REPORTED IN PARIS

Lasers for more than welding

Except in surgery, where it has long been used to weld back detached retinas, the laser has not had wide applications in the biomedical field. It has been assumed that the powerful light is naturally harmful to living tissues, a conclusion backed by experiments by Marcel Bessis of the Institut de Pathologie Cellulaire at the Bicetre Hospital near Paris, who found that the laser killed cells in a microscopic field.

The trouble, says Dr. Marc S. Bruma of a French National Scientific Research Center laboratory studying the laser, is that the tool's role has been cast as a mere hole-puncher, a popular image coming from industrial and military applications and unfortunately carried over into the medical field. A reappraisal, he says, is now in order.

One of the indicators of a possible broader use for lasers, presented at a recent international round table in Paris, comes from the failure of the laser as a cell-killing tool. For some years, experimenters have hoped to use its highly localized radiation to reduce skin melanomas, black-pigmented malignant tumors that spread rapidly. In one case, a melanoma responded to treatment, but in others, deep melanotic masses have been subjected to laser therapy without great benefit.

But beyond the inconclusive results previously found, a group headed by Dr. M. S. Litwin at Tulane University Medical School reports that radiation from a low-energy ruby laser actually stimulates the growth rate of both human and mouse melanoma. In addition, Prof. E. L. Mester, a laser investigator from Budapest, who irradiated tar-induced skin cancer in white mice with a few joules-per-square-centimeter of laser light from the same type of device, found that hair began to grow on the tumor site. The tumor normally remains bald because of the abnormal growth activity taking place just below its surface.

Both of these reports indicate that lasers are not necessarily harmful to living tissue; they can even have positive effects. If cancer cells can be stimulated, it is possible the growth of other, advantageous cells can be stimulated as well.

In another nondestructive application of lasers, researchers at the Institute of Ophthalmology of the University of London have demonstrated its use to determine the elastic contents of the eye, providing a potential method for detecting and diagnosing glaucoma. The method, developed by Dr. J. R. Mellerio, consists of directing the beam from a Q-switched ruby laser onto the limbus of a test animal's eye. The resulting thermal stress induces a transient acoustic wave to travel across the cornea; the wave is detected and causes a timer to stop, giving a measure of how long it took to travel across the cornea. This in turn is related to the elasticity of the matter the wave passed through.

Nevertheless, the laser's force as a cutter is also coming into the biomedical fore. An example is an almost bloodless light knife used by Dr. Stanley Stellar, a neurosurgeon at St. Barnabas's Hospital in New York, who reported its development by physicists at the Research Center of the American Optical Corp. in Farmington, Mass.

Dr. Stellar has done a series of experiments, with encouraging results, using the carbon dioxide laser on transplantable brain tumors in mice.

When used at energy ranges between 20 and 60 watts, the carbon dioxide beam, which is a continuous wave, not a pulse, becomes a cutter which causes very little bleeding and exerts no pressure, both important qualities in neurosurgery. In the future, says Dr. Stellar, pressureless drills for craniotomies and trepinations may be perfected from the light knife.

Perhaps the most important developments will come from stepping up the effectiveness of anticancer chemical and physical agents such as X-rays by laser light. But for the moment no one is willing to speculate on the results of such research.

And the prospects of immediate use of the laser on humans are not bright, according to Dr. Vincent E. Siler of the University of Cincinnati College of Medicine. Lasers should continue to be restricted until basic animal research proves without a doubt they have value in combatting human illness, he says; at present, conventional methods of surgery should be used to treat and control malignant tumors. ◇

AIRPORT WAR

More trouble for Everglades

The wild and swampy Everglades National Park in Florida is a unique resource in a country most of whose natural treasure areas are in the form of great plains, mightly mountain ranges and generally wide open spaces. Its thousands of dank and tangled square miles teem with life, including many almost extinct species.

The fight to save the Everglades from the encroachments of civilization has been a running battle for decades; the latest in a long string of skirmishes centers around the plans for an airport, to handle full-sized jetliners.

The first shot in the Great Everglades Airport War was fired in 1952, when Florida's Dade County published a study ominously predicting the complete saturation of Miami International Airport. The idea of actually building a major new airport in the nearby swamps was not then brought up, however, and the report merely recommended that military, general aviation and training flights be relocated at smaller airports to make room for commercial traffic.

By 1962, military flights had been moved south to Homestead Air Force Base, and within the next five years, three regional airports had taken over almost all of Miami International's general aviation traffic. But the jet training airport has been and still is at the center of a full-fledged battle.

Pressure to free the space at Miami International still being taken up by training activities began in earnest in the early 1960's, although studies of noise,

Dept. of the Interior

Everglades jetport under construction.

airspace and other factors held up the first selection of a site until January 1967. Within five months five sites had been brought up, but all of them had been rejected.

By late 1967, agreement was reached on a site straddling the Dade-Collier County line, with at least the initial support of the regional office of the National Park Service. But the dust that had been raised by the controversy refused to settle.

There had been plenty of reports and recommendations, concluded a special Environmental Study Group of the National Academies of Science and En-