

SCIENCE

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THE PHYSICO-CHEMICAL CONDITIONS OF ANESTHETIC ACTION¹

UNDER certain well-defined artificial conditions, as well as under some that are normal, the living system—organism, tissue or cell—becomes temporarily inactive and irresponsible to stimuli. When such an artificially induced state of inhibition is well marked and lasting it is called anesthesia, or in a somewhat more restricted sense, narcosis. This condition may last for hours or even days, but apparently not indefinitely; and when it passes off the normal vital activities and properties return unimpaired. This apparently complete *reversibility* is one of the most remarkable features of anesthesia, and distinguishes it from death—a perhaps related but characteristically irreversible change. The terms “anesthesia” and “narcosis” are somewhat differently applied, although they have the same essential significance; the former relates to any temporarily insensitive condition, however produced, while “narcosis” usually means an anesthesia produced by chemical substances. I shall use the term anesthesia throughout the present address to designate any temporary or reversible lowering or loss of the normal vital responsiveness, or of the normal automatic vital activity, under the influence of certain artificial substances or conditions. Anesthesia, as thus defined, may be exhibited by the most various organisms and cells, if not by all. It is fully as characteristic of plant cells as of animal cells, although its manifestations may be less obvious and striking

¹ Lecture given before the Chemical Society of Washington, April 11, 1913.