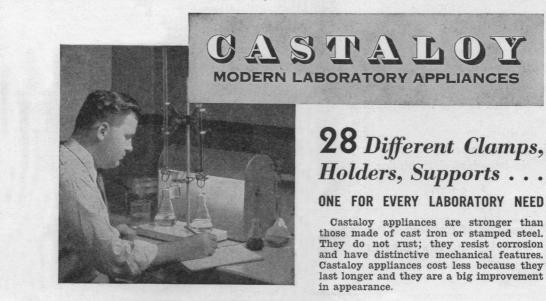
# SCIENCE

NEW SERIES Vol. 95, No. 2456

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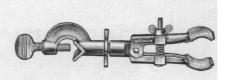
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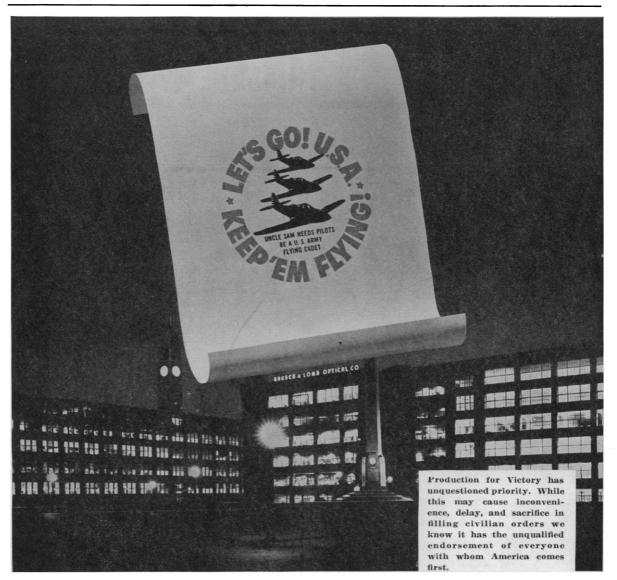
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# LIFE IN THE ANDES AND CHRONIC MOUNTAIN SICKNESS

#### By Dr. CARLOS MONGE

UNIVERSITY OF SAN MARCOS, LIMA, PERU

SINCE prehistoric times congenital or acquired acclimatization has made life possible upon the high plateaus of the Andes, where the altitude varies from 10,000 to 16,000 feet. At the present time twelve million people are living on these plateaus under normal conditions, at an oxygen pressure of about 85 mm instead of 150 mm as at sea-level. In considering the steady biological changes produced by ancestral acclimatization to chronic oxygen insufficiency we must assume that dwellers in these highlands belong to a climatophysiological variety of the human race, which, as observation shows, may even be responsible for their individual attitudes and sociological behavior. Anthropological morphology does not suffice to explain life in the Andes—the fundamental basis must be found in the physiological dynamics of altitude homeostasis. If we go back to Galen we will remember that "the organism is a whole with an environment and it can not be considered apart from that environment" (Hutchins), a fact not yet established in the natural history of men in the Andes.

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> LINDSAY E. BEATON<sup>2</sup> H. W. MAGOUN

INSTITUTE OF NEUROLOGY,

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#### SODIUM DIPHENYLHYDANTOINATE AND EXPERIMENTAL EPILEPSY

SODIUM diphenylhydantoinate is a drug introduced by Putnam and Merritt in clinical practice for treatment of epileptic seizures on account of their particularly efficient anti-convulsant action with the least hypnotic effect. Primarily such results were obtained on cats with convulsions induced by electrical stimulation of the cerebral cortex.<sup>1</sup> Clinical investigations were performed later.<sup>2</sup>

In this article are discussed experiments performed in our laboratory with sodium diphenylhydantoinate in an experimental epileptiform seizure of the frog induced by quick cooling of the spinal cord. The results reported are a résumé of a more detailed paper in preparation.<sup>3</sup> The technic employed was recently reported<sup>4,5</sup> and now is usual in our laboratory. For the Brazilian frog (*L. ocellatus*) cooling of the isolated spinal cord of the preparation to a temperature below 8° C. produces an epileptiform seizure which lasts 20 to 40 seconds. For the American and European frog the cooling must be below 0° C.

The anti-convulsant action has been studied injecting sodium diphenylhydantoinate solution in the abdominal lymphatic sac before the isolated spinal cord preparations were started. The doses employed varied from 0.05-0.90 grams per kilogram of body weight. Doses from 0.05-0.09 grams did not avoid the production of the attacks, but sometimes they

<sup>2</sup> Medical fellow of the National Research Council. <sup>1</sup> J. T. Putnam and H. H. Merritt, SCIENCE, 85: 525,

1937. 2 H H Merritt and I T Putnam Arch Neur Psuch

<sup>2</sup> H. H. Merritt and J. T. Putnam, Arch. Neur. Psych., 42: 1053-1058, 1939.

<sup>3</sup> H. Moussatché, Rev. Bras. Biol., in press.

<sup>4</sup> M. Ozorio de Almeida, C. B. Soc. Biol., 115: 78, 1933. <sup>5</sup> M. Ozorio de Almeida, H. Moussatché and M. V. Dias,

Rev. Bras. Biol., 2: 179-194, 1941.

were less severe. Doses greater than 0.10 grams per kilogram commence to hinder the production of the convulsions and 0.15 grams prevent the epileptiform seizure in nearly all the frogs injected. This anticonvulsant effect was observed with no hypnotic effect, the frog jumping quite well in the laboratory. When the medulla was sectioned and the isolated spinal cord prepared, the flexor reflexes of the legs were as in the normal preparations. Such anti-convulsant action is still observed after 2 days elapse between the injection of the sodium diphenylhydantoinate and the cooling of the spinal cord. Hypnotic effects were obtained only with doses superior to 0.20 grams per kilogram. The lethal dose has not been determined, being superior to 0.90 grams.

Sodium diphenylhydantoinate acts on the spinal cord of the frog, hindering the epileptiform seizures induced by quick cooling with no hypnotic effects and disturbances of the spinal reflexes.

H. Moussatché

Physiological Laboratory, Institute Oswaldo Cruz, Rio de Janeiro, Brazil

#### BOOKS RECEIVED

- Anales de la Escuela Nacional de Ciencias Biologicas, Volume II, Numbers 1, 2 and 3. Symposia. Pp. 371. Illustrated. Secretaria de Educacion Publica Instituto Politecnico Nacional, Mexico.
- CHAMPION, F. C. University Physics. Part 4. Wave-Motion and Sound. Pp. 67. Illustrated. Blackie and Son, London, and Interscience, New York. \$1.65.
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