1971

Physics Nobel Prize

DR. DENNIS GABOR

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Born 1900

STOCKHOLM, Nov. 2— Two German-educated scientists who emigrated West during the rise of Nazism and now work in the United States and Canada won the 1971 Nobel prizes for physics and chemistry today.

Dr. Dennis Gabor of Stamford, Conn., received the physics award for his invention of a three-dimensional lensless system of photography called holography. He said the idea came to him while he was watching a tennis match.

The chemistry prize went to another physicist, Dr. Gerhard Herzberg of the Canadian National Research Council in Ottawa, for his contributions to knowledge of how molecules are composed.

Gabor is 71 and Herzberg 66. Each will receive $88,000.

Herzberg, born in Hamburg, Germany, and now a Canadian citizen, is the first Canadian to win a Nobel in either chemistry or physics.

Gabor is a Hungarian-born British citizen who works at the Columbia Broadcasting System laboratories in Stamford. Holography gives depth to photographs and may eventually enable doctors, for example, to "look around" a tumor to judge whether it is malignant.

The holographic method also can measure vibrations with extreme accuracy.

Gabor first told a reporter in Stamford he would salt away the prize money. Then he quickly changed his mind and said: "I'll buy my wife a mink coat." Throughout the interview, he chuckled in a happy and excited manner.

Dr. Gabor has said that while sitting at a tennis match, he wondered if the three-dimensional image of the ball he was watching from various spots around the court might not be captured on film. This was the germ of holography.

The process he developed in 1948 at the University of London uses a laser beam, the concentrated beam of light that does not spread out the way a flashlight beam does. The three-dimensional image of an object is recorded on a photographic plate when the laser is aimed both at the object and the plate. The image is a recording of various light waves, not a visual image, and when the laser beam is again aimed at the plate, the image appears in three dimensions.

Holography, according to a Fortune magazine study, has grown into a worldwide business that grosses several hundred million dollars a year. It is used in industry, medicine, topographical mapmaking and media communications, wherever true dimensional depth and color is needed.

The viewer of a holographic image can see around the photographed objects by moving his head, just as he looks around real objects.

Gabor was educated at the technical university in Budapest, took a doctorate at the Technische Hochschule (Technical College) in Berlin and worked in German laboratories until he emigrated to England.

He is still professor emeritus and senior research fellow at the University of London's Imperial College of Science and Technology, won the Royal Society's Rumford medal in 1968 and the Cristoforo Colombo prize of the International Institute of Communications in Genoa four years ago.

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Gabor, who works at the Columbia Broadcasting System laboratories in Stamford, developed the photography system known as holography. It gives depth and dimension to photographs, enabling doctors, for example, to "look around" a tumor to judge whether it is malignant.

The holographic method also can measure vibrations with extreme accuracy. A violin is being built in Stockholm using the technique Gabor pioneered to gauge its vibrations—in effect to see what kind of music it will produce.

Gabor entered CBS Laboratories in 1954, joining his childhood friend, Dr. Peter Goldmark, president of the laboratories. Gabor and his wife Marjorie live in Stamford seven months of the year and the rest of the time in Lavino, near Rome.

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Research is under way into its use for detecting heart defects or cancer by a process called ultraradiosonography.

Dr. Gabor also holds a patent for the use of holography for 3-D movies, but a spokesman for CBS Laboratories in Stamford said this use of the process appears to be years away.

Gabor's three-dimensional images in color are so realistic, a member of the Swedish Academy said, that they can be used in industry to determine the hardness of substances.

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