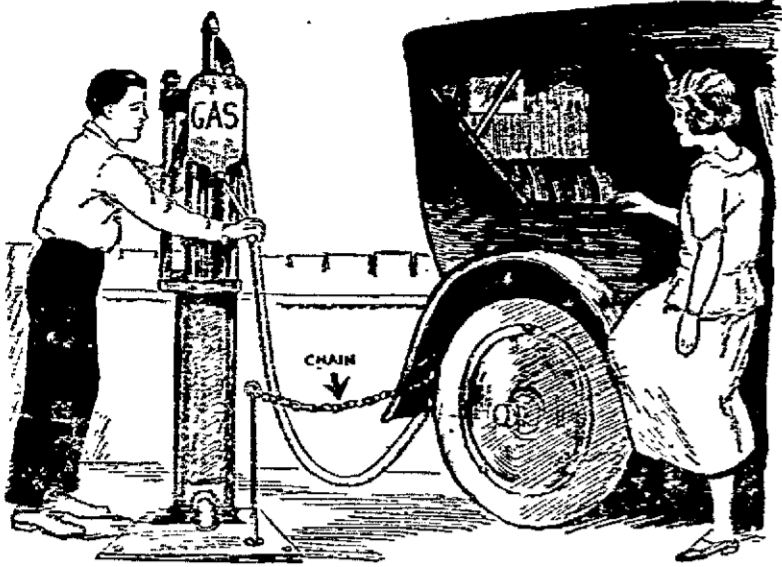
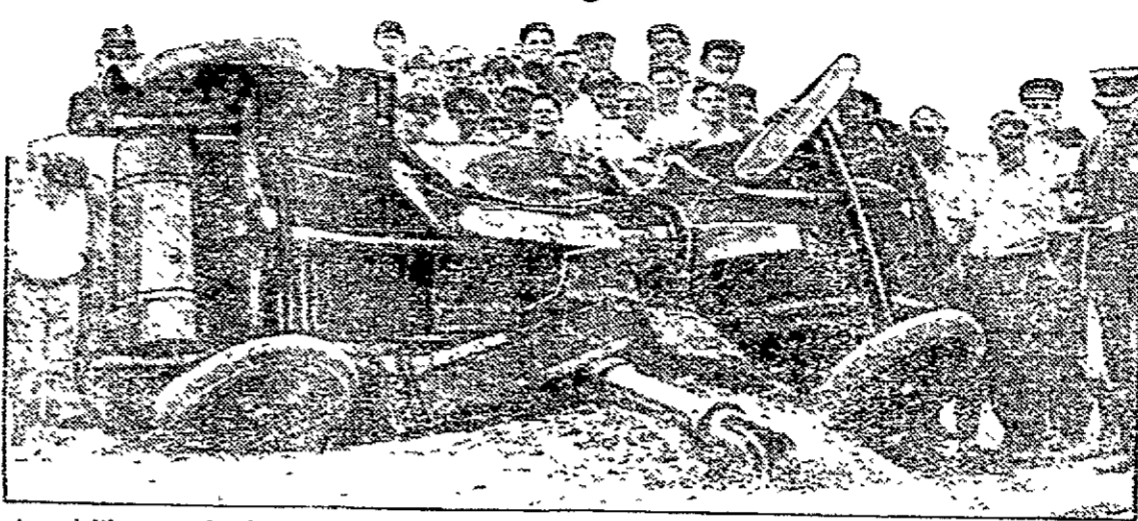


New and Interesting Facts from Science and Life



A Safeguard Adopted by Filling Stations Is to Attach One End of a Ground Chain to a Metal Post and Fasten the Other End to Some Metal Part of the Car.

When Static Electricity Becomes More Deadly Than Dynamite



Actual Photograph of an Automobile Reduced to a Complete Wreckage by the Terrific Force of Exploding Gasoline Ignited by a Tiny Spark of Static Electricity.

With the development of the automobile there has come a new danger that makes static electricity, a source of annoyance to the "fan," more deadly to the motorist than dynamite when united with gasoline fumes. The attention of automotive engineers has been focused upon this odd peril, the tremendous scope of which is at once apparent when it is realized that more than 11,500,000 automobiles in daily use in the United States consume annually almost 3,500,000,000 gallons of gasoline.

Organizations concerned directly or indirectly with fire perils suddenly have discovered that many disastrous fires, the origin of which was shrouded in mystery, actually were caused by static sparks coming in contact with the fumes of gasoline. As a result they are hastening to perfect preventive measures that will lessen this real source of property damage and death.

Static electricity may be generated in an infinite number of ways. Whenever there is friction it is likely to be produced. It is static that crackles in your hair when you apply a rubber comb in the winter. It is static that causes sparks to jump from your fingers when you touch a metal object or the hand of another person after walking across a carpeted floor. Usually these sparks will do no harm; but, if generated where gasoline vapor has combined with the air in explosive proportion—above the gas tank of your car, or in any garage, service station, filling

station, dry-cleaning establishment; in fact, anywhere where gasoline is used—static sparks may cause disastrous fires and explosions.

How easily and peculiarly static electricity may be generated with dangerous effect is explained in Popular Science Monthly by Raymond J. Brown, who cites the following as a case in point: A physician, roused from his bed by an urgent night call, donned a fur-lined overcoat and rubber boots. He walked to his garage, and as he started to enter the automobile, there was a blinding flash, and an explosion. The machine burst into flame. The automobile was destroyed and the physician badly burned.

Static electricity, generated by the rubbing of the fur of the coat against the rubber boots, was the cause of the fire. The rubber soles insulated the doctor from the ground, as he walked, causing the electricity to be stored up in his body as in a condenser. Then, when his hand approached the metal body of the machine, the charge was discharged in a spark that ignited the gasoline fumes rising from the tank of the car.

"Liquid gasoline is not dangerous in itself," says Mr. Brown. "Confined in a tank or can, it is quite harmless. But the gas it gives off, combined in proper proportion with air, is highly explosive. Scientists have determined that the ignited vapor from a single gallon of gasoline can do as much damage as 83 pounds of dynamite. In fact, it is this very explosive force of air and gasoline that makes possible the powerful automobile engine.

"A slight spark only is necessary to ignite this gas—the glowing end of a cigarette, a burning bit of match, a weak discharge of static. The peril is magnified by a physical property of the gas. Because it is heavy, the gas is not carried away by the circulation of air, but falls to the lowest level it can find, settling to the floor and filling all crevices. It sinks into garage repair pits, where it may remain for days unless an extraordinary current of air carries it away.

"Gasoline fumes that had settled in a repair pit caused a violent explosion in a garage in the Middle West a few weeks ago. A mechanic, entering the pit to drain a crankcase, was unable to budge the plug with his pliers. As he exerted

more force, the pliers slipped, striking a bolt head and causing a spark. Immediately the fumes in the pit exploded, burning the workman severely and badly damaging the car.

"Gasoline rushing through the hose at a way-side filling tank generates static, which passes through the metal nozzle into the metal parts of the automobile. There it is stored up because the car is insulated from the ground by its rubber tires. Touching the car with any conductor of electricity will cause the static to be discharged. The hand of the attendant at the filling station, or the hose nozzle as it is withdrawn from the tank may supply such a conductor. The resultant static spark, occurring over an open gas tank and near a spot where a greater or less quantity of gasoline is spilled every day, is bound to be dangerous.

"A noted automotive engineer investigating the danger of static reports an unusual incident of static generation. An automobile was backed up to a wire fence in such a way that the discharge from its exhaust struck against the wires. So much static was generated by the discharged gases impinging on the wire, that persons who touched the fence felt distinct shocks.

"In Downey, Cal., static electricity, generated by gasoline flowing through a hose, recently

caused a fire and explosion that killed eight persons. A 1,700-gallon tank truck, filling the tanks at a service station, suddenly exploded. The tank was ripped from the chassis and hurled 25 feet through the air. Persons standing within 50 feet were enveloped in flames and their clothing burned from their bodies. Other persons 200 feet away were scorched and blistered and some of them thrown to the ground. All vegetation near the explosion was scorched.

"The service station was demolished, and a frame hangar that stood about 40 feet away was burned to the ground. Sunken concrete construction prevented the explosion of the five underground tanks in which gasoline was stored at the station, although the fluid was forced from four of the tanks through the vent pipes by internal pressure resulting from the external heat.

"From a similar cause a garage in Mansfield, Wis., caught fire recently and automobiles valued at \$50,000 were destroyed.

"For some time gasoline dealers have been using a simple but effective method of preventing fires of this sort. A chain is attached to the chassis of the gasoline tank truck and permitted to trail on the pavement. This supplies a ground connection for the truck and causes any static generated to flow harmlessly to the earth. The truck destroyed in the Downey explosion just mentioned was supplied with a ground chain, but faulty adjustment is believed to have been responsible for its failure to perform its function.

"Some owners of gasoline filling stations recently have carried the ground chain idea further, supplying a device which is used to ground every automobile that stops for gas. This consists simply of a metal chain attached to an iron pipe driven into the ground near the filling pump. When a car stops beside the pump, the attendant places the end of the chain on some metal part of the car. Thus the machine is protected should static develop as the gasoline flows into the tank.

"The elimination of static by grounding also is being practiced on a smaller scale in dry cleaning establishments. Many fires occurring in these places have resulted from the generation of static by the rubbing of silk garments that are being cleaned. Experienced operators now dip their hands into the gasoline in which the garments are immersed and draw off the static charges, if any, by a grounded metal finger ring. This practice prevents the creation of a spark at the surface of the gasoline where it might cause a fire. Since static is generated in dry weather more rapidly than in damp weather, much of the danger in cleaning establishments is eliminated by discharging steam into the workroom.

PROTECT Your HEALTH by Keeping All FOOD COVERED

It is stated on the best authority that the average baby born in 1924 will live ten years longer than the average baby born in 1899 could be expected to live. In other words, in the last quarter of a century a whole decade has been added to the normal span of life—in this country, that is to say.

The main reason is improved sanitation, which discourages the incidence and spread of disease.

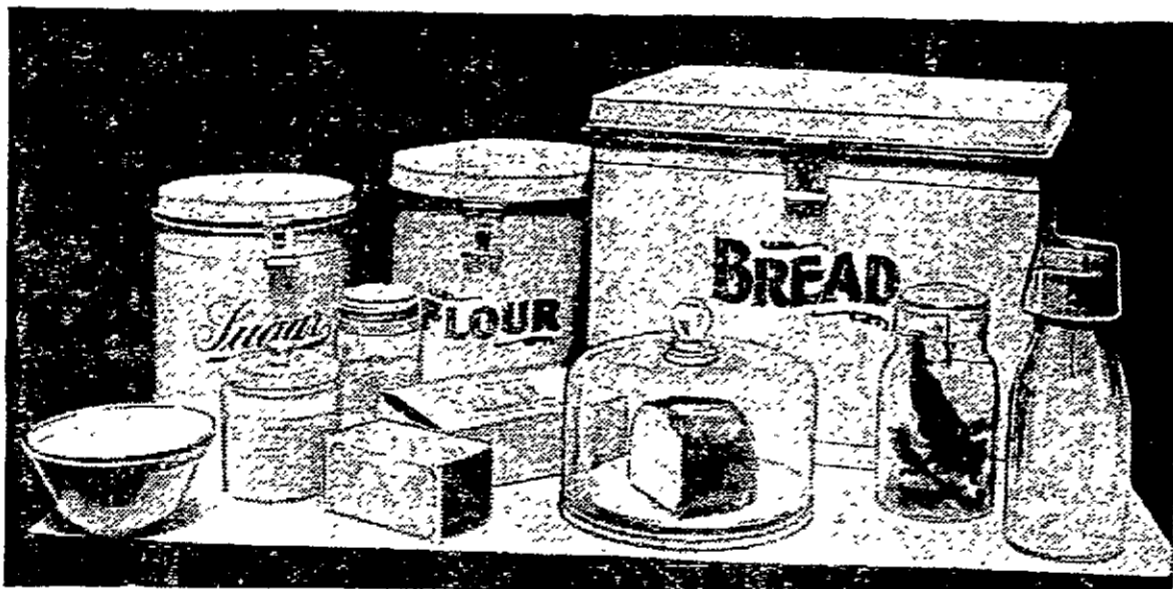
Very important as a feature of this improvement is the practice, now so generally adopted as to be almost universal, of keeping food supplies covered, to protect them from insect and dust. To accomplish this purpose, there are many clever inventions, among the most familiar of which are the milk-bottle cap and the germ-proof carton.

Up to within very recent years sugar, flour and most other food supplies sold by grocers were kept in the shop in open bins and barrels. Dust, more or less laden with germs, was deposited upon them, and more or less of it was delivered to the housewife with whatever she bought.

Nowadays that sort of thing would not be tolerated and nearly everything sold by the grocer comes in cartons, cans or other sealed packages. The goods come to him in that shape from the factory or mill. His flour is put up in sacks.

When foodstuffs were exposed in the manner above described, flies collected upon them, bringing infectious filth and various other species of insects, including moths and beetles, laid eggs in them which hatched out "worms" and grubs. Unpleasant, very.

The Government Bureau of Home Econom-



The Most Intelligent Housekeepers Have Adopted the Sanitary Plan of Keeping All Bread, Flour and Sugar in Tight Tin Boxes, and Other Foods in Closed Glass Jars or Otherwise Protected from Insects and Dust.

ics is doing its best to encourage housewives to adopt like methods in the home. Most intelligent housekeepers, indeed, have already adopted them, keeping their bread, flour and sugar in tight tin boxes, and other food in closed glass jars or otherwise protected against insects and dust. It is just as easy, insures cleanliness, and is a valuable health precaution.

Next to temperature, the important point in preserving food is cleanliness.

All fruits and vegetables that are to be eaten raw should be thoroughly washed, for even though they look clean, dangerous bacteria may cling to skins or leaves. As a rule, uncooked meats of any kind should not be eaten. Smoking meat does not kill parasites.

Left-over cooked foods should be kept cold and covered, used promptly, especially in warm weather, and, if possible, heated thoroughly before being served again. Dangerous poisons sometimes develop in such foods without making noticeable changes in taste or smell.

Are Cats Most Mysterious of Animals?

ALTHOUGH cats are among the best known animals, they are at the same time perhaps the most mysterious. According to Professor Lepinay, of the Paris College of Psychology, "cats are very curious enigmas; they are capricious and independent, suddenly abandoning what appeared to please them most, following those who flatter and caress them, only suddenly to turn away again. They are anarchists among animals. They make no concessions or only such as please their temper of the moment.

"To me they are little less than divinities, little more than animals. Unlike my friend, Dr. Philippe Marrechal, I do not support the theory that animals are superior to man, but by instinct they make fewer mistakes than man in his researches and in his efforts. Generally speaking, we might train them as collaborators, learning better to utilize their associations and ideas, making ourselves understood through educative means. What has been done with men could be done with them, raising them from timid slaves to intelligent auxiliaries."

Dr. William T. Hornaday, of the New York Zoological Park, whose tigers, lions, pumas, leopards and jaguars may be thought to possess in all their variety the qualities which have been somewhat dimmed, or are carefully concealed, in the domestic cat, sets down two axioms in his book on "The Minds and Manners of Wild Animals." The first is this: "If every man devoted to his affairs, and to the affairs of his city and

State, the same measure of intelligence and honest industry that every warm-blooded wild animal devotes to its affairs, the people of this world would abound in good health, prosperity, peace and happiness." And the second is: "Many men are both morally and intellectually lower than many quadrupeds, and are, in my opinion, as destitute of that indefinable attribute called soul as all the lower animals commonly are supposed to be."

On a chart Dr. Hornaday shows the relative intelligence of wild animals as he has found it in his long experience with them. The chimpanzee heads the list with a score of 925. This includes all the qualities and attributes that might be grouped as temperament and intelligence. The lion, noblest of the cat family, scores 725, the tiger 575.

For lions Dr. Hornaday has a warm admiration, despite the fact that a bad lion is the worst, not alone of cats, but of other animals as well.

A lion brought up in captivity, says Dr. Hornaday, is the most amenable of beasts. He knows that his keeper is his best friend, and cultivates his good will. Often he is as gentle and playful as his remote cousin, the household cat, although in his playfulness he is likely to claw off his keeper's face, just as a household cat will forget itself in a romp and bite or scratch a little. This good nature of the lion is due, Dr. Hornaday points out, to his intelligence and his lack of fear. Since he is not afraid, he is never nervous. The jaguar and the leopard, which are less intelligent, are more nervous and therefore more dangerous.

What Makes Soap Lather

WHAT is called "lather" is really an enormous number of tiny bubbles of water, each enclosed by a very thin film of partially dissolved soap, the whole mass being held together by the stickiness of the little films as they touch one another.

Soap, when water dissolves, and the globules of water are carried in the solution. Then, as it is rubbed the bubbles are broken, thus releasing drops of water which case themselves again in other shells of soap, and so lather is formed.

To Prevent SHOES from SQUEAKING

SHOES squeak because the pieces of leather forming the soles do not lie close together, and rub and bend with the movement of the feet.

A perfectly made shoe will have French chalk, black lead, or some other paste smeared over the two surfaces that are to touch, so as to act as a kind of packing, but in the case of most machine-made shoes this process gets omitted with the result that as the layers work on each other, they grate slightly and make the objectionable creak.

With wear, however, the moisture of the foot itself acts as a lubricant, as it were, welding the parts together, and the creak stops. This ac-

counts for the old saying that it is only the shoe which has not been paid for—presumably a new one—that creaks.

A good plan to stop squeaking is to put a little sweet oil in a pan or dish and place the shoes in it to soak overnight. They will take up enough oil to deaden the squeak, and it is also good for the leather.

Another method is to remove a few rivets along the side of the shoe and insert powdered graphite or chalk, or thin pieces of felt rubbed with chalk, and fix it up again. Three or four more small nails or pegs may be driven into the center of the sole, but this reduces the flexibility of the shoes.

A CARD INDEX for a LONG LIFE

DR. CHARLES MAYO suggested in a recent address that every man should be physically examined by a doctor on his birthday and the results noted on a card.

When the doctor has finished the annual examination of the patient he will say: "I find your heart scores one hundred, but your kidneys score only seventy. So far as I can judge you will die in 1933 of a kidney trouble, assuming that you continue as you are now." These data would be written on the card.

Dr. Mayo continues: "Suppose, however, that you turn your pencil, erase 1933 and write in 1949. The two important elements that build heavy structures in the body, the United States Public Health Service, are phosphates and lime, and there is no better source of these elements during infancy. After infancy the diet should include a glass of milk with each meal."

Teaching in a healthy child is... if a normal function, but when associated with some outside disturbance it may become a source of serious trouble. If the baby thrives normally, the first teeth will appear at the end of six months. When these temporary teeth begin to come do not think that their preservation is not important. Quite the contrary. The first teeth are essential up to the very moment their successors are ready to replace them.

Among the evils that may follow the premature loss of first teeth are imperfect chewing, poor digestion, irregularities in the second set of teeth, distorted features and frequent suffering from severe toothache. The child's health and development depend a great deal upon the care of the first teeth. It is the mother's duty to train the little one to keep its mouth clean.

The first or "baby" molar appears during the sixth year and takes its place behind the temporary teeth. It is often mistaken as one of the temporaries and for this reason is neglected upon the supposition that it will soon be lost. The second or permanent molar largely determines the position of the permanent teeth that follow, as well as the shape of the jaw and the subsequent appearance of the child's face.

As the second teeth begin to develop and to take their places see that the first teeth are removed neither too early nor too late. Normally the new teeth will come up directly under those

round. You go to the card box, take out your card and again read it, or, in other words, you undergo another examination. You erase, in consequence, the old entries and make new ones. You may further modify some of your ways of living, or, having found those of the past year satisfactory, plan to continue them."

Controlling Blindness

ONE of the most frequent causes of blindness is an inflammation of the eyes which is due to an infection during birth, and known as ophthalmia neonatorum (inflammation of the eyes of the newly born).

The disease is easily prevented by dropping into the eyes of the infant immediately after birth two or three drops of a 1 or 2 per cent. solution of nitrate of silver. This procedure is required by law in a number of States, among them Illinois, and it is reported that in Chicago, where the law is now rigidly enforced, there occurred in 1923 not a single case of blindness from this infection in a total of 56,724 births.

CARING for a Child's FIRST TEETH

WHEN a child comes into the world it is apparently toothless. However, the first teeth are completely formed and are lying just beneath the gums. Under these are also the beginnings of the permanent teeth. The teeth do not develop as they should if not supplied with a sufficient amount of building material. The two important elements that build heavy structures in the body, the United States Public Health Service, are phosphates and lime, and there is no better source of these elements during infancy. After infancy the diet should include a glass of milk with each meal.

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they are to replace. Sometimes, however, the permanent tooth may start to emerge on either side of the arch. In this case the first tooth becomes an obstruction which must be removed before the second or permanent tooth has been forced out of line.

Breaking Dishes for a Living

UNCLE SAM has some strange jobs to offer, but none is stranger than that of breaking dishes for a living. This odd job is possible because the army, navy, marine corps and shipping board all buy dishes by the carload. Each department usually buys what it wants regardless of the quality. Naturally great waste results. In view of this the budget bureau decided there must be a uniform standard in gov-



ernment dishes. So the ceramics division of the bureau of standards was given the task of testing all kinds of china.

The principal means of testing the dishes was breaking them. For over a year three men have been breaking dishes daily. One of the ways of testing the strength of the different wares was with the help of a machine shown in the accompanying illustration, reproduced from the Fachfinder. Whole carloads of pretty dishes were broken in this way in the long test.

The results of the tests were that American-made chinaware proved to be the strongest and most durable. This is said to be because the American product is not baked so hard. German products will hold the designs longest, the tests revealed, but they break easily.

