

# Red Flag on Laser Use

It has been six years since Theodore Maiman of Hughes Aircraft Company in California succeeded in flashing the first beam of laser light. Since then there has been a tremendous surge of interest in lasers for potential industrial and commercial uses. Communications, surgery, range finding and measurement names a few. The military services have been actively interested in exploiting this fierce, coherent light although, despite talk of death rays, lasers as weapons seems far off.

But because of its enormous destructive power—the laser literally blows tissues apart—many medical researchers have been using it to treat cancer, at first experimentally in animals and more recently in humans. Because of the laser's affinity for dark colors the pigmented cancer cells called melanomas or black cancers seemed to be the best candidates for these experiments. One dramatic case made headline news early last year when Drs. Thomas Brown and Leon Goldman used a laser beam to destroy a golf-ball sized cancer in the hip of a patient at Children's Hospital in Cincinnati. Besides these black cancers, however, some patients have been treated for discolorations and other relatively benign conditions of the skin.

**Now comes a warning** from one of the major cancer institutes in the country that to use this light knife on cancer may be dangerous. When the cancer is exploded by the laser beam, living tumor cells have been thrown out into the surrounding area.

This finding was reported by Dr. Edmund Klein of Roswell Park Memorial Hospital in Buffalo, N.Y. He spoke during the annual meeting of the American Association for the Advancement of Science in Washington, D.C. If living tumor cells are thrown off when the laser strikes a cancer, argued Dr. Klein, then they may also be pushed deeper into the body or thrust into the circulation so causing the tumor to seed itself elsewhere.

Other disturbing discoveries with laser radiation noted by Dr. Klein were:

- Although tumors seemed completely destroyed by the laser new tumors grew in the crater left by the beam within three to six weeks.
- There was an increase in the speed that cells divided after laser exposure. This increased mitotic division is usually associated with cancer cells.
- When animals have been treated with a substance known to increase the speed of tumor formation—such as croton oil—then exposed to a laser,

they developed cancer at a 10 percent higher rate than animals who were exposed only to the laser. This does not mean that lasers can cause cancers. There is no evidence of this, Dr. Klein says.

- Genetic alterations take place in cells that have been irradiated by laser beams.

- When bacteria were treated with lasers they, like the cancer cells, were not completely destroyed by the beams.

**It is findings** such as these which have only become known within the last few months, that have instilled a note of caution in other groups using lasers in medicine.

As recently as last March, Dr. Kenneth Endicott, director of the National Cancer Institute, had told congressmen that he was "becoming more enthusiastic about the use of lasers as we go along." The laser beam destroys tumors in an altogether spectacular and remarkable way, he added.

Today, however, there is more sobering comment. Dr. Alfred Ketchum, the surgeon directly in charge of the laser work at the National Institutes of Health, says "there are so many things that need further investigation that we doubt that the laser will ever be used in general surgery or cancer treatment."

However, he added, this is no reason for not testing and experimenting with the device.

His words were echoed by Dr. Klein: "There is no doubt that the laser is a useful research tool in biology and I hope that in time it will be useful in the diagnosis and treatment of disease. In the meantime apart from its use in repairing eye retinas, there is nothing to indicate that lasers have any advantages over present methods of treatment."

**Lasers in medicine** are rather far down the list in terms of the amount of money being spent on their development. One estimate is that for every dollar devoted to nonmedical laser research by military and commercial interests, only 10 cents goes into medical research with lasers.

But what the medical researchers lacked in money they have made up in enthusiasm. Several hundred patients have been treated with laser light for retinal detachment. The searing beam welds the loosened retina back into place at the back of the eyeball without the need for any other surgery. So successful is this that current criticism about the medical use of lasers invariably exempts retinal surgery.

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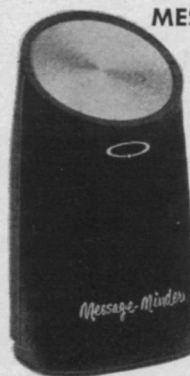
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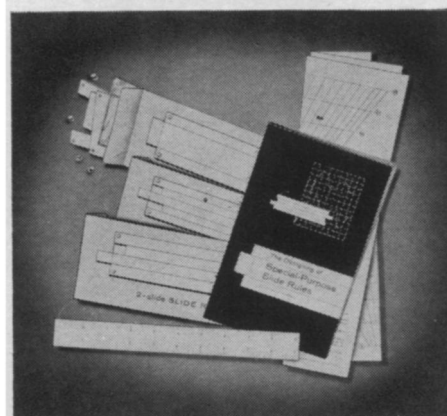
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