ing by small wires in order to avoid the possible resonating effects which might come from supporting it on a table or platform.

For specimen No. 1 the sine waves of frequencies of 200 and 300 ~ and for specimen No. 2 the sine waves of frequencies 200, 500 and 900 ~ were altered in their passage through the specimen. Fig. 1 shows the

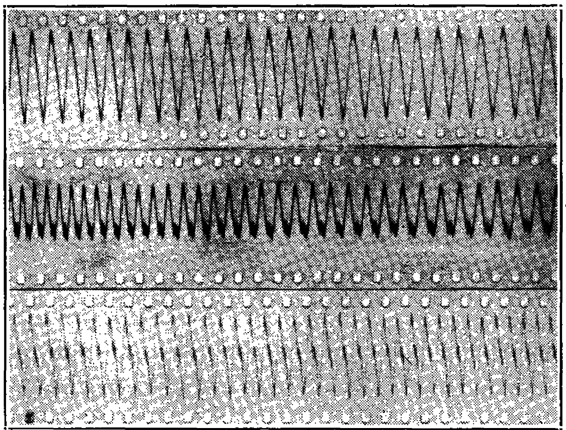

FIG. 1. Oscillogram of relatively pure sine waves (200 ~) led into the larynx of the cadaver. FIG. 2. Oscillogram of the waves emerging from the nose and mouth of the cadaver (specimen No. 2) when the waves depicted in Fig. 1 were being led into the cadaver's larynx. FIG. 3. Oscillogram of the waves emerging from the nose and mouth of the cadaver (specimen No. 1) when relatively pure sine waves of 300 ~ were being led into the cadaver's larynx.

relatively pure sine waves of a frequency of 200 ~ as they were taken directly from the end of the rubber tube. Fig. 2 shows the change produced in this frequency when the tube was inserted into the larynx of specimen No. 2. Fig. 3 shows the change produced in the sine waves of a frequency of 300 ~ by specimen No. 1.

There was a possibility that these changes might be due to the additional column of air imposed upon the vibrating diaphragm of the head phone by the cavities of the head and neck. This was tested by substituting a cardboard cylinder with a small input and output hole for the specimen. The waves emerging from this cylinder proved to be identical with those put into it. The possibility that these changes might be reflected waves was ruled out on the basis of the fact that all relationships between objects in the room were the same for the picking up of both the original input waves and those passing through the specimen. It appears that the alterations in the original waves emerging from the inserted tube occur during the passage of these waves through the cavities of the neck and head of the cadaver. Furthermore, the distortions are not a function of amplitude because the modified wave is smaller than the input wave.

With a more complicated original wave form, one might expect to obtain more striking structural changes in the waves as they emerge from the mouth and nose. We chose purposely the simple sine wave as the one to be modified, reasoning that any change produced in its form would be conclusive in regard to the point in question.

Because the recorded differences between the original waves and those emerging from the cadaver occur between the end of the inserted tube in the larynx and the nasal and oral openings, our results tend to support the cavity tone theory of vowel production. The resultant wave, being no longer pendular, must contain frequencies not present in the source and hence necessarily introduced by the cavities. Certain frequencies were not changed, probably because they did not excite the transient frequencies which were characteristic of the cavities. A close examination of the modified waves shows that a given wave may not be a perfect duplicate of its predecessor; *i.e.*, there is not absolute periodicity in the wave chain. This fits in well with Scripture's general conception of the inharmonic theory that each succeeding puff of air from the vocal cords changes the cavities' contents so that the cavities need not be exactly the same from puff to puff. If our input sine waves contained concealed harmonics, then our results are not so conclusive in favor of the inharmonic theory. However, it is thought that the waves emanating from the cadaver contained frequencies which were not present in the source.

It remains to attack the problem of vowel production with respect to both simple and more complicated input waves in relation to the condition, size and number of the so-called resonating chambers.

LEE EDWARD TRAVIS
PSYCHOPATHIC HOSPITAL
ARCHIBALD R. BUCHANAN
DEPARTMENT OF ANATOMY
UNIVERSITY OF IOWA

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