MEDICINE

Separate Blood New Way

By adding to the blood extra fibrinogen, a protein in blood which aids clotting, the blood cells can be separated quickly and without damage.

➤ HUMAN BLOOD, which millions of Americans are donating to the Red Cross blood program, will be used in more ways to save more lives, thanks to a discovery reported at the meeting of the Federation of American Societies for Experimental Biology in Detroit.

The discovery is a new way to separate, rapidly and effectively, the red cells of blood from the white cells and other parts of blood. It was reported by Drs. Edward S. Buckley, Jr., Marvin J. Powell and John G. Gibson, II, of Harvard Medical School.

The new method not only separates the red cells but does it so fast and so gently that they are not damaged in the process. And it makes possible the recovery of the even shorter-lived, more fragile white blood cells for study and possible use of their germ-fighting ability.

Ordinary methods of separating red cells from blood plasma leave the red cells in a gluey mass of hurt cells that have very little medical use and are generally thrown down the drain. The red cells, however, are the important oxygen-carrying part of the blood. For about a third of the patients who get blood transfusions, red cells would not only be as good as whole blood but actually better.

The new method involves the use of fibrinogen, a protein of blood involved in the clotting process. Fibrinogen makes red cells pile up face to face like stacks of coins. It does this very fast. By adding enough extra fibrinogen to the blood as it is drawn from a blood donor's vein, the red cells will settle to the bottom of the flask in about 50 minutes, the Harvard team reported. Ordinarily it takes 24 hours or more for all of them to settle out of the plasma when the blood is allowed to stand.

In the same time about 80% of the plasma containing about 80% of the white blood cells is obtained. These white cells contain and some scientists think they manufacture the germ-fighting antibodies. Getting them out of the blood so fast, before they have time to disintegrate, will let scientists learn more about this germ-fighting ability and perhaps put it to use.

Platelets, which produce the substance in blood that starts the clotting process, also can be obtained with the new, speedy method of separating blood cells. The importance of this lies in the fact that many bleeding diseases are due to deficiency of platelets in the blood. The bleeding tendency caused by radiation from atomic bombs to X-rays is believed due to destruction by the rays of these blood particles. When enough of them become available for further study, scientists may find a way to use them to help patients with bleeding disorders, just as another part of blood can now be used to help hemophiliacs, persons with a different, hereditary bleeders' disease.

Credit for originating the method of using fibrinogen to separate red cells from the blood is given by the Harvard group to Drs. Allen H. Minor and Lee Burnett who developed it on a test tube basis at the Sloan-Kettering Institute, New York. The Harvard group modified it to use with pint quantities of blood such as are collected from Red Cross blood donors.

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MEDICINE

Bottom of Heart Warmer

The lower sixth of the heart is warmer because it lies on the diaphragm and liver. This finding may lead to better diagnosis and treatment of heart disease.

➤ THE lower part of the human heart is the warmer part. As a result, it recovers at a more rapid rate after contraction than the upper, cooler part. This and other findings expected to lead to better diagnosis and treatment of heart disease were reported by Drs. Louis H. Nahum and Hyman M. Chernoff of the Yale School of Medicine at the meeting in Detroit of the Federation of American Societies for Experimental Biology.

The new discoveries came from studies of electrocardiograms, the written record of the electrical impulses of the heart during each beat. But the Yale scientists make their electrocardiograms in a different way from that your doctor uses. Instead of attaching two electrodes to two parts of the body simultaneously, they use a single electrode. This, they find, provides a more accurate picture of the action of different parts of the heart.

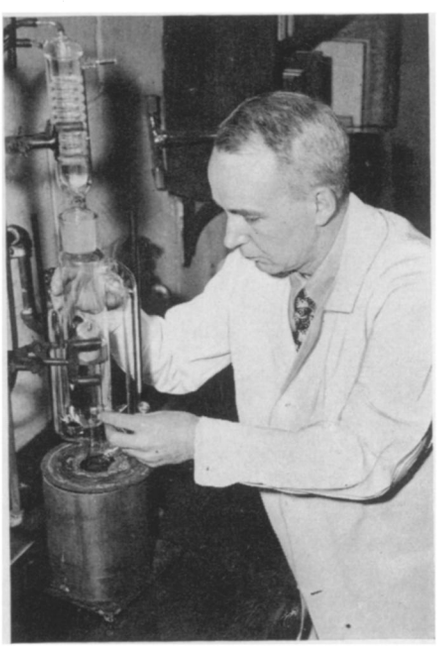
With this method they were able to give the first complete explanation of what happens to a heart when the body suffers a loss of oxygen. A state of oxygen lack occurs during the first few minutes after a coronary thrombosis type of heart attack, during acute bleeding and at high altitudes.

At such times the electrocardiogram shows a peculiar pattern. The change, the scientists found, results from a more rapid recovery in various parts of the heart.

The fact that the lower sixth of the heart, which recovers more rapidly, is the warmer part has long been suspected but never previously determined. It is warmer because it lies on the diaphram and liver.

Differences in the rate of recovery of different parts of the heart show up in the wavy line, known as the "T-Wave" of the heart. The Yale doctors' report provides the first adequate explanation of this T-Wave and will help doctors to a more accurate diagnosis.

Physicians will be able to find exactly where a blood clot may have formed, where "skips" in heart beat originate and other baffling heart activities by applying the new theory presented for interpreting the electrocardiogram. This theory contradicts ideas held for a quarter of a century. It is based on the concept that it is the interaction of opposite electrical forces from different zones of the heart which creates



CANCER DETECTION — Dr. Charles Huggins, University of Chicago scientist, developed a blood test for cancer which is based on a disturbance of albumin, a protein, in the body. This promises to become an effective screening method for spotting early cancer cases. (See SNL, April 23, p. 259)