## Before Crater Lake

HUMAN beings lived in Oregon before a gigantic volcanic explosion blasted a mountain and formed famous Crater Lake, between 5,000 and 10,000 years ago.

Dr. L. S. Cressman, head of the University of Oregon's department of anthropology, reported the discovery in caves of camp fires and camp debris blanketed with pumice from the eruption.

"These eastern Oregon caves show the transition from the atlatl or spear thrower to the bow and arrow," Dr. Cressman said. "Fine twined basketry, the most conspicuous type of article found in the caves, must have been brought in by migratory peoples, for it appears completely developed immediately following a period without basketry. In the eastern caves near the end of occupation were found a few fragments of coiled basketry. Well beneath the pumice in one of the stratified caves were found chipped obsidian tools, bones of horse, camel and several other genera along with the camp fires used to cook the flesh of these animals."

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## Distance Not Abolished

DESPITE the airplane and its swift flight, it is not correct to say that for modern life "distance has been virtually abolished," Dr. John Q. Stewart, associate professor of astronomical physics at Princeton, told the meeting.

The fallaciousness of this idea was illustrated, Dr. Stewart said, speedily and spectacularly by the fall of unsupported Hong Kong and Singapore, which had been British possessions for a total of 215 years. Although military science stresses the significance of distance when armies are to be maintained far from home, the importance of the distance factor for general social relations is not well recognized.

Prof. Stewart put forth the idea that the influence of a group of people tends to be proportional to their number divided by their distance away.

Social influences weaken with distance much as physical ones, he said, and thus some of the relations of celestial mechanics are brought "down to earth."

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In the past, approximately 90% of the paint brushes used were made of black *Chinese hog* bristles.

BIOLOGY

# Animals as Well as Plants Use Carbon Dioxide in Cells

### New Finding With Revolutionary Effects Possible Through Radioactive Carbon Atoms Fed to Animals

REVOLUTIONARY in its effects on our ideas of life processes, discovery that animals use carbon dioxide in the nourishment of their cells and tissues was laid before the American Chemical Society in Memphis by Dr. E. A. Evans, Jr., of the University of Chicago, recipient of the Eli Lilly award in biological chemistry.

The new finding, which was made possible only through the radioactive "tagging" of carbon atoms in the compounds fed to the animals studied, breaks down the old, simple doctrine on which all students, even in elementary schools, are brought up, that "plants take in carbon dioxide and give off oxygen; animals take in oxygen and give off carbon dioxide as a waste product."

It is almost as if an engineer had announced the discovery that cinders could be burned in furnaces. The carbon atoms were "tagged" by being made radioactive in the University of Chicago cyclotron. The buildup of carbon dioxide containing these atoms into complex organic compounds was traced in muscle and liver tissues.

Two of Dr. Evans' associates, Dr. L. Slotin and Dr. Birgid Vennesland, collaborated with him in preparing water solutions from dried liver tissue which contain enzymes able to convert the carbon dioxide into the larger organic molecules.

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CHEMISTRY

# Synthetic Cellobiose Made For First Time by Chemists

### Resulting Knowledge of Cellulose Can Be Utilized In Making Explosives, Rayon, Plastics and Wrappings

BASIC understanding of cellulose, the stuff that cotton, wood and a thousand other useful substances are made of, was materially advanced by a paper presented at the meeting of the American Chemical Society in Memphis by Dr. W. T. Haskins, Dr. Raymond M. Hann and Dr. C. S. Hudson of the National Institute of Health.

For the first time in the history of chemistry, the fundamental building block of cellulose, a compound known as cellobiose, was made synthetically by the three researchers. This does not mean that cotton plants, trees and all other sources of cellulose will presently be out of a job, Dr. Hudson stated in discussing the paper. Man will probably never be able to make cellulose as easily and cheaply as plants. But it does mean that science will have a better knowledge of how cellulose is put together, that knowledge can be turned to advantage in making such things as explosives, rayon, plastics and transparent wrappings, of better quality and at lower cost.

When cellulose was first analyzed, more than a hundred years ago, it broke down into molecules of common glucose. Subsequently it was found that these were united in pairs to make double-sized molecules of a more complex sugar which was named cellobiose. Now for the first time it has been possible to make cellobiose artificially and to demonstrate that in the synthetic molecules the glucoses are tied together in exactly the same way that they are in the natural molecules.

At the same session, what might be termed the engineering properties of the cellulose molecule were discussed by Dr. R. F. Nickerson of the Mellon Insti-