

long period of time = 69.4 ± 3.5 sq. cm. After 7 hrs. running = 69.3.

In another set of experiments, the speed of the mill was increased to 17,250 ft. per hour. The same dogs were used as in the previous experiment. The dogs were run for 3 hours each.

Pericardiotomized dog—

Immediately before running	72.0 sq. cm.	Mean value of silhouette area over a long period of time = 69.9 ± 3.5 .
Immediately after running	66.6 " "	
	—	
Decrease in size of	5.4	

Control dog—

Immediately before running	71.8 " "	Mean value of silhouette area over a long period of time = 69.4 ± 3.5 .
Immediately after running	67.5 " "	
	—	
Decrease in size of	4.3	

In this experiment the size of both the heart of the pericardiotomized dog and of the control dog decreased in size following forced severe exercise. This decrease in size was greater than the limit of error. Our results are in accordance with most of the work done heretofore on the effect of exercise upon the size of the heart. The pericardiotomized animal reacted to exercise in exactly the same manner as a normal animal, *i. e.*, a slight decrease in heart size.

The dogs were in no way affected by the removal of the pericardium.

These experiments are in agreement with Stewart,¹ Yamada,² Beck and Moore.³

4806

The Point of Origin of the Bronchial Breath Sounds.

GEORGE FAHR AND JAY DAVIS.

From the Department of Medicine of the University of Minnesota and the Minneapolis General Hospital.

A tracheotomy was performed on a patient who had a carcinoma of the larynx, and a pneumonia developed in the left lower lobe. With the patient's nose closed firmly by the fingers of the doctor

¹ Stewart, *J. Clin. Invest.*, 1929, 339.

² Yamada, *Mitt. a. d. Med. Fac. d. k. Univ. zu Tokio*, 1917, xvi, 527.

³ Beck and Moore, *Arch. Surg.*, 1925, xi, 550.

and the mouth closed firmly by the patient, bronchial breath sounds which sounded typical were heard over the left lower lobe. The breath sounds over the other lower lobe were normal. This would seem to show that the vocal cords play no very large rôle in the formation of the bronchial breath sounds, but that the bronchial breath sounds are formed by the passage of air through the bronchial tubes much after the manner of the formation of sound in lip pipes.

A patient who had loud bronchial breath sounds over the right lower lobe came to autopsy. A rubber tube was passed through the vocal cords and air was periodically allowed to enter the lungs from an oxygen tank. There was a side tube for allowing the egress of air and by alternately closing the outflow and inflow tubes, artificial inspiration and expiration could be produced. Auscultation over the right lower lobe produced bronchial breath sounds resembling fairly closely those heard over the same area by the intern and resident physician before the death of the patient. The trachea was now cut off below the larynx and the same rubber tube was inserted down just beyond the bifurcation. On auscultation the breath sounds were still bronchial and apparently were a little higher pitched than when the tube was passed just beyond the vocal cords. This experiment shows that the components of the bronchial breath sounds are formed largely in the bronchial tubes below the vocal cords and that some of the bronchial breath sound is formed apparently beyond the primary bronchus.

Conclusions: The vocal cords play only a very small part in the formation of the bronchial breath sounds. Bronchial breath sounds are not formed on the principle of the reed pipe; more probably on the principle of the lip pipe.

4807

Relations Between Surface Area, Weight and Length of the Human Body in Prenatal Life.

ALBERT D. KLEIN AND RICHARD E. SCAMMON.

From the Department of Anatomy, University of Minnesota.

The growth in surface area of the body in prenatal life has received little study. Valentine,¹ Ssytscheff,² Lissauer,³ Kastner,⁴ and Pfaundler⁵ have included some determinations of the surface area of premature infants among their observations but most of these