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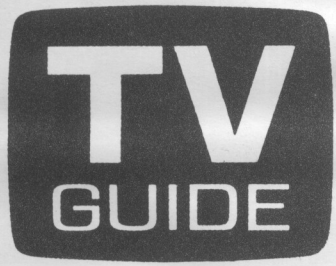

3D TV IS COMING

By Mike Edelhart

In a darkened lab north of Chicago, a young scientist flicks a switch, and a thin green light illuminates a transparent cylinder. In the center of the cylinder is a picture of a girl. The scientist gives the cylinder a spin and the girl's front, side and back twirl past as though she were really there. As she swivels past, she waves.

The figure of the girl looks quite solid. It's hard to believe she's not real. Laughing, the young scientist wiggles a couple of fingers through the image and says, "It's only light, really."

Who is this man and what is he doing? His name is Tung H. Jeong and he is a holographer. His specialty is making three-dimensional images—like the one of the girl—called holograms, using laser light and no lenses; a sort of laser photographer.

Through the work of Jeong and others such as Lloyd Cross of San Francisco, a science-fiction dream, 3-D TV, has been moved well out of the realm of fantasy. Even a few years ago, three-dimensional television was considered a teen-age pipe dream by most scientists. Today, it is considered not only possible but inevitable—and sooner than you think.

Dr. Jeong, who received his Ph.D. in nuclear physics, and teaches both physics and optics at Lake Forest College, near Chicago, sees the advent of 3-D TV still at least a generation →

away. "Yet," he says, "it took 100 years for photography to reach the stage of television. It won't take that long for holography. In the 20th century, technology moves 10 times as fast. It will take 10 years, I hope, to get to the public."

The trail leading to 3-D TV has followed a strange course and has already produced some astonishing creations.

Originally discovered in 1947, holography was considered for many years a scientific curio good only for convention displays and mesmerizing freshman physics classes. The development of the laser (a highly pure and regular light), in 1960 changed this course drastically. With the addition of the laser, holography took a great leap forward in scientific importance.

The laser was important because of the way holography works. Basically, a hologram is the record of the pattern produced when two light beams collide. The beams must be as pure as possible, which is why the laser, so much purer than other light sources, makes such a difference. The laser is optically divided into two beams. One is aimed at the object being holographed and is reflected in all directions. When it meets the other "reference" beam, they create a unique pattern that is recorded on film as a hologram. When developed and exposed to laser light, the hologram will display a three-dimensional image.

To this basic technique, modern holographers have added color, motion and 360-degree viewing, and Dr. Jeong sees these as steps on the road to 3-D TV. Practical application of these developments has already begun and more will follow in a few years, he believes.

Jeong points to the World Book Encyclopedia's use [in Science Year in 1967] of holographic pages. He also foresees large displays in airports and other public buildings soon becoming holograms. "Think," he says, "of what it would be like to see the new fall cars full size, in three dimensions and color on the wall."

Dr. Jeong also sees a great future for holographic art, especially portraits. Imagine the joy it might give a parent to record his children in three dimensions, moving around. Soon, it will be very possible to do just that.

Today's miracles could soon be followed, Dr. Jeong believes, by a marvel that could actually bring 3-D entertainment into the home: holographic cassettes. Already a technique has been designed to allow holographic film of any length to run from spool to spool around a cylinder. The result is a 360-degree minimovie, suitable for viewing by a small audience.

Once we have our cassettes and daily newspaper holograms, it will still be a few years before actual 3-D TV becomes widely available. The problems are both technical and social. Technically, a hologram contains a lot more visual information than a normal TV picture. Today's TV antennas couldn't receive it, nor could normal television sets display it. A new system will be required to handle 3-D pictures.

"The present TV format, with its box concept, doesn't lend itself to 3-D," Dr. Jeong explains. "No one wants to just look under David Brinkley's chin." The new format he envisions would consist of a large cylinder powered by a laser the size of a grain of sand. The 3-D picture would be projected into this cylinder, making its walls seem to vanish and presenting us with an utterly realistic view of Paris, a football game, the moon—anything. We could watch the scene from any angle we want, and the scene would change with our angle of view just as if we were there.

The radical nature of the change wrought by three-dimensional television is probably as big a problem as the technical hangups. People and business are slow to accept new systems. "The

technical problems will be solved way ahead of others such as format and people's habits," Dr. Jeong says. "It will take three to four years to realize the possibility of 3-D TV. But from the present stage to market availability will take much longer."

Two products currently available indicate both the possibilities and problems of the coming 3-D age. One major corporation has developed a totally laser-operated 2-D TV. It uses three colored lasers simultaneously scanning a wall-size screen to produce brilliant color pictures. Because it is based on lasers, its design might be adaptable to 3-D uses when the time comes. Even now it produces better color and focus than any regular set.

Another company, even more prophetically, has perfected a method to use holography for taping regular TV shows. While the show remains two-dimensional, the technique allows them to be taped on a material similar to, and as cheap as, clear plastic wrap, with a clarity and indestructibility impossible with regular systems. The system's holographic structure could be easily adapted to 3-D.

Awards were given to the scientists who developed the system, but today it still sits unmarketed on the company's shelf. The reason for this, says Dr. Jeong, is that they have settled the technical problems but not the selling problems. It costs too much to change people's habits. People won't buy something unless they know what it is. Holography has reached a missionary stage.

Yet, the time will come for holography, as it did earlier for TV and other technical marvels, when it is no longer the toy of a few scientists, but a tool for the use of the public. Three-dimensional TV is not mere speculation, but something the great majority of us can expect to see within our lifetimes. Holography is here now; 3-D TV is coming. END

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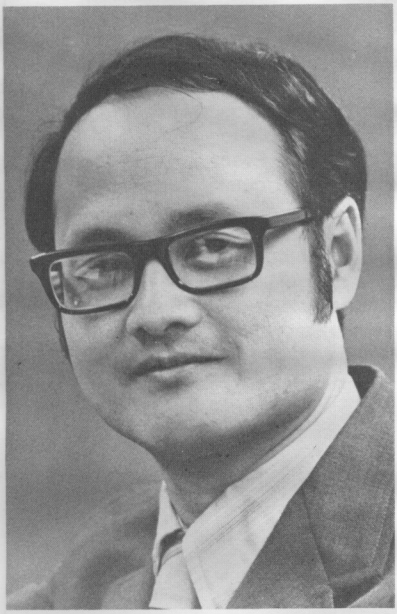

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