



GLOBULAR CORONA REVEALED

The delicate detail of the newly discovered envelope is brought out by photographing the image on the negatives onto other film by reflected light. This was done from Major Stevens' high altitude photograph by the Eastman Kodak Research Laboratories.

BIOLOGY

Find That Plant Cancer Can Be Caused by a Chemical

AN important discovery of how tumors can be caused in plants, made at the University of Chicago, may influence the trend of research in the study of human cancer.

The husband-wife research team of Profs. George K. K. Link and Adeline DeSole Link, with the help of research assistant Hazel W. Wilcox, found that crown gall, or plant cancer, can be created by applying a special chemical to a plant. Significant point is that this plant disease, long known to be caused by the bacterium organism *Phytoplasma tumefaciens*, can also be caused by the application of a growth hormone, beta-indoleacetic acid, an organic chemical compound.

In the plant experiments it was discovered that the applications of the organic acid not only could produce plant tumors but also, when given in varying concentrations, produced different ef-

fects. Some treatments stimulated healthy growth of the plant and other treatments produced "every type of disease symptom known to the plant pathologist," to quote the announcement of the discovery.

"Research workers in human cancer," continues the report, "have been searching for a specific substance responsible for the production of unhealthy cell growth. The botanical discovery that a growth hormone, under varying conditions and in varying amounts and concentration, causes diverse effects may open an additional line of attack on the cancer problem."

Crown gall is a plant disease of economic importance in the rose family, particularly apple trees. Botanists have known for 30 years that the disease is caused by the bacterium, which enters wounds, especially improperly made grafts. The disease is controlled through

quarantine and destruction of infected trees.

While crown gall is known as a plant cancer it is unlike human cancer in that it does not show the process of metastasis, in which human cancer sends into the blood stream cells which can cause cancer in the other parts of the body. Plants, of course, do not have a circulatory system in the human sense of the word. Rather the spread of crown gall through a plant is accomplished by sending out strands which can cause other galls to occur.

Beta-indoleacetic acid, causing the plant cancers, has been known since the 1880's and in the last five years it has been found to be a growth hormone.

By controlling the concentrations and the amounts of the acid applied to plants the Chicago investigators have been able to produce all the following conditions in plants: tumors, wilting, discoloration, root formation, death and healthy growth.

The report is published in the *Botanical Gazette*.

Science News Letter, August 21, 1937

ANTHROPOLOGY

Fossil Man of China Now Considered Oldest Human

WHO was the first man? This is one of the major questions of all science.

In layers of earth in various parts of the world are found a few fragmentary bones of human-like creatures that lived and died long before the dawn of history. This record of human evolution constitutes one of the great pieces of scientific sleuthing.

In China, not far from Peiping, near the scene of the Japanese-Chinese military and commercial struggle, over a score of ancient fossil human remains have been found at a site called Choukoutien. *Sinanthropus pekinensis* is the name given to these extremely primitive yet human creatures. *Sinanthropus* is pronounced even nearer to the apes than famous *Pithecanthropus*, ape man of Java.

Dr. Franz Weidenreich, visiting professor of anatomy at the Peiping Union Medical College, looks both ways in time from the era of *Sinanthropus* and foresees that the ancient soil of Asia will bring forth relics of men both earlier and later than the men of Choukoutien. *Sinanthropus* was living before the great Ice Ages, the Pleistocene, began. He knew the use of fire and implements. Obviously human culture began with a

human being still older. For this reason the scientists are turning to old deposits of the earth, called the Tertiary, confident that there will be found the solution of the true riddle of human evolution.

While Sinanthropus has many characteristics of modern man, Dr. Weidenreich feels that there will be found in

Asia a link between him and modern men, a kind of ancient man somewhat like the Neanderthalers of Europe. He is convinced that Sinanthropus is a direct ancestor of modern man, at least the Asiatic variety, and that somewhere among the direct ancestors of Sinanthropus was a creature whose future descendants included both men and apes.

Science News Letter, August 21, 1937

processes show that all these defects are overcome. The wool has the original soft and fluffy feel. It is just about as durable as the untreated wool. Its color and the dyes on it are not changed in the least. The wool does not seem to be chemically altered at all, the microscope reveals.

Other features of the new method are: wool can be treated as it comes from the sheep's back or in the form of socks and other clothing. The wool does not have to be washed first, or treated in any special way. The treating solution can be used over and over again and Mr. Hall has used the same solution for over a year. It is only necessary to add sulfuryl chloride as it is used up, and purify the solution once in a while.

Wool mixed with rayon and cotton can be treated without harming these fibers, provided they are not too damp.

Science News Letter, August 21, 1937

CHEMISTRY

Wool Made Unshrinkable By New Revolutionary Invention

Simple Dipping in Chemical Does the Trick Without Damaging Durability, Softness or Fluffiness

A NEW, revolutionary method which solves the old problem of making wool unshrinkable, without damaging it in any way, has just been invented by A. J. Hall, English textile chemist.

The important feature of Mr. Hall's process is that it permits shrinking wool without adversely affecting its durability, its original softness and fluffiness, and its color—something which heretofore has proved to be impossible. These defects have been associated with unshrinkable processes for over forty years, since they were first practiced. In spite of much research, they have remained unsolved.

Extremely simple, Mr. Hall's method merely consists of dipping the wool in a solution containing the chemical sulfuryl chloride. The chemical is dissolved in "white spirit"—a solvent which is used a great deal in dry cleaning. About 1½ to 2 per cent. solution is used and the

treatment lasts about an hour.

Already Mr. Hall's invention has aroused considerable interest among wool manufacturers and finishers. Many important firms have taken out licenses under the patents which are being applied for in most of the countries throughout the world.

Previously it was always thought that to make wool unshrinkable, treatment with chlorine in some active form—like sodium hypochloride or chlorine gas, the same gas used by Germans in the first gas attacks in the early stages of the war—was necessary. But always the wool came out with a harsh feel. If the wool was dyed, the treatment bleached the dyes. Then if such unshrinkable wool was made into clothes, they did not last as long as garments made out of untreated wool.

Tests on wool treated by Mr. Hall's

ENGINEERING

New Mountain Highway Will Have Nine Tunnels

RELIEF for the American motorist on one of the toughest year-round trips in the country—between Harrisburg and Pittsburgh directly across the Allegheny Mountains—is now under way.

Imagine a super highway through this rugged country for 165 miles of which 125 miles will be in a straight line, averaging only one curve per mile and with no grade greater than three per cent.

CLIMB DODGER

This picture map shows how the new highway will dive under mountains to smooth the way for motorists

