PHYSICS

## Laser Light Focused Using Gas as Lens

**See Front Cover**

➤ GAS IS BEING USED as a new kind of lens to focus the intense light of a laser beam for communication over long distances in experiments at Bell Telephone Laboratories, New York.

Such lenses use variations in the angle at which light travels through the gas to guide the laser light beam. They do not reflect or absorb light nearly as much as conventional lenses.

On this week's front cover, an experimental helical gas convection lens that guides light by using temperature-produced variations in the refractive index of a gas is shown being tested by Dwight W. Barreman and Andrew R. Hutson of Bell Telephone Laboratories. They developed this method which continuously focuses light by controlling variations in the refractive index of transparent gases through thermal expansion, flow and diffusion.

A long gas lens, or a series of lenses, can confine a laser beam to a path near the center of a pipe. Only a very weak lens is needed when the pipe is straight. However, in curved sections of the pipe the beam encounters gas of decreasing refractive index when it tries to follow the straight line in which light usually travels.

This region acts like a prism, deflecting the light beam in the direction of the pipe's curvature.

• Science News Letter, 86:116 Aug. 22, 1964

TECHNOLOGY

## 'Laser Eraser' Future Boon for Secretaries

➤ A TYPEWRITER KEY that erases—the dream of all secretaries—will be available in the future if Dr. Arthur L. Schawlow of Stanford University, Stanford, Calif., has his way in developing a "laser eraser."

The highly amplified light of the laser, thousands of times more intense than sunlight, has been used to bore holes through diamonds and to make delicate repairs on the retina of the human eye. Possible other uses for intense laser light are being investigated in laboratories around the world.

Dr. Schawlow decided to find out what laser light would do to ordinary typewritten characters on white paper. The pulsed light beam, he found, removed individual letters as if they had never been typed, vaporizing the typewriter ink without marking the paper.

Dr. Schawlow asks, "Why not a laser eraser key on electric typewriters? All it requires is some engineering development that would bring the cost down."

Lasers are much too expensive now, Dr. Schawlow believes. He and Dr. Charles H. Townes, now provost at Massachusetts Institute of Technology, in 1958 first suggested the possibility of lasers, then called optical masers.

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## Questions

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CHEMISTRY—In what food has a new form of vitamin K been located? p. 119.

ENGINEERING—What device has been proposed as a method of refrigerating summer clothing? p. 121.

HERPETOLOGY—How many deaths are caused by snake bites in the United States each year? p. 120.

MEDICINE—What is the greatest danger to kidney-transplant patients? p. 124.

METEOROLOGY—What effect did experimental seeding with silver iodide have on tropical cumulus clouds? p. 115.


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