

## PHYSIOLOGY

# Upright Man Bucks Gravity

Man's present brain was developed as a consequence of his defiance of gravity. No other animal can maintain the upright position for as long as man.

➤ MAN is man and not an ape because his ancestors a million years or so ago dared to buck the force of gravity and stand upright for longer periods than any other living creature.

He forced his heart to drive quantities of blood to his head against the pull of gravity. As a consequence the human brain was able to develop to its present state.

The heart disease and high blood pressure which are the leading cause of human deaths today are the by-product of this gravity-defying step in man's evolution.

Studies showing that the development of man's brain has come through the physiologic changes forced on his body by the head-up position were reported by Dr. Sidney W. Britton of the University of Virginia at the meeting of the National Academy of Sciences.

A strain of apes might be bred, Dr. Britton suggested, which would have brains so nearly human that they might perform many tasks for humans, though doing this "might lead again to traffic in slavery."

Dr. Britton's studies were made by putting animals from snakes and opossums to monkeys and man on tilt tables and observing the changes as they were swung from horizontal to upright positions.

A rabbit within 30 to 60 seconds of being held upright begins to struggle. After five or 10 minutes the animal grows drowsy. Shock and death follow, sometimes within 10 minutes of being tilted to the head-up position.

Within 15 minutes after being held upright dogs and monkeys show 20% to 40% drops in blood pressure in arteries supplying the head. The return flow of blood through the veins from the legs to the heart is also slowed. And brain waves slow down and show convulsive patterns, indicating change from normal brain activity.

Man, however, can be swung from horizontal to upright position and kept there for 15 minutes or longer without drop in blood pressure through the arteries supplying the head, without slowing of blood return from legs to heart and without changes in brain waves.

Man can comfortably remain upright, usually with high level brain activity, during most of the 14 to 16 hours of an ordinary active day. But even high grade anthropoid apes, Dr. Britton found from round the clock moving picture studies, can sustain the upright position for about only one-half this time.

Science News Letter, May 6, 1950

disease is dreaded because of the horrible convulsions suffered by its victims and the complete certainty of death once symptoms become apparent. Because of the uniform fatality among rabies victims, the great hope of survival in rabies is prevention," declared Dr. Cox.

Science News Letter, May 6, 1950

## MEDICINE

## Sulfa Drug Triple Mixture Acts against Dysentery

➤ A TRIPLE mixture of sulfa drugs has a greater curative action in dysentery than either of two potent sulfa drugs alone, a five-man medical team from New York Medical College and Flower and Fifth Avenue Hospitals reported at the meeting of the Federation of American Societies for Experimental Biology.

The triple mixture consisted of equal amounts of sulfadiazine, sulfamerazine and sulfacetimide. Given every day for a week, it cured 20 of 24 children during a dysentery outbreak. Sulfadiazine cured only 11 of 27 children in the same time, and the other sulfa drug, a nonabsorbable one, phthalylsulfacetimide, cured 11 of 28 in the same time.

The better results with the triple mixture, the doctors think, must be due to its having a greater effect on the germs in the intestinal tract.

The scientists reporting this work are: Drs. David Lehr, John T. Luetters, Arnold J. Capute, Harold Abramson and Lawrence B. Slobody.

Science News Letter, May 6, 1950

## VETERINARY MEDICINE

# New Rabies Vaccine

➤ SUCCESS with a new vaccine for protecting dogs against rabies, or hydrophobia, is reported by Drs. Herald R. Cox and Hilary Koprowski of Lederle Laboratories, Pearl River, N. Y.

The vaccine is made from a live rabies virus modified by growing in chick embryos. Its success was found from tests on 12,000 dogs.

The new vaccine does not contain any mammalian brain or spinal cord tissue. Until now, the vaccines used were made from killed rabies virus grown in tissues from the brain and spinal cords of animals, or a fixed live virus from the same sources. All vaccines derived from brain or spinal cord tissue potentially may cause moderate or severe paralysis in the period immediately following vaccination. In over 10,000 of the 12,000 dogs vaccinated, no paralysis after vaccination has been observed.

The high degree of immunity resulting from the vaccine is another advantage. All dogs inoculated with a single injection of

the new chick embryo vaccine were found to be completely resistant to street virus five to 27 weeks later, while 70% of the unvaccinated dogs died from the virus.

Heretofore the best immunization practice has called for the injection of fresh preparations, for vaccines lose their immunizing power as they age. However, the chick embryo vaccine, which maintains its immunizing capacity for at least 18 months, is a highly stable preparation. The new vaccine is also easily standardized.

Known as the Flury strain, the virus strain used in the production of the vaccine was first isolated by Dr. H. N. Johnson of the Rockefeller Foundation from the brain of a child named Flury who died of rabies. Drs. Cox and Koprowski, researchers in the field of virus diseases, helped in the development of the vaccine.

Rabies, according to Dr. Cox, still constitutes a most serious public health problem. "The number of human beings affected by rabies seems rather small, but the



**VACCINE FOR RABIES**—The vaccine for dog immunization is produced from live virus which has been modified by growth in chick embryos. Chick embryos, above, are inoculated with a live virus.