to tune: correct phasing is essential in such a device and more easily achieved by the reflex principle.

The right atrium and ventricle behave in a manner similar to the left with the exception that power, taken from the stream, is transmitted solely as a pressure wave by the pulmonary artery. The tricuspid valve acts as a buncher while the pulmonary valve and sinuses act as a catcher, each being in phase and paired to form a set with the corresponding valve of the left side. On each side, the shock wave of the first heart sound overcomes thyxotropism of the atrium.

The wave-mode of the oscillator is stabilized by the conducting system of the heart, which is comparable to the strapping of a magnetron. Mode jumps occur in extrasystole, differing values of n explain the varying grades of heart block but variation of each element of the $(n + \frac{3}{4})$ phase rule is also physiological.

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Potential Oscillations in the Lower Olfactory Pathway of the Toad

In the olfactory bulb of the hedgehog and the rabbit, Adrian[1,2] found that the potential waves evoked by olfactory stimulation take shapes of potential oscillation. It was presumed that the waves were developed by synchronized activity in the dendritic region of the bulb. Later, he[3] recorded the similar potential in the olfactory epithelium of the rabbit, and found that the potential pattern in the epithelium has all the features of that appearing in the bulb. In the experiment, Adrian[3] did not record the potentials in the epithelium and the bulb simultaneously; but from the similarity he presumed that the mechanism which produces the potential oscillation in the bulb originates in the olfactory epithelium. In the olfactory epithelium of the frog, Ottoson[4] found that rhythmic waves sometimes superimpose on the crest of the slow potentials produced by odour stimulation. He presumed that they are identical to the potential oscillations found by Adrian[1-3].

Since the toad (*Bufo vulgaris japonicus*) has long olfactory nerves, potentials can be recorded in the olfactory epithelium, nerve and bulb simultaneously. By olfactory stimulation, potential oscillations appeared in these tissues as well (Fig. 1). Those which appeared in the olfactory nerve and bulb are identical with one another in frequency, phase and shape. Consequently, it is apparent in the toad that the potential oscillations in the bulb originates in, or before, the olfactory nerve. However, the similar potential oscillations have never been found in the olfactory epithelium of the toad. Thus, our finding in the toad partly supports Adrian's assumption. On the other hand, the potential oscillation in the olfactory epithelium of the toad usually appeared superimposed on the slow potential which was reported by Takagi and Shibuya[5-7]. It has higher frequency than the potential oscillations in the nerve and bulb, and is different in shape from the latter

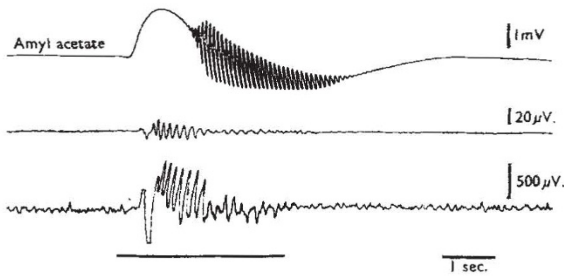

Fig. 1. Two types of potential oscillations. Top, a potential oscillation appearing on the falling phase of the slow potential; middle, a potential oscillation recorded in the olfactory nerve; bottom, a potential oscillation recorded in the olfactory bulb. It is noted that the first half of the potential in the olfactory bulb is identical in frequency, phase and shape with the one in the olfactory nerve, but is entirely different from the one in the olfactory epithelium. The horizontal line on the left below indicates olfactory stimulation

ones. Besides, it always began to appear some time after the beginning of the latter ones. It often appeared even after the latter ones had nearly disappeared, when stimulation was very short. In these points, the potential oscillation in the olfactory epithelium of the toad entirely differs from those in the olfactory nerve and bulb. The former oscillation closely resembles the rhythmic wave found by Ottoson[4] in the olfactory epithelium of the frog (*Rana temporaria*). Though we could not find the similar wave in the frog (*Rana nigromaculata*), it is supposed that the rhythmic wave found in *Rana temporaria* is identical to that in the olfactory epithelium of the toad. From these findings in the toad, it is concluded that there are two kinds of potential oscillations in the lower olfactory nervous system, and that they are mutually of indifferent origin and nature.

Full details of this work will be published elsewhere.

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Saliva–Serum Ratios of Tritium after the Administration of Tritiated Water

Taggart and Hytten[1] reported results which indicated that the salivary glands can concentrate deuterium oxide above the level in serum of human subjects. They had administered deuterium oxide orally to normal pregnant women and found, 3 hr. later, saliva–serum ratios ranging from 1·05 to 1·34, and in one subject after 24 hr. they found a ratio of 1·39.

These results have considerable importance as they suggest that human salivary glands can differentiate between deuterium and hydrogen, and it would therefore be of interest to know if a similar effect occurs with tritium. In view of the paucity of