

PHYSIOLOGY-ELECTRICITY

Household Circuits May Give Fatal Electric Shocks

Scientists Have Learned That Less Than 100 Volts Causes the Heart Either to Waver or to Stop at Once

SHOCKS by electricity of even such low voltage as that found in the ordinary household circuit are extremely dangerous and may cause death, Dr. Horatio B. Williams of New York, has pointed out in a report to the American Medical Association.

Heretofore when people have died from shock with supposedly low voltages of electricity, such as from household circuits and appliances, it has been explained on the ground that the voltage had suddenly become greater than the usual 110 or 120 volts. Dr. Williams offers another explanation based on physiological rather than physical grounds.

Within recent years medical scientists have learned that electricity under the pressure of a very low potential, often much less than 110 volts, affects the heart, causing a sort of tremor or wavering in its usual contraction, which physicians call fibrillation. Instead of all the muscle fibers contracting together, they each do it separately without co-ordination. When the current passes through one part of the heart, this fibrillation occurs without interfering with the circulation but when the current passes through another part of the heart, the circulation stops at once and death usually follows in all large animals.

When the human skin is dry it is a good non-conductor. But when it is wet, large enough currents could pass to cause fatal fibrillation of the heart, Dr. Williams suggested. The skin is rarely absolutely dry. Perspiration keeps it somewhat moist and when this is copious, or when the skin is wet with soap and water, an electric current could easily pass through it. A slight cut or bruise of the skin also lowers the resistance to electricity.

Household electric power lines are customarily grounded on one side. Contact between the other side and any part of the body becomes dangerous when the skin is wet enough to conduct. Water pipes, drain pipes, radiators, sinks and the conduits in which

the power wires run are all usually well grounded, which, together with the fibrillation theory, explains the numerous cases of fatal electric shocks of persons touching electric appliances while in the bathtub, for instance.

"A person in a bathtub, making through his wet skin an excellent contact with the grounded drain pipe, runs a deadly risk if he happens to touch the metallic shell of a fixture which is in electrical contact with the ungrounded side of the circuit," Dr. Williams said. "Fixtures are not supposed to be in this condition, but there are so many opportunities for them to be or to become so that the danger is ever present.

"It may be dangerous to touch electric lamps and appliances with wet hands, especially when there are cuts and abrasions of the skin and particularly when there is a ground contact, as when one is in a bathtub."

Another danger spot is the chain pull switch with which many lamps are equipped. In some there is an insulating link, but many do not have this, Dr. Williams observed. A safe practice is to tie a piece of silk ribbon to the chain, particularly in the bathroom, kitchen and cellar.

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ASTRONOMY

Amateurs Make Ready For Next Year's Eclipse

OBSERVATIONS to determine the exact path of the total eclipse of the sun, on August 31, 1932, by photographing the northern and southern edges of the moon's shadow as it sweeps across the earth will be made at Springfield, Vermont, by a group of amateur astronomers.

This was announced at the sixth annual meeting of amateur telescope makers by Russell W. Porter, of the California Institute of Technology. Mr. Porter, whose home is in Springfield, some years ago guided a group of

factory workers here in making their own reflecting telescopes, and since then the movement has spread to all parts of the country.

The eclipse next year will be visible a few miles east of Springfield. With the co-operation of Dr. John A. Anderson, of the Mt. Wilson Observatory, Mr. Porter has outlined a plan for observations that can be made without expensive equipment. The photographs of the edge of the moon's shadow will be made by observers stationed on hills, about five or six miles inside the path. It is expected that the two sets of photographs, if successful, will permit a very close determination of the extent of the path, and hence of the moon's position in space.

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ENTOMOLOGY

Malaria-bearing Mosquitoes May Come in by Chimney

MALARIA-BEARING mosquitoes emulate Santa Claus in some parts of the South. When they find doors and windows screened, they come down the chimney seeking whom they may devour, and bearing unwelcome gifts of "fever 'n' ague." But you can keep them out by hanging a little basket of naphthalene, the stuff mothballs are made of, at the top of the chimney. They hate it, and will zoom out of its range as soon as they smell it, no matter how much good biting may lie slumbering below.

This is one of the curious facts about mosquito behavior which have been learned by the U. S. Public Health Service.

Not all mosquitoes will enter houses by coming down chimneys, and it is not known whether all of them can be driven off with naphthalene. One species, however, responds in this way, *Anopheles quadrimaculatus*, the four-spotted malaria mosquito. But she is important enough to make this bit of entomological knowledge very much worth having.

Presumably one could protect one's self from the visits of this unwelcome and dangerous night visitor by sprinkling a little naphthalene powder on the bed, or by keeping a few mothballs under the pillow. But whether one could sleep with such odorous bedfellows is another question, and whether one's friends might not next day be driven off just as effectively as the mosquitoes were is still another.

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