

PHYSIOLOGY

Tone of Voice Changes When Breathing Helium

BECAUSE the quality of a person's voice changes when he is inhaling a helium-oxygen mixture, scientists at the Mayo foundation have discovered a new, relatively simple way of determining the percentages of nitrogen and helium in a mixture of these gases and oxygen.

Helium inhalations are used in treatment of asthma, and promise to be more widely used now that a new type of mask has been developed which reduces the high cost of helium treatments by allowing a gradual replacement of helium by the much cheaper oxygen. Early in the use of the mask for helium treatments, it was noticed that a person's voice sounded different when breathing helium, as if the pitch changed.

Investigations showed that the change in voice is not of the fundamental pitch but of the overtones. These investigations of the voice change involved determinations of the approximate velocity of sound in mixtures of helium and oxygen.

Having worked out a method and formula for determining the velocity of sound for any gas or gaseous mixture, the Mayo scientists, Drs. W. B. Dublin, W. M. Boothby and M. M. D. Williams, found they could construct a graph showing the relation between the velocity of sound in a gaseous mixture and the percentage of each gas present. The procedure is simple enough for practical application in analysis of helium-oxygen mixtures for nitrogen, for either medical or commercial purposes. Technical details appear in the Proceedings of the Staff Meetings of the Mayo Clinic.

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