MEDICINE

Life-Saving Operation

The blood is diverted from normal channels and shunted through the lungs by artery joining in new attempt to save "blue" babies.

➤ A NEW operation which gives "blue" babies born with malformed hearts a chance to live has been devised by Dr. Alfred Blalock, professor of surgery at Johns Hopkins Medical School.

The operation, though life-saving, involves such vital structures that the doctors waited a year after devising it before they dared to try it. It has now been performed successfully on three children, Dr. Blalock and Dr. Helen B. Taussig, of the pediatrics department at Hopkins, report. (*Journal, American Medical Association,* May 19)

One was a 14-month-old baby girl weighing less than nine pounds, too weak to be able to sit up alone, refusing her feedings and steadily losing ground. The second was a 12-year-old girl who could not walk 30 feet without panting. The third was a six-year-old boy so incapacitated that he could not walk and would not try to take even a few steps.

Shortly after the operation he had changed from a "miserable whining child to a happy smiling boy," with cherry-red instead of purple lips and good skin color. From refusing even to try to walk, he protested vigorously against being kept in bed three and a half weeks after the operation while his temperature returned to normal.

The baby's improvement has been "striking". She eats well, is alert and active though before the operation she was so sick she seemed to be mentally retarded. Her weight has increased by one-fourth and she is learning to walk.

The older girl improved equally well. Two and one-half weeks after the operation she walked 60 feet, sat down and rested a short time, and walked another 60 feet without panting or other difficulty.

The surgery which has brought new life to these children and promises to do the same for others is an artery-joining operation. Each of them was born with a defect of the big artery supplying blood to the lungs. The artery was so narrowed that only a little blood could be pumped through it. That little blood could not pick up enough oxygen to supply the body. That was why the children were so weak, panted on exertion, and had deep blue colored skins.

To overcome the defect, Dr. Blalock cut one of the arteries supplying blood to parts of the body outside the lungs. One end of this artery was brought around and sewed to a slit made in the right or left branch of the lung artery. In this way some blood was shunted from the general supply to one of the lungs where it picked up oxygen to carry into the rest of the blood circulating throughout the body.

The operation is a long one, taking from an hour and a half to three hours. The chest must be cut open from the breast bone to the underarm line, ribs spread apart, the arteries found and cut away from adjacent tissues, and each artery clamped in two places to prevent hemorrhage when they are cut. The artery chosen to supply the extra blood to the lung artery was either one of two that normally supply blood to the neck, head, chest, shoulder and arm. The end not attached to the lung artery had to be tied securely to prevent bleeding. (Other arteries take over its normal job.)

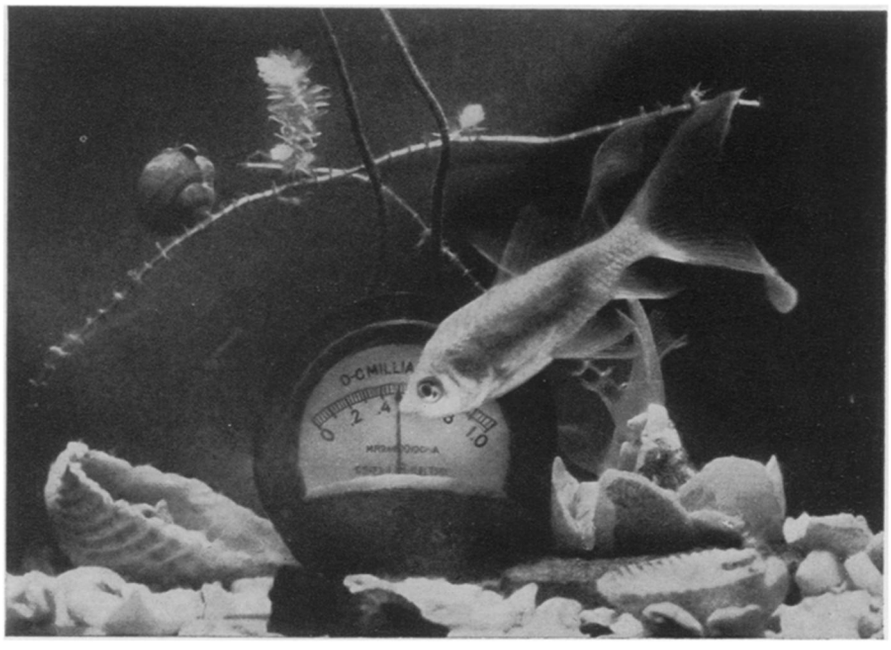
The lung had to be re-expanded and the cut in the chest wall closed.

During the operation, an artery to one lung had to be clamped so that no blood could get through for from half an hour to an hour and a half. The doctors were afraid a child already suffering from severe oxygen want would not be able to stand this strain. So they put off trying the operation for a year after they were sure it was otherwise a sound procedure. They hoped to find a way of giving oxygen by vein or some other way in addition to inhalation. Inhaling it takes it into the lungs but the children were unable, even before the operation, to get enough into their blood from their lungs.

Because of the war, it was impossible to get equipment for giving oxygen by vein. So they went ahead with the usual general anesthetics, ether for the baby and cyclopropane with a high concentration of oxygen for the other two children, and found the children came through the operation satisfactorily.

The operation will not help all patients with heart defects that cause persistent cyanosis (blueness of the skin), the doctors emphasize. It helps only when the primary difficulty is lack of blood circulation to the lungs.

Best age for the operation is between four and six years, though in some cases it must be done within the first few days



NO HARM DONE.—A new sealing process makes it possible for delicate electric instruments to remain days under water without injury. They withstand dust, fungi and temperature changes. (See next page)

or weeks of life if the baby is to be saved.

Since the operation has never been done before, what the future holds for the children remains to be seen. They may later develop heart failure or subacute bacterial endocarditis, the doctors point out. They maintain, however, that fear of these conditions in the future, is "no justification" for letting the patient die of oxygen want in the present.

Science News Letter, May 26, 1945

ANTHROPOLOGY

Normal Face Measured

➤ HEADS of over 3,000 soldiers were measured to find the most comfortable gas-mask size. Ten different head types were established, and it was found that men from the South, where there is more of a native unmixed Anglo-Saxon strain, have the largest heads, while those who hail from New England have the smallest.

The tests were made under the direction of Dr. Earnest A. Hooton of Harvard University by a group of anthropologists, including John C. Kelly and Paul Reiter, in cooperation with the Chemical Warfare Service and the Massachusetts Institute of Technology. It is the first big study of its kind to be made by the Government.

A new measuring instrument, the "faceometer," was used in the tests conducted at Camp Sibert, Ala. This device measures the face in three principal dimensions—length, depth, and breadth—and 62 other facial landmarks. After considerable practice, operators can take all measurements in less than two minutes. The information gathered has helped the Chemical Warfare Service to find three types of gas masks which will fit every soldier in the Army.

As a result of the tests, the average head among men in the Army was found to have a face length, from tip of chin to nose depression between the eyes, of 124 millimeters (about five inches); face breadth, from temple to temple, of 141 millimeters (not quite six inches); and face depth, from tip of nose to ear passages, of 123 millimeters. These figures were supplied by Capt. R. A. Chadbourne of the Chemical Warfare Service in Boston.

Men from the ranks who were used as subjects represented every state in the Union, as well as Alaska, China and the Philippines. They were examples of a dozen racial extractions. Five normal and five unusual head sizes were established by correlating principal measurements representing breadth, depth, and length of face. The normal type includes an average head, two large, and two small sizes. The unusual types are those in which two of the principal measurements are normal, while the third is not.

It was found that 65% of the soldiers measured normal medium; 19% medium small, and 11% medium large. About 4% of the heads were small, while only 3% were large. In the unusual size, 7% had "short, fat faces," the largest single category in that group.

In addition to helping the Chemical Warfare Service design standard gas masks, these authoritative data have aided the Quartermaster Corps in determining hat sizes; the Army Air Forces, for goggles and head fittings; Ordnance, for placing of artillery gunsights and for headspace in tanks and other vehicles; and the Signal Corps for communication apparatus head fittings.

They also have a direct postwar bearing on fitting eyeglasses, manufacture of hats, dental and medical service; shape of telephone headsets; use of goggles and eyeshields in industry; spacing of seats and headroom in planes, trains, and buses.

Science News Letter, May 26, 1945

ENGINEERING

Delicate Instruments Remain Days Under Water

➤ DELICATE electrical instruments may remain for days under water without injury if sealed by a method developed and used by the General Electric Company that also protects them against humidity, dust, fungi, discolorization and other adverse conditions. Instruments so protected have been suddenly transferred from temperatures of 67 degrees below zero Fahrenheit to 165 degrees above without inflicting any change in their performance.

The method is the result of extensive research by scientists of the company to find a way to offset difficulties in the tropics, deserts and high altitudes, where electric instruments failed because of moisture, climatic and other conditions. It is claimed to be the first successful means of hermetically sealing an instrument with moving parts.

To obtain a hermetically sealed enclosure, a thick, special, stain-free glass window is fused to a metal ring in a glass-to-metal seal. This assembly is then fused to a steel case by a soldering joint. Hermetic sealing of the two terminal studs is obtained by glass-to-metal seals between each metal stud and the metal eyelet.

The final assembly is evacuated, filled with an inert gas through a tube located in the base, and is sealed off at a pressure slightly above atmospheric.

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