tion is produced, with increased blood-flow. No significant difference in blood-flow change after ergotamine was noted between normals and subjects with liver disease.

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Effect of Some Short Acting Barbiturates on the Patency of the Glottis.

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Experiments were conducted on normal cats with the following barbituric acid derivatives: sodium N-methyl-cyclohexanyl barbiturate (evipal), sodium iso-amyl ethyl barbiturate (amytal), sodium iso-amyl ethyl thio-barbiturate (sodium thio-ethamyl*), sodium N-ethyl-l-methyl butyl barbiturate (nembutal), and sodium N-ethyl-l-methyl butyl thio-barbiturate (pentothal). In each case a 2% aqueous solution, freshly prepared, was injected intravenously at a constant rate of a milligram per second. The quantities injected ranged between the minimum anesthetic dose and the minimum lethal dose.

It was noticed that most of the animals would cough, sneeze, or hiccup considerably during the course of anesthesia and that these animals would quickly develop cyanosis and dyspnea regardless of whether a large or small dose had been administered. Inspection of the glottis in these cases showed spastic adduction of the vocal cords. In the cases where there was no spontaneous coughing, inspection of the glottis showed hyper-active adducted vocal cords and lifting the epiglottis would elicit complete spastic closure of the glottis; cyanosis then developed rapidly and unless tracheal intubation was

TABLE I.

Barbiturate	No. of animals	Spontaneous laryngospasm	Hyperactive laryngeal reflex, followed by laryngospasm
Sodium thio-ethamyl	37	36	1
Evipal	10	7	3
Amytal	10	4	5
Nembutal	10	6	4
Pentothal	11	8	3

* Parke, Davis & Co.

performed cardiac arrest would ensue. These results are illustrated in Table I.

Since artificial stimulation of the superior laryngeal nerve[1] causes reflex closure of the glottis by contraction of the adductor muscles, it is possible that the symptoms here observed are of parasympathetic origin. In order to test the validity of this assumption experiments were performed to study the modification of this symptom-complex by drugs affecting the sympathetic and parasympathetic divisions of the autonomic nervous system and by section of the vagi. The results may be summarized thus:

Atropin sulphate (3 to 5 mg. per kilo intravenously) always caused immediate relaxation of the vocal cords, a return of normal respiration, disappearance of cyanosis, a shortening of anesthesia time, and an increase in tolerance to the M.L.D.

Ephedrin sulphate, in therapeutic doses (20 mg. per kilo intravenously) caused only partial improvement characterized by relief of dyspnea and slight relief of laryngospasm but with persistence of hyper-active laryngeal reflex. Increasing the dose caused complete relaxation of the vocal cords but was usually followed by ventricular fibrillation.

Adrenalin hydrochloride (0.15 mg. per kilo intravenously) caused immediate improvement but the untoward symptoms reappeared after 10 to 15 minutes.

Finally, bilateral cervical vagotomy invariably relieved the laryngospasm.

From the above data it is concluded that the closure of the glottis following the intravenous administration of these short-acting barbiturates in cats is due to stimulation of the parasympathetic division of the autonomic nervous system.

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Use of Cerebro-Spinal Fluid and Synthetic Salt Solutions in Studies of Tissue Metabolism.

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The desirability of having available a physiologically normal fluid medium in which tissue slices may be immersed for the study of their metabolism is widely recognized. The use of serum as such a

[1] Howell, W. H., *Textbook of Physiology*, ninth edition, p. 697.