

Engineers' New Equation Valued At \$1,000,000,000

Formula Saves \$120,000 For Westinghouse In First Try

Bradford Determines Mathematical Curves

An equation which is estimated to be worth over a billion dollars to industry has been developed by three members of the engineering experiment station. The equation of eight characters saved the Westinghouse Company \$120,000 the first time it was put into practical application, it is said.

The formula represents the load carrying capacity of a journal bearing. It applies almost universally where mechanical power is used. It may be stated as: $W \text{ equals } (a/b) \text{ squared times NZKY}$ where a, b, N, Z, K, Y are constants.

Simplifies Method
In this equation, the value of Y is variable. It may be obtained by an intricate application of higher mathematics. However, it involves formulae which would extend for five feet, if written out. The work here at the College reduced it to a series of curves from which it is now possible to read the value of Y directly.

Practically any moderately intelligent engineer can use the formula now. Before, there were only about a half-dozen gifted engineers in the country who could follow its intricacies. With the added information obtained here plus the simplified method of finding Y , the behavior of bearings can be easily computed.

It was first put to practical use recently when Westinghouse Company was bidding on some new equipment for which efficiency guarantees were necessary. Under the old method, the company allowed a four percent loss for bearings. But now, with the application of this formula, the company had only to allow for a one percent loss on bearings. This raised the efficiency guarantee and automatically raised the value of the machinery \$120,000.

The mathematic work to determine the curves was done in the experiment station under the direction of Louis J. Bradford, professor of machine design. The formula was worked out and developed by two graduate students, Everett M. Barber and Charles C. Davenport, holders of Elliott and Texaco fellowships.

Smith, Linton Elected To Fill Friar Offices

J. Franklin Smith '37 was elected president of Friars, honorary hat society, at a meeting held recently. Levon Linton '37 was named secretary-treasurer for the coming year.

Three sophomores were pledged. They are Jerome Freudenheim, Richard Hunter, and Carl Maish. At the request of Leo N. Skemp '35, Tribunal president, Friars are going to cooperate in a stringent enforcement of freshman customs this year.

Tentative plans were also discussed for a Druid-Friar dance, to be held sometime this year. No definite date has yet been set for the affair.

Arrested, Incarcerated, Cross-Examined, Released --- Criminal Record of Wiley '32 Charged With Sedition Against Govt.

Arrested, incarcerated, cross-examined, released.

That's the story of Donald S. Wiley '32, who last week was held in the Danialson, Conn. jail, charged with sedition against the United States government. Wiley was picked up while distributing reprints of textile strike editorials from the *Daily Worker*, official organ of the Communist Party in this country. He was held, and cross-examined pending trial. Judge John W. Gallup threw the case out of court on insufficient evidence Monday, freeing Wiley.

Wiley's companion in Danialson at the time of the wide-spread textile strike was a descendant of the Connecticut town's founder, Russell Danialson. He was held for sedition also. Both men were picked up by State police when it was discovered that the words, "Join The Communist Party" were printed in small type on the back of the editorial reprints.

Joel Rustam, writing in the *Daily Worker* of last Friday, reports the cross-examination of Wiley:

Home Meets With Columbia, Navy, Lehigh, Miami Feature Wrestling Card; Red, Orange Matches Away

Home meets with Columbia, Navy, Lehigh, and a new opponent, Miami University, of Oxford, Ohio, are on the 1935 wrestling schedule released through the office of Neil M. Fleming, graduate manager of athletics, by Melvin J. Fox '35, manager, yesterday.

The wrestling schedule for this year includes six dual meets, and the Intercollegiate in Philadelphia on March 16 and 17. Four of the meets are at home. The team will open their season here on January 26 against Miami.

Columbia, traditional rivals of the Nittany Lions, will travel here on February 9. The team will go to Ithaca, N. Y., on February 16 and grapple with Cornell, while on February 23 they will meet Lehigh University in Recreation Hall.

On March 2 the second away match of the season will take place at Syracuse University. In the final dual meet, the Lions will engage Navy wrestlers here on March 9.

'38 Basketball Schedule
The freshman basketball schedule, released by Leonard W. Bauer '35, manager, includes six contests, two of them away. The season opens

Grant Announces Varsity Quartet

3 Seniors, 1 Junior Appointed By Music Director; 19 Chosen For Special Club

Members of the Varsity Male Quartet for this year selected by Richard W. Grant, director of the department of music, from the Men's Glee Club are: Marvin L. Eshelman '35, first tenor; Ebert L. Badger '36, second tenor; Burton Rowles jr. '35, baritone; and Fred J. Getz '35, bass.

Nineteen members of the Glee Club were appointed. Grant, late last week after competition to compose the "Hy-Los" or special singing club. The group will represent the Glee Club in the fall home party Thespian and Glee Club production and at informal campus social occasions.

Those selected are:
First tenors: Marvin L. Eshelman '35, Richard D. Langdon '35, Robert C. McCreery '36, Harry A. Rowbottom '36 and Richard C. Shoemaker '37.
Second tenors: Charles T. Potts '35, Ebert L. Badger '36, Herman Blair '37 and Charles W. Tilden '37.

Baritone: Burton Rowles '35, Arthur C. Harper '35, John O. Linton '35, John W. Kreeger '35, and Donald Dixon '37.

Basses: Fred J. Getz '35, George F. Magdeburger '36, James A. Williams '37, Ralph DuVize '38 and Edward M. Leigh '38.

Lewis Presents Report

Willard P. Lewis, College librarian, has returned from Hershey where he attended the annual meeting of the Pennsylvania Library Association, and at which he discussed "The Future of Public Library Service in Pennsylvania." Mr. Lewis also presented the report of the committee on public library standards, of which he is chairman.

here on February 9 with Brown Prep. On February 16 the first-year men will meet Wyoming Seminary. The next two games will be played in Pittsburgh on February 22 and 23 against Carnegie Tech and Pitt, respectively.

March 1 the freshmen will play Bucknell here, and on March 9 they will close their season here with the Dickinson Seminary game.

The gym team schedule, as released by Herman Rosenbluth '35, manager, includes two meets, one here with Panzer College on February 16, and one at Princeton University on February 23.

For the first time in several years the freshman boxing team has a dual meet schedule. According to William B. McKechnie '35, manager, the first-year men will travel to West Point on March 9 and box the Army Plebes.

P. S. C. A. Starts Financial Drive

Officials To Attend "Kick-Off" Dinner At Nittany Lion Inn Monday Night

Opening the annual Christian Association finance campaign, division leaders and solicitors will attend a "kick-off" dinner at Nittany Lion Inn Monday night at 6 o'clock. Short talks will be given by Dean Ralph L. Watts, of the School of Agriculture, who is chairman of the P. S. C. A. Board of Directors, Dean of Men Arthur R. Warnock, and Prof. John H. Frizzell, head of the division of public speaking.

The dinner, at which the aims and goals of the campaign will be discussed, is being given by the Board of Directors. The campaign will start immediately after the dinner. Special entertainment, including an orchestra, has been planned, as well as group singing.

Division Leaders Listed
Dr. James F. Shigley, of the animal husbandry department, has been named faculty chairman of the drive, with Albert E. Dirm '35 and Katherine B. Humphrey '35 as student chairmen. The division leaders are Herbert E. Longnecker, graduate assistant, Charles E. Myers, Secretary of the Student Union, R. Bates Barnes '35, Douglas R. Borst '35, William Briantall '35, Geraldine E. Broberg '35, John A. Brutzman '35, Manlio F. DeAngelis '35, Joseph E. Dentice '35, Anne B. Fagan '35, Claire M. Lichty '35, A. Kenneth Maiers '35, and Eugene G. Myers '35.

Other division leaders are: Frances T. Paschall '35, Robert K. Paxton '35, James W. Townsend '35, J. Kenneth Weikal '35, William G. Balderston '36, John E. Binns '36, John B. Bott '36, Aaron N. Decker '36, Elwood M. Douthett '36, Lloyd E. Garrison '36, J. Francis Gehr '36, Harry T. Gilbert '36, John T. Hermansen '36, Ralph T. Irwin '36, and Peter Lektrich '36.
Anne M. McCaughey '36, J. Briggs Pruitt '36, Bernard A. Riley '36, Dorthea E. Ruth '36, Charles H. Salt '36, Warren W. Shew '36, Robert H. Small '36, M. Elizabeth Springer '36, J. Jack Weiss '36, Joseph B. Wharton jr. '36, Lester M. Benjamin '37, Dorothy P. Fish '37, J. Lloyd Larikins '37, and Elizabeth R. Oberlin '37 complete the list.

Venezuela President Awards Medal to Kern

A gold medal for distinguished service, accompanied by a special citation from the President of the Republic of Venezuela, has been received by Dr. Frank D. Kern, Dean of the Graduate School and professor of botany.

The official title of the award, when translated from the Spanish, has the approximate meaning of "Metal of Honor of Public Instruction." The President sent it to Dr. Kern in recognition of a botanical expedition which he made in Venezuela last May.

Dr. Kern went there after being invited to make the study by the government. He was aided in his work there by the government, the Department of Agriculture, and the President himself. Dr. Kern went there from the University of Puerto Rico, where he was located during the past academic year.

While the United States government usually awards medals for military service only, many of the South American countries make it a practice to give medals and citations to all citizens and foreigners who render the country distinguished services along academic lines.

A. A. Announces Sale Of Reserved Tickets

Students desiring to secure reserved seat tickets for the Syracuse game must bring their ticket books to the Athletic Association window on Tuesday or Wednesday. Seniors and juniors may get their tickets on Tuesday, and sophomores and freshmen can obtain theirs Wednesday.

Coupon number three must be exchanged to get the ticket, and the matriculation card must be presented at the same time. A general sale on tickets for the Columbia game will also be held Tuesday, Wednesday and Thursday. The price of the ticket is \$1.65.

2 Dads Critically Injured in Crash

Fathers of Rodgers '37, Mullin '38 Collide With Altoona Train At Port Matilda

As a result of a head-on collision of two automobiles near Port Matilda Sunday afternoon, the father and step-father of two Penn State students are now in the Phillipsburg hospital, critically injured.

The father of John A. Rodgers jr. '37 and the step-father of John Mullin '38 were returning to their homes in Greensburg after attending the Dad's Day program here. Their car crashed with one owned by a man who gave his name as Powers, of Altoona. Both automobiles were practically new, and both were demolished in the accident.

According to Mullin's account of the accident, there had been an accident at that spot a few seconds before when a truck loaded with girls from Birmingham School for Women hit a small boy, Powers, who was coming east, saw the other accident happening and swerved in front of Mr. Rodgers' car. Both cars were overturned in the collision.

Powers Seriously Hurt
Mr. Rodgers and Mullin's step-father, Mr. Calver, were the only occupants of the car. The Powers car were a Mrs. Longnecker, her daughter and another young woman.

According to the hospital report, Powers is in a critical condition. He is suffering from a broken shoulder, a penetrated lung, and several broken ribs. Calver sustained several minor injuries. Of the occupants of the other car, Powers received a double fracture, and two of the women are reported to be in a serious condition, with possible fractured skulls.

Engineers Devise New Oil Spray Apparatus

Professors Paul H. Schweitzer, and Kaimen J. DeJuhusz and Theodore Hetzel, of the department of engineering research, have designed and built a new piece of apparatus used for a visible type of study of oil sprays.

The apparatus is particularly ingenious and promises valuable corroborative evidence obtained by the older apparatus which has marked this as one of the leading Diesel engine research laboratories in the world," Dean Robert L. Sackett, of the School of Engineering, said of it.

A piece of new apparatus has just been received by the engineering experiment station and on which a new series of investigations in the Diesel engine field will be carried out. This is a small diesel engine fitted with a generator and equipped with devices for studying "knock" and other features of the Diesel engine operation, including fuel and fuel specifications.

Hetzel Lists Changes In Faculty Personnel

Changes in the personnel of the College recently approved by the board of trustees were announced yesterday by President Ralph H. Hetzel.

A leave of absence for Dr. Austin L. Patrick, of the department of soil technology, continuing to next July, was approved. Dr. Patrick is engaged in soil erosion studies for the federal government. Resignations of Prof. William R. Gordon, of the department of rural sociology extension, and Homer G. Turner, research associate in fuel technology, were accepted.

Oliver P. Medsker was appointed professor of nature education in the department of teacher training extension. Dr. C. R. Austin was made associate professor of metallurgy. Other appointments include H. N. Watenpaugh, associate professor of soil technology, John A. Mitchell, instructor in English composition, and John C. Carey, assistant in bacteriology.

Lions Favored To Win Tilt With Lehigh in First Game on Foreign Territory; Morrison Will Not Play

Schuyler, Silvano Also Injured But May Start Fray

Brown and White Will Outweigh Nittanymen

My, what big Engineers you have, grandma!

Although the Lions will be outweighed almost seven pounds to the man in the first 1934 tilt on foreign soil, they enter the fray the favorites.

The chief handicap of the Nittany Lion in tomorrow's contest is that it will be without the services of its leader, Captain Merrill Morrison, who will probably be kept on the sidelines by a leg injury.

Silvano is suffering from a cut leg, which he suffered in the game against Gettysburg. The injury is responding to treatment and the stocky fullback is expected to start tomorrow, although Cooper may get the call.

Roy Schuyler is troubled with a charleyhorse in the leg which was aggravated by a kick last Saturday. He may start.

Robbins Back

Offsetting these injuries is the return of Harold Robbins, fullback and captain of last year's freshman team, who has been out for four weeks because of a chipped ankle bone.

O'Hara is expected to report for practice again sometime next week. The team scrimmaged for three-quarters of an hour on Wednesday night and ran through signal drills and blackboard practice last night. Spike Leslie has been taking the principle role in the blackboard sessions, outlining the plays the Lions are likely to encounter against the Brown and White. He scouted them in the Lehigh-Johns Hopkins fray.

Despite Lehigh's impressive 7-0-6 victory over Johns Hopkins Saturday, the Lions have been warned not to take the Brown and White lightly. They will be looking for revenge for their 33-10 defeat at the hands of the Blue and White last year. The Engineers have been pointing for the game since the beginning of the training season.

6 Lehigh Veterans
Six members of the Bethlehem eleven who hooped the Lions on New Beaver field last year are expected

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Earle To Speak Here

George H. Earle, Democratic nominee for governor, will come to State College sometime tomorrow morning to make an address from Co-op corner at noon, according to a recent announcement.

Fenske To Give Paper

Dr. Merrell R. Fenske, in charge of petroleum refining, will present a paper, "Accurate Determination of Viscosity," at a meeting of the Society of Rheologists in Philadelphia on Saturday. Dr. Wheeler P. Davey has served as president of this organization for several years.

Flywheel Is Dead --- Dr. Shigley Attends Her Obsequies in Dress Clothes; Rae and Binkie Dickinson Inconsolable; Elmer, Tug, Sox Sad

(Reprinted from the Centre Daily Times.)
Flywheel was a lady—a lady dog—by personality. Within her two short years of existence, she learned about life, and went through about all the experiences that are endured by mankind. Because hard luck dogged both her and her family, four members of which survive as "troublefinders," she merits a kindly obituary.

Flywheel came to State College as the chief extra-curricular activity of Spike Collins, football player. When Flywheel was a pup, she was "Chow" all over; but, as she grew, the wire-haired fox began to show in her bristly brown coat. Her ears and tail were always up. After Spike left town, she gave her devotion to a series of masters and mistresses. She never forgot to wag recognition whenever she saw a former owner—among them, the Stuarts, the Jameses, and Galbraith. She came to the Dicksons from Boalsburg, banished for chasing, and, unfortunately, catching chickens. Through her own efforts, she got her name in the COLLEGIAN columns "Campus" and "Old Mania," on no less than a dozen occasions.

Then, along came the Cowells' "Mike." Handsome, Irish, pedigreed, he lived a few blocks west. Romance, maternity filled Flywheel's life. Mike survived the new responsibilities of quintuplets only a few months, before he was struck by a car. Four of the litter survive. Elmer is owned by the Alders; Tug, by the Ritenours; Sox and Jiggs, by the Alkenses; Spinzie (Spinach or Spinningwheel, as you prefer) was a victim of pneumonia. Elmer has forgotten about his broken leg. With Tug, he shared the wrath of our bourgeois, and languished in the dog-house for running loose. Sox and Jiggs are convalescing from a tussle with a porcupine.

Elmer and Tug maintained their filial devotion until the end, being frequent callers at the Dickinson menage to check up on their mother's cache of old bones, probably the best collection in the neighborhood.

It was while she was "being aired" after an encounter with a skunk, that Flywheel met her violent end. Nevertheless, Dr. Shigley attended to the obsequies in his dress clothes. Rae and Binkie Dickinson are inconsolable. Flywheel liked to do tricks for them. She had one very special stunt—saying her prayers. We hope they got her into dog heaven.

Grid Team To Receive Unofficial Send-off

Because the Administration cannot see benefit in giving the football team an official send-off for the Lehigh game, there will be an unofficial send-off at Co-op corner between the 9 and 10 o'clock classes this morning. It is to consist of giving the team a "hand" as their bus pulls out and there will be no speeches or songs, according to Head Cheerleader William B. Edwards '35.

It was originally planned by students to have a 10 minute recess from 9 o'clock classes, so that the entire student body might attend, but because the Administration refuses to grant this recess, plans have been made to hold the send-off during the inter-class period.

Paul K. Hirsch, president of the senior class, Student Council, and Student Board, and Head Cheerleader William B. Edwards '35, said yesterday, "We're going to go ahead with our plans and we expect all the students to come regardless of anything."

Mann Will Install Honor Fraternity

Theta Sigma Phi, Journalistic Group, Will Induct Alpha Theta Epsilon Here

Alpha Theta Epsilon, local professional journalism fraternity for women, will be installed late tomorrow afternoon into the Alpha Tau chapter of Theta Sigma Phi, national honorary professional journalism fraternity. Following the installation by Mrs. Helen Jo Scott Mann, national executive secretary, a banquet will be held at the Nittany Lion Inn at 6 o'clock for the new charter members, the members of the journalism department, and several outside guests.

The local honorary was organized May 29, 1930, having as its ultimate goal the petitioning of Theta Sigma Phi. It began the following year to take an active part in campus publication activities. It now supervises the printing of programs for dramatic productions, and writes the women's page of the Penn State-Alumni News.

For the past four years, the fraternity has worked in collaboration with Sigma Delta Chi in taking charge of the annual State high school publications conventions, which have been held on the campus. Prominent women journalists are brought to the campus by the fraternity during the school years and teas and other social functions are held in their honor.

The following women will be initiated as charter members: Margaret A. Minnig '35, president; Katherine M. Gorman '35, treasurer; Florence A. Zerby '35; Ruth E. Koehler '36; and Florence E. Reese '36.

Theta Sigma Phi was founded by seven women students at the University.

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35 Members of Squad To Leave by Bus From Corner

Small Student Exodus Expected Tomorrow

The Penn State football squad will leave for Bethlehem at 9 o'clock this morning for their first invasion of grid foreign territory during the 1934 season. The bus carrying the squad will leave from Co-op corner. About thirty-five members of the squad are expected to make the trip, together with the coaches and managers. The Blue Band will not go to Bethlehem.

Lehigh is one of Penn State's oldest football rivals. The Lions first met the Brown and White in 1888, which was the second season of organized football for the Nittanymen. The Engineers won by a 30-0 score. This week's game will be the fifteenth between the two colleges.

State has won eight of the previous games. Lehigh five, and one resulted in a tie. This was in 1920, the last time the Lions have played on a Lehigh field. The tilt then resulted in a 7-0 tie.

The student exodus is expected to be smaller than might otherwise be expected, because of the Columbia game next week-end.

Dr. Beaven To Deliver Chapel Talk Sunday

Chapel Talk Sunday

Dr. Albert W. Beaven, president of the Colgate Rochester Divinity School, will discuss "Religion, or No Religion" in Schwab auditorium at the regular chapel services Sunday morning at 11 o'clock. Dr. Beaven was the mid-year commencement speaker in 1932 and gave the baccalaureate sermon in June, 1932.

Graduated from Shurtleff College, Alton, Ill., in 1906, Dr. Beaven has also received degrees from the Rochester Theological Seminary, University of Rochester, McMaster University, and Hillsdale College. He was ordained into the Baptist ministry in 1908, and the next year became pastor of the Lake Avenue Church, Rochester, N. Y., a post he held until 1929, when he became president and professor of practical theology at Colgate-Rochester Divinity School.

The speaker has served as university preacher at Cornell University, Mt. Holyoke College, University of Chicago, Wellesley College, Williams College, and Wesleyan University, and on this campus. He was in Y. M. C. A. work at Camp Wadsworth, and served as secretary of the Y. M. C. A. in the United States, and Germany, during the World War.

Dr. Beaven was president of the Federal Council of Churches of Christ in America from 1932 until this year, and is now a member of the Board of Managers of the International Society of Christian Endeavor and a member-at-large of the Associated Boards for Christian Colleges in China.

Among the published works of the speaker are "Fine Art of Living Together," "Putting the Church on a Full Time Basis," "Sermons for Every Day Living," "Fireside Talks with the Family Circle," "Life's Eastern Window" and "The Luminous Christ." He is also a frequent contributor to church periodicals.

Freshman Women Elect Trial Class Officers

Clara Jones was elected president of the '36 women in the first election of trial officers Monday night at 405 Old Main. Julia Brandt will fill the vice-president post; the care of the treasury went to Dorothy Ballinger; that of secretary to Jessie Schminsky and Jane Salberg became social chairman.

The principal speaker of the evening was Mrs. Elwood C. Davis, wife of Dr. Elwood C. Davis, of the physical education department. The essence of her speech was the association of girls with men.