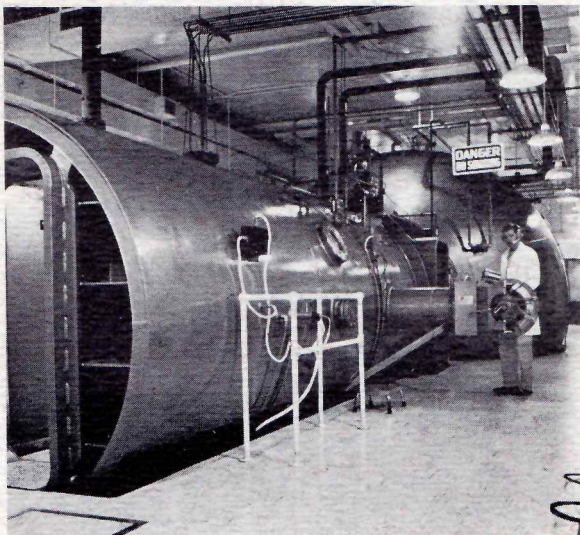


HYPERBARIC CHAMBER



One of two horizontal chambers
showing medical pass-through lock;
maximum pressure for this large
chamber is 7 atmospheres absolute.

LOCATED AT

**Minneapolis Medical Research
Foundation Incorporated**

(Situated beside Hennepin County General Hospital)

**619 South Fifth Street
Minneapolis, Minnesota 55415**

APPLICATION OF HYPERBARIC OXYGEN IN MEDICINE AND SURGERY

Clinical Applications

Infections

Clostridium welchii

Carbon monoxide poisoning

Bends following scuba diving

Acute respiratory insufficiency

Respiratory distress syndrome of the newborn

Cardiac surgery

Research

Infections

Clostridium tetani

Mycobacterium tuberculosis

Acute respiratory insufficiency

Traumatic wet lung

Pulmonary edema

Bilateral aspiration pneumonia

Bilateral chemical pneumonia

Ischemia

Myocardial infarction

Cerebral vascular occlusion

Mesenteric artery occlusion

Traumatic extremity

Chronic arterial insufficiency

Shock

Hypovolemic

Septic

Cancer

Radiotherapy

Chemotherapy

Organ transplantation

Tissue healing

Soft tissue

Poorly healing fractures

Thermal injuries

Frostbite

Bowel obstruction

Poor anesthesia risk

HISTORY

The history of Hyperbaric Medicine dates back over 2000 years, and interest has periodically been revived. Modern day enthusiasm was generated by Dr. Boerama of Amsterdam, Holland starting in 1955.

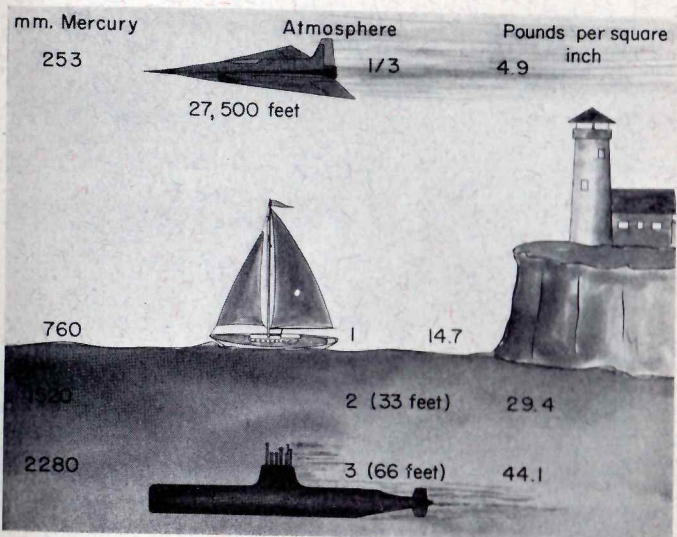
In 1962, Dr. C. R. Hitchcock (President of our Foundation) spoke before a joint session of Congress on "Experimental Pressurized Operating Room". Shortly after, with support from the National Institute of Health and matching local donations, design and construction of our present complex facility was started. The original cost of the hyperbaric facility was \$526,000.00. Since this, with the installation of all the instrumentation and added safety factors, the cost has increased considerably.

Our first patient was treated in April, 1964. Now, 5 years later we find we have had 1.8 runs per day on a 365 day a year basis.

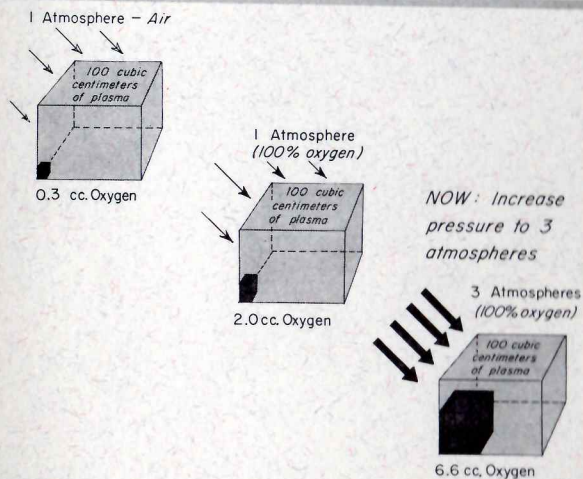
The type of patient treated has been varied. The area served has been 9 states and Canada.

Patient's with an infection called "Gas Gangrene" comprise one of our larger and most successful groups. This infection caused by organisms that cannot live in the presence of Oxygen is treated 3 times in the first 24 hours, 2 times in the second 24 hours and 1 time in the third 24 hours. A treatment consists of 120 minutes bottom time, while the patient breathes 100% Oxygen at 3 atmospheres absolute.

Our medical staff is continuing the quest for further knowledge in the promising field of Hyperbaric Medicine, always aware of both the benefits and hazards to the patient and personnel.



Pressures in hyperbaric medicine are stated as absolute atmospheres (gauge pressure plus one), depth in sea water (preferable), or mm of mercury.



Volumetric relationships of oxygen in plasma at 37°C.

BOYLE'S LAW

When temperature is constant the gas volume is inversely proportional to pressure exerted on the gas.

Remember

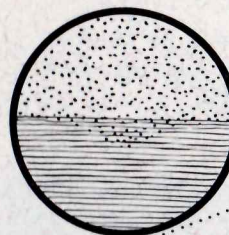
Gases are compressible

Liquids are not!



HENRY'S LAW

1803

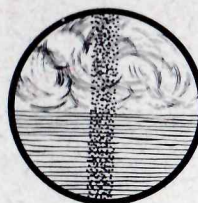


Quantity of a gas dissolved into a liquid.

Increases directly as the pressure exerted on the liquid by the gas.

DALTON'S LAW

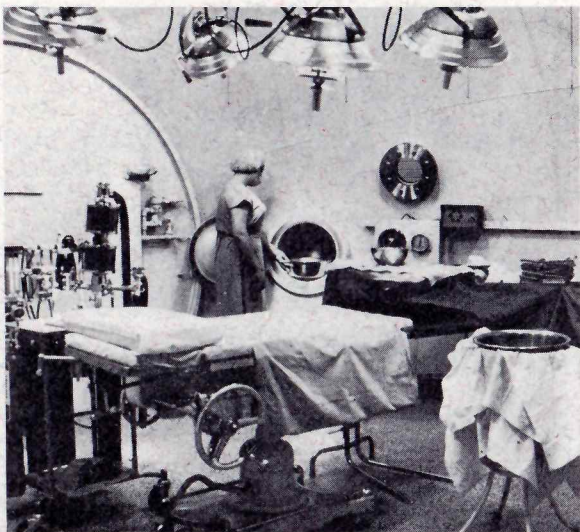
1807



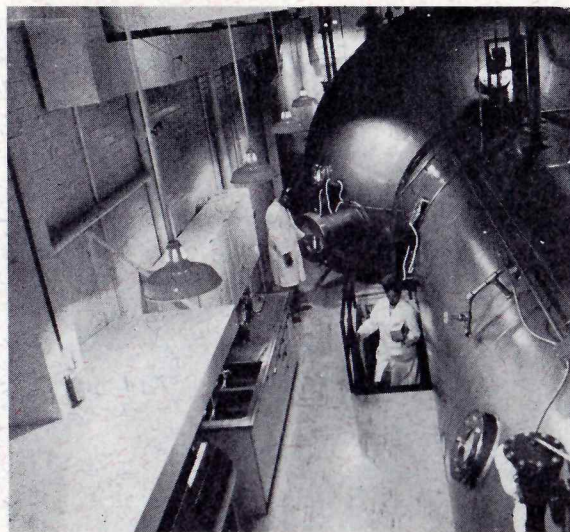
With a mixture of gases

The quantity of a specific gas

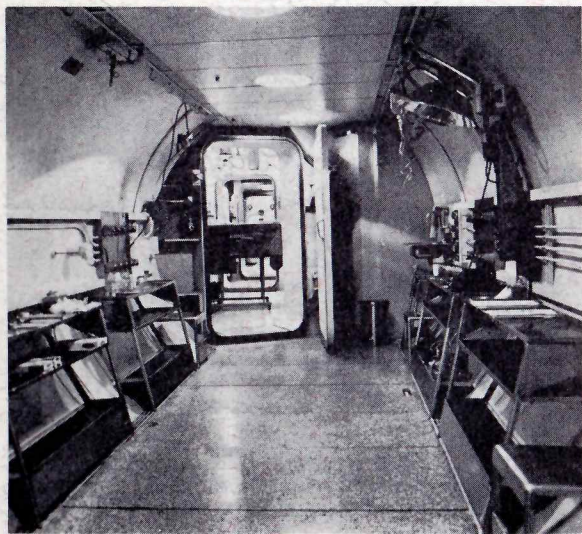
Dissolved by a liquid depends on the partial pressure of that gas.



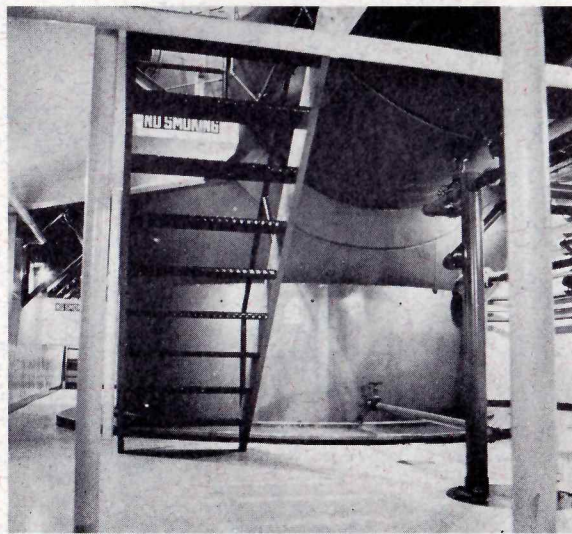
Operating room in a 19 ft. steel sphere capable of pressures to 4 atmospheres absolute.



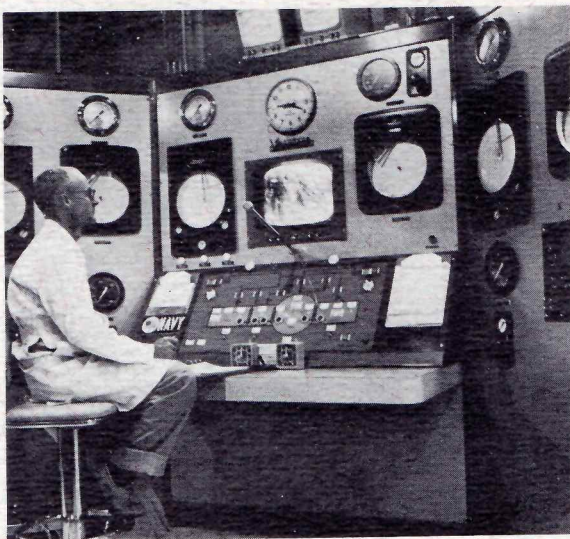
Nurses' utility area, with autoclaves and medical pass-through lock into spherical operating room.



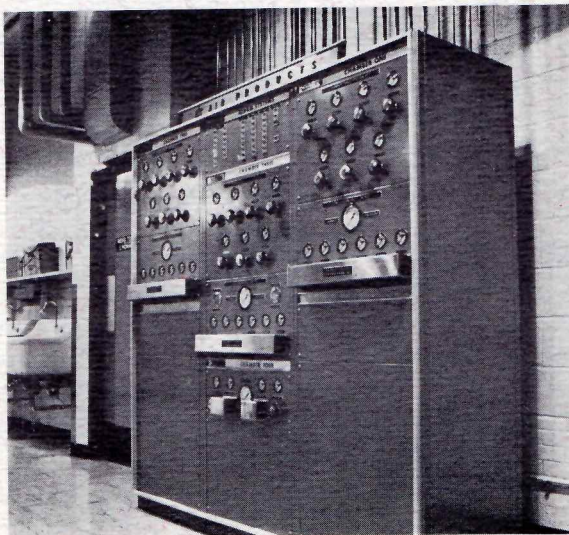
Interior of chamber, looking 67 ft. through total complex.



Steel support for the sphere and ventilated "pit" beneath chambers.



Chamber controls and recording instruments with television and communication monitors.



Control Panel for medical gases, with safety control system.