



John Landry

COFFEE-TABLE HOLOGRAPHY—Anyone with a small gas laser can make a good hologram if care is taken to minimize vibrations. The laser, camera and object to be "photographed," shown above, can be set up on an ordinary coffee table.

TECHNOLOGY

3-D Image Made at Home

► A THREE DIMENSIONAL "photograph" can be made on a coffee table using the latest scientific equipment, thanks to a method worked out by John Landry who will be a graduate student at the University of California in Santa Barbara this fall.

The cost, however, is about \$400, making the method more practical for schools and clubs than for an individual.

The "photograph" is actually a hologram, the recording of an interference pattern reflected from an object. From this recording, the object's image can be reconstructed visually in three dimensions, so that the viewer can peer around it by moving his head, just as he could if the object were actually there.

Although holography is a form of photography, no lenses are required and the exposed film bears no resemblance to an ordinary negative. Holograms have been made with ordinary light, but most are made using the intensely bright light of a laser.

The laser Dr. Landry used to make his coffee-table hologram is a Spectra-

Physics Model 130, which costs about \$300. The camera holding the film was a single-lens Heiland Pentax, a kind often used for vacation snapshots, with the lens removed. The holograms were taken on Kodak special high definition aerial film type SO-243.

Mr. Landry made his holograms of a Rolls-Royce radiator cap, using a 90-degree glass prism to split the laser light, thus providing a reference beam at an angle of about 15 degrees.

Since the camera shutter could cause vibrations when snapped, a small piece of cardboard was held in front of the camera until after the shutter was opened, then the card was removed for the exposure, which took from five to 10 seconds.

The experiments show that holograms are not as difficult to make as many scientists had thought.

"I am now convinced that it is really quite easy and that good holograms can be made by anyone having access to a small gas laser, provided reasonable care is exercised to minimize vibration," Mr. Landry reported in the *Journal of the Optical Society of America*, 756:1133, 1966.

SPACE

USSR Spectacular Would Spur U.S. Space Program

► A SOVIET space spectacular now would be the best possible spur to the United States' space program, which has no defined aim after the Apollo moon landings are achieved.

A Russian space feat might make possible a budget of six billion dollars a year for the National Aeronautics and Space Administration, instead of the five billion currently anticipated. The U.S. public does not want the Soviet Union to do "everything in space," Representative Joseph E. Karth (D-Minn.) said in Washington, D.C.

He outlined his views on what the United States should undertake as space activities during the next four years to an Aviation/Space Writers Association meeting. Congressman Karth called for a major emphasis on manned missions near earth, leaving establishment of lunar bases and manned exploration of neighboring planets for the late 1970s.

As chairman of the Space Sciences Subcommittee of the House Science and Astronautics Committee, Congressman Karth has an important voice in establishing the goals of future U.S. space programs. NASA has called for a national debate on post-Apollo space aims.

Turning to unmanned vehicles, Congressman Karth said that meteorologic, navigation, communications and geodetic satellites have already brought "substantial economic, scientific, national security and prestige payoffs." He called for somewhat higher budget expenditures for exploiting further the payoffs possible from such orbiting satellites.

Congressman Karth said that he was not opposed to future manned space flight programs, but was in favor of a good balance between manned and unmanned flights. He believes the space program is now sufficiently "grown up" so that there is no need to race quickly toward manned missions to the planets as the next space goal.

Certain technical problems, such as how long exposure to zero gravity affects man and how serious is the calcium loss when experienced for many months, must be solved before man can make the lengthy voyages to Venus or Mars.

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