

## MEDICINE

# Strain on Heart Measured

Effect of emotions on heart and blood vessels can be measured by change in size of fingers and toes. Doctors hope to learn what wears out the heart.

► THE CASE of a healthy young man who could raise his blood pressure at will, simply by thinking about his girl, was reported by Drs. George E. Burch and Clarence Thorpe Ray of New Orleans at the meeting of the American Medical Association in Atlantic City.

His case was significant because when his blood pressure went up under the influence of exciting thoughts, the doctors could detect and measure a change in the size of his fingertips.

The fingertip change resulted from the effect of excitement on his heart and blood vessels.

Doctors have long known that excitement and other emotions, such as fear, anger and worry, can raise the blood pressure and cause heart and blood vessel changes. But they have never before had such an accurate method of measuring the effects of emotions on the heart and blood vessels.

High blood pressure and heart disease might, in some cases, be prevented by such a method. It might be used to detect unconscious worry or fear before these emotions can cause permanent, damaging change to heart and blood vessels.

Then the doctor could apply psychiatric methods to help the patient overcome his unconscious fears and escape the damage they can cause.

The fingertip change is measured by

a newly-devised instrument, the plethysmograph. Plethysmo means increase; graph means record. The Cambridge Instrument Company made it according to Dr. Burch's design.

The patient's finger, or toe, is placed in a small glass cup which is sealed around his finger. As the heart beats, pumping blood into the finger, the finger expands. This forces a tiny bit of air out of the cup into a tube and to a recording device. The air writes a record of the change in size of the finger as the blood flows in and out. Emotion which narrows the blood vessels in fingers and toes reduces the amount of blood flowing into them and changes their size.

These changes, very minute, are constantly going on in all of us. Our small blood vessels, at the ends of our fingers and toes, are in a constant changing state of turmoil, Dr. Burch said. The ringing of a bell, the slamming of a door, someone coming into a room, all cause changes in the blood vessels of fingers and toes. They show on the plethysmograph.

From study of these records, the doctors hope to learn which changes are normal and necessary and which produce the "subtle but repeated wear and tear" that ultimately results in disease of the heart and blood vessels.

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Mayo Clinic, the pituitaries of 15,000 sheep were required. However, Dr. Li, who isolated the adrenocorticotrophic and three other hormones, indicated that future research may result in better extraction methods, with some hope that the pituitary hormones some day will be available for clinical use.

The adrenocorticotrophic hormone is produced by the pituitary to stimulate the action of the adrenal glands, the two flat ductless bodies located one above each kidney. General debility, a decreased utilization of protein and a disruption of body metabolism result from a deficiency of this hormone. Diabetes is also associated with the adrenals.

Twenty-five milligrams of the hormone per day was found to be sufficient to produce significant stimulation of the adrenals. The amount of stimulation was determined by analyzing certain steroid compounds in the urine, which provide an indication of the activity of the adrenals.

The adrenocorticotrophic is one of four pituitary hormones which cannot be synthesized, but has been isolated in pure form by Dr. Li. The other three are the growth, lactogenic, which stimulates lactation in mothers, and the luteinizing hormone, which stimulates the growth of cells forming the outer envelope of the fertilized ovum in pregnancy.

*Science News Letter, June 21, 1947*

## VETERINARY MEDICINE

## Fowl Tick Spreads Serious Poultry Disease

► A SERIOUS poultry disease known as fowl spirochetosis is transmitted by the bite of the fowl tick, a widely distributed parasite of birds, states A. L. Burroughs in *Science* (May 30). Experiments he performed in the economic zoology laboratories of the University of Minnesota proved conclusively what had been strongly indicated in earlier work by other researchers.

The organism that causes the disease is a corkscrew-shaped germ fairly closely related to the one that causes syphilis in human beings. Once its numbers are built up sufficiently in a chicken's blood, the bird becomes droopy and inactive, loses appetite and weight, and develops diarrhea. If it recovers it will be immune to the disease for a long time. The death rate in a flock may be high: Mr. Burroughs cites Old-World onsets that wiped out from 60% to 90% of afflicted flocks.

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## MEDICINE

# Gland Chemical Gets Trial

► FIRST USE on a human subject of a recently purified gland chemical was announced at the meeting of the Association for the Study of Internal Secretions.

The human guinea pig was a normal young woman. She was given the chemical for a month at the Mayo Clinic.

The chemical is the adrenocorticotrophic hormone. It is produced by the pituitary, small gland at the base of the brain. It acts on another part of the glandular mechanism, the adrenal glands above the kidneys which in turn produce adrenalin and other powerful hormones.

The experiment with the young wom-

an serving as guinea pig showed that the hormone stimulates human adrenal glands as well as animal and that pituitary hormone extracted from animals can be used in man.

The experiment was reported by Dr. H. L. Mason of the Mayo Clinic and Dr. C. H. Li of the University of California.

Next step, the scientists said, will be to use the hormone in a patient whose adrenal glands are not functioning efficiently. They cautioned, however, that the adrenocorticotrophic hormone cannot be obtained at present for clinical work.

For the month-long experiment at