

A considerable proportion of the pollen grains were well enough preserved to permit their identification. They came from a considerable variety of flowers: dandelion, hawkweed, cherry, heather, rose, snowdrop and a number of other

species of wild plants.

Honey was not by any means a common funeral gift among the ancient Germans, Prof. Grüss remarks. Presumably it was not very easy to get.

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PHYSICS

## Multiple Lightning Strokes Crush Strong Wires

### Internal Pressures of From 10,000 to 20,000 Pounds Per Square Inch May be Built up in .8-Inch Core

**D**ESTRUCTIVE lightning strokes which shatter a tree or telephone pole, burst a block of concrete through which a wire runs or dig a hole in the ground are the result of too much confinement, reports P. L. Bellaschi, engineer of the Westinghouse Electric and Manufacturing Company laboratories (*Electrical Engineering*, August).

If the core of the lightning stroke is confined within a bore having a diameter less than about eight tenths of an inch, internal pressures may be built up of anywhere between ten to twenty thousand pounds to the square inch. Few natural materials will stand such forces and naturally blow up.

Electrical engineers were led to investigate the shattering of wires by lightning strokes because of the paradox that small wires were known to be able to withstand high currents comparable with those of lightning and yet were sometimes fused and destroyed by lightning, Mr. Bellaschi will report in a paper to be delivered at the forthcoming meeting of the American Institute of Electrical Engineers in Seattle, Wash.

The secret, the electrical engineer reveals, appears to be that many lightning strokes are not single discharges but multiple ones. Lightning, in other words, sometimes strikes anywhere from five to ten times in the same place within a fraction of a second.

From a collection of experimental data gathered in a study of lightning with a super-speed camera it was found that 80 per cent. of the lightning strokes were single ones. The other 20 per cent. were of a multiple nature.

The multiple flashes are suspected of being the ones which crush large hollow cylinders, fuse telephone wires and other heavy-current carrying electrical leads.

Laboratory tests showed that very heavy lightning strokes, having currents

up to 200,000 amperes, would be needed to destroy conducting equipment in the manner authentically reported. The cumulative effect of several more moderate strokes coming one on top of the other is believed to explain the lightning paradox.

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ENGINEERING

## Giant Lightning Arresters Built for Boulder Dam

**T**HE first of the twelve giant lightning arresters which will protect the power transmission lines from Boulder Dam to Los Angeles against lightning has now been completed. The arresters are 45 feet high, weigh 4,500 pounds and are rated at 287,000 volts.

The strip of brass wire cloth shown in picture was used in artificial lightning tests to simulate the steel tower on which the arrester will hang in actual service.

Insulating material of the arresters is the new substance Thyrite, for whose discovery Karl B. McEachron of the General Electrical Company received the Edward Longstreth Medal of The Franklin Institute, Philadelphia.

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The wood of the Osage orange tree was valued by Indians as material for bows and war clubs.

When tin cans were novel containers for food, tinsmiths made cans by hand at the rate of about 60 a day.

The Seventh Pan American Child Congress will be held in Mexico City in October of this year.

To salvage the diamonds in the gravel bed of the Vaal River, South Africa, a large part of the river has been diverted.

PHYSICS

## Nitrogen Afterglow Hints Possible New Lamp Type

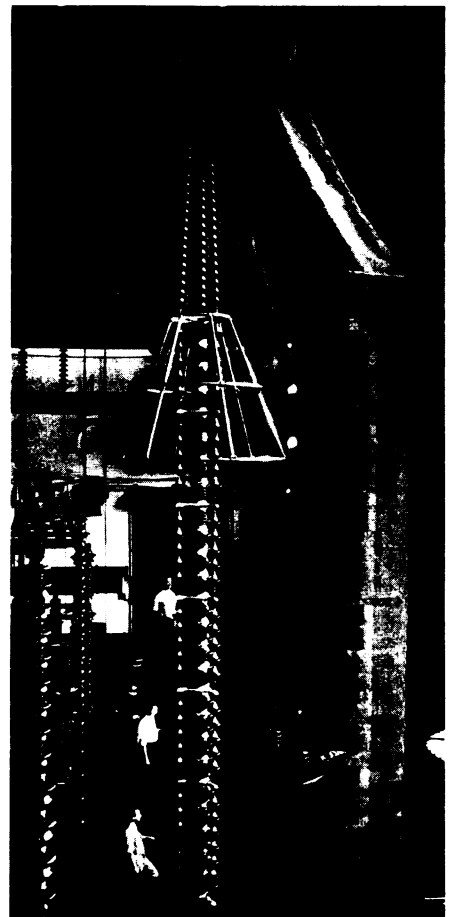
**T**HE FUTURE may bring a new form of illumination for domestic and commercial use which will supersede all other forms now in use, Prof. W. H. Rodebush of the University of Illinois has predicted.

He referred to the afterglow of nitrogen which occurs when this gas is placed in a glass tube with small amounts of oxygen and subjected to low pressure electrical discharges.

Among the virtues which this form of light appears to have is a practically complete conversion of electrical energy into light with no detectable waste in the form of heat.

Furthermore, it does not require continuous supplies of electrical energy, for under some conditions the afterglow lasts for hours after the electrical discharge is stopped. By proper mixture of gases used, light can be produced which approximates the ideal "white" light of the sun.

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