



### JOHNNY GETS WHAT HE WANTS

*Since the time he was only 20 days old, this twin boy, Johnny Woods, has been trained to use his muscles and to go after what he wants. His brother was not trained until he was 22 months old. When these pictures were snapped, Johnny was after a banana tied to the ceiling light high over his small head. The stunt of combining the boxes and climbing up as shown in the picture at the left, and of pushing the stools about until it is possible to climb from one to another until the top of the highest is attained is an ability which is greatly increased by training at the proper time.*

"conditioning" as applied to the training method she used with these babies.

"Of course the term conditioning has acquired such a loose usage that it has come to mean almost anything, but the method of training employed in this experiment in no way resembled the conditioning technique made famous by

Pavlov in his experiments with dogs or that used by Watson and Jones in their experiments with infants," she explained. "Instead we attempted to stimulate the infant to exercise repeatedly those abilities of which he at the time showed some capability."

*Science News Letter, September 22, 1934*

degenerated it becomes and the higher mounts its arginase content.

At the same time the arginase normally present in the liver decreases as the tumor grows.

For two other enzymes, cathepsin and phosphatase, the action works in a reverse sense. Their content in a tumor diminishes as the cancerous growth becomes more necrotic.

The work suggests two pictures of enzyme cancer mechanism, Dr. McDonald declared in concluding.

"The interesting question is raised as to whether these enzyme changes may not be related to a specific immunological reaction against the growth of cancer. For example, the high kidney phosphatase of resistant rats might act as a defensive mechanism against further growth of the tumor.

"Or from another point of view, the implanted cancer tissue might liberate into the blood stream certain enzyme activators, or stimuli, which would cause other organs to respond by setting up a defensive mechanism in the form of increased enzyme activity. If the stimulus is sufficient the animal may throw off the cancer; if not, the cancer grows. This opens an interesting field in the possibility of artificially stimulating enzyme activity of an organ as a defense against further growth of the cancer."

*Science News Letter, September 22, 1934*

#### MEDICINE

## Enzymes May Help the Body In Battle Against Cancer

**A** SUGGESTION that the changing enzyme content of various organs of the body during the development of a cancer tumor may represent defensive mechanisms of the body to prevent further malignant growth was advanced before the American Chemical Society by Dr. E. F. Schroeder and Dr. Ellice McDonald of Pennsylvania University's cancer research laboratories.

Future treatment of cancer may be directed toward methods of artificially stimulating the enzyme activity of an organ to aid this apparently natural defensive mechanism of the body, it appears from Dr. McDonald's discussion.

Speaking before the symposium on the chemistry of enzymes, the Pennsylvania scientists traced their recent work

on analyzing the enzyme content of cancer tumors and such organs of the body as the kidneys and liver.

Enzymes are the biological chemical catalysts which make possible chemical reactions without entering into the reactions themselves.

The enzyme arginase, declared the scientists, occurs in large amounts in cancer tissue and appears to be closely associated with rapid growth processes like those found in necrotic tumors. Other rapidly-growing tissues, like those of an embryo, also contain arginase, and as growth slows down the arginase content decreases.

In studies on rats given cancer by implantation it was found that the faster a tumor grows, the more necrotic or