Hyperbaric laboratory pioneers high-pressure oxygen research

By FLAVIA KRONE
Battalion Staff

The white pressure chamber in Texas A&M's Hyperbaric Laboratory looks like nothing more than a big, empty steel tank.

But Texas A&M researchers, under the direction of physiologist William Fife, are using the chamber to pioneer new discoveries in the field of high-pressure oxygen research.

Fife and his associates use the hyperbaric chamber to treat persons suffering from a variety of afflictions ranging from gas gangrene to failing skin grafts and osteomyelitis, an inflammatory bone disease.

An average of three patients a day are treated in the chamber, five days a week, year-round, Fife said. All patients come on a referral-only basis from local doctors.

During the two-hour treatment, patients inside the pressurized chamber are put under pressure equal to being "taken down" to a depth of 45 feet underwater. They are given pure oxygen to breathe.

Exposing patients to high-pressure oxygen increases the level of oxygen in body tissues, Fife said. The higher oxygen levels tend to kill disease-causing bacteria and stimulate the growth of capillaries into damaged tissue, he said.

Some diseases can be arrested or cured in days. Others may take months of treatment. Many diseases are not helped at all by the hyperbaric therapy, Fife said.

High-pressure oxygen seems most effective in arresting the spread of gangrene, and many gangrene patients' arms, legs and even lives have been saved by the treatment.

In addition, Fife's team has enjoyed some success using the chamber to treat the infectious bone disease, osteomyelitis, and in helping failing skin grafts to take hold and grow.

However, Fife said scientists still do not know how or why the high-pressure oxygen treatment works.

"All we know is that it seems effective in curing some diseases," Fife said. "But we don't know why."

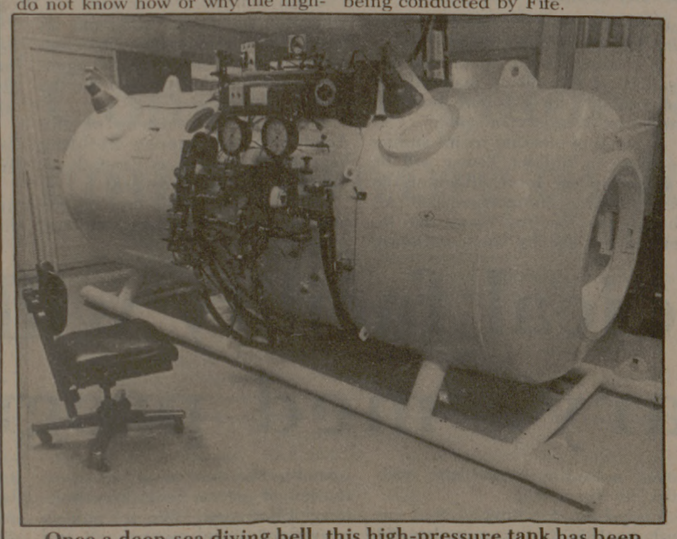
Fife is quick to say that he and his team of researchers do not practice medicine and that experiments are not conducted on the hyperbaric laboratory patients.

"These cases only serve as a training experience for our students," Fife said. "The referring physician still is medically responsible for the patient."

The Hyperbaric Laboratory, located near Easterwood Airport, contains seven pressure chambers. One chamber is rated for use by people such as the medical patients, Fife said. There are two large animal chambers and four small ones that will hold animal test subjects like rats and mice.

Fife's graduate students are given direct responsibility for operating the chambers. Fife said the nature of the hyperbaric work demands that his graduates be on call and available 24 hours a day, seven days a week.

Medical treatment is only one aspect of the hyperbaric research being conducted by Fife.



Once a deep-sea diving bell, this high-pressure tank has been converted by Texas A&M researchers into a high-pressure hyperbaric chamber used in treating patients with a variety of diseases.
Battalion photo by Pat O'Malley

Fife's team has been testing an oxygen-hydrogen breathing mixture that may enable divers to work at depths of 1000 feet and more. Currently, working divers are limited to a depth of about 600 feet.

Called "hydrox" for short, the newly-developed mixture previously had not been used by divers because it is a potentially explosive compound, Fife said. However, researchers recently discovered that the mixture remains stable when the oxygen content is held at a 2 percent level.

"By keeping the oxygen at 2 percent we have been able to use the mixture for 6000 hours of testing without a single accident," Fife said.

The hydrox mixture has several advantages over conventional diving mixtures, Fife said.

Breathing mixtures containing nitrogen act as a narcotic at depths of 200 hundred feet or more and mixtures of helium affect the central nervous system at depths below 1000 feet.

Hydrogen gas, on the other hand, is lighter and less dense than either nitrogen or helium. Not only can divers go deeper, they also can surface and decompress in less time than is now required to avoid getting the "bends" from nitrogen bubbles forming in the blood.

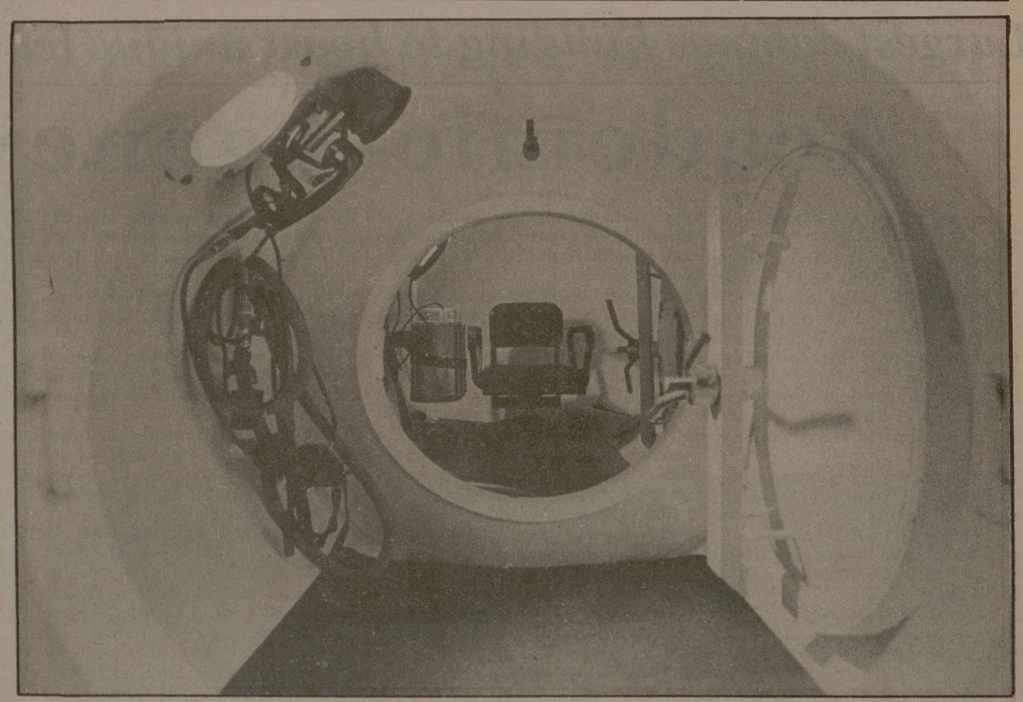
In other research, Fife's students are exploring the effects of scuba diving on pregnant women.

Taking pregnant sheep on simulated 100-foot dives inside a hyperbaric chamber, researchers monitored the blood flow through an umbilical artery. Tests showed that massive bubbles appeared in the fetal circulation as a result of the dive.

Untreated, these bubbles would have resulted in death for the fetus by what divers commonly call the "bends."

The observations suggest that pregnant women who scuba dive deeper than 60 feet run a risk of harming their unborn child.

"What some people would consider a safe, no-decompression sports dive could kill the infant," Fife said. "An unborn infant could get the bends and die without the mother ever feeling any symptoms."



This unusual door leads to one of Texas A&M University's seven hyperbaric pressure chambers. This particular chamber is used to treat patients with bone diseases, failing skin grafts and gangrene. While in the chamber patients are put under pressure equal to that of being 45 feet underwater.
Battalion photo by Pat O'Malley

Enrollment figures indicate less space, more women

By MARK WILLIS
Battalion Staff

Enrollment will increase at Texas A&M University again this fall.

The Planning and Institutional Analysis Department of the school projects that 29,928 students will have enrolled by the end of the registration period, Don Wood, administrative planning analyst, said. This projection reflects an increase of 3.8 percent or 1,095 students over last fall's enrollment.

However, the increase is considerably less than in the past few years, during which the school's population doubled. The slow-down is due to efforts by the school to slow and control growth.

The Texas A&M board of regents has been working on a five-year plan for the controlled growth of the school. The projected effects of this plan on enrollment shows a gradual slowing of population growth, as shown below:

	STUDENTS ENROLLED	PERCENT INCREASE
1979	30,678	2.51
1980	31,552	2.85
1981	32,079	1.67
1982	32,430	1.09
1983	32,911	1.01

This slow-down in growth does not indicate a lack of potential-student interest in the University; the number of applicants for admission is increasing at a far greater rate than enrollment. The school officials believe the University can only serve a limited number of students and still maintain desired academic standards.

Last fall the University employed 1,702 faculty members or one teacher for every 17.5 students. The number of faculty members for the fall term has not been set as of this writing, but the ratio will be near the same, school officials have said.

Campus housing has created the most problems related to increasing enrollment for the University. This fall there are 5,880 bed spaces on campus for men and 2,354 for women. These have all been reserved and by early July there were 1,133 men and 1,210 women on lists waiting for someone to cancel a room reservation.

The regents have approved funds for a feasibility study on a planned 500-bed dormitory and are considering plans for a 120-bed women's athletic dormitory.

Off-campus housing has caught up with demand over the past couple of years, but many students would still prefer the cheaper and centrally-located dormitory housing.

New students, as has been the pattern in recent years, will include a greater number of women than men, although that difference is expected to be small.