are indispensable. Their rôle in the future management of groups and nations is bound to grow, but always as consultants. They should give advice when asked and when not asked. But they cannot determine a Purpose for mankind. Wonderfully enough, that function must be left by the nations to their politicians. The politician is very much an insignificant part of the animal kingdom, but for that very reason he stands very close to all of us.

MANY DORM MEN PRESENT AT TEA

First Informal Affair In Burton Room Declared Big Success By Dorm Residents

Dormitory men enjoyed friendly chats over the teacups yesterday afternoon, at the first informal tea of the season given in the Burton Lounge from 4 to 6 o'clock. Many professors and their wives were present at the affair, helping in the greeting and entertainment of the guests.

The teas are an innovation this year. They are held, according to the *Dorm Rumor*, as a means of "bringing the faculty and the dormitories closer together." In many quarters, however, the teas were seen as a means of increasing the social opportunities of the men living in the dormitories, and both faculty guests and dormitory men agreed last evening that this first tea was highly successful.

Shortly after 4 o'clock the dormitory men and their guests began filtering in. A bright fire burned in the fireplace, adding to the hospitable atmosphere of the occasion. Small groups formed here and there in interesting conversation. Tea, sandwiches and cake were served. In addition to the faculty members and their wives, members of Agenda and Dorclan, the honorary organizations of the dormitories were present to make introductions and aid in promoting the atmosphere of the occasion.

Among the guests present were Mrs. Karl T. Compton, Professor and Mrs. James R. Jack, Bursar and Mrs. Horace S. Ford, Dean Harold E. Lobdell and his mother, Mrs. Kathryn M. Wiswall, Professor and Mrs. Leicester F. Hamilton, Professor Harry M. Goodwin, Dean and Mrs. Vannevar Bush, and Professor and Mrs. William T. Drisko.

The committee in charge of the tea was headed by Stephan H. Rhodes,

QUADRANGLE CLUB ELECTS FRESHMEN

Announcement has been made of the new men elected to the Quadrangle Club at the recent fall election. The following men, all of the Class of 1936, are those chosen: Oliver Lawrence Angevine, Jr., Philip Gardiner Briggs, William Bayard du Pont, Harry Edward Essley, Jr., John Richard Gardiner, Stanley Theodore Johnson, Michael Alexis Kuryla, Scott Carson Retharst, Robert Searle Reichart, Fletcher Parratt Thornton.

The Quadrangle Club is the honorary society of the freshman and Sophomore classes. The new men will be formally initiated Wednesday, December twenty-first. The next elections of the club will be held next term.

VARSITY SWIMMERS LOSE TO BOWDOIN

In the first meet of the season last Saturday afternoon, the varsity swimming team was decisively defeated by a strong Bowdoin combination by a score of forty-eight to twenty-nine. However, despite the fact that the score was rather one-sided, each race was closely connected and Technology gained places in all the individual events. The Bowdoin team succeeded in winning both the 200-yard relay and the 300-yard medley relay.

Captain Lou Flanders was the only Institute swimmer to win a first place, capturing the 200-yard breaststroke in two minutes and fifty-one seconds. Muller, another Engineer, finished second to give Technology a total of eight points for this event. Jack DuRoss and Jim Granberg finished second and third respectively in the fifty-yard dash, and George Henning copped a second in the 220-yard swim to give Technology another seven points.

EDUCATOR TALKS ON SITUATION IN INDIA

(Continued from page one)

agricultural school there. In recognition of his work the King of England awarded him the Kaiser-in-Hind medal, one of the highest honors bestowed on residents of India. His school is now attended by the sons of many Maharajahs.

The second address will be given by Ben H. Spence, Canadian journalist, on "Canada's Liquor System". Mr. Spence is noted as an authority on the modern liquor problem, he having gained valuable experience through his position of press representative for a Canadian newspaper at Washington. There he was a member of the National Press Club, the White House Correspondent's Association and the Senate Press Gallery, giving him an exceptional opportunity to observe American affairs.

CALENDAR

Monday, December 12

3:00 P. M. — Tech Catholic Club Meeting, Faculty Dining Room, Walker Memorial.
6:00 P. M. — Arlington Schoolmasters' Association Dinner and Meeting, Grill Room, Walker Memorial.
6:30 P. M. — Course VI-A Seminar, Dinner, North Hall, Walker Memorial.
7:30 P. M. — Tech Show Tryouts, Walker Gymnasium, Walker Memorial.

Tuesday, December 13

5:00 P. M. — Banjo Club Rehearsal, East Lounge, Walker Memorial.
5:00 P. M. — Freshman Class Officers' Meeting, West Lounge, Walker Memorial.
5:00 P. M. — Alpha Phi Delta Business Meeting, North Hall, Walker Memorial.
6:00 P. M. — Soccer Team Banquet, Grill Room, Walker Memorial.
6:15 P. M. — "Aristocrats'" Rehearsal, East Lounge, Walker Memorial.

Wednesday, December 15

5:00 P. M. — "Ambassador" Rehearsal, East Lounge, Walker Memorial.
6:00 P. M. — Society of Automotive Engineers' Dinner, North Hall and Faculty Dining Room, Walker Memorial.
7:00 P. M. — Alpha Chi Sigma Smoker, Grill Room, Walker Memorial.
7:30 P. M. — Tech Show Tryouts, Walker Gymnasium, Walker Memorial.

DR. BENNETT GIVES TALK ON COSMIC RAY

(Continued from page one)

is composed of charged particles, and that variations in strength are due to deflection by the earth's magnetic field.

This explanation of cosmic radiation is further strengthened by the theory recently set forth by Dr. Manuel E. Vallarta of Technology, who, in collaboration with the Abbé G. le Maitre of the University of Louvain and a former student at Technology, made computations which indicate that cosmic radiation is electrical in its nature. Calculations by these scientists to determine theoretically the influence of the earth's magnetic field on the rays closely checks actual measurements.

Rays Come From Above

The existence of cosmic radiation and proof that the rays fall from above was demonstrated by means of instruments designed by Dr. Bennett for measuring cosmic radiation. The most spectacular experiment was a wierd wailing sound produced by tremendous amplification when one of the instruments registered the arrival of a particle of cosmic energy.

Dr. Bennett traced the history of this mysterious radiation which rains upon the earth continuously in the form of darts of energy that penetrate everything. Not even the 110 steel and concrete floors of the Empire State Building are an insuperable obstacle to cosmic energy, he said, and added that cosmic radiation probably would have to be millions of times more intense to have any biologic effect on man. In their swift journey through the atmosphere each of these minute projectiles of energy leaves in its path the shattered fragments of countless atoms. The rays come at a frequency indicating that about 30 of these particles of energy fall upon each of us every second.

The earliest indications of the effects of this strange radiant energy, Dr. Bennett explained, were observed in its ability to make the atmosphere or other gasses slightly electrically conducting. Not until some 40 years ago, however, were scientists able to devise instruments sufficiently sensitive to measure the rays, nor had knowledge advanced to a stage capable of interpreting the observations.

Ionization Chamber Shown

After describing the basis for detection and measurement of cosmic radiation, Dr. Bennett exhibited some of the modern instruments for measuring the intensity of the radiation. Among these was one designed by him and used last summer in his expedition. It was not unlike a globe of the world resting on a three-legged stand. The globe, however, was made of more than 200 pounds of lead built up in hemispherical layers. In the center was a sealed spherical chamber containing argon gas, which is ionized by the radiation and thus plays the primary role in the process of detection and measurement. Other instruments included Geiger-Müller counters and the Wilson cloud chamber.

The Geiger-Müller counter is essentially a gas-filled tube containing a fine wire stretched down the centre of a metal cylinder, with a potential difference of about 1000 volts between the cylinder and the wire.

Geiger Counter Explained

The action of the counter is best described by saying that the voltage between electrodes in the tube is so high that the tube is always just on the point of breakdown. In simple, it is almost unstable, and the slightest disturbance, such as the entrance of a penetrating ray, "triggers off" this breakdown and allows a current to flow for an instant. It was with this instrument that the arrival of a particle of cosmic radiation was demonstrated.

The Wilson cloud chamber is an ingenious instrument devised in 1912 by the distinguished English physicist, C. R. Wilson. It is a chamber filled with moisture-laden, dust-free air. By ionizing the air and producing minute droplets of water on the ionized molecules, he was able to photograph the paths of electrically charged particles by means of light reflected by the water drops.

Discussing the possible significance of cosmic radiation, Dr. Bennett made clear that science knows very little yet about the time, the place and nature of the origin of this form of energy. It may well have started 10 billion years ago, he explained, and if so, some 90 per cent of the radiation would still be wandering about unabsorbed. There is no known terrestial, and no demonstrated celestial process which accounts for the radiation.

MACHINE AGE IS NOT CAUSE OF DEPRESSION

(Continued from page one)

chance to see the conditions of modern labor-saving machines which would render his thought useless.

The tendency of the age toward shorter working time will undoubtedly continue, according to Mr. Kintner. Within the age of the older generation, working time has changed from sun-up to sun-down, to a twelve-hour day, then a ten-hour, and now an eight-hour day. There is agitation at present for a six-hour day, and this is not out of the question at all.

There is no one at present, said Mr. Kintner, who would wish to retrace our steps and throw away our machines in order to increase employment. What we need is no such retrocession into past methods, but rather a new plan of operation, which of course needs an incentive to continue the improvement, that will give due consideration to our new order of things and permit us to enjoy the freedom from drudgery toward which we have so long been striving.

FEW CANDIDATES FOR BEAVER BOXING TEAM

Coach Rawson of the Technology boxing squad has been worried lately about the failure of enough men to come out for varsity and freshman boxing to make full teams. In the past the Institute has always been well represented in this sport, and it would be sad indeed if the team were to be forced to meet other teams without men in several of the classes.

The varsity weights which still need more men are the 155-, 165-, and 175-pound classes. In at least two of these the team will not be represented unless candidates come out for them. All men interested in boxing are urged to go out for the sport, which is well-known for its body-building capabilities. Experience is not necessary, for Tommy Rawson is an expert coach and has been known to develop even green material into good boxers. Men should come out immediately in order to have time to get into shape for the coming season.

VARSITY BASKETBALL TEAM WINS BY 50 - 27

(Continued from page one)

Leach Stars For Sailors

For the Naval Academy the high scorer was Leach, the center, who made several fine shots in the last half. Condry at left forward was the only player who seemed to be able to score on the Engineers in the first half, and twice he circled the guards to make goals. In the second half, however, Captain Anderson, Brown, Frere, and Dandino began to follow Leach's example and to make baskets from outside the foul line. Against this style of play the Technology team was helpless, especially when the visitors were such excellent shots.

Coach McCarthy's starting line-up of Feustel, O'Brien, McIver, Sysko, and Shaughnessy got off to an early lead which was never reversed, when after about a minute of playing O'Brien, on a brilliant bit of individual play, got by the Newport guards for the first score of the evening. Feustel soon followed with an almost identical play. After Obie had capitalized on a free throw, Tom Shaughnessy took the ball in on a nice tip-off from McIver for the third field goal. Obie made another shot under the basket, and then Fred Feustel followed with a beautiful overhand shot from the corner of the court.

After a considerable lull in which neither team scored, the Engineers again began to run up the score with O'Brien and Feustel getting most of the goals. In the second period Coach McCarthy began to send in his substitutes freely, but the training-school squad was still unable to do much. The score at the half was 29 - 5 in the Engineers' favor.

Engineers Outscored In Second Half

The Newport coach must have given his team a few pointers during the intermission, for they immediately began to take long shots with great success, matching the Beavers' efforts point for point. In the final quarter the scoring was less, and both teams were substituting freely. When the final whistle blew, the Engineers had amassed fifty points to their opponents' twenty-seven. In the last half, however, Newport succeeded in outscoring the visitors, making twenty-two points to the twenty-one of the Technology quintet.

The summary:

M. I. T.

	G.	F.	Pts.
Feustel, rf	6	2	14
Oldham, rf	2	0	4
Laurence, rf	0	0	0
O'Brien, lf	6	3	15
Fisher, lf	0	1	1
McIver, c	0	0	0
Murphy, c	0	0	0
Whitmore, c	0	0	0
Shaughnessy, rg	3	0	6
Keyser, rg	0	0	0
Sysko, lg	2	0	4
Amenta, lg	2	2	6
Rich, lg	0	0	0
	21	8	50

Newport

	G.	F.	Pts.
McNamara, rf	0	0	0
Mizausky, rf	0	0	0
Anderson, rf	2	0	4
Brown, lf	2	0	4
Condry, lf	2	0	4
Leach, c	4	0	8
Frere, c	1	1	3
De Mars, rg	0	0	0
Culman, rg	0	0	0
Beauchemin, rg	0	0	0
Dandino, lg	2	0	4
	13	1	27

Referee — Kelleher.

FRESHMAN SHATTERS POLE VAULT RECORD

(Continued from page one)

was the longest race of the day. Smith, who was given twenty yards handicap, was closely followed by Bob Mann, who started from scratch. Dick Jarrell, Paul Gerhard, and Bill Royce completed the first five. The winner was timed in 2 minutes 32 seconds.

Summaries:

Varsity 50-yard dash — First heat won by Clarence R. Horton, '35 (2 ft.); Richard Bell, '34 (scratch), second; Charles F. Hill, '34 (3 ft.), third. Second heat won by Melvin A. Sousa, '34 (2 ft.); H. Rees Schwarz, '34 (3 ft.), second; Richard F. Jarrell, '35 (3 ft.), third. Final won by Bell; Horton second; Hill third; Sousa fourth; Schwartz fifth. Time 5 4-5 sec.

Freshman 50-yard Dash—First heat won by Henry C. Runkel (scratch); Raymond C. Svenson (3 ft.), second; William T. Royce (5 ft.), third. Second heat won by Stanley T. Johnson (3 ft.); Richard B. Hitchcock (4 ft.), second; Gregory P. Villaflor (7 ft.), third. Final won by Johnson; Runkel second; Svenson third. Time, 6 sec.

Varsity and Freshman 50-yard Dash—Won by Horton (2 ft.); Runkel (3 ft.), second; Bell (scratch), third; Hill (3 ft.), fourth; Johnson (4 ft.), fifth. Time 5 4-5 sec.

45-yard High Hurdles—Won by Stanley T. Johnson, '36 (scratch); G. Kingman Crosby, '34 (scratch), second; Edgar M. Pierce, '33 (scratch), third. Time 6 4-5 sec.

300-yard Run—Won by Edward J. Walsh, '33 (5 yds.); Walter Wrigley, '34 (8 yds.), second; Charles F. Hill, '34 (3 yds.), third; Thomas W. Blair, '35 (8 yds.), fourth; Harner Selvidge, G, (10 yds.), and Richard B. Hitchcock, '36 (8 yds.), fifth. Time 35 1-5 sec.

1000-yard Run—Won by John G. Smith, '34 (20 yds.); Robert E. Mann, '34 (scratch), second; Richard F. Jarrell, '35 (20 yds.), third; Paul M. Gerhard, '33 (25 yds.), fourth; William T. Royce, '36 (40 yds.), fifth. Time 2 min., 32 sec.

Pole Vault—Won by Gordon S. Donnan, '36 (scratch); Edgar M. Pierce, '33 (scratch), and Nathaniel P. Green, '33 (scratch), tied for second. Height 11 ft., 6 in. (New Institute Freshman Record).

High Jump—Won by Warren Sherburne, '36 (3 in.); George D. Ray, '36 (scratch), second; Gordon S. Donnan, '36 (2 in.), and Edgar M. Pierce, '33 (2 in.), tied for third. Height, 5 ft., 9 in.

12-Pound Shot Put—Won by Edgar M. Pierce, '33 (5 ft.); Thomas E. Brown, '36 (3 ft.), and Alfred L. Greenlaw, '35 (5 ft.), tied for second.