DOG 2-1, MALE, WEIGHT 12.9 KILOS.

Day.	R. B. C. millions.	Hemoglobin per cent.	Color index.	Remarks
1	5.40	83	0.77	Administered subcutaneously 0.258 grams symmetrical compound.
3	5.20	83	0.80	Marked lipemia.
4	3.80	77	1.01	Dog very sick.
5	3.60	66	0.92	Dog somewhat improved.
7	2.30	44	0.96	Dog much improved; 0.120 gram of compound administered.
8	2.20	33	0.75	Dog received 0.240 grams of compound.
10	0.92	28	1.52	
11	1.05	25	1.19	

As in the case of phenylhydrazine, the isopropyl derivative produces hypertrophy of the spleen and very marked hyperplasia of the bone marrow. Symmetrical di-isopropyl-hydrazine also resembles hydrazine in its effect upon the liver;[2, 3] fatty degeneration being produced after the administration of relatively small doses.

146 (2106)

Further studies of the relative rates of absorption of drugs from the lymph sac and the muscles of the frog.

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Previously it has been shown that members of the digitalis group as measured by their intensity of action upon the heart, are absorbed more rapidly and evenly from intramuscular injections than from the lymph sac. Strychnine was also found to be more rapidly absorbed from the muscles. These facts led us to suggest that in the official assay of the digitalis group of drugs the substitution of intramuscular injections be made. The present paper deals with further studies of this question.

2 Underhill, F. P., and Kleiner, I. S., *J. Biol. Chem.*, 1908, iv, 165.

3 Wells, H. G., *J. Exp. Med.*, 1908, x, 457.

Figure I. Epinephrin effects upon the frog's pupil.

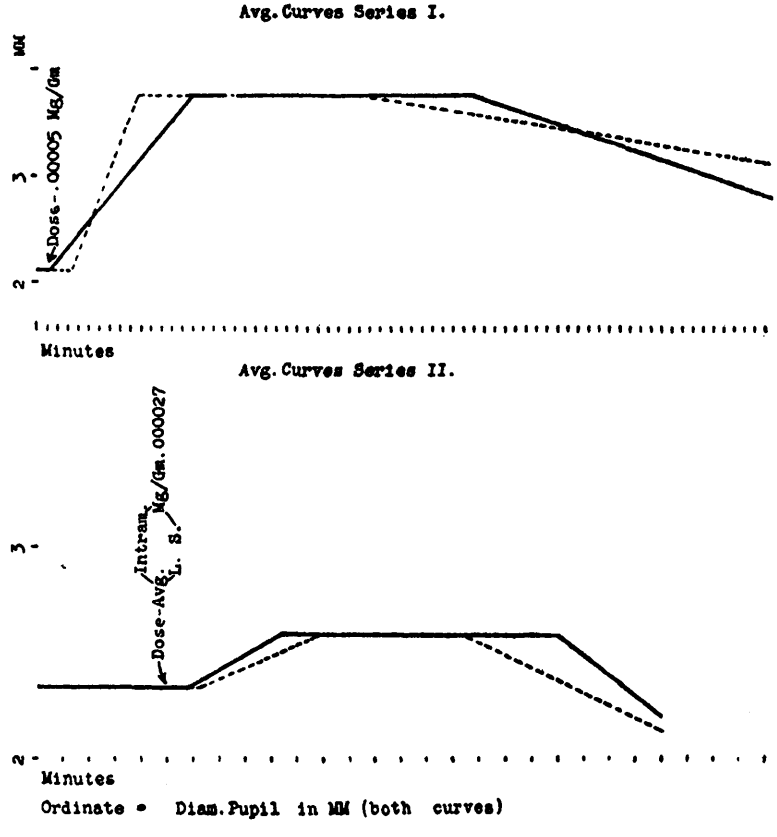
TABLE I.

	Lymph sac.	Intramuscular	Per cent.
Normal diameter	2.10 mm.	2.14 mm.	
Latent period	3.10 min.	1.08 min.	187
Period of increasing pupil diameter..	6.85 min.	14.00 min.	104.3
Maximum increase of pupil diameter	1.55 mm.	1.55 mm.	
Duration of maximum pupil diameter	20.90 min.	27.30 min.	30.6

TABLE II.

	Lymph sac	Intramuscular	Per cent.
Normal diameter	2.37 mm.	2.30 mm.	
Latent period	1.13 min.	0.75 min.	33
Period of increasing pupil diameter..	4.56 min.	3.64 min.	25.2
Maximum increase of pupil diameter	0.26 mm.	0.28 mm.	
Duration of maximum pupil diameter	5.38 min.	8.68 min.	61.3

Fig. II. -Epinephrin effects upon the frog's pupil.



Epinephrin has been chosen for study because of the readily measurable changes it induces in the diameter of the frog's pupil. The time from injection of the drug to beginning dilatation has been designated as the latent period and has been made the basis of comparison of the rates of absorption by the two methods. As the tables and curves (Figures I and II) show the latent period after intramuscular injection is always shorter. It is felt that this finding further substantiates the above results.

147 (2107)

Some effects of morphine upon respiratory reflexes.

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In some unpublished experiments it was found that morphine not only does not diminish the Hering-Breuer reflex, but, on the other hand, actually renders it more prominent, especially the inhibitory phase of it. This appears to be directly opposite to its effect upon other respiratory reflexes such, for instance, as the cough reflex and certain dyspnœas of reflex origin which are caused to disappear under morphine action. But, for reasons which can not be stated here, we believe that the cough reflex, especially, belongs to a different category and is not to be regarded as a simple reflex and, hence, responds differently. The experiments here reported were devised in an attempt to shed further light on this question.

It was stated above that especially the inhibitory phase of the Hering-Breuer reflex is exaggerated by the action of morphine. This has led us to examine another purely inhibitory respiratory reflex as to its behavior under the influence of the drug. To do this we have taken advantage of the fact, discovered by Myer, that the active expiration in the fowl is always inhibited by any effective electrical stimulation of the central end of the vagus nerve. For a given strength of stimulus morphine greatly prolongs this inhibitory reflex rather than diminishing or abolishing it. It is thus seen that this reflex reacts toward morphine as does the Hering-Breuer and not as does the cough reflex.