COSMOLOGY

Universe Seems to Throb Slowly, Like a Giant Heart

Farthest Galaxies Receding at Terrific Speed, While Nearer Ones Appear to be Approaching Earth

THE UNIVERSE is periodically expanding and contracting and we are living at a time when an expanding period is nearly finished and a contraction period is about to begin. This is an alternative theory of the expanding universe pointed out by Prof. Janet H. Clark of the Johns Hopkins University in a communication to *Nature*.

Prof. Clark bases her argument on the fact that the nebulae farthest removed from the earth appear to be receding at the greatest rate and the five nearest neighbors are not receding but are approaching the earth.

The farthest nebulae, so far removed that it takes 150,000,000 years for their light to reach the earth, appear to be speeding away from us at the enormous rate of about 15,000 miles per second. That is what they were doing in the dim past when the light signals now received by astronomers were sent out by them. What they are doing now is a mystery that will not be solved for another 150,000,000 years. The nebulae that are only 3,000,000 light years away have a more modern history. They are receding at only about 350 miles per second.

This variable recession of the outermost nebulae and the approach of the five nearest neighbors of the earth suggested to Prof. Clark that the universe is periodically expanding and contracting. Because astronomers can not "see" all the parts at the same time they can not determine the speed of the various parts at any one instant. It may be that only time, and many millions of years of observations on the nebular velocities, will solve this problem and settle this theory.

Astronomers compute the velocity of the stars from color pictures or spectra of their emitted light. If the spectral lines are shifted to the red, the star is moving away from the observer and the amount of this shift is a direct measure of the velocity of recession. Since the majority of the nebulae exhibit this "red shift" the theory of the expanding universe was propounded.

Sir Arthur S. Eddington, Professor of Astronomy at Cambridge University, England, comments on Prof. Clark's theory in another communication to *Nature*. He welcomes an alternative theory of the expansion of the universe and adds some criticisms of the new theory.

Science News Letter, September 30, 1933

HISTORY OF SCIENCE

Celebrate Publication Of Famous Digestive Study

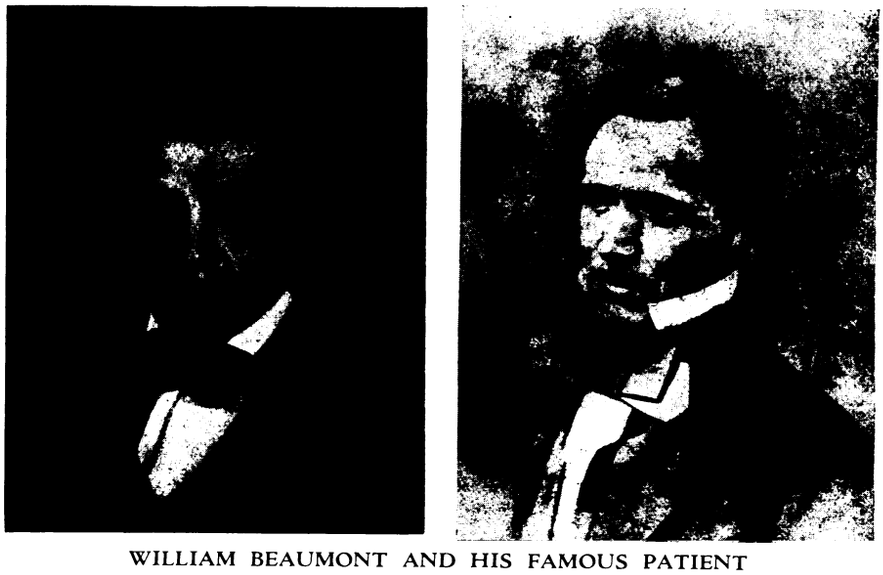
THE HUNDREDTH anniversary of the publication of Dr. William Beaumont's famous work on gastric digestion will be celebrated at the New York Academy of Medicine, New York City on October 5. This work describes the first and most important experiments on digestion of food in the stomach that were made anywhere in the world.

They were made possible by the fact that Alexis St. Martin, a French-Canadian boy, had accidentally been shot through the stomach, and the wound failed to heal. Dr. Beaumont was called to the scene of the accident to attend St. Martin. While he cleaned the man's wound, he remarked that the patient would probably not live thirty-six hours. However, St. Martin actually survived Beaumont by many years. Soon after the accident, the physician, out of charity, took St. Martin into his own home, cared for him and attended him professionally.

For two years Dr. Beaumont, who was at that time a poor army surgeon stationed at Fort Mackinac, tried unsuccessfully to get the wound in the boy's side to heal. Then he had his great inspiration, turned accident into opportunity, and started the experiments which not only brought undying fame to himself and his young patient but laid the foundations for present medical knowledge of how the human stomach functions.

For eight years, off and on, Beaumont continued his studies, actually watching the stomach at rest and at work digesting different kinds of food. He found what causes the flow of stomach juices, how they are mixed with and digest the food. Most people eat more than they need, he learned. Some foods digest easily but others retard the digestive processes. Three to four hours he observed to be the length of time needed to digest the average meal.

Then, just one hundred years ago, he published his findings. These have



WILLIAM BEAUMONT AND HIS FAMOUS PATIENT

One hundred years ago William Beaumont (left) published his studies on digestion in the human stomach, using for the experiments the stomach of Alexis St. Martin (right) which, conveniently for science and Dr. Beaumont, could be watched at work and at rest through the hole left by a gunshot wound that failed to heal.