

sorbed by a surrounding insulation-lined metal jacket.

The Junior Scientist can demonstrate on an ordinary dry cell how the first fuse worked. To make your model fuse, you will need a piece of flexible copper wire similar to the wire that connects your floor lamps or electrical equipment to the outlets. Cut off a three-inch length of this wire and bare it. Now separate the individual strands of copper. Any of these strands can carry the current in your fuse.

Bare two ends of regular flexible wire for a distance of a half inch or so, and connect the wires by twisting one of the thin strands of copper across them. This will leave the two ends of flexible wire about an inch apart. Now slide a glass tube around the wire as illustrated in the diagram. This completes your "fuse."

Connect this fuse to a dry cell and lamp in series as shown. The lamp should be of the small one-cell flashlight varieties which you can obtain from the 5- and 10-cent store. When everything is in order, the lamp will light.

"Short" your circuit by holding the open blades of an old pair of scissors against the two terminals of the lamp socket. In this way you cut the lamp out of the circuit. The current now flows from one side of the cell to the other via the wire, scissors and fuse.

This load is more than the thin piece of copper wire in the glass tube can carry. The wire immediately gets overheated, melts and breaks, thus cutting off the current and protecting your power supply. If you care to look, you will find tiny particles of copper in the glass tube.

Details regarding the construction of the original fuse probably have been lost for all time. Exactly what alloy of low melting point was used for the wire and what materials were employed in the surrounding shell of the first fuse are not definitely known.

The patent specifications merely suggest that the shell was composed of two halves, made slightly tapering at the ends and with a slight inward flange firmly to grasp the insulation surrounding the wire. Hoops or bands were to be slipped over the two halves of the fuse to hold them in place and thus relieve the fuse wire of all strain.

The basic design of this safety conductor is in use today. Although modifications have been made during the intervening years, it would appear that no better or cheaper method of preventing overloads and short-circuits has been de-

veloped since Edison patented his idea. Screw-base fuses bought today are similar to the earliest fuses. Employing the same principle, they are merely made from porcelain, glass or plastic instead of the wood used in the earliest fuses.

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**Befriended by His Foes**

➤ COYOTES, zoologists tell us, are not only present over most of their pre-settlement range but have actually extended it, even appearing on the outskirts of rather large cities. Despite the lack of welcome they receive from civilized man, these little wolves of the prairie find it profitable to hang around his settlements and ranches, where they can snap up poultry, lambs and shoats, and feast on carrion and garbage.

There is a certain element of justice in this, Wilfrid S. Bronson, artist-naturalist, points out in his just-published book, titled simply "Coyotes", which he wrote especially for small children. (*Harcourt, Brace & Co.*, \$1.75.) When the white man pushed his frontier out into the West, he not only killed all the coyotes he could shoot, trap and poison, but he destroyed a major part of the natural food of those who were crafty and hardy enough to survive direct attack, by killing or driving away most of the game and plowing up the sod where swarming rodents nested. So if a coyote steals a few hens he is only getting even for the loss of an equivalent weight in prairie-dogs, field-mice and grasshoppers.

There is one factor in the spread of the coyote east of the Mississippi during recent decades that is often overlooked. The coyote is naturally an animal of the plains and prairies; he isn't at home in the timber. When the white man came,

most of the East was heavily forested. Settlers cut and burned the trees to make way for farms. This huge-scale clearing, which had much to do with the disappearance of the timber-wolf, meant simply an extension of the prairies for the coyote. So he has been moving in. And if the farmer supplies him with occasional poultry and piglets, so much the easier is life.

The coyote is by no means the unmitigated thief and general pest that he is sometimes pictured by exasperated victims of his raids. His principal diet still consists of small rodents, which in the aggregate devour a great deal more of the farmer's or rancher's substance than a few furtive predators are likely to get away with. Also, by cleaning up the carcasses of animals dead of accident, disease or exposure, the coyote performs a direct service. Moreover, he is musical. Many a rancher, who plots his destruction by day, will admit by campfire-light that he "kinda likes to hear the old cuss howl."

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