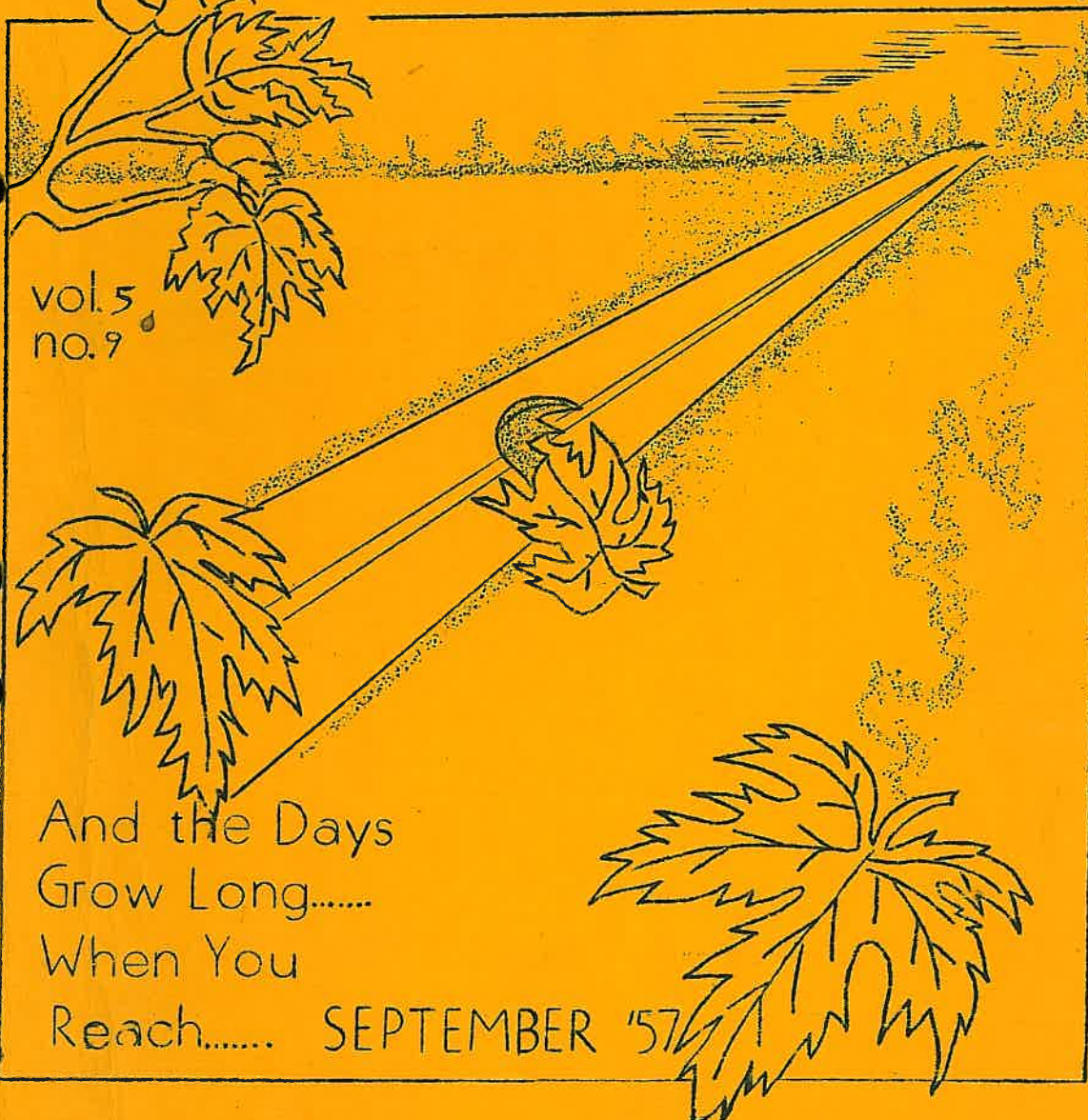


ARKANSAS HIGHWAYS

vol. 5
no. 9

And the Days
Grow Long.....
When You
Reach.....

SEPTEMBER '57



ARKANSAS HIGHWAYS

A MONTHLY MAGAZINE FOR EMPLOYEES OF THE
ARKANSAS STATE HIGHWAY COMMISSION

VOL. V

SEPTEMBER, 1957

No. 3

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AROUND THE BUILDING

Our Director, Mr. Eldridge, spoke to the members of the North Little Rock Rotary Club on August 6, at Sportsman's One Stop Restaurant.

On August 8, Mr. Eldridge, along with several of the Department personnel, attended the Associated General Contractor's picnic at the Junior Deputy Playground; and on August 9, Mr. Eldridge and R. B. Winfrey, were guests at a community supper in Choctaw, Arkansas.

It's nice to see V. E. Scott back with us again. "Scotty," our Administrative Assistant, was on sick leave for about three months for a good rest. We're all glad to have you back, Mr. Scott, and hope you continue to feel better.

If anyone is interested in taking the standard or advanced Red Cross First Aid Course, please register with Jimmy Zinn in the Personnel Office. The course will be taught by Bill Headrick of Statistics and Analyses if enough Department employees show interest and it can be organized. A 30-hour course, it could be held in the building if permission is granted, and classes will be held from 7 P. M. to 9 P. M. on Mondays.

Jessie Lee Perry, our Mail and Supply Room "keeper" whose birthday was August 10, was honored with a lovely birthday luncheon at Lido Inn on August 9. Hostesses were Joyce Spencer, Ferol Jones, Helen Lane, and Helen Hackett. Mrs. Perry received a lot of birthday greetings and we hope she celebrates many, many more.

The Highway Department is always happy to welcome new engineers and so it is with pleasure that we introduce two new ones, and one who has returned to our midst after an absence of several years.

William C. Johnston is no stranger to the engineering personnel, as he began working in 1927 and worked until 1943, at which time he served with the U. S. Navy, and again briefly in 1950. He graduated from the University of Oklahoma and also attended the University of Michigan for a summer course in engineering. During his absence from the Department he held key positions in other highway departments. He and his wife, Capitola, have one son, Jamie, who also attends the University of Oklahoma. Bill is working in Federal Aid.

Roy Monroe Ward is employed in Right-of-Way as a Utilities Engineer. A native Arkansan he attended high school in North Little Rock and was graduated from the University of Southern California, where he received a degree in mechanical engineering. For the past two years he has been employed in Saudi Arabia supervising engineering and construction of utilities there. Mr. Ward served in the Navy at Washington D. C. as a Lt. Commander. He resides with his wife, Virginia, and three children in North Little Rock.

Paul Thomas Cook is the new engineer in Roadway Design, where he worked during the summer of 1950 as a draftsman. He is a graduate of the University of Texas and has a degree in civil engineering. He served with the U. S. Air Corps in Alaska from 1946 to 1949. He and Mrs. Cook have

MASTER BRIDGE-BUILDER

October, 1956 Reader's Digest
From Popular Science Monthly

by Ira Wolfert

Poets who see the great steel and concrete bridges of modern times as new, wildly beautiful creatures fathered by man are not indulging in fantasy altogether. For a bridge at times is almost alive. The best way to see this is to look over the shoulder of bridge-builder David B. Steinman while he is at work.

Dr. Steinman has built bridges on five continents and in doing so, has made many of the most important new discoveries about them. "A bridge," he says, "is mathematics brought to life."

When an engineer looks at a great bridge he sees a majestic drama. He sees the bridge's members upholding all the various loads, safely balancing them, huffing and puffing, bulging their molecular muscles, stretching, bending. In times of strong wind the cables hum defiant songs.

"Harmony with environment, internal harmony, symmetry, clarity, simplicity, grace, proportion, rhythm"...these are a few of the elements Dr. Steinman considers in building a bridge. But not until he has considered, first the bridge's capacity to do its job and, second, its capacity to do it at a minimum cost.

Dr. Steinman cannot remember when he was not fascinated by bridges. He was born in New York's lower East Side, in the shadow of Brooklyn Bridge, which was built by the Roebling family. One of seven

sons of a factory worker, he grew up in a three-room tenement. But all through those desperate years the great bridge was an inspiration to him, and he determined to build spans like it.

A brilliant student, he graduated summa cum laude from the College of the City of New York in 1906. A scholarship enabled him to win his Master's and Ph. D. degrees in engineering at Columbia University, and he was on his way.

He launched himself from desk space he rented for \$10 a month. With Holton D. Robinson he entered an international competition to build the Florianapolis Bridge in Brazil. Their design was revolutionary, creating four times as great rigidity with two thirds as much steel. It not only won the competition but put the new team at the top of bridge-designing firms.

That position Steinman has never lost. He is 70 now. The walls of the reception room in his New York office are covered with diplomas, honorary degrees, medals, and plaques, honors that his 300 bridges have won for him all over the globe. Chief among his many advances in bridge design are: Mount Hope Bridge between Newport and Providence, R. I.; St. John's in Portland, Oregon; Thousand Islands International Bridge; designs for what will be the most gigantic bridge in the world, to cross the Strait of Messina between Italy and Sicily.

When you meet Dr. Steinman you do not find him sitting in the midst of his honors, but in a plain little room hardly larger than a cubbyhole. His mind is on the bridge he is building now which he regards as the most imaginative and successful of his career.

I went up to Mackinac Straits in Michigan to look at what I had seen on paper in his office. The Mackinac Bridge is five miles long, and crosses four miles of water to connect the main part of Michigan and its forest-covered northern peninsula. From anchorage to anchorage it is the longest suspension bridge in the world. When opened next year its suspension span will be the second longest in existence, 3800 feet. (The span of the Golden Gate Bridge, the world's champion, is 4200 feet.)

Mackinac's cables are anchored at each end in concrete foundations each bigger than a football field; the concrete alone in both weighs 350,000 tons, not much less than all the steel and concrete in New York's Empire State Building. It will also cost more than any other bridge built thus far, \$99,800,000. This is because of the almost impossible weather and geological conditions that the site imposes. It is being built right in the middle of a 40-mile long funnel that connects two great weather factories...Lake Huron and Lake Michigan. Mackinac Straits spouts weather at both ends, sometimes simultaneously. Of the bridge's 34 piers, 32 had to be built in the water and had to go down 200 feet to reach bedrock. The towers rise 552 feet...about the height of a 50-story skyscraper. Last fall they were hit by storms that brought 72 mile-an-hour winds and waves that threw water 40 feet high.

A tower is a cellular shaft of steel standing on end. Whenever wind hits, its push is multiplied by the shaft's height and develops almost incomprehensible toppling power. The wind turns the whole

tower into a gigantic lever, working that lever with more power than two diesel locomotives- now this way, now that, trying to knock it down.

What blocks the wind here is an ingenious development in metallurgy-high strength anchor bolts of silicon steel. There are 68 of them in each of the two legs of each tower. They are four inches in diameter, 20 feet long and weigh 1000 pounds.

Dreaming up in advance all the windy nightmares the towers would have to live through, the engineers figured that each of these bolts must grip with a tension of 300,000 pounds. And the threat of the nut, a little ribbon of metal, was made to withstand that much tension.

In contrast with the early trial and error methods, today's engineers, can load a bridge before they build it. Mathematically, in his office, Dr. Steinman can put a truck on the roadway of the bridge. The weight of the truck soars up the cables, pushes down on the towers and pulls on the anchorage. It runs out over beams of the roadway and down the piers.

The engineer studies his mathematical truck in a dozen different position upon a section of a bridge. Then, with pencil and paper, he moves the truck from section to section. He rolls it over the bridge, considers its impact as it starts, stops, bounces. Then he multiplies by the number of vehicles the roadway can hold.

About 100 men working under Dr. Steinman designed the Mackinac Bridge. To show you how far their mathematics took them, they told the contractor precisely how many one-inch bolts to put in one member and, to save the price difference,

how many 7/8-inch bolts to put in another and at precisely what tension: 42,500 pounds for the one-inch, 32,400 pounds for the 7/8.

The silhouette of the modern steel suspension bridge is among the most graceful sights man has ever created. But it is for a practical rather than an esthetic reason. If the cable were perfectly horizontal, there would be nothing to counteract any vertical force.

The roadway is designed to arc upward to provide passage for ships, and allow for the effect of temperature on steel. There are 42,800 miles of wire in the cables of Mackinac Bridge. The cables sag ten feet lower in summer than in winter. The roadway, of course, is expanding in the same heat.

How do you keep an expanding and contracting bridge motionless in relation to supports that do not move in the same way or the same degree? Those steel plates you bump over every so often on the roadway are one way. They are the sliding joints where the expanding and contracting roadway slides in and out. Because the roadway arcs upward, in expanding, it merely becomes flatter, going deeper into sliding joints at either end.

An ancient, grim law among bridge-builders has been: "The bridge demands a life." In 1907, in a crash during the erection of the Quebec Bridge over the St. Lawrence River, 82 men died. Nine years later work was resumed and another method tried: 13 men died.

But a span 472 feet long was put on its foundations in Mackinac Straits without anybody drawing a tense breath. They built the span on falsework on a group of

barges to stand a few inches too high when in place. Then the barges were floated to the foundations and ginged into position. Water was pumped into them. As they sank deeper, they lowered the span onto the foundations.

Bridges still retain many mysteries. One has been a tendency to sway and soar into the air, a phenomenon called aerodynamic oscillation. It does not demand a high wind. The third longest suspension span...the ill-fated Tacoma Narrows at Puget Sound, swayed in an 11-mile-an-hour breeze. In 1940, four months after it was opened, it took off in a 42-mile wind and crashed. The great Whitestone Bridge in New York used to move so that it produced airsickness in people crossing it. About 20 bridges completed since 1930 have been subject to disturbing oscillations. Some, including the Golden Gate and the Whitestone had to undergo expensive alterations to stiffen them.

Dr. Steinman has analyzed wind mathematically to see how it lifts and twists bridges. The roadway on the Mackinac won't lift or twist. In designing it Dr. Steinman left a 10-foot open gap on each side of the roadway and put non-skid open-gird metal instead of concrete in the middle. Wind-tunnel tests on a model proved that the bridge would be aerodynamically stable in 600-mile per hour winds.

During the hunting season last fall, people crossing the straits had to wait 24 hours to get on one of the big 100-car ferries that kept up continuous service. Now they'll have Dr. Steinman's bridge to take them across...a magnificent testimonial to the everyday miracle of Twentieth Century America.

C. A. Shumaker

C. A. SHUMAKER

Quiet, serious, nice guy...Those are a few terms used by his associates to describe C. A. "Bill" Shumaker, Assistant Chief Engineer in our Highway Department, who is the subject of our biographical profile this month.

"Colonel", as he is also called sometimes, claims Prescott, Arkansas, as his home town and place of birth, on January 10, 1899, which makes him a young 58. His parents were C. E. and Pattie Arnold Shumaker. He has one sister, Mrs. Eleanor Anderson, who is a teacher in the public school system at Prescott.

He received his elementary education in the schools at Magnolia, Arkansas. Following his high school years, he attended the College of Engineering at the University of Arkansas, from 1916 to 1919.

His is probably one of the most varied careers in the engineering field. It began in May, 1919, when he was an instrumentman and draftsman for private firms. In 1922 he worked for the North Carolina Highway Department as instrumentman to the Senior Chief of Party on location. He held this position until October, 1925, when he left to become Chief Draftsman for the National Highway Commission of Mexico. In 1926 he became a Resident Engineer with the Florida State Road Department where he stayed until he went with the Tennessee Department of Highways also in the capacity of Resident Engineer.

In April, 1929, he returned to work in his native state at our Highway Department where he has remained since except for a four-year hitch with the U. S. Army in the Corps of Engineers. His first years were spent as Locating Engineer, Resident Engineer, Estimator, Inspector, Instrumentman, and Draftsman.

He entered the service in May, 1942 as a 1st. Lieutenant but he had advanced to a Major by the time he was discharged in February, 1946. He gets his moniker, "Colonel," because he holds a Lieutenant Colonel's rating in the Army Reserve.

When he returned to the Department, he held jobs such as District Engineer, Assistant Construction Engineer, Office Engineer, and Assistant Chief Engineer. His engineering work has been in design, location, construction and administrative.

A devoted husband and father, he was married to Miss Rachel Dunn of Fayetteville, in November, 1943. She is a graduate of the University where she received a Bachelor's degree in Home Economics in 1934. They have three little Shumakers: Ann, 10 years old, and George, 8 years old, who both attend Pulaski Heights Elementary School, and William, age, 4. The Shumakers live at 4705 North Lookout.

Mr. Shumaker, a Registered Professional Engineer, is a member of Pulaski Heights Presbyterian Church; belongs to Sigma Chi college fraternity; and is affiliated with the Ancient Free and Accepted Masons.

In his spare time, which is a rare thing indeed, he reads quite a bit but other than that he has no hobbies.

TURNPIKES...THE DREAM WAYS

Supplied by Chicago Motor Club

Now you can drive to New York from Chicago in a single day! Recent completion of a network of turnpikes across the northeastern states makes it possible to drive the 817-mile distance in thirteen short hours.

Not a single stoplight, crossroad or railroad crossing interferes with your pace from the environs of Chicago to the outskirts of New York City. The Indiana Turnpike, which is the newest link in the chain, may be entered near Gary for the first leg of the trip. The pleasant countryside of northern Indiana flows smoothly past, and almost before the motorist knows it, he is on the second leg of his journey, the Ohio Turnpike, which was opened late in 1955. The speed limit on both the Ohio and Indiana Turnpike is 65 miles per hour. This rate of speed steadily maintained except for rest and food stops, soon brings you to the border of Pennsylvania, where you enter the oldest section of the network, the Pennsylvania Turnpike.

This granddaddy of the turnpikes shows its age in its steeper grades and sharper curves than those of later expressways. Opened in 1940, it was constructed along an abandoned railroad right-of-way. The promoters were unable to complete the railroad, and after building a number of tunnels, they halted construction. Consequently the turnpike builders inherited a roadbed through rugged terrain, which makes this facility the most interesting of the turnpikes for the motorists.

The tunnels are narrow and poorly lighted and it is necessary to use headlights even during the day when driving through them. One of the seven tunnels is more than a mile long, and children are delighted as the family car suddenly plunges into a hole in the stone face of the mountain, proceeding in the erie blue light and the dark stone walls of the tunnels. Speed is reduced to 35 miles per hour, and even this seems fast in the narrow lanes. The car emerges into the open once more, and the green mountains on all sides seem much friendlier than they did before going through the awesome atmosphere of the tunnel.

The lush rolling countryside of Pennsylvania offers an attractive contrast to prairies of Midwestern states. Typical Pennsylvania Dutch barns may be seen on both sides of the facility, some of them with native hex signs painted above the doors. At some point along the Pennsylvania Turnpike you will wish to stop for the night. Although there are no facilities on the turnpikes, hotels and motels are located at strategic places just off the right-of-way.

The next morning you complete the last lap of the Pennsylvania Turnpike and connect with the New Jersey Turnpike. Now you have a straight run into New York City, slightly more than an hour's drive. The turnpike runs through the Jersey flatlands, and you may experience some driving through fog. The turnpike authorities have put up fog-dispelling machinery, but the best remedy is to slow down; and you will see lower speed limits posted at prominent places along the expressway. They are activated auto-

matically when the fog reaches a certain density.

Soon the fabled towers of Manhattan may be seen looming ahead over the flatlands. You leave the New Jersey Turnpike, take the Lincoln Tunnel for midtown, and your day-and-a-half drive is over.

During your cross-country drive along the turnpikes, you may have noticed from time to time that you were beginning to stare fixedly at the road, that the roadside had assumed a certain sameness, and that you were being affected by a strange sense of unreality...as though it wasn't you sitting there behind the wheel but some stranger whom you were watching. If you experienced this or similar sensations you were probably falling victim to the sometimes fatal disease known as "highway hypnosis."

Under the influence of this condition, drivers sometimes let their vehicles swing across the center island into the other lanes, or run at full speed into the rear of a slower moving car ahead. Their reaction to driving problems is too slow to avoid an accident.

Highway hypnosis actually has become a problem because other driving problems have been alleviated. The elimination of stop-and-go driving, frequent braking to avoid slower moving vehicles, and watching out for crossroads or railroad crossings causes some drivers to become dulled. Driving under the more ideal conditions of expressway motoring, they miss the factors which provide annoyances, slow them down, and keep them alert at the wheel. The placid rolling by of mile after mile, the purring of the motor, the soporific singing of the tires, all this

adds up to a lulling of the motorist into a dream which suddenly may become a horrible nightmare.

A basic rule that you should allow at least one car length between your car and the car ahead for ten miles of your speed. On turnpikes, the practice of "driving ahead" is recommended, that is, watching farther down the road rather than the area within a few feet ahead of your radiator ornament.

The development of peripheral vision is also a good idea for turnpike driving, that is, being alert to cars moving on all sides of you, as well as those approaching from the rear. This is not as difficult as it sounds, since it involves roving glances to the sides and rear, rather than a fixed stare straight ahead which often induces highway hypnosis. Some drivers are startled when a car suddenly comes up on either side of them on a turnpike, and they become confused, a condition which may lead to an accident. Most commercial drivers develop the habit of peripheral vision, and they describe it as one of the safety factors in their driving.

Your drive along the turnpike to New York or other points east is a pleasant new experience in motoring, if you bear in mind the fundamentals of expressway driving, which may be summed up as follows: avoid highway hypnosis; allow sufficient distance between your peripheral vision so that you are alerted to all cars approaching from the rear and those on either side of you.

We'd be a lot better if we acted our wage.

LET'S PRACTICE SAFETY

This can be the result of.....

Editor's note: In printing the following, we are deviating from our policy of not printing anything that would offend our readers. But the editorial, from the Virginia Traffic Safety News leaflet, packed such a wallop we are passing it on, in the hope that it will serve as a grim reminder to all. Don't read it however, if you're subject to queasiness.

Some safety experts say that gruesome photographs of traffic victims make only a fleeting impression for good upon viewers. State troopers have told us that passers-by will gaze upon a scene of carnage and then drive off with their tires screaming.

We don't know, but we invite anyone interested to go through our file of photographic evidence as to what happens when human flesh goes through the specially prepared mincing machine furnished by the modern automobile. It might change some attitudes.

A very lovely woman lies in the road. Her eyes are closed as in sleep and her features are composed. However, her head is completely severed from her body and lies in a pool of blood near her shoulders.

There is a man who was catapulted head first from his car to the asphalt when it struck a solid object. You wouldn't recognize his head as such for it resembles a smashed tomato stuck with fragments of china. A youth lies on his back, arms and legs spread out, an overturned car resting on his invisible head.

A pedestrian crushed by a tractor-trailer resembles an abattoir into which a couple of hand grenades have been hurled. Alongside the shell of a fire-gutted sedan lies a mass of flesh roasted out of all recognition as the human form. Two men and a woman with blood splashes on their faces and gaping mouths have been laid side by side in "death's extreme decrepitude." There are several bodies crushed flat against instrument panels or windshields when their vehicles telescoped against solid objects.

We could go on. There is the drowned man who broke out a window and struggled half way out but couldn't quite make it. Fortunately, the trapped terror he must have felt does not show in his countenance. A woman is completely scalped. Only the outstretched hand of a victim protrudes from beneath a tangled mass of wreckage. Near it is a miraculously unbroken whisky flask.

The mortal flesh is not a pretty sight when subjected to disintegration or maiming. They are even more terrible when viewed directly rather than portrayed in the black and white of a photograph. Yet people are so firmly accustomed to interpreting these things merely as cold statistics that the impact is lost. When they do come upon some scene of traffic carnage, they are shaken for a moment but the old "it can't happen to me" philosophy quickly asserts itself again and the preventive effect is ephemeral.

ON OUR HIGHWAYS

This →

In Bristol, a 17-year old driver was picked up after a chase through city streets involving speeds in excess of 90. A few minutes later, he was arrested again in adjoining Washington county for a similar offense. The driver of a car with whom he was racing turned off his lights and escaped.

Three other youths were also arrested for speeding and it seems they all belong to the same "Hot Rod" club with requirement for membership a car that will attain a certain speed. One of their operations is said to be racing from a side by side start after members have been placed at each end of the road stretch to watch for police. Reaching speeds as high as 95, according to a member's statement, the contestants pull off the road at a designated spot and return to the starting point, continuing back and forth for a scheduled number of "laps."

Their motto of the club? "Safety and Courtesy."

Though traffic signs they disobey, kids always have the right-of-way.

QUOTES...

"Use your Eyes--Save the Pupils," sign near a school in Kane, Pennsylvania.

SLIP

"The automobile in which they were fleeing collided with another car two blocks away," radio news broadcast.

Despite the fact that so many articles and safety slogans are printed, and we hear of tragic highway accidents everyday through the medium of radio and television, our casualties continue to mount. The primary reason being just plain stupidity, which is trailed by recklessness, intoxication, speed, and carelessness.

We all try to protect our loved ones, by natural instinct. When our children become ill we call a doctor because we don't want to take any chances that the illness will become more severe. And we are forever cautioning our children to play to be careful at all times and not take chances. Yet some of us will pile the kids in the car for a drive, or head for a picnic at breakneck speed, most of us not realizing the chances being taken, or the lives being endangered by erratic driving habits.

Not long ago after a picnic, we were headed for home when a car passed us full of children and grown-ups who had been at the same area. This same group was still at the picnic when we left so you can imagine the speed at which they were driving. Not only were they speeding, but the parents permitted the children to lean out the windows, which is another dangerous practice. Fortunately they arrived at their destination without mishap but the driver may not be so lucky next time.

Labor Day is approaching so if you are planning an outing for your family, use extreme caution on the highways.

THE ETERNAL TRIANGLE

by Veales Hudspeth
Roadway Design

The most efficient highway transportation system is one in which there is a sound balance between the driver, the vehicle and the roadway. Throughout the history of automotive transportation these three factors have altered in their advances. The vehicles were mechanically imperfect, and the drivers were equally uncertain. With research and mass production the vehicle soon became mechanically perfected to the extent that our roadways were no match for their abilities. At that time the drivers were not far behind as the speeds were comparatively low. This has been a see-saw battle throughout the automotive age with driver lagging far behind.

To better understand the problems that exist on our highway we should first investigate the three elements which go together to make up a unit on our highway.

The Driver

The most important and least understood is the driver. The drives, resistances, intelligence, learning and emotion of the driver results in how he operates the vehicle on the roadway. The driver is affected by many things, some predictable, some unpredictable. The environment, weather, mental and physical limitations, psychological reactions, drives, needs and demands all go together to give the resultant actions of the driver.

The ability to see is the most important factor influencing the behavior of

the driver. Through the medium of sight all the environmental conditions, emergencies that arrive and the confining conditions under which he is to operate the vehicle is transmitted to the brain.

Upon seeing, we react in some manner. The driver's reactions depend to a large extent on his previous experiences, education, mental ability to cope with the condition that confronts the driver.

All of this takes time...which is distance behind the wheel of a moving vehicle. This total time it takes for a driver to react under a given set of conditions is generally termed PIEV time. First we must perceive (Perception) the condition by the sensory system of the eyes, ears or body. Intelligence, the brains part, evaluates or sizes up the problem and determines what to do. The Emotions are then set into action. The emotions vary greatly with the individual and are considered part of his psychological make up. Volition- the will to act as a result of the intellection and emotion and emotion dictates. This chain of events occurs within every driver for each condition that arrives. This process of PIEV requires a time ranging from as low as perhaps 0.5 second for simple problems to as much as 3 or 4 seconds for a more complex one.

The psychological traits of the driver, or what makes him do certain things under a given set of conditions has long been a challenging problem to the psychologist.

We know people assume a different character or personality when they get behind the wheel. But the why of this is one of the mysteries of the automotive age.

The Vehicle

The basic purpose of the vehicle is to transport persons and goods from one place to another. The design of the vehicle encompasses many features to give the user convenience, safety, comfort and load-carrying capacity, and speed. Its design for these features is influenced by the demands of the user and economic considerations.

The limits of the vehicles found in a stream of traffic vary greatly. The size, length and width, is to a great extent governed by law, but initially the size was determined by the limits of the materials at hand to construct the vehicle, and this to some extent has set the pattern of the vehicle we have today. The weight of the vehicle is also governed by law and the ability of the vehicle to carry the load imposed on it.

Speed- the ability of the vehicle to get from one place to another as fast as possible is the greatest demand put on the vehicle by the road user. This is the basic reason the automobile has come to play such an important role in every phase of our life. The speed of the vehicles are limited but in most cases it far exceeds the legal limit placed on our highways.

Performance of the vehicle has been the prime factor the manufacturers have concentrated on in recent years. Increased horsepower, braking power, turning ease, and riding comfort all give the driver

greater flexibility and mobility of the vehicle under his command.

The turning radius and stopping distance of vehicles are the two most restrictive elements. These limitations, more than any other thing, influence the design for and the use of the vehicle.

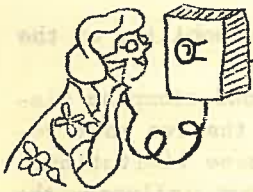
The Roadway

Like the vehicle, the roadway has gone through many changes, from the first wagon trails to the super highways of today. What has brought about the change that has evolutionized the design and construction of our highways in this automotive age?

The first problem in construction of a road is to clear the right-of-way. This is where construction stopped on many of our earlier roads. A road bed was added to provide a stable travel surface, and elevated to provide drainage. A gravel surface was added to permit travel in all weather conditions. To add comfort and speed to road users, a smooth riding surface was added.

All of this was brought about by the engineer's interpretation of physical materials and their application to provide a roadway structure.

The engineer's interpretation of material has reached a relatively high degree of perfection. He must now interpret the use and application of the vehicle and the motivating actions and reactions of the driver using the vehicle and the roadway. The vehicle and driver, as the materials, have many variances and limitations and the design of the roadway should be the results of the limits and characteristics.



the party line



STATISTICS AND ANALYSES

Headrick and Hume - Reporters

Employees of S and A enjoyed a picnic outing Monday, August 5, at Boyle Park. The occasion was a surprise birthday celebration for Mr. Herring and approximately 125 persons turned out to honor our Boss. The food was delicious and plentiful...fried chicken, potato salad, slaw, baked beans, sliced tomatoes, iced tea, and 10 birthday cakes. The weather was very cooperative and everyone had a wonderful time. We all hope Mr. Herring celebrates many more.

R. W. Parker of Traffic section is planning to attend Yale University Traffic Engineering school from September 1, to June 1, 1958. Robbie is going to take his family so they have some household appliances for sale if anyone is interested, at 408 South Valentine.

Mayo White of Traffic served as umpire during the All-State Little League Baseball Tournament. Bill Headrick of the Mapping Section, served on the Red Cross First Aid team. Bill is also a member of Pulaski County First Aid Instructors Club of the American Red Cross.

Leroy Beckett and his family enjoyed a nice vacation to the Gulf of Mexico, Destin, Florida, and they returned via Sherman, Texas.

M. L. "Grandpappy" Baird is in the Baptist Hospital. We hope he will soon be back with us.

Gordon Huchingson is back at work after an emergency operation at the Veteran's Hospital in Little Rock.

June and Buddy Lewter are again vacationing in Florida. They spent their leave last year down there also. We hope they are having a good time.

ROADWAY DESIGN DIVISION

John Hicks - Reporter

Paul Haydon, Duane Reel and Jimmy Breazeal are enjoying a vacation with the National Guard at Camp Polk, Louisiana.

Pat Huddleston and Billy Pickens got to see the Cardinals play the Braves in St. Louis the weekend of August 10.

We extend our best wishes to Howard Webb and his new wife, Judy Jones. They were married at Greenville, Mississippi on July 29.

Joe and Leota Hicks will leave in the near future for a vacation visit to Kansas City and St. Louis, by way of the Ozarks.

Glen Trammel and family are enjoying a vacation in Hot Springs at this writing.

The partyline

Kenneth Orton, Gene LeFaw and A. O. Flowers, former employees in our office, dropped by to visit us recently.

We welcome W. C. (Bill) Johnston, one time Chief Draftsman of the Plans Division, back to the Department. He returned to the Federal Aid Division August 1.

We can't keep up with our fishermen but R. B. (Bud) Smith is telling fish stories concerning a recent trip to Lake Conway.

T. G. (Buddie) Orton Jr., now serving with the U. S. Navy, will arrive in Treasure Island, California August 14, where he will receive his honorable discharge. He plans to return to Arkansas and enter the University this fall.

EQUIPMENT AND PROCUREMENT

Mary M. Hill - Reporter

Patsy Navens traveled to Memphis, Tennessee, on the weekend of August 3. She tells us she had a wonderful time.

Mrs. C. D. Holmes went to St. Louis on the weekend of August 3 to watch the Cardinals play on Saturday and Sunday. She was accompanied on the trip by her daughter and her husband, Mr. and Mrs. J. L. Weare.

Mr. and Mrs. L. E. Harper are vacationing in Oregon and Washington the first two weeks in August. What? not even a card, Mr. Harper?

Kay Bonnell's brother and family from Wichita, Kansas, were visitors in Kay's home in July. After their stay, Kay and Joel took off for the Smoky Mountains... their favorite vacation spot.

R. A. Short was on the sick list from July 29 to August 15. We're glad to see you back on the job, Mr. Short.

Congratulations to Gregory S. Imbery, who received his Certificate and 10-year Service Pin on August 6, from Mr. Hayes.

W. E. Ripberger returned to work August 5, after an absence of almost two months, during which time he was in the hospital for surgery. We are happy to have you back with us again.

We are happy to have Martha Pearle back on the job after an absence of two weeks because of illness and surgery.

Jimmie Guffey and family are vacationing in northwest Arkansas. Others who have taken leave are T. C. Ellis, Joe Stinson, and H. F. "Dutch" Helton, but we didn't find out about any trips. B. D. Davis was on military leave at Fort Polk, Louisiana.

Cecil C. Hamrick, a long time employee of the Highway Department, passed away on August 2, from a heart attack. Cecil had been employed in the Equipment and Procurement Division since March, 1946, and prior to that had worked in Division 1, Wynne. Our deepest sympathies are extended to members of Cecil's family.

the partyline

BRIDGE DESIGN

Virginia Tackett - Reporter

It was an eventful month for the Knotts, Jake and Lillian. The first two days of the month were the last two days of their stay on Ouachita at Hot Springs. Not too many fish were caught, but he and son John enjoyed trying and they played a lot of bridge in the afternoons. On August 4 they celebrated their wedding anniversary and on August 8, Jake's birthday. Many, many more happy Augusts to the Knotts.

Vic Anderson has returned from his trip to South Dakota and has a pocketful of tall tales of his adventures, some happy, some disastrous. He visited relatives in Egan, South Dakota, Sioux Falls, and also in Iowa.

Pensacola is the destination of two bridge design families this month. Jim and Mini Matthews with Mary Celia and Jimmy, will drive down on August 18. Jim is now Registered Professional Engineer No. 1392, and the Division is right proud of his accomplishment. Also Pensacola-bound are Eddie and Esther Williams who found the sun and water and food and relaxation so pleasant last summer they couldn't think of any place they'd rather go this year.

The Vinsons have just returned from New Iberia, Louisiana. They drove down to pick up Ann's young niece and nephew who are staying with them for a while.

ACCOUNTING

Leslie and Bivens - Reporters

Aleene Boysen, Rose Bivens, and Maxine Weaver have just returned from vacations. Aleene spent a week at home and also visited in Portland. Rose enjoyed a two-weeks vacation of swimming, fishing, and just plain loafing in Roland, and Maxine went up to Kansas City where she visited relatives. We also wish Rose many more happy birthdays. She celebrated her big day on August 14.

We'd like everyone to know that Bill Schneider, who formerly worked for our Accounting Division, is convalescing nicely after his operation.

Howard Johnson had a house warming, but he didn't invite any of us. It was a bit of bad luck. The fire started from a can of spilled gasoline in his utility room, and some remodeling will have to be done through his insurance company.

Margaret and John Allen motored to St. Louis the week end of August 10 to see the Cardinals win...except they didn't.

Margaret Schamer, who is a buyer at Foley's Department Store in Houston, Texas, motored home for a vacation with her parents, Mr. and Mrs. Joe Schamer.

We're happy to have Mr. David Hamilton back with us after his long absence. He came back in style with a new, 1957 green Plymouth.

The partyline

PERSONNEL DIVISION

Hazel Norman - Reporter

Jackie Wallace, our receptionist, entertained her niece, Wilsia Jean Gregory of Heber Springs, for a week end of sunning and swimming at Lake Hamilton recently. She said they had fun.

Mr. and Mrs. Walter Neel were visitors in Memphis the first part of August. Went over to see their son, W. B. Neel, Jr., and family, who live in Whitehaven. They always enjoy their visits there because they can see their grandchildren.

Adele Harris Fiedler and daughter, Sandra, joined the John Harris family of Pine Bluff recently for a week end in Perry county. While there, they were taken over Harris Brake Lake on a sight-seeing trip. The lake was named for John and Adele's father, the late John S. Harris, Sr. We know John and Adele felt very happy to revisit the old home land and see the fulfilment of their father's long cherished dream of developing the area into the lake it is today.

"Auchu" Moore, newly acquired member of the Bill Moore family, visited the Personnel Division recently, much to the delight of everyone who saw him, particularly the females who oohed and aahed over him. Completely bored by all the attention he was getting, he finally fell asleep in one of the baskets. "Auchu" is a fat, fuzzy, and cuddly little nine-weeks old Pekinese puppy, belonging to Billie

Ruth Moore of Personnel. She had him out with her during noon and he was almost overcome by the heat, so he was cooling off awhile. Come back soon, Auchu.

Mr. and Mrs. Jimmy Zinn (Grace) are spending their vacation in Fairmount, West Virginia, Grace's native state. Her brother, Earl Brown, owns a beautiful camp and lodge on the Capon River where the Zinns will spend most of their time. Jim is probably fishing right now, and we hope he's catching 'em.

We are happy that Sibble Cox's trip to the hospital was a short one and hope she will feel super-duper from now on. We sure did miss you, Sib.

Congratulations to "Big Jim" Adams on a very successful baseball season. Jim is the son of Martha Adams, our magazine editor and we know how very proud she must be of him. Jim is pitcher for the Kroger Little League team in North Little Rock. And he won a trophy for being the outstanding player of his team. (You're right, we are proud...Ed.)

Our Bossman, Mr. Tanner, took a rare day off recently, to try to catch up on some yard work...which he did.

Your reporter and the kids, Nancy and Sonny, have just returned from a week's vacation in Lake Charles, Monroe, and other points in Louisiana. We had a wonderful time visiting friends and brothers, Joe and Earl.

The Partyline

RIGHT-OF-WAY DIVISION

Virginia D. Cannon - Reporter

An obvious point of beginning for any sort of construction is securing the land upon which to build.

As Arkansas' gigantic road building program unfolds and grows it is becoming increasingly apparent that to prevent hampering the construction pace, the acquisition of right-of-way must keep moving on. As quickly and as painlessly as possible to the landowner, the right-of-way must be acquired.

Preparing for the day when expanding quarters would be necessary, in February, 1955, the 13 member staff of the Right-of-Way Division moved from the New Highway Building to the Old Highway Building. From the time we started operating in the building changes and expansion has been at a fairly rapid pace. The first major change was in Division Heads. Eugene F. Nelson was named Engineer of Right-of-Way in 1950 when the Division first started as a separate Division of the Highway Department. In May of 1956 Mr. Nelson was given the position of Office Engineer and W. R. Thrasher, General Counsel, was named as Division Head for the consolidated office of the General Counsel's Office and the Right-of-Way Division. More space was required and the State Apiary Board moved its office and supply rooms to another part of the Old Highway Building, releasing another three rooms for our expansion. The expansion has brought the total number of employees to 36 and new quarters in the Forestry Building are be-

ing readied for our occupancy.

That usual "usually reliable source" tells us, "the Wheel says he will be able to take a deep breath now without checking first to see if he has enough clearance for the chest expansion. Recent new members of the Right-of-Way staff are: Carolyn James, Mary Jo Spencer, Laura McKenzie, Gip Robertson, Nathan Garrett, Dennison Yates, Roy Ward, Bill Demmer, Fay Wallace, Herbert Hooten, Lee Reynolds, and Phillip Pinter.

".....AND JOHN AND MARY
JUST GOT BACK
FROM....."



PARTYLINE DEADLINE-SEPT. 10

G	A	S	T	P	H	I	D	A	T	E		
A	V	A	R	P	E	A	C	E	E	R	I	A
M	E	T	E	R	A	V	E	D	L	E	N	S
P	R	E	S	S	U	R	E	N	E	A	S	Y
S	C	A	L	E	S	P	A	R	E	S	T	
L	D	O	S	E	S	T	A	T	E	T	H	E
U	R	N	S	C	H	O	R	E	C	A	R	E
G	E	T	C	R	O	N	E	S	S	O	E	L
R	E	P	R	O	V	E	R	I	N	S	E	
C	R	E	E	P	S	R	E	P	O	R	T	E
L	A	V	A	E	L	I	T	E	A	I	D	E
A	P	I	S	D	I	N	E	D	C	R	E	E
P	A	L	E	P	E	L	T	E	N	D		

Solution to crossword puzzle

the partyline

DISTRICT #2

Division 2 Ouida Grimes Pine Bluff

Congratulations to Mr. and Mrs. Aubrey M. Murphy, who are the proud parents of a 7 pound, 15 ounce daughter, Deborah Kay, who was born July 29, at Davis Hospital, in Pine Bluff. Good luck, health, and happiness to the Murphy family.

J. L. "Blondie" Goins celebrated his birthday July 30. His family and friends gave him a surprise birthday dinner which was nice, we bet...We hope you have many, many, more Blondie.

James Pierce took his wife and daughters on a few days vacation recently. They enjoyed fishing and visiting with their relatives.

Floyd Walker also took a few days off recently but stayed home and replanted his garden for fall. He'll have some good food to look forward to, come autumn.

Aubrey Murphy killed a velvet back rattle snake on the old Saline River bridge while the Bridge Crew was tearing the old bridge down. It must have been a monstrous thing...five and a half feet long, with 18 rattlers and a button.

Congratulations to Mr. Robert Warren who celebrated his birthday August 12. He was 76 years young. Mr. Warren says you are just as old as you feel. We hope you feel real young, Mr. Warren.

And another of our youngsters who will celebrate their birthday soon is Mr. Edward "Pa" Young, who will be 86 on September 16. Best Wishes, "Pa".

Congratulations to the following men who received their Certificates of Merit and Service Pins for their efficient and loyal service with the Department: Elbert Martin, 15 years; Lester Rabb and James Cockrell, 10 years; Charlie Earnest, George E. Meeks, and Roosevelt Williams, 5 years.

DISTRICT 2

Construction Ralph Hass Rison

Harold R. Parsley, Bridge Inspector on the Saline River Bridge relocation job, which was completed August 1, has been transferred to Malvern on another bridge job. We miss you, Harold.

Bill Hass, who has been with his parents during vacation this summer and working with the contractor on the job south of Rison, will return to college this fall for his senior year.

A program to combat increasing automobile accessory thefts has been launched by the chiefs of police in San Francisco Bay area counties, with its main feature the marking of hub caps with the car's license number by means of an electric pencil. The theft of hub caps and other automobile accessories has become a very serious police problem.

the partyline

DISTRICT 3

Division 3 Olive Jackson Hope

While on a recent fishing trip, Ernest Whitten, who was vacationing a few days, had a real piece of luck...among his catch was a 37-pound cat fish, which he caught on a trot line in Little River. We displayed it at the office for a while.

The following employees are on a two week military leave with the National Guard at Fort Polk, Louisiana; Houston Kitchens, Elmer Clark, Cecil McCorkle, Franklin S. Page and Arvin E. Jones. Also, Sam J. Huckabee is on a two week military leave at Lake Charles, Louisiana.

We were very happy to see Hiram Hatfield, who was a recent visitor in our office. Hiram suffered a heart attack about two months ago and was in the hospital for several weeks.

Buford Johnson and family have returned from a nice trip over Arkansas. We hear they caught a lot of nice fish at Lake Ouachita.

Leonice and Dexter Bailey and their children, Janice and W. D., have returned from a short trip to Louisiana and Texas. They went down the Louisiana coast and came back up the Texas coast. They went over the south's highest bridge at Orange, Texas...swam in the Gulf at Stewart's Beach, and crossed over to the island at Port Bolivar, by ferry. We know from such a nice trip they enjoyed it.

The office personnel welcomes Victor Stone, who is a new employee in our new Division Warehouse.

We extend our deepest sympathies to R. F. Greeson in the loss of his father, Joseph Felton Greeson, 78, who passed away in Arkadelphia, July 17. Also to the family of Leo C. Miller, age 57, who passed away in a hospital in Bremerton, Washington, where he made his home with a daughter. Leo, who was a Foreman in Miller County up until the time of his illness, had been with the Department for about 18 years and will be greatly missed by everyone. He is survived by his wife, Tola Mae Miller, two daughters, and one son.

DISTRICT 3

Division 7 Sula Burnham Camden

Mr. and Mrs. E. J. Lindsey and their grandson, "Butch," recently returned from a two weeks vacation in St. Louis and Keokuk, Iowa. "Red" reported a very wonderful trip...saw 13 National League ball games, but hated the fact he couldn't spend the rest of the season with the St. Louis Cards. "Butch" was absent from a few games due to having the measles. We are helping Red pull for the Cards and believe they will come through on top. (We're with you too...Ed.)

David Lee, Jr. spent a week in good old Houston, Texas, on his vacation and from his reports he had a mighty good time...so good, in fact, he plans to go back over the Labor Day week end.

The Partyline

Maxwell "Smitty" Smith took in the All-Star football game in Little Rock the week end of August 17.

This time of the year all we know is work, work, and more of it, but we are looking forward to cool weather...barbeques, ball games, and more fun.

DISTRICT 5

Division 9 Shirley Morton Harrison

Mr. and Mrs. Bill Hawkins had as their guests for a few days their daughter and family from Fort Worth, Texas. Their little granddaughter remained with them for a longer visit and will return to Fort Worth before school starts.

Raymond Holland is convalescing rapidly after a serious illness and will be able to report back to work in the near future we are happy to report. We have missed you, Raymond.

Minnie and Jack Shinn have as their guests, her parents from Des Moines, Iowa. They plan an extended visit on the Shinn's lovely farm at the foot of Gaither Mountain.

J. C. Perkins, Sr. paid a visit to the District Office recently. Mr. and Mrs. Perkins were in Harrison for a week end with her parents. Other visitors we have enjoyed having were: Bill Baugh, G. W. Stamford, Ed Orsini, Russell Newsom, and a very brief visit with R. B. Winfrey, E. L. Wales, and Webb Turner.

Bertha Wagley attended the National BSPW convention in Denver, Colorado. The trip was made by special bus and included a tour of several states. Bertha reported she had a wonderful time and is looking forward to next year's convention.

We extend our deep and sincere sympathies to Robert Borland, whose father passed away recently, and to Price Williams, whose mother-in-law passed away this month.

DISTRICT 1

Headquarters Kathryn Booher Jonesboro

This office was honored to have visits from Mr. R. B. Winfrey and C. Don Hayes recently. We were happy to have them and hope they will come back soon.

Mr. and Mrs. J. C. Perkins recently spent a short two-day vacation at their home in Harrison, visiting friends and relatives. We understand they enjoyed their visit very much.

We enjoyed having Anne Nunnally working in our office the first two weeks in August. Anne took my place while I was vacationing and a very good job she did and we were sorry to see her leave.

Your reporter enjoyed her vacation which was spent with hubby, who had 12 days leave from the Army after completing his basic training at Fort Chaffee. He will be stationed at Fort Bliff, Texas for the remainder of his training.

IN MEMORIAM

The Department has been saddened by the sudden passing of three of our employees within a month's time. We wish to express our heartfelt sympathies to the families of those who have left and may their grief be lessened with the passage of time.

CECIL C. HAMRICK

Cecil C. Hamrick, an employee of the Department for 18 years, passed away on August 2 after having suffered a heart attack. Mr. Hamrick, 47 years old, had been employed in Central Shops at Jacksonville as a truck driver.

Mr. Hamrick was a native of Wynne, Arkansas, but lived in Jacksonville for many years. He is survived by his wife, Myrtle, and two children.

Mr. Hamrick will be greatly missed by his co-workers.

JOSEPH S. MAREK

Joseph S. Marek, 39, an employee in the Right-of-Way Division-Legal, died on August 13. He had been employed by the Department for only 5 months but had made many friends during that time.

Mr. Marek was born in Brenham, Texas, and graduated from Texas A. and M. at College Station, Texas. He was a member of American Society of Agricultural Engineers, and served as a Lt. Colonel in the War Department, U. S. Army for four years at Washington, D. C.

He is survived by his widow, Clarice, and three children.

JAMES E. WARRINGTON

James E. Warrington, an instrumentman in District 5, Construction, passed away on July 19, while making work contacts. He had been employed since 1948. During World War II, he served with the U. S. Navy for two and a half years.

Besides his wife, Mary, he is survived by four children, James Jr., Paula, Patsy, and Vicki, all of McGehee, and his parents, Mr. and Mrs. E. B. Warrington.

The University of Arkansas is extending its campus to reach thousands of Arkansas citizens who are busy earning a living. The University will provide an evening program of both credit and non-credit course for those who wish to "earn" during the day and "learn" in the evening.

Anyone may register for any of the non-credit courses. There are no special requirements and no prerequisites. Registration, including payment of the class fee must be completed by September 5 for all non-credit courses. Enrollment in each class will be limited to the first 40 persons who register. Address all calls, course fees, and requests for information regarding these courses to the University of Arkansas Graduate Center, 16th and Lewis Streets. The non-credit courses will meet one evening each week as indicated in the course listing. If anyone is interested in the non-credit courses, they may come to the Personnel Office for a list of the courses.



JEST FOR FUN

by Jimmy Zinn



Landlord to prospective tenant: "You know we keep it very quiet and orderly here. Do you have any children?"

"No."

"A piano, radio or phonograph?" Do you have a dog, cat, or parrot?"

"No, but my fountain pen scratches like hell sometimes."

"Fellow Citizens," said the candidate, "I have fought in two wars. Many's the night I had no bed in no man's land. I have marched over frozen ground till every step was marked with blood."

His stories had held the people's interest until a dried up looking old man came up in front to say, "Sonny, I'll say you've done enough for your country. Go home and rest. I'll vote for t'other guy."

He is your friend who speaks well of you behind your back.

"So, your married life is very unhappy? Just what was the trouble? December wedded to May?" asked the Mistress of her maid.

"Oh lan' sake, no, mam!" The maid replied, "It was Labor Day wedded to the Day of Rest!"

A loose tongue being in a wet place is most likely to slip.

"I was doing a nifty dance at the stag party when a cop walked in."

"Did he pinch you?"

"Sure, he was no different from all the rest."

Bum: "Have you a dime for a cup of coffee please?"

Engineer: "No, but I'll get by somehow."

"And to think I mortgaged the house to send my boy to college. All he does is go out with girls and drink and smoke."

"Do you regret it?"

"Sure, I should've gone myself."

Nothing changes the line of a man's thought quicker than spading up fishing worms while digging in the garden.

Mrs. "Didn't I hear the clock strike 2:00 as you came in?"

Mr. "You did, my dear. It started to strike 10:00, but I stopped it to keep it from waking you up."

The baldheaded barber was trying to sell his customer a bottle of hair tonic.

"But how can you sell it when you have no hair yourself?" he was challenged.

"Nothing wrong with that," came the answer. "I know a guy who sells brassiers."

Tourists are persons who travel thousands of miles to take pictures of themselves standing beside their cars.

First Lady: "What color dress are you wearing to the party?"

Second Lady: "Each lady is supposed to wear something to match her husband's hair, so I'll wear my gray dress. What are you going to wear?"

First Lady: "Well, in that case, I guess I'd better not go."

