

CHATHAM SHARES NO SECRET

Manufacturer of Rare Gems Lectures at Denver U



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GEM MAKER CARROLL CHATHAM
Holding a 300-karat emerald crystal he has grown.

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Man-made emeralds are better than rubies for receiving faint radio signals from space, says Carroll Chatham of San Francisco.

Chatham should know. He's a man who makes gems. He's famous for it. Ever since 1940 he has been "creating" actual emeralds and rubies for the trade. He can chuckle now over the chilly reception he got in New York the first time he tried to sell his rough stones on the gem market there.

Chatham, who got his chemistry degree at the California Institute of Technology in 1938, flew to Denver, accompanied by Mrs. Chatham, to lecture Saturday at the University of Denver.

He talked on the chemistry and production of gem crystals, addressing the training institute for Colorado high school science teachers sponsored by the ESSO Foundation.

The San Francisco gem maker brought with him a display of fine specimens, including a 300-karat uncut emerald — the third-largest single crystal of its kind.

Ask him if he grows 'em from a water solution and he just grins and says he'd rather not answer that. But he doesn't mind telling what his raw materials are. For rubies, he starts with alumina, or corundum, also known as aluminum oxide. Various impurities produce colors such as the characteristic red of the ruby.

In making emeralds, the raw material is commercial green beryl, also known as beryllium aluminum silicate. The green color is caused by chromium.

"When I was a kid of 15," says Chatham, "I read that chemists had tried for years to make emeralds and rubies without success. So I figured I ought to try it. For a long time I didn't have any luck, either, but I kept trying.

"First results came from a lucky accident—I won't say just what. Then I had to re-do the experiment to learn what the accident was, and why it got results.

"I started producing com-

mercial stones 20 years ago. Scientists and museums were interested at once, but gem dealers refused to believe I was able to re-crystallize the minerals into gem-quality stones.

"Actually, the value of rubies and emeralds, four karats and larger, is ten times the worth of a diamond of equal size. A 4-karat ruby is worth around \$5,000 a karat.

"Because of the psychological opposition to man-made gems, the going price of created stones is only a fourth or fifth of the price of natural, mined stones.

"Now, the future looks good for large crystals of gem quality, for use in electronic devices such as the solid-state MASER. This is a radio apparatus that boosts the strength of very faint signals which could not be heard over the hiss and crackle of "background noise" made by tubes or transistors.

"I'm no expert, but I'm told the emerald will amplify radio waves of much higher frequency than rubies can handle. It's these multi-billion-cycle frequencies that are useful in satellites and space probes. Because of the new MASERS it is possible to bounce radar signals off Venus and even the sun."