fat remaining in the stomachs of the anoxic rats 2 hours and 3 hours after feeding was significantly less than for the corresponding controls. On the other hand, no statistically significant difference was found at the end of 4 hours. (The individual variation which was greater for the rats subjected to anoxia, than for the controls, accounts for the apparently larger amount of fat in the stomach after 4 hours absorption time than after 3 hours). Although a delay in gastric emptying may have occurred later than 4 hours, these findings indicate an initial acceleration of the emptying of the stomach of rats exposed to diminished oxygen tension. For the purpose of these experiments, the results obtained show that the decreased rate of absorption of fat in rats subjected to anoxic anoxia, as previously reported, cannot be explained on the basis of a prolonged gastric emptying time.

Schnedorf and Orr[3] reported that increasing degrees of anoxemia produced by inhalation of 15, 10 and 5% oxygen in nitrogen resulted in a marked and progressive decrease below normal in the flow of bile in nembutalized dogs. The decreased rate of fat absorption observed in rats subjected to partial pressures of oxygen of 63 mm and 53 mm Hg (8.35 and 7.03% oxygen, respectively) might reasonably result from a diminished flow of bile. Work on this phase of the problem is in progress.

Summary. Adult albino rats fed corn oil showed an initial acceleration of the emptying of the stomach on exposure to diminished oxygen tension. A decreased rate of absorption of fat in rats subjected to anoxic anoxia cannot be explained on the basis of a prolonged gastric emptying time.

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Latent Period Between Electrical and Pressure Pulse Waves Corresponding to Right Auricular Systole.*

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The exact time relationship between the onset of electrical activity and the appearance of a pressure wave corresponding to auricular systole has been, heretofore, unknown in man. The development of the technic of catheterization of the right heart[1-4] and the use of a multiple blood pressure recorder with a synchronous electrocardiogram has made possible the study of this time relationship.

Preliminary tests for measuring the difference of transmission time of electrical impulses as recorded with the ECG and simultaneous mechanical impulses from the tip of a catheter connected with a Hamilton manome-

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TABLE I. Time Relationship of Electrical and Pressure Pulse Waves Corresponding to Auricular Systole in Man.

Case	Date	Clinical diagnosis	Age, yrs	Heart rate	Avg time in sec.* Beginning of P wave to beginning of auricular systole	Peak of P wave to peak of auricular systole	Beginning of P wave to peak of auricular systole	P-R interval of ECG
			8 Cases with Essentially Normal Cardiac Function.					
L.B.	1/29/46	Pulmonary fibrosis	50	73.2	—	.12	.16	.16
B.O.	2/19	Essentially normal	27	78.2	—	.095	.15	.15
E.H.	2/28	" "	23	85.2	.11	.11	.16	.16
E.H.	3/12		23	85.6	.11	.11	.16	.16
E.L.	3/5	Art. pneumothorax	27	90.8	.095	.095	.17	.19
J.L.	3/26	6 yrs post-pneumonectomy	18	72.0	.12	.12	.18	.17
E.C.	4/15	Essentially normal	31	81.2	.11	.11	.14	.17
A.S.	4/17	Art. pneumothorax	22	111.5	—	.13	.16	.15
Avg				85.0	.11	.11	.160	.164
			2 Cases with Cardiac Abnormalities.					
G.L.	3/19	Tetralogy of Fallot	8	113.0	.055	.055	.125	.13
R.B.	3/28	Scleroderma	59	83.0	.17	.17	.20	.25

* Corrected for .01 sec difference between electrical and mechanical conduction time.

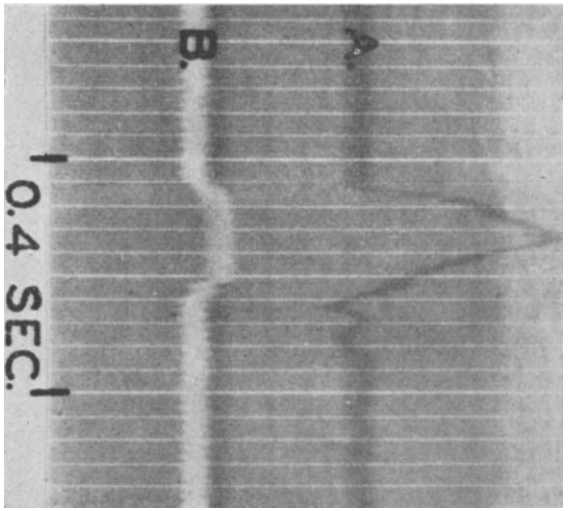

Fig. 1.
A. Mechanical conduction.
B. Electrical conduction.
Transmission time difference of simultaneously-induced electrical and mechanical impulses. (See text for description).

ter were made in the following manner; one electrode of the ECG was attached to a small rubber balloon, fastened on the distal end of a No. 8 cardiac catheter, with the proximal end connected by lead tubing to a Hamilton manometer. The entire mechanical system was filled with sodium citrate with all air bubbles removed. Tapping the attached electrode with another electrode (circuit of lead II used), initiated simultaneously an electrical and mechanical impulse that was transmitted to the string of the ECG and the manometer membrane; the resulting deflections were photographed using a camera speed of 50 mm per second. As illustrated on Fig. 1, the time interval between the beginning of the electrical and the mechanical deflection is approximately 0.01 second.

The data obtained on 10 human subjects are tabulated in Table I, and representative tracings shown on Fig. 2. In 8 individuals with essentially normal cardiac function the latent period of the right auricle measured from the time of the beginning of the P wave to the beginning of the auricular systolic pulse wave averaged 0.11 second after the 0.01

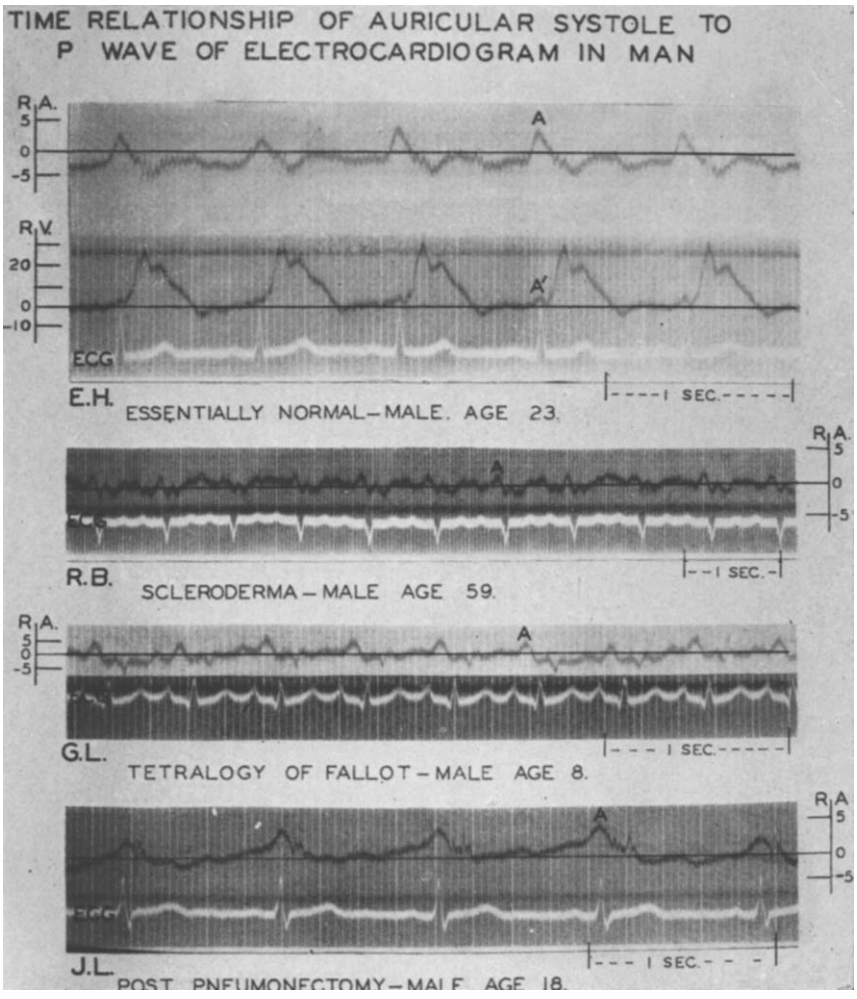

Fig. 2.

A. = auricular systole.
A'. = auricular systole on right ventricle tracing.
R.A. = right auricle. **R.V. = right ventricle.**
E.C.G. = electrocardiogram—lead II.
All pressures in mm mercury.
Time interval between electrical and pressure pulse wave corresponding to the auricular systole in normal man and in 2 cases with cardiac abnormalities.

second correction was subtracted for the difference between the electrical and mechanical conduction. In 3 cases it was necessary to take the measurements from the peak of both electrical and pressure waves as the exact beginning of the auricular systole was not sharply defined on the tracing. In all cases where both determinations could be made the time lag was the same as seen in Table I. The average time from the beginning of the P wave to the peak of the auricular systolic pulse wave was 0.16 second, ranging from 0.14 sec. to 0.18 sec. The P-R interval averaged 0.164 sec. (range 0.15 sec. to 0.19 sec.)

The results in 2 cases of cardiac abnormality are shown in Table I and the tracings illustrated in Fig. 2. In the case of an 8-year-old child with Tetralogy of Fallot, the time lag between the electrical and pulse wave was 0.055 sec. The heart rate was rapid, 113 per minute. The time from the beginning

of the P wave to the peak of the auricular systole was shorter than the normal limits calculated above. In one case of a 59-year-old male diagnosed as scleroderma with involvement of the lungs, marked pulmonary hypertension and evidence of partial heart block, the latent period was 0.17 sec. The time from the beginning of the P wave to the peak of the auricular systole was 0.20 sec. in this case. This may represent some delay in the spread of the sinus impulse through the right auricle.

Summary. 1. In 8 adult subjects with essentially normal hearts the latent period between the beginning of the electrical P wave and pressure pulse wave corresponding to the right auricular systole averaged 0.11 sec. 2. In one case of a child with a rapid pulse and Tetralogy of Fallot the latent period was much shorter, 0.055 sec. 3. In one case of scleroderma with pulmonary hypertension and partial heart block the latent period was prolonged to 0.17 sec.

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Influence of Thiourea on Development of the Chick Embryo.

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While investigating the effect of several substances which may influence the growth of rickettsiae in the yolk sac of the chick embryo, some effects on the embryo itself have been observed, and these have been followed up for thiourea.

Thiourea and related substances have been shown to affect the thyroid function in adult animals, *viz.*, rat,[1,2] mouse and dog,[1] rabbit,[3] and chick.[4] Thiourea has also been found to inhibit metamorphosis in tadpoles[5-7] and cleavage of sea urchin eggs.[8]

Thiourea is introduced into the yolk sac of Leghorn embryos according to the technic described by Cox.[9] Aseptic precautions are strictly adhered to throughout the whole procedure. Fertile eggs incubated at 39°C for 7-17 days are used. The shell covering the air sac is washed with 5% phenol and the injections are made into the yolk through a needle-sized opening in the air sac by means of a hypodermic syringe and a 22-gauge needle. The hole is then sealed with paraffin and the eggs are returned to the incubator. Amounts of thiourea used were 0.3 to 3 mg per egg. In order to avoid mechanical damage to the embryo, the fluid introduced should not exceed 0.5 ml; a similar volume of distilled water serves as control. Eggs were daily inspected by candling and dead ones were discarded.

Results. While the controls hatched after 21 days (on very few occasions after 20 or 22 days), hatching of embryos treated with thiourea was retarded up to 10 additional days. The retardation seemed to depend on 2 factors, (a) age of the embryo at the time of injection; (b) concentration of thiourea. For example, 1 mg thiourea delayed hatching by only 1 day in 17-day egg embryos, while the same amount applied to younger

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