



28 Sep 1938

The Missouri Miner, September 28, 1938

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The DIRECTOR'S COLUMN
By **DR. W. R. CHEDSEY**



Years ago, in a poor schoolhouse in a back district, a boy at the foot of the class unexpectedly spelled a word that had passed down the entire class.

"Go up head," said the master, "and see that you stay there. You can if you work hard."

The boy hung his head. But the next day he did not miss a word in spelling. The brighter scholars knew every word in the lesson, hoping there might be a chance to get ahead. But there was not a single one. Dave stayed at the head. He had been an indifferent speller before, but now he knew every word.

"Dave, how do you get your lessons so well now?" asked the master one morning as Dave came in early.

"I learn every word in the lesson, and get my mother to hear me at night; then I go over them in the morning before I come to school. And I go over them at my seat before the class is called up."

"Good boy, Dave," said the master. "That's the way to have success; always work that way, and you'll do."

Dave is today the manager of a big lumber company, and he attributes his start to the words:

"Go up head, and see that you stay. You can if you work hard."

While it is not always possible to concentrate on one thing until we have mastered it, the above story, nevertheless, points to the desirability of concentrating our work on the things that have to be done and that mastery usually follows concentration.

Wm. R. Chedsey

Two Members Added to St. Pat's Board

In a precedent setting meeting held last Wednesday night, the St. Pat's Board approved a proposal to add two more Independent representatives to the board. Formerly, each of the ten social organizations represented on the board was allowed only two members, but in recognition of the comparatively large number of students in the Independent organization, the board voted to increase the number of Independent representatives to four. The two new members, a Junior and a Senior, will take their places on the board immediately following their election at the next meeting of the Independents.

Along with other much needed improvements to the gym which it has financed, the St. Pat's Board has turned its attention to the sorry state of the ladies dressing room. Funds have been appropriated to furnish the room with a mirror, chairs, smoking stand, and table. For the dance floor, the Board is considering the purchase of a new spotlight, and a large mirror ball to hang in the center of the gym.

Hereafter, all students living in the gym may be admitted to St. Pat's Board dances at half the admission price. They must come stag, however, and the offer does not apply to St. Pat's and Homecoming dances.

Smoker Is Given by Theta Tau Members

Members of the Theta Tau Professional Engineering Fraternity were the hosts at a smoker given last Friday night for the benefit of prospective pledges of Theta Tau. President Bill Overbeck spoke a few words on the purpose of the fraternity. He then introduced Dr. Cooke of the Metallurgy Department to the assembly. In a pleasant atmosphere of cigar and cigarette smoke, Dr. Cooke informally discussed the Czechoslovakian trouble, and pointed out the possibilities of a coming year.

By means of slides, Dr. Cooke gave the assembly a clear picture of his native country, New Zealand. His slides showed much of the plant life and drainage pattern of mountainous, little New Zealand. Natural resources of the small dominion were discussed. It's system of government was made clear. Dr. Cooke explained the freedom of all the dominions in the "British Empire" and added that, in case of war, most of the dominions would not hesitate to aid Great Britain.

Following Dr. Cooke's talk, Dr. C. V. Mann spoke a few words about Theta Tau. Then cigars and cigarettes were extinguished and coffee and doughnuts were served. Fervid "bull sessions" reigned for the remainder of the evening.

Foreman to laborer Flannery. Why is it that that little fellow carries two plants to your one?

Flannery: It is because he is too lazy to go back for the other one.

THE MISSOURI MINER

MISSOURI SCHOOL OF MINES & METALLURGY

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VOLUME XXV

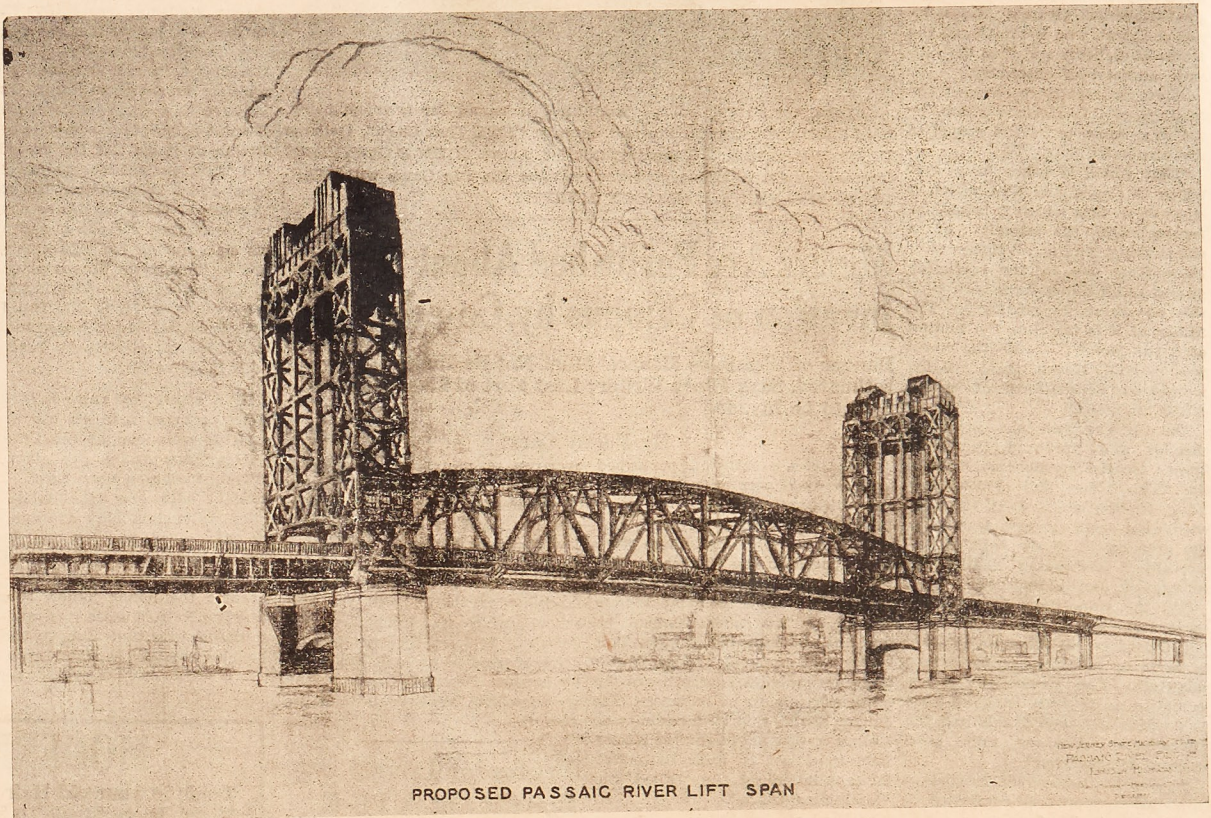
ROLLA, MISSOURI, WEDNESDAY, SEPTEMBER 28, 1938

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OUR SILVER
ANNIVERSARY
★

NUMBER 3

Miners To Open Season Friday

New Project of School of Mines Graduate



PROPOSED PASSAIC RIVER LIFT SPAN

Future of Bridge Building Is Discussed by M S M Alumnus

Bridge Builder Will Find Increased Portion of His Future Activity in Field of Replacement Bridges, Says Enoch R. Needles

By Enoch R. Needles, '14

The civil engineer is a builder. His work is usually associated with new country, pioneering, and new enterprise. In the early days of our country, the civil engineer played a most important part in the building of the canals which contributed so much to our early development. In later years came the extensive building of the railways which knit our states with threads of steel, from coast to coast and from the Gulf to Canada. The railway locating engineer of those days was a true pioneer, often of rare judgment and vision, and with a flaming spirit which invested civil engineering with much of the romance which will always be found there.

Coming down to more recent days, it is unnecessary to dwell upon the part of the civil engineer in the building of our highways, our water supplies, our communication facilities, our magnificent structures of all types. The electrical, chemical and mechanical engineers are usually associated with industry, with production, with operation and maintenance. The mining and metallurgical engineers wrest our more valuable and useful materials from the earth, and refine and shape them for the purpose of man. But the civil engineer is a builder, and he feels quickly any slackening in the demand for new construction.

The history of bridge building has been linked very closely with the building of railways and highways. The rapid extension of railways, a number of years ago called for the bridging of many of our important waterways with important structures, many of which were of great significance. The development of modern motor highways, and more particularly our express traffic arteries in congested and populous areas, has brought about the building of some of the greatest and most monumental bridges the world has known. Now that the building of new railway lines is virtually at an end, and now that many extensive highway systems appear to be approaching completion, what of the future for bridge building?

Our country gives indications of coming into maturity. Our frontiers are not with us as they were. The facilities which were quite adequate not so many years ago are now proving grossly inadequate. Many of the bridges of some years ago



Mr. Needles

are now proving too weak for modern highway loads, the roadways are too narrow, or the roadway materials have become outmoded; the development of shipping has made greater navigation clearances mandatory, either to permit the passage of larger ships, or to reduce the interruptions to highway traffic because of draw span openings; the demand for fireproof, permanent bridges has become very strong; and more than ever the public has begun to expect fine acoustics to be increased. Plainly, our old bridges are suffering from obsolescence as well as from the weather. The change from horse drawn to motor vehicles and the abandonment of street cars are significant in this obsolescence. Thus the bridge engineer today finds much to interest him not only in the structure which is to replace a ferry, but also in the modern structure which is to replace the bridge which no longer can meet the demands placed upon it.

The foregoing thoughts have been prompted by a review of the current and recent engagement of the writer's firm. The results of this review were quite enlightening. It was found that six of these engagements pertained to new structures where none had existed before; but there were ten different structures which had served many years and had begun to prove inadequate to

(See BRIDGES, page 4)

Dr. Chedsey Speaks at A S C E Meeting

Dr. Chedsey was the principal speaker at the meeting of the Missouri Section of the A. S. C. E. held in Columbia last Friday. Dr. Chedsey was introduced by Prof. J. E. Butler, and spoke on "Some Problems For Engineers."

A distinction was made between an engineer and technician. It was pointed out that developing a greater efficiency from a given unit from a purely technical standpoint, while an engineer does not stop at the stage of operations. He must decide whether or not unit or project is economically feasible, and as to what efficiency it is economical to maintain.

An example was given of a power plant in Virginia. The plant was making low returns on the investment which some one decided to make it more efficient. Numerous devices were installed to increase the amount of B. T. U. output per ton of coal used. Although the technical efficiency of the plant was increased, the improvement was unwise because it was so expensive, the net return on the capital investment was actually lowered.

Civil and Mining Engineers were described as the group most often called on to do engineering work of a non-technical nature.

Included in the speech was also an encouragement for cultivating the ability to sell one's self.

Mr. G. H. Dyer, Asst. Supt. of Springfield Water Co., gave a review of four recent articles from "Proceedings of A. S. C. E." and "Civil Engineering."

The Mid-Western Section of the A. S. C. E. meets twice a year; once at Rolla and once at Columbia.

Cadet Officers of ROTC Are Named

The cadet officers of the R. O. T. C. were appointed last week by an order from Major Gordon.

A new policy was inaugurated this year whereby the Cadet Officers are temporarily appointed at the beginning of the first semester and are later given final appointment.

Herbert Creelius, William R. Ellis, Robert L. Gardner, Harold S. Kidd and Kermit Siegrist are the appointees who are to serve by rotation in the capacities of Battalion Command and Staff.

City slicker Post: Are these eggs strictly fresh?

Farmer Waters: Go ahead and touch them and see if they are still warm.

Foundrymen Will Convene Here Again

For the second year, M. S. M. will be host to the Foundrymen of the St. Louis district, when their chapter of the American Foundrymen's Association holds its Regional Convention here on Friday and Saturday, Oct. 7 and 8.

Initiated last year by the then two year old chapter, the regional convention drew an attendance of 162 persons, representing ten states, and earned the commendation of the national officers of the A. F. A. As a result it was decided then to make the conference an annual affair.

Again technical sessions, this time five in number, will be the nucleus of the week-end gathering. These will consist of discussions on "Cupola Practice" in Parker Hall and "Non-Ferrous (Metal and Malleable Iron)" in the Metallurgy Building on Friday morning; "Sands and Refractors" in Parker Hall on Friday afternoon; and "Gray Iron and Metallurgy" in Parker Hall and "Steel" in the Metallurgy Building on Saturday morning.

Included in the program will be a talk especially for students on "Opportunities for the Engineer in the Foundry." This will be given in Parker Hall at 11:00 a. m. Friday. A luncheon at the Edwin Long Hotel Friday; a dinner at the Sinclair Pennant Hotel that evening, at which the national officers will be introduced; and a football game Saturday (Miners versus Chillothe Business College) will round out the program.

Many foundrymen who presented papers last year are again scheduled to speak at the conference and the attendance is expected to reach the 200 mark.

Tryout Assignments for Rollamo Made

Last Thursday the M. S. M. Rollamo staff members again met in the Power Plant building to distribute assignments to tryouts who hope to gain admittance to the board through their efforts.

The Rollamo Board wishes to remind beginning students that the year book staff is always ready to accept good material, and that the opportunity to become a member of the board is a meritorious one. The tryouts at the first meeting were not too numerous and there is still enough material left to warrant the attempt of several more tryouts to gain entrance to the staff.

Director Addresses A. S. C. E.
Dr. W. R. Chedsey addressed the Mid-Missouri section of the A. S. C. E., last week-end in Columbia.

To Face St. Louis U. Team at Walsh Stadium in 1938 Opener

Coach Bullman to Use Wide Open Game Against Traditional Foe at Walsh Stadium; Large Crowd from Here Expected to See Game

By B. C. Compton

The Miners will open their season on Friday night when Coach Gale Bullman takes his charges to St. Louis to meet the St. Louis University team at Walsh Memorial Stadium under the floodlights. The kickoff is scheduled for 8:15.

H. F. Shattuck Makes Interesting Address

"Know what you want to do and then—Sell Yourself" was the theory advanced by Harold F. Shattuck, of the Monsanto Chemical Co., in his talk pertaining to securing employment, which terminated with a personal interview by Mr. Shattuck of G. E. Mueller, Senior E. E., at last Friday's Mass Meeting.

Dr. Chedsey, with a few introductory remarks, introduced Mr. Shattuck to the capacity audience, many of whom were standing in the aisles.

Before entering into the actual interview, Mr. Shattuck brought out several important facts concerning the securing of the right employment, how to hold a position, and personal confidence. Summed up, his major points were:

A college education is not necessary but knowledge in the past should be gained in order to help the future. One should never stop in his search for knowledge, if he is to be of help to himself and his employer.

However, knowledge is not all for "as Herbert Spencer put it 'Not knowledge but action.' " Hard work, tact, personal appearance, in short, personality is one of the prime factors in the securing of employment. Know what you want to do and choose a type of work so that you can get fun out of it. When forced to accept employment in other than your own chosen field, do it well so as to prepare yourself for what you are waiting for. Gain respect for yourself by yourself while in this temporary employment.

When writing letters for a personal interview, state all the facts as briefly as possible and ask for a personal interview.

The prime purpose of the personal interview is for the interviewer to size up the personality of the applicant and for the applicant to "sell himself." Important things to remember, as brought out by Mr. Shattuck were "Be yourself." "Do not assume an air of inferiority nor one of superiority. Answer all questions with straight thinking. Confide in yourself so as to secure the confidence of the employer."

Mr. Mueller was then ushered on to the stage and interviewed by Mr. Shattuck. Several questions, announced as "stock questions" were asked concerning health, marital status, age, what school attended, financial condition of student while in school (Did he put himself through school? etc.), experience, does applicant have any special type of work which suits him best, salary expected, opinion of shifting positions, and would the applicant go anywhere the company sent him. During the interview Mr. Shattuck commented on the several questions.

Mr. Shattuck then summed up his whole talk by saying that the secret of getting a position lies in the manner of attack and outlined the following:

- (1) Decide what you want to do.
- (2) Find out all the facts concerning this type of work and the companies who do it.
- (3) Sell yourself.

Director Chedsey closed the discussion with a few comments of his own.

Loan Information Given
Students wishing prompt consideration of applications for loans to be granted at the beginning of the spring semester should have their applications in the hands of the Faculty Loan Fund Committee not later than October 1, 1938.

Sonny Axthelm: "Pop can I have an encyclopedia for school?"

Pappy Axthelm: "Encyclopedia nothing you walk to school like I did."

Thirty-three men will make the trip for the Miners, leaving here on Friday at noon in the special train. The squad will have dinner at the Kingsway Hotel and will leave for the stadium at 7 o'clock.

Although St. Louis has a strong backfield than last year, their line is not as heavy and experienced, and Bullman expects the Miners to score on the Billikens, mostly through long end runs with Otis Taylor and Harley Ladd carrying the pigskin.

The Bills were upset by the Bradley Tech eleven last Friday night, 6 to 0, and Bullman expects them to be on their "edge" for the Miners. However the St. Louisans lost Len Gorman, regular center, when he aggravated an old side injury, and Bill Foehr, halfback, who has a leg injury. On the other hand Mel McGengle, ace halfback and ball carrier, will see action for the first time this season.

In addition to Ladd and Taylor at the halfbacks, Bullman plans on sending Walter (Kozy) Koziatek, midge signal caller, and husky Walter Baumstark, fullback, into the starting lineup. Preston Axthelm will be at the pivot post at the start of the struggle, with veterans Ivan Curtis and Frank Rogers at the guards, Jim Stephens and Henry Uelk at the tackle posts, and Bob Nevins and Jim Wilson at ends. Joe Spafford will probably divide time with Axthelm at center, and Ralph Stallman and Nelson Koerner are slated to relieve Curtis and Rogers at guards. Gene Veale, Ed Kromka and Harold Krueger will also see service at the guards.

Bullman indicated last week that William Walker, 180-pound center, will also see service at that position. The reserve ends are Paul Wedleigh, a freshman; Nick Nichols, Arthur Hessman, Bob Ridley and Joe Raskaskas.

When the first backfield leaves the game Art Schumacher, a 152-pound freshman from Norman, Mo., will take over Koziatek's quarterback duties; Dick Cunningham and Joel Loveridge will go to the halfback positions, and Keith Cook will be at fullback. Other backs who will probably break into the game are veteran Jim Kiesler, Mel Flint and Clifford Corneau.

Although Jack Flannery has only been in uniform for a few days, he will act as reserve tackle along with E. M. Allgeier, Jack Zoller, Robert Goss, Robert Klug, and Don Falkingham.

The Miners will play a wide open type of game against the Bills according to Bullman, who saw the Cunningham, Cook and Koziatek Bradley-Tech-St. Louis upset, with participating in the razzle-dazzle type of play. The St. Louisans look bad in pass defense against the Tech eleven, and the Miners may rely on that type of attack to supplement their wide end runs.

As usual a large crowd of Miners and townspeople will accompany the squad, and the three middle sections of the East stands will be reserved for the Miner supporters.

First Meeting Held by Alpha Chi Sigma

Alpha Chi Sigma, professional chemical society, held its first meeting of the school year last Wednesday evening, W. T. Pearl, president of the M. S. M. Chapter, conducted the meeting that made plans for Alpha Chi Sigma's annual smoker. The smoker will be held at the Edwin Long Hotel, when those students majoring in Chemical Engineering will be introduced to the society.

Tommy: "What's an echo pa?"
Pa: An echo my boy is the only thing that deprives a woman of the last word.

LET'S GET THIS STRAIGHT

For a number of years M. S. M. has been classed as a "tough" school in the minds of casual observers, meaning that the students are either "tough" when they enter, or very quickly learn to be. They can cuss a blue streak, carry enough liquor to kill a horse, hold their own in any knock-down-and-dragout fight, and, in general, raise more Hell than anybody else around.

This glittering reputation has been considerably enhanced in the past by the attitude and behavior of the visiting Miners both during and after the annual St. Louis U. game.

But we wonder if this is not also only the glitter of fool's gold.

There may have been a day when brawn was more important to be engineer than brains, but we doubt that, too. The engineer of today and tomorrow is not a rough-and-tumble brute with a technical training. He is a gentleman of brains, skill, and initiative.

Let's get it straight now before we go to St. Louis. What kind of reputation are we going to establish or uphold this time?

TO THE STUDENT BODY:

When the Student Council was organized, it was with the understanding that all those Miners having complaints or suggestions concerning traditions of the school and activities of various organizations should tell them to their representative, who would bring them up at the next Council meeting. But quite a few suggestions and back alley complaints have reached the ears of the Council by the ear and mouth method.

For the benefit of those who do not wish to trust their representatives to handle their woes and suggestions, the Student Council has placed a box in Parker Hall under the Bulletin Board. All signed complaints and suggestions will be considered at the following Council meeting without disclosing the sender's name to the Council.

(Signed) THE STUDENT COUNCIL

The best way to keep up with present day practice in your field of engineering is to join a professional organization and to attend its meetings. Speakers, who have been successful engineers, will be brought before you to advise you from their experiences.

PROFESSIONAL ORGANIZATIONS

Name	Popular	Admission	Apply to
Abbreviation	Requirements	Secretary	
Mo. Mining & Metallurgical Association	A I M E 63 Credit hours	P. Blazovic	
M S M Stu. Chap. Am. Society for Metals	A. S. M. At least Jr. rating in Met.		
M S M Student Chap. Am. Society of Civil Engineers	A. S. C. E. Anyone taking A. H. Bursten C. E.		
Ira Remsen	Anyone taking R. M. Stewart Chem. E.		
M S M Branch Am. Ceramic Society	A. C. S. Anyone taking T. J. Planje Cer. E.		
M S M Branch Am. Institute of Electrical Engineers	A. I. E. E. At least Soph L. M. Payne rating in E. E.		
M S M Branch Am. Society of Mechanical Engineers	A. S. M. E. At least Soph G. E. Macheson rating in M. E.		
Society of American Military Engineers	S. A. M. E. Jr. or Sr. rat. A. L. Tetley ing in Military		

Freshmen Make Interesting Answers in Dr. Mann's Test

"I would like to be an experimental man in inorganic chem," stated one of our promising fresh in reply to the question: "What would you like to be doing, fifteen years from now, if you could do as you please?" The question was asked in connection with Dr. Mann's Strong Interest Test. Several ambitious youngsters knew just what firm they wanted to work for. One fellow would like a good job while another merely desires "to be working."

One youngster would like a good job with a long vacation each year. Another would "like to hold a responsible job in a small or large corporation making about ten thousand dollars a year." The question is, what is a responsible?

The next yearling says, "I would like to be definitely settled in a profession where I can be somewhat my own boss without having to be any place at a certain time each day."

One young man wants to be retired, while one of his classmates goes one step farther, desiring to be retired with enough money to last the rest of his days.

We couldn't believe our eyes when we saw one who desires a permanent pass to all symphonies and operas. Next came two gentlemen with rather unique ideas for engineering students, the one who wants to be a movie star and the one who wants to be a statesman. But the one who tops them all is the fellow who answered, "I would like to be a"

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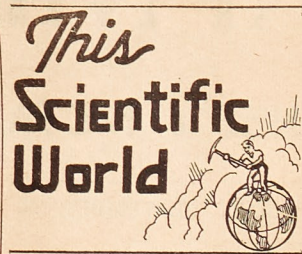
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September 28, 1935



This Scientific World
By Clyde Cowan
Although the study of chemistry and especially chemical engineering are considered to be the babies of science, the youngest members of the scientific field, their ancestors go back as far as far into the past than do the other branches. Chemistry may be traced to the great alchemist Hermes Trismegistos of Egypt, who is considered the father of alchemy and thus the ultimate ancestor of chemistry.

Below we reproduce some of the writings of this Hermes which, by the way, came to be the gospel of the alchemist.

"That which is below is as that which is above, and that which is above is as that which is below, for accomplishing the miracles of a single thing. And as all things were made from one, by the mediation of one, so all things were born from this one thing, by adaptation. The father of it is the Sun, the mother of it the Moon So the world was created. Hence, there will be marvelous adaptations of which this is the mode."

The Chinese were also great alchemists and produced the first known treatise on alchemy. This is the Ts'an Tung Chi of Wei Po-Yang, written about A. D. 142. Following are some excerpts describing the preparation of the "pill of immortality," embracing distillation, refluxation, and sublimation.

"On the sides there is a walled enclosure, shaped like a P'ent-hu pot. Closed on all sides, its interior is made up of intercommunicating labyrinthine. The protection is so complete as to turn back all that is devilish and undesirable and the meandering passages take good care of emergencies."

Evidently the above describes a distillation apparatus connected to a "meandering" reflux.

"In order that the Treatise on fire shall not have been in vain, I shall explain here in simple language. Like the moon lying on its back is the shape of the furnace and the pot. In it is heated the White Tiger. Mercury Sun is the flowing pearl, and with it is the Blue Dragon. The east and west merge together, and so the sun and moon control one another The Red Bird is the spirit of fire and dispenses victory or defeat with justice. With the ascendance of water comes the vanquishing of fire."

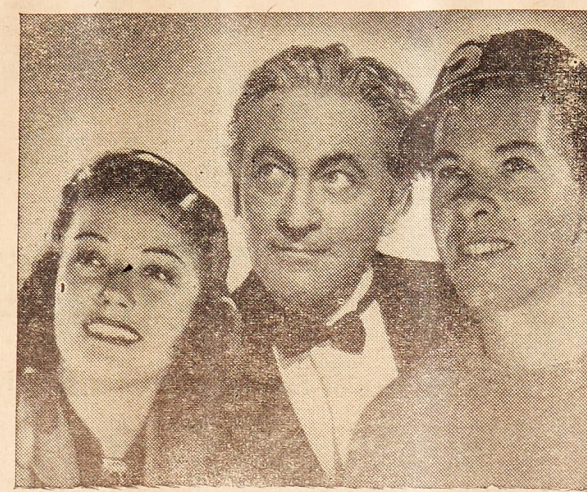
The process itself: "Treatment and mixing will bring about combination and rapid entrance to the scarlet portal. The escape must be firmly blocked. Below plays the dazzling flame, while the Dragon and the Tiger keep up a sustained vociferation. The flame at the start should be weak, so as to be controllable, and should be made strong at the end. Close attention and careful watch should be given so as to regulate properly the heat and cold The color changes into a purple. Behold! the returned medicine is obtained. This is then made into pills These are extremely efficacious, although their individual size is so small that they occupy only the point of a knife or the edge of a spatula."

Humorous? Well, perhaps, but we must remember that these were the men who laid the foundation of chemistry. The close observation of the reactions described above and many similar reactions slowly taught man to control the elements and to make new compounds to create substances which are just short of the miraculous. We of today owe an immense debt to those crusaders of the unknown, a debt which can only be filled by conscientiously remembering that we ourselves are the far ancestors of the chemists of years to come and by building well on the foundations which Hermes and his followers laid.

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Raises Campus Rucus Medicine-Show Drive



Sparkling, larking college youth rallies 'round for a vote-chasing, co-ed-kissing governor in the new comedy, "Hold That Co-ed", Rollamo Theatre, Wednesday & Thursday, Oct. 5-6. Above, JOHN BARRYMORE (center), as the hilarious governor, watches the Big Game with MARJORIE WEAVER and GEORGE MURPHY.

Miners Are Perturbed About Invasion of Campus by Co-eds

Danger of 'Feminine Menace' Must Not Be Underestimated, Says Miner Writer; Last Fort of Masculinity Said to be Invaded

By Jimmy Carr

More than a little bit perturbed were many Miners upon reading in head-lined type last week "Twice as many girls attending M. S. M. this year as last." Old timers here were discomposed to say the least. Bill Re, one of the roughest and toughest of the "old school" of Miners uttered an "aw shucks" when he read the shocking bit of news. This writer was one of those devil-may-care individuals who heard the news with an air of calmness. The danger of this raid by femininity on Rolla's traditional masculine stronghold must not be underestimated. In fact it might be called the "feminine menace."

By toying with a bit of calculus and mentally weighing a few trig formulas on the side, this writer has uncovered some figures on the growth of female enrollment which have been startling himself. If the number of women continues to double for the next five years, male Miners will be not in the mine but in the minority. Figure it out on your own slide-rule. Then picture in your mind the school five years hence and imagine the A. I. M. E. replaced by a knitting circle, St. Pats turned into a tea party, and Fred Smith's converted into a beauty shop. The thought is nauseating.

But let us turn our investigation to the situation on hand at the present. It is true that the wave of co-eds is even now undermining Miner institutions? Your self-styled investigator could not conscientiously reply to that query in any words other than "yes, but definitely." Already a College Club has been formed which we imagine secretly plots the overthrow of masculine domination. (None of our scouts in disguise can gain entrance to the meetings because of their feet.) Like the venom in a cup-full of poison, one coed in a published interview last week said, "I wish there were 6600 more girls here." No more evidence is needed.

Your investigator has not conducted a "witch hunt," nor has he chased "false bogies." The feminine menace is a real thing. For example he walked into French class the other day and found himself surrounded by five girls. As a result he absorbed only half the portent of the lecture. According to the inverse square law, think of what would have happened had ten girls been present. (But what business does your writer have taking French, anyway?)

Yes, the last great fort of masculinity is being invaded. The scourge of females has already

over-run every other profession. Now it is attacking the very roots of engineering. The rustle of skirts can be heard in every classroom. The feminine aroma of perfume is all over the campus. In a few years, will Miners be overpowered by feminine numbers? Will the high school girls in Followill's and Scott's be replaced by girls from the college? And if so, will Dr. Armsby become Dean of Women? Only a determined Miner stand can prevent it.

Professor Lovett Speaker at A I E E

"One of the chief advantages of becoming a member of the A I E E is the opportunity one gets to contact many of the leaders of the electrical profession." Thus stated Professor Lovett, as he addressed the first meeting of the American Institute of Electrical Engineers which was held Wednesday evening, September 21, in Norwood Hall.

After Professor Lovett outlined the advantages of becoming a member of the institute branch here at Rolla, the officers for the coming year were elected. The results placed the following men in office: William Ellis, as chairman; Leroy Smith, vice-chairman; Leslie Payne, Secretary, and Ruble Burns, treasurer. To the executive committee these three men were placed: Forrest Troutner, senior; Elmer Peters, Junior, and Robert Spargur, sophomore.

For the meetings which will follow, various suggestions were given. The suggestions ranged from presentations of reports, discussions, and papers to the invitation of noted engineers to present talks on suitable subjects before the club. Motion pictures of electrical products and factories were also heartily approved.

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COLONIAL VILLAGE
Everyone Welcome

WHAT WHEN WHERE

Student Council	Wednesday, Sept. 28	7:00 P. M.	Club Room
State Forestry Meeting	Thursday, Sept. 29	1:00-4:00 P. M.	Auditorium
Football—St. Louis U. (there)	Friday, Sept. 30	Night	
Miner Board (News Dept.)	Tuesday, Oct. 4	7:00 P. M.	Power Plant
St. Pats Board	Wednesday, Oct. 5	7:30 P. M.	Club Room
Alpha Chi Sigma		7:15 P. M.	Chem. Bldg.

YOU KNOW THEM TOO

By Jimmy Carr

There is an old belief prevalent among students, especially those blessed with purely mediocre cognitive facilities, that the attributes of scholarship and personality are two very incongruous things. Facts long ago have disproved this general opinion, but as a complete repudiation of it we cite the record of Bill Ellis, personable senior electrical and scholar deluxe. Bill probably has as many friends as anyone on the campus. He was president of his class during his sophomore year and at the present time is president of that highest of engineering honor fraternities at M. S. M., Tau Beta Phi. Only last week, this columnist witnessed his election to head the A. I. E. E. society.

Ellis, whose full name is William Reid, rocketed through his freshman year on one of the Curators Scholarships, which are given to fifteen freshmen each year. Not content with one Scholarship, he piled up such a high average that he was given another one during his sophomore year. He kept right on building up grade points and became the honor junior, received the Tau Beta Phi slide rule, and was initiated into Tau Bet. Of course, he also received a Phi Kappa Phi

HOSPITAL NOTES

Six students were named on the hospital list last week. One of these, C. G. Rose, has been in the hospital for several days with an infected foot! The other five spent a day or two each in the hospital with bad colds or with sore throats. They were James Gentry, Otis Taylor, W. E. Bowman, M. C. Gusham and Kay Bardsley.

Sergeant Bertram Promoted

The Military Department, in addition to the replacement of Capt. Hodge by Lt. William V. Powers as assistant professor of Military Science and Tactics, has one other change to report, that of the elevation of Sergeant Bertram to Staff Sergeantcy, effective July 1.

book plate for being in the upper fifteen percent of his class.

For other activities on the side, Bill was named as Independent representative on the Student Council. He is a member of the Miner, Rollamo Board of Control and the S. A. M. E.

If he accelerates through a business career as he has through college, the little-known town of De Soto, Mo., which Bill calls home, may yet find itself in the limelight.

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THE CORNWELL SCHOOL OF THE DANCE ANNOUNCES

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SAM MAY
JANITOR OF THE U. OF ALABAMA CHEMISTRY SCHOOL. HAS, THROUGH 25 YEARS' EXPERIENCE, LEARNED EVERY FORMULA IN THE QUALITATIVE ANALYSIS BOOK. HE IS EXPERT AT ANALYZING CHEMICAL COMPOUNDS BY SIMPLY "SMELLIN' 'EM, TASTIN' 'EM AND IDENTIFYIN' 'EM!"

"SHOVEL TECHNIQUE"

THE UNIVERSITY OF WASHINGTON OFFERED A SPECIAL JANITORIAL COURSE DURING THE LAST SUMMER SCHOOL SESSION.

SPORTS PAGE

September 28, 1938

THE MISSOURI MINER

Page 3



An upset featured the opening games in the Missouri Intercollegiate Athletic Association race last Friday night, as the runner-up Warensburg eleven was defeated by the M. C. A. U. champion Tarkio team, 14 to 13. In the other game the Maryville Bearcats, picked by several observers to win the loop title this year, trimmed the Peru, Nebr., Teachers, 33 to 0.

Although the Tarkio team was known to be fairly strong, most fans hardly gave them a chance against the Mules and the final score was quite a surprise. The Owls scored first on a 17-yard pass by quarterback Herbert Prather to fullback Porter. Armstrong, tackle, placekicked the extra point.

The Mules crossed the payoff counter twice in the second quarter, first on a 32-yard pass from Quarterback Holland to Wakeman, end, and again when Holland intercepted a pass on his own 20 and galloped 80 yards.

Fullback Sibal missed the first try for the extra point, but placekicked the second.

The last Owl score came early in the fourth quarter, Prather going over from the 2-yard line. Armstrong converted.

The Maryville-Peru game was quite different. The Bearcats used trick reverses and wide end sweeps to gain their objective. While they crossed the goal line four times in the first half, they were held to a single counter after the intermission.

All six of the M. I. A. A. teams will see action this week-end with Warensburg taking on Kansas Wesleyan at Salina for starter on Thursday night. On Friday the Missouri Miners take on their traditional rivals, the St. Louis University eleven at St. Louis; Cape Girardeau goes to Carbondale, Ill., for their first of two struggles with the Teachers; Springfield goes to Fayette, Mo., to meet the Central Eagles; Culver-Stockton invades Kirksville to meet Coach Earl Svendsen's charges, and Maryville plays host to the Midland, Nebr., team.

Of the six games, the loop elevens should win four, with the Miners being the underdogs at St. Louis and the Warensburg Mules at Salina.

Intramural Sports Will Start Soon

The 1938-39 intramural sports competition will swing into action early in October with the opening of the touch football season. The game as played this year will be governed by a new set of rules designed to add speed and color to it. A 60-yard field divided into three 20-yard zones will be used. The team in possession of the ball will have four downs in which to move the ball from one zone to the next.

Ping Pong and handball will start at about the same time as touch football, while the annual cross-country race will be held on Homecoming Day, Oct. 22. Other sports included in the program are basketball, swimming, wrestling, boxing, tennis, golf, softball, horseshoes, volley ball, and a track meet.

Keen competition in all the sports is expected this year because of the large enrolment. All independent groups are urged to meet as soon as possible and elect an intramural manager.

Sophs Victorious Last Year
Last year the Sophomore Independents piled up an early lead and gamely held on to it to nose out the strong Freshmen class by 16 points. The four leading teams were:

Sophomores	724 1/2 points
Freshmen	703 1/2 points
Juniors	699 points
Sigma Nu	648 points

Further announcements will be posted on the gym bulletin board and will be published in the Miner.

"Not because he's my room-mate, but because he's a good man."—Joe Strawn.

COLLECTORS!

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Mix's, Hi-way 66

Delicious Pastries of All Kinds

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811 Pine

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IF YOU LIKE GOOD FOOD

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110 West 7th St.

CITY CLUB



FOR THAT
Extra Yardage

You can "make it" in a pair of these shoes.

Scotch grain uppers, natural crepe sole, moccasin toe give this shoe first-class "rating" in Fall footwear.

WILLIAMS SHOE STORE



The smaller schools may not be regarded as "tough" by such University elevens as the St. Louis U. squad, but sometimes they can be tougher than everyone gives them credit for being. This was the case last Friday night when the Bradley Tech team defeated St. Louis, 6 to 0, in a decided upset.

The Tech eleven has about the same number of boys enrolled as M. S. M., but they go in for football in a big way. For the past two years they had been undefeated and unscathed upon their conference—the Little Nineteen. Last season Iowa trimmed them 14 to 7 in scoring in the last period.

However they were just a "small" school to the Billikens until the final gun went off the other night. Then the Bills found that they were soundly beaten, even though they outgained the Illinois team in yards from scrimmage and first downs.

This writer saw the game along with George Fort, ace miler on the Miner track team, as well as the Washington-Vanderbilt game on Saturday.

Coach Bullman thinks that the Bills will be stronger this weekend than last because of the unexpected defeat, and that they will catch the Miners on "the rebound."

Undoubtedly the loss at the hands of

the Tech team did not help the Miners' chances any—if fact the stock of the Billikens for the game Friday night went up 50 percent in Bullman's opinion.

The Washington-Vanderbilt game was a classic to watch. The Southern team knew what they wanted and had little trouble in getting it. The final score, 20 to 0 in favor of Vanderbilt, did not indicate the real strength of the Southern eleven. They scored two touchdowns on straight football. Nothing tricky, no laterals, no reverses, and none of the razzle-dazzle football of which they are noted.

The Vanderbilt shift was not the same as the Miners, Washington or St. Louis. They shifted one man, either the wingback or the end on each play, and all he did was to move one step farther out from the line. Then the Commodores ran their play, and it was usually good for several yards.

The Bear tackles were weak on defense, but their backs were backing up the line in good style, and Vanderbilt apparently hit a snag after their two scores.

However in the last few minutes they tried out their razzle-dazzle set of plays and scored from the Bear forty in two plays with the help of a lateral and a lateral-forward pass.

17 Freshmen Report for Cage Practice

The first call for basketball practice found 17 Freshmen recruits on hand. This pre-season practice is being conducted especially for the Freshmen. Herb Kamper of last year's varsity is in charge of the practice while Coach Gill is still working with the football men.

Those reporting for practice include a number of outstate men, consisting of Wargo, Huggins and Loefer from Illinois, GaNun and MacMurray from New York, and Dahm from New Jersey. Those from Missouri are Miller and Schuman of Rolla, Hudgens of Newburg, Stalder of Salem, Stine of Raymondville, Rueff of New Franklin, Kehr of Eldon, Mercer of Bismarck, and Carroll and Lyons of St. Louis.

Varsity practice will not begin for several weeks.

M S M Enrollment Statistics Given

There is a representation from (33) of the states and foreign countries at M. S. M., this year, according to a release from the Registrars' Office early this week. Of the total compiled enrollment of 777, 27% are non-residents of Missouri.

Illinois leads the field (excepting Missouri's 558) with 79 students. Next in order are New York 38, New Jersey 29, Wisconsin 10, Massachusetts and Connecticut with 8 each, Arkansas 5, Oklahoma and Ohio 4, Iowa and Pennsylvania 3, Florida, Indiana, Kansas, Louisiana, Mississippi and Michigan with 2 each, and Arizona, California, Colorado, Idaho, Kentucky, Maryland, Montana, Nebraska, New Mexico, South Dakota, Tennessee, Texas, Vermont, and Wyoming having 1 representative.

There are also 3 students from Mexico, and 1 each with residence in Canada, China, England, Peru, Philippine Islands, and Turkey.

It is also noted from this release that 30% of the whole school hails from St. Louis and vicinity.

Plaque Is Awarded to Triangle Chapter

Of the organizations on the campus last year, the Theta Tau Fraternity led the parade of pistols with a grade point average of 1.558, while the Ceramists were in the van of the departments with a score of 1.84. Bringing up the rear guard were the Kappa Sigma Fraternity with an average of 0.932 and the Military Department with 0.92.

Following is the scholastic scoreboard for the year 1937-38:

ORGANIZATIONS	
Theta Tau	1.558
Senior Class	1.530
Women Students	1.504
Unclassified Students	1.377
Triangle Fraternity	1.328
Independents	1.288
Lambda Chi Alpha Frat.	1.256
ENTIRE SCHOOL	1.234
Men Students	1.230
Pi Kappa Alpha Frat.	1.219
Sophomore Class	1.175
Kappa Alpha Fraternity	1.174
Fraternity Average	1.135
Sigma Pi Fraternity	1.134
Alpha Lambda Tau Frat.	1.114
Freshman Class	1.092
Theta Kappa Phi Fraternity	0.978
Sigma Nu Fraternity	0.975
Kappa Sigma Fraternity	0.932
DEPARTMENTS	
Ceramics	1.84
Biology	1.57
Mechanical	1.47
Metallurgy	1.36
Foreign Language	1.34
Electrical	1.31
Mining	1.29
Drawing	1.24
Economics	1.22
Civil	1.20
Mechanical	1.14
English	1.11
Physics	1.07
Chemistry	1.06
Mathematics	1.04
Geology	1.00
Physical Ed.	1.00
Military	0.92

Sophomore Class Elects Officers

Alden Hacker, new President of the class of '41, was elected to office along with three other independent candidates at the Sophomore class election, held last Wednesday afternoon.

The other officers elected were Armin Fick, Vice President; William Alsmeyer, Secretary; and William Neeley, Treasurer.

Rollamo Theatre

Rolla, Mo.
Motion Pictures Are Your Best Entertainment!

(Wed. & Thurs. Sept. 28 & 29)
Freddie Bartholomew and Mickey Rooney in

"LORD JEFF"
Also—Robt. Benchley in "Music Made Simple" and World News Events
Shows 7:00 & 9:00—Adm. 10-35c

(Midnight Show Thurs. Sept. 29)
10:45
(Fri. Sept. 20 Shows 7 & 9)

Adults Only
"ASSASSIN OF YOUTH"
Also—Selected Short Subjects

(Sat. Oct. 1—Matinee & Nite)
Double Feature Program
Wayne Morris and Priscilla Lane in

"MEN ARE SUCH FOOLS"
Don Terry and Jacqueline Wells in
Also—Cartoon "Feed The Kitty" and Chap 3 "Lone Ranger"

"WHEN G-MEN STEP IN"
Sat. Matinee Starts 1:30
Adm. 10 and 15c
1st Nite show 7—Adm. 10-25c

(Sun. & Mon. Oct. 2 & 3)
Norma Shearer and Tyrone Power in

"MARIE ANTOINETTE"
Also—Cartoon "Good Scouts" and Latest News Flashes
NOTE—Due to Length Of Feature Picture One Show Each Night.

Sunday Matinee Starts 2:00
Adm. 10 and 30c
Nights Feature Runs Once Only
One Show Only
Starting 7:15 Adm. 10-35c

(Tues. Oct. 4—Matinee & Nite)
Kay Francis and Pat O'Brien in
"WOMEN ARE LIKE THAT"

Also Short Subjects
Matinee Starts 3:00
1st Night Show 6:30
Adm. 10 and 25c

Little or no opposition was encountered as each Independent candidate received a large majority of the votes. Charles Koch, last year's president, presided. Approximately thirty Sophs were present.

Miner Editor Hurt in Auto Accident

Elmond Claridge, editor of the Miner and a senior, was injured last Saturday night when the car he was driving was forced off the road at the East intersection of Highway 66 and 63. He suffered a head injury, but is now completely recovered.

His companion, Miss Ruth McDowell, was badly bruised but was released from the Rolla Hospital on Monday. According to reports the car went off a 100-foot embankment and turned over four times.

Elmer Peters Named Head of Radio Club

The first meeting of the radio club for this year resulted in the election of Elmer Peters as president, Jerome Moore, vice-president, and George Mueller as Secretary-treasurer. These men will hold office for the 1938-39 season.

The meeting, which was held Tuesday evening September 20, in Norwood Hall continued with discussions of the various activities and meeting programs to be sponsored throughout the coming year. Code practice will be held at each meeting for a short time, then the rest of the meeting will be taken up

with a talk or discussion on some topic of interest to all the members. All the membership was also urged to have to be a radio amateur to become a member of the club.

The club adjourned the meeting after Professor Ranes gave a short speech on some of the present rules. Captain Thomas L. Gibson, ex-governing the operation of the campus radio station, W9EEE.

From a recent Department of Labor release we see that 84% of all engineers covered by this survey were working in another branch of the profession than they had prepared for. Some few men have attained the status of engineers without the benefit of a college education and 2.5% of the practicing engineers only have a liberal arts degree. Ten percent of all engineers have never finished college, but all available data points to a rapidly decreasing opportunity for these men in the profession.—Michigan Technic.

A Million dollar dormitory is being constructed at the State University of Pennsylvania at State College, Penn., with a telephone placed in each room.—Capaha Arrow.

Germans are naming their battle-ships after jokes so the English can't catch them.—Sou'wester.

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609 Pine St.

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WELCOME BACK, MINERS!
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The Popular New Leader!

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"A Better Beer Since 1854"

After eighteen holes . . . Oh, Boy! . . . what a treat in a bottle of fine old Stern Brau . . . the beer with the satisfying punch that "peps up" tired nerves . . . and muscles. Better hotels . . . clubs . . . cafes . . . and homes . . . have this fine old beer ready to serve.

Ask for Stern Brau the next time you feel that tired feeling coming on. And always keep a case at home.

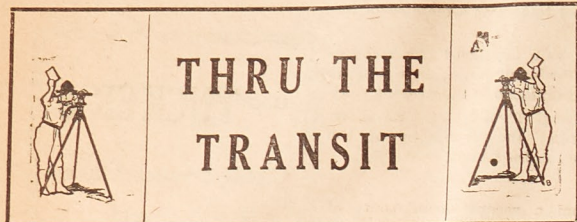
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Greetings From Scotts--The Miners' Co-op And Book Exchange

51 years at 8th and Pine



Things were pretty quiet last week with the exception of a few regular happenings, and with some of the boys getting into shape for the game this Friday. Fort and Compton made their monthly trip to St. Louis, and they said that they did not have dates. In St. Louis, one does not need a date. One of the Tucker twins, (don't know which), had for an escort a petite out of town girl and he is to be congratulated for his choice. Dowling was seen with the Russian Princess and indications show that we will probably see her at the Triangle dance.

S. S. Stevens blazed a new trail Saturday night when he got his power together and actually spoke to a Jeff. City frau and then took her on for a date. Steve should give others a break since he said that she is a pip (good looking) and also has a car. Axthelm was also seen driving a car and I don't think that he was getting paid for chauffeuring the young lady.

Coach Brownie was in town, and many were glad to see him. Claridge and his girl friend, in order to avoid an accident, ran off the highway and we are all hoping for a complete recovery.

Caplovitz (the mad Russian) hasn't much to say due to the fact that Physical Chem. is making him shortminded. How is it that Dr.

Miles pronounced Creel's name correctly when he aroused Creel's small son were taking in the circus. From his slumber the other morning. Looking at the hippopotamus. Thats what you get, Creel, for giving little boy said, "Pa, ain't that the ing Dr. Miles the correct pro-giest damn thing you ever saw?" nunciation of your name. Let us "Bill," said his father, "didn't I in, Dianoshich and tell us how you tell me never to say ain't."

cornered that local blonde that you were sene with. Where did Graser get that cute hat he was trying to wear the other night. I didn't ever think that of him. Vandergriff had a little trouble in crossing the railroad tracks (a la Pied) but he finally cleared them.

Algeier and Brannock were in the same class last year and didn't want any newcomers in that class. They were afraid of having the class average lowered. Kamper and one of our coeds were seen strolling hand in hand and were indeed a nice looking couple, which can also be said of Brownie and Marie. Dallmeyer had the appearance of being homesick, but he was only taking Hanes' place in the local fauet. (pretty large order for him).

First Miner: Do you have any trouble with that girl living next next door?

Second Miner: No, if she is unreasonable, I just threaten to publish the photographs of her two sons who are Lieuts. in the army.

She: What do you mean by kissing me? What do you mean?

He: Er-er-er nothing.

She: Then don't you dare do it again. I won't have any man kissing me unless he means business. Do you hear?

An alumnus of M. S. M. and his correctly when he aroused Creel's small son were taking in the circus. From his slumber the other morning. Looking at the hippopotamus. Thats what you get, Creel, for giving little boy said, "Pa, ain't that the ing Dr. Miles the correct pro-giest damn thing you ever saw?" nunciation of your name. Let us "Bill," said his father, "didn't I in, Dianoshich and tell us how you tell me never to say ain't."

BRIDGES, (continued from page 1) meet modern conditions, so that new replacement bridges had become necessary; and in two other instances expensive remodeling operations were required. Each of these structures tells an interesting story, of which the following illustrations are indicative.

The Ferry Street Bridge over the Quinnipiac River in New Haven, Conn., was completed in 1875 from the designs of Clemens Herschel, who later became one of the most eminent hydraulic engineers in the world. As a young engineer, Mr. Herschel followed bridge designing for a number of years, and then left his field to enter hydraulics because he thought that bridge design was becoming too highly standardized. This old bridge contained a swing span, the design of which required extensive investigation which was used as the basis for a book by Mr. Herschel entitled "Continuous Revolving Draw Bridges."

After more than sixty years of service, carrying trolley cars as well as highway traffic, this bridge became greatly overloaded, particularly with regard to the volume of traffic moving. Designs are just now being completed for a new bridge which will be approximately 431 feet between abutment faces, and costing approximately \$900,000. The roadway will provide for four lanes of traffic, two in each direction, separated by a canted island. The bridge will contain three spans, the center of which will be a double leaf bascule, providing a channel for navigation 100 feet in width. The two flanking spans will be steel rigid frames for which the City of New Haven is preparing designs.

About fifteen years ago, a comparatively light two lane highway bridge was constructed across the mouth of Shark River in Monmouth County, N. J. This bridge was located virtually at the rear of the ocean beach where exposure to salt air with resulting corrosion was very great. This between faces of abutments, with a single leaf bascule span at one end of the bridge. A number of important things happened during the comparatively short life of this structure. The river bed scoured out,

permitting several of the small piers to be undercut, exposing the timber foundation piles to salt water and the accompanying teredo. Navigation on the river increased very greatly and this, together with a shift in the navigable channel, caused the U. S. War Department to order the construction of a new double leaf bascule span, located in the center of the waterway, and providing a 90-foot navigable channel, with an 18-foot under-clearance for navigation with the bascule span closed. In addition, the roadway width had become too narrow to accommodate the very heavy highway traffic along the coast on week-ends and holidays, and also the steel work of the old bridge was located so close to the water that it was subject to salt spray with excessive corrosion. The new bridge has been completed at a cost of approximately \$350,000, this bridge providing for four lanes of traffic, the structure being modern and substantial in all respects.

The Intercity Viaduct between Kansas City and Kansas City, Kansas is slightly over 8,000 feet in length and was completed in 1906 to serve as a high level connection between the high bluffs in the two cities and across the Kansas River and the river bottoms. This structure cost approximately \$4,000,000 and was a notable accomplishment in its day, providing for horse drawn vehicles as well as heavy interurban street cars. The car tracks and the roadway were separated. This structure was built as a private toll project. Horse drawn traffic to use the structure proved disappointing, and motor traffic was then of minor consequence. A few years later the large interurban railway cars were planned to use this structure so extensively went into the discard. The corporation owning the viaduct went into bankruptcy and it was taken over by the two cities; first on a rental basis and later through purchase at a modest price. About twelve or fifteen years after the viaduct was constructed, motor traffic began to develop in substantial amount. By 1925 this traffic had become very heavy and by 1935 the old structure was inadequate. It was then decided that the deck of this structure should be rebuilt; the street car portion to be made available for additional roadway width. As a result, \$1,250,000 has been expended in the construction of a new deck for the Intercity Viaduct throughout its entire length, the new concrete roadway being 52 feet in width, with new guard rails and lighting system throughout. The substructure and steel work supporting the roadway deck required but a moderate amount of attention to permit this viaduct to be converted into the equivalent of a modern express highway structure.

About fifteen years ago an untreated timber pile trestle about 1,200 feet in length was constructed across Barnegat Bay at Mantoloking, New Jersey, providing for two lanes of traffic and containing a light steel swing span. About five years ago this structure had gotten in very bad condition, due to the heavy traffic as well as the deterioration of the untreated timber. Plans were prepared for a new bridge but before construction could begin the County became unable to finance the cost of a new bridge. Consequently, it was decided to spend \$200,000 in repairing the old structure, thus extending its life for a substantial period of time. However, deterioration continued so rapidly that it has now become imperative to build a new and more permanent bridge. The roadway width is being increased from two to three lanes and the old swing span is being replaced by a modern single leaf bascule span which will provide a 17-foot underclearance for navigation with a 51-foot clear channel width. The cost of the new bridge is to be approximately \$350,000.

Across the Savannah River, near Savannah, Georgia, the Seaboard Air Line Railway Company has maintained a single track railway bridge for a great many years. About thirty-eight years ago, navigation was taken care of by means of a girder swing span providing two 60-foot openings for navigation. Within less than ten years the demands of navigation for a wider channel resulted in the construction of a rolling lift bascule span which provided a navigable channel 116 feet in width. When this new bascule span was installed, the existing girder swing span was converted into a fixed span, the old pivot pier and the two-span girders remaining in service, with the new bascule span located just adjacent to the old swing span.

Now, after the bascule span has been in service for approximately thirty years, the demands of navigation have increased to the point that an even wider channel must be provided. Consequently a new vertical lift span has been designed, and is ready for construction, which will provide a 200-foot clear channel for navigation, with 135 feet vertical underclearance with the span in the raised position. This new lift span, together with its towers and machinery will be erected while railway traffic is being maintained on the bridge and while river navigation is being cared for by the existing bascule span. The new lift span will be just adjacent to the existing bascule span. The new cul span to be converted into a fixed span upon the completion of the new lift span. Thus the interesting history of this bridge will be recorded in its physical outlines upon the completion of the new lift span, in that the old girder swing span, the later bascule span, and the new lift span will all be in the finished bridge, the two earlier movable spans becoming fixed in position. There is no record of any other bridge in the country which can show this experience and resulting layouts. The construction difficulties relative to installing the new piers, towers and lift span, and the remodeling of the bascule truss span into a fixed span, all operations being under traffic both on the river and on the railway, combine to make an unusual and complicated building program.

Over the Chemung River at Corning, New York, is a bridge 578 feet in length between faces of abutments. Previous to about fifty years ago, an old timber bridge had existed at this location for many years. In 1887, three new spans were constructed of wrought iron, providing a two lane roadway, the superstructure being supported on stone masonry piers, which in turn were supported upon timber cribs resting upon timber piers. Each of

these spans was about 145 feet in length. About ten years later, another span was added, making four in all, in order to provide greater floodway, the new span being constructed of steel, which material had then become more commonly in use. The timber floor was revised to provide for street car tracks. As thus constructed, this bridge served until last year when a new structure became imperative. Several years ago, the added steel span, referred to above, became so badly affected by corrosion, etc., that timber bents were provided under each panel point to assist in supporting this span and its loads.

The new bridge for this location has just been completed. This is a three-span continuous steel truss structure, providing for four lanes of traffic without street car tracks. A concrete roadway has been provided and in all other respects the design and construction are of best modern type.

The old Lincoln Highway between New York and Philadelphia, and Jersey City, N. J., across the Passaic River. This particular highway between Newark and Jersey City has been in service for a great many years. The present bridge over the Passaic River was constructed about thirty years ago and contains a steam operated swing span which provides two 100 foot channels for navigation. The roadway width is 38 feet, containing two street car tracks. This structure, after thirty years service, is in fairly good physical condition. About ten years ago, motor traffic on this portion of the Lincoln Highway became so extremely heavy that very long and trying delays in the movement of traffic into New York became common. Under certain extreme but rather frequent conditions, it is not improper to state that the traffic was so congested that as many as five or six hours were required to travel approximately fifteen or twenty miles. To alleviate the conditions existing on the old Lincoln Highway, the Pulaski Skyway was planned and constructed at a cost of about \$22,000,000. The skyway was completed about five years ago. This is a high level structure, three and one-half miles in length, with a 50 foot roadway, and spans both the Passaic and Hackensack Rivers. It was constructed primarily to take through traffic off of the old Lincoln Highway. Shortly after the construction of the skyway, it became necessary to prohibit its use by motor trucks as a safety measure. The present movement of passenger vehicles and buses over the Pulaski Skyway is tremendous.

After the Pulaski Skyway was completed, the old Lincoln Highway alongside carried a very modest amount of traffic. Later when motor trucks were barred from the Skyway the Lincoln Highway traffic was increased substantially, but in the last two or three years, due to the growth of truck traffic in general, the normal local traffic over the highway, and the opening of some very large industries just adjacent to the old Passaic River swing span, the congestion on the old Lincoln Highway at the Passaic River again became intolerable. These conditions were made particularly bad because of the frequent openings of the Passaic River swing span for navigation. The swing span provided an underclearance of slightly over 10 feet above high water so that even the smallest boats required the span to open, thus blocking highway traffic at frequent intervals.

The rebuilding of the Passaic River swing span has become imperative and the design of the new structure is now under way. A new vertical lift span will be provided which will be approximately 338 feet in length, thus affording a 300 foot channel for navigation. The underclearance will be a minimum of 40 feet above high water, so that almost 90 per cent of the river traffic will be passed beneath the span in its down position. When raised, the lift span will provide an underclearance of 135 feet. The new structure will provide four traffic lanes, two in each direction, with a center island between. The lift span floor will be constructed of open steel grating, to afford light weight but permanence. The towers at the ends of the lift span will be self-supporting on their piers, and at the top of each tower will be installed the operating machinery and electrical equipment required for the movement of the lift span. The lifting of this span at the two ends will be electrically synchronized, the operator's house being located in the lower portion of one of the towers. Particular attention has been given to the architectural features of the entire structure so that the State of New Jersey may obtain a fine appearing bridge as well as one of utility.

Undoubtedly there are a very large number of old bridges throughout the country which will require replacement in coming years, and thus the bridge builder will find an increased portion of his future activity in this field of replacement bridges. One may well wonder about the future life of the modern highway bridge as commonly designed and constructed today for the more important crossings. The most appropriate statement to be made is that the life of these structures should prove indefinite from the standpoint of service and permanence, if proper maintenance may be taken for granted.

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