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The spontaneous development of an acidosis condition in decerebrate cats.

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Investigations of the nature of the control of the respiratory center are rendered difficult because of the extreme susceptibility of the center to anesthetics. Much of the recent work has accordingly been done on man by methods suggested by Haldane and his pupils, and subsequently employed by Hasselbach, Linhard, R. G. Pearce and others. The obvious limitations to investigations of this type have prompted some investigators to employ decerebrate animals, or those in which the medullary centers are kept alive by artificial perfusion. The objections to the latter type of observation are too well known to require further comment here; they may or they may not be such as to render the results inapplicable to the intact animal. The chief objection to the use of decerebrate animals lies in the fact that the reactivity of the isolated centers is uncertain. This is particularly so in the case of the respiratory center. Some animals retain for several hours after the decerebration, a uniform and regular respiratory rate and volume, whilst others show an abnormal type of breathing. These irregularities, apparent in the work of Porter, Means and Newburgh, were also observed in the animals used by my former associate, R. W. Scott, in whose experiments it was further noted that apart from the animals that failed to breathe properly from the start, there were others which were apparently perfectly normal in this regard for some time (1–2 hrs.) after the decerebration, but in which later the breathing became dyspneic and irregular, and death soon followed, usually after an acute attack of vomiting.

As a preliminary to an investigation into the nature of the respiratory hormone, it was considered essential to investigate the cause of this delayed dyspnoea of decerebrate animals, not alone because these are probably the most suitable for use in such