TABLE 1

Animal	Drug	Total dose of barbiturate. mgm per kgm	Total dose of picrotoxin mgm per kgm	Time
Dog	Sodium barbital	1,650	20	Died in 1½ hrs.
Dog	Sodium phenobarbital	375	6	Died in 2 hrs.
Dog	Sodium pentobarbital	160	38	Died in 68 min.
Dog	Sodium pentobarbital	100	18	Recovered in 12 hrs.
Rabbit	Sodium pentobarbital	100	24	Recovered in 5½ hrs.

the animal's respiration and carotid blood pressure on a kymograph tracing. While the animal was thus under constant observation further doses (usually ¼ of the M.L.D. was used for a single injection) of the barbiturate originally administered were given intravenously. It was observed that these injections produced in each instance a sharp fall in blood pressure and a slowing or stoppage of respiration. The blood pressure fell after each additional injection. Death was due to a combination of circulatory collapse and respiratory failure.

The antidotal effect of different doses of picrotoxin was manifested in four different ways: (a) Occasional rise in blood pressure; (b) prevention of the steep fall in blood pressure and hastening the recovery from the fall produced by intravenous barbiturate injection; (c) stimulation of respiration when stoppage was produced by barbiturates; (d) maintenance of respiration after barbiturate injection even after cardiac stoppage.

In several experiments, it was noticed that the action of small doses of adrenaline and ephedrine was especially marked following picrotoxin in the barbitalized animals. These drugs not only stimulated respiration with a simultaneous rise in blood pressure, but the hemodynamic effects they produced after picrotoxin was more pronounced and more sustained than in controls. In several cases, intravenous injections of adrenaline (a total of 0.1 cc of 1 to 20,000 solution) produced a gradual and sustained rise in blood pressure. These sustained rises with adrenaline and ephedrine may be explained as shifts in blood volume. Adrenaline and ephedrine then may be employed as effective antidotal agents together with picrotoxin in barbiturate poisoning and possibly in other instances of circulatory collapse and respiratory failure.

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SCIENTIFIC APPARATUS AND LABORATORY METHODS

PHYSIOLOGICAL STROBOSCOPE

IN SCIENCE for December 21, 1934, the authors described their physiological stroboscope and its application in the field of the mechanics of phonation. Refinement of the apparatus and the addition of cooperative instrumental units has followed the study of the stroboscope with a model larynx as the subject.

The heart of the instrument is a specially designed amplifier fed by a wide-frequency-range microphonic element. It was a simple step to add to the gaseous discharge lamp in the output a cathode ray oscillograph and a recording device with audio monitor. The chain of instrumental response is currently as follows: A tone originating in the artificial larynx is passed to the microphonic element and into the amplifier, where its electrical component is linearly increased in amplitude; thence into the amplifier's phasing and band pass filter section, where a reduction of the origin tone to its fundamental frequency is achieved and translated in the output into a flashing of the gaseous discharge lamp at a period synchronous with the frequency of the tone emitted by the artificial larynx. Simultaneously, as the lamp held near the vibrating cords of the larynx reveals them in stroboscopic immobility, the fluorescent screen of the cathode ray oscillograph exhibits a wave analysis and the recording device registers and monitors the tone produced by the cordal configuration under observation.

With this apparatus revealing for the first time the tonal conformation of the cords during frequency transitions, and with a visual representation of the sound thus produced, a relationship is postulated wherein a particular tone is reproducible by the reestablishment of a predictable set of mechanical conditions in the larynx. Thus the isolation of individual factors responsible for vocal characteristics is accomplished.

Further study and interpretation of the apparatus operative with the artificial larynx will precede any report of observations made on clinical cases.

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A METHOD FOR IRRIGATING FUNGUS CULTURES

AN adequate study of smaller fungi must always include careful pure-culture work. Information re-