

# Holography: The new revolution

By John Alderson

Don't look now, but I think there might be a revolution under way. Nothing violent, you understand—just mind boggling.

When two-dimensional photography emerged in the technical flush of the Industrial Revolution, it was greeted with awe and wonder by an amazed world. Once again those tinkering scientists had come up with something incredible. Now a process called holography holds every promise of taking another and perhaps even more significant step in the realm of imaging systems.

First conceived in 1947 by Dr. Dennis Gabor, a research engineer at the Rugby Electrical Co. in Scotland, holography records a complete, three-dimensional image of an object on extremely fine-grain photographic film. There are different kinds of holograms, but basically the process involves placing the film at the intersection of two beams of light which emanate from the same source (usually a laser). Part of the light beam is bounced off mirrors and reaches the film unaltered; the rest of the beam hits the film after it has been reflected off the object being recorded. The film—a very fine grain black-and-white emulsion—records the interference pattern described by the two beams of light.

When light is passed through the film after processing, the viewer sees the original object, complete in every detail, projected



Dr. T.H. Jeong, Lake Forest College physics professor, adjusts apparatus for making holograms (left). During a visit to the Gallery 1134, he displays a hologram of a lion's head (above).

into space before him. You'd swear it was really there, but you could pass your hand right through it. Even stranger (attention stereo photography buffs), you can walk all the way around a 360-degree hologram to view front, back and sides at leisure. Awesome.

Gallery 1134 on W. Washington St. has mounted several holography exhibits since it opened in January of last year, and has started offering holography workshops this fall. A \$200 fee for the six-week beginning course (the next one starts Nov. 7) covers

about 24 hours of instruction and all materials required for the student to produce his own holograms. Intermediate and advanced courses are planned for early next year.

Associated with the gallery is Dr. T. H. Jeong, professor of physics at Lake Forest College and a pioneer in the development of holography. Dr. Jeong certifies all workshop instructors, and serves as a general consultant to students and staff.

Gallery founder Loren Billings got into holography about six years ago while she was at the Art Institute. It took her six

months to produce her first hologram, but students at 1134 now make theirs during the first workshop session.

Ms. Billings is bullish on the medium: "People are interested, and response has been marvelous," she says. "We are the only teaching facility in the nation that is geared exclusively toward holography, and it's an exciting time to be learning." She says holography is still in its infancy—that artists and scientists together have only begun to tap a medium of tremendous potential. "I guess you could say we're about at the stage of silent movies," she says, "and I can't wait for the talkies."

Ditto, My own fantasy about holography involves something like holographic theater-in-the-round. An audience could be seated in a circle around a performance, and each viewer would see the show as if real, live actors were at work before them. Since the performance would be a studio creation, however, it wouldn't be subject to the usual limitations of the stage. Prop and scene changes could be extensive and immediate, and special effects would be all the more effective in three dimensions—essentially a solid movie, released from the confines of a two-dimensional screen. This may not ever happen, but it is one possible direction for holography in show biz. The Russians have already produced holographic movie footage, and a couple of frames were on exhibit at Gallery 1134.

But even the present is exciting enough. Holography has already given us new dimensions in information storage and retrieval (a whole library of information could be stored on a single 8x10-inch holographic plate). The medium offers amazing resolution of detail: When a hologram of a glass of water was greatly magnified, microscopic organisms living in the water became visible. Try that with Tri-X.