

mold is the "negative"—just the opposite from the original model; ridges are valleys and valleys ridges. But when the casts are made from the mold, they, like the original, are "positive."

Each piece weighs between 25 and 150 pounds, depending upon whether the section is level or mountainous.

Then the cast is sent over to our studio department where the artists take it in hand and try to make an exact reproduction of nature as it would appear from an airplane flying at the height of several miles.

Work such as we have been doing in our laboratories has an actual money value of thousands and thousands of dollars—far more, in fact, than the Government put into the work. It has permanent value, for each model of this sort will be placed in one of the national park museums where it will interpret the story of the park to the many thousands of American citizens who will see it each year and whose vacations will be made the more enjoyable by a thorough understanding of what they see.

Science News Letter, May 18, 1935



FINISHING MESA VERDE

Mesa Verde National Park occupies the top of a plateau in southeastern Colorado.

PHYSIOLOGY

Nicotine Affects Nerve-Ends In Muscles, Not the Brain

A PERSON poisoned by nicotine stops breathing because the nerve endings in the muscles of his breathing apparatus are paralyzed. The drug does not paralyze the breathing center in the brain, as has been generally believed.

These discoveries, which suggest a new method of treating nicotine poisoning, were reported by Drs. Harry Gold and Frederick Brown of Cornell University Medical College, New York, at the meeting in Detroit of the American Society for Pharmacology and Experimental Therapeutics.

Artificial respiration, rather than drugs to stimulate the breathing center in the brain, is the method suggested by the Cornell investigators for treating cases of nicotine poisoning in which breathing has been dangerously slowed or stopped altogether. Stimulating drugs can only make matters worse in such cases, they pointed out, because the partially paralyzed nerve endings require rest, such as can be obtained by artificial respiration. A substance like barbital, which has a depressing rather than stimulating effect

on the nerves, can abolish the convulsant action of nicotine, they found. An animal treated with this substance can survive an otherwise fatal dose of nicotine.

The new knowledge of how nicotine acts to stop breathing was obtained in several ways. First, direct application of the drug to the respiratory center in the brain caused marked stimulation of breathing, the Cornell investigators found, but even very large doses of nicotine applied to the brain center failed to cause paralysis of breathing.

Secondly, nicotine was found to be more poisonous when injected into a vein than when injected into the carotid artery, the principal artery of the neck. If the action of nicotine was directly on the respiratory center, the reverse should have occurred, for when the drug is injected into the carotid artery it goes directly to the brain without passing through the lungs. When injected into the veins it goes to the lungs first. This, therefore, indicates that the seat of the toxic action is not the brain respiratory center.

Thirdly, it was found that after nico-

tine the power of the nerve endings to carry impulses from the brain center to the muscles was markedly reduced or abolished. Significant evidence was also obtained by means of a special device by which the minute electrical potentials produced in the brain were enlarged through radio tube amplifiers and recorded with the string galvanometer. When all signs of breathing had ceased after nicotine, the cells of the breathing center in the brain were still continuing to send down volleys of electrical discharges in a normal manner, showing conclusively that the nicotine did not injure the breathing center.

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Clipping shrubbery to resemble animals, ships and other curious shapes was a garden custom popular with the ancient Romans.

● RADIO

Tuesday, May 21, 3:30 p. m., E.S.T.

THE MOSAIC OF NATURE, by Dr. George J. Peirce, Professor of Botany, Stanford University.

Tuesday, May 28, 3:30 p. m., E.S.T.

FOODS WE EAT AND WHY WE EAT THEM, by Prof. R. Adams Dutcher, Department of Agricultural and Biological Chemistry, Pennsylvania State College.

In the Science Service series of radio addresses given by eminent scientists over the Columbia Broadcasting System.