

in physiological saline and given in a volume of 5 cc. or less and in  $\frac{1}{2}$ -1 minute. The minimum amount for visualization of the spleen in the rat would appear to be in the neighborhood of 1 cc. of oil per kilo body weight. The shadow appears to reach maximum intensity  $\frac{1}{2}$  hour after injection. The animals show slight respiratory disturbance and flushing of the skin of the ears for a few hours after injection. They appear normal the next day except in the cases of those receiving 2 cc. per kilo body weight or over. These animals appear normal on the second or third day. The shadow fades and disappears entirely within about one week, although at this time there appears to be still some oil left in the spleen. The liver shadow is slightly intensified following the injection.

A few similar experiments have been done on dogs. The long strap-like spleen can be visualized following the injection of about 1.5 cc. of oil per kilo body weight. By rapid injection or by using a concentrated emulsion it is easy to produce death by acute edema of the lungs. Further experiments are to be conducted using a more perfect emulsion.

We would like to call attention to the work of Radt.<sup>2</sup> His announcement appeared while this work was being done. He was able to visualize the spleen and liver in rabbits by injecting a colloidal solution of thorium dioxide.

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#### 4843

### Absence of Axis Deviation of Electrocardiogram in Acute Heart Dilatation Following Experimental Embolism with Metallic Mercury.\*

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The injection of 5 cc. of metallic mercury into a leg vein of adult unanesthetized dogs produces a marked dilatation of the right heart chambers a very few minutes after reaching the right heart and

<sup>2</sup> Radt, Paul, *Klin. Woch.*, 1929, viii, 2128.

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arterial side of the pulmonary circuit. There is a great disproportion between the objective symptoms and the severity of the lesions wrought in the thoracic viscera. The first symptoms that usually follow the above procedure are gastro-intestinal in nature; vomiting and defecation occur, usually within one-half hour or hour after the administration of the metal. Tachypnea or dyspnea rarely appear early, and frank respiratory symptoms are usually in abeyance for some hours. The survival period of more than 20 animals averages 35 hours.

The electrical axes computed from synchronous leads and from single axial leads that satisfy the Einthoven formula do not show significant axis deviation. There is an anomalous wide splitting of

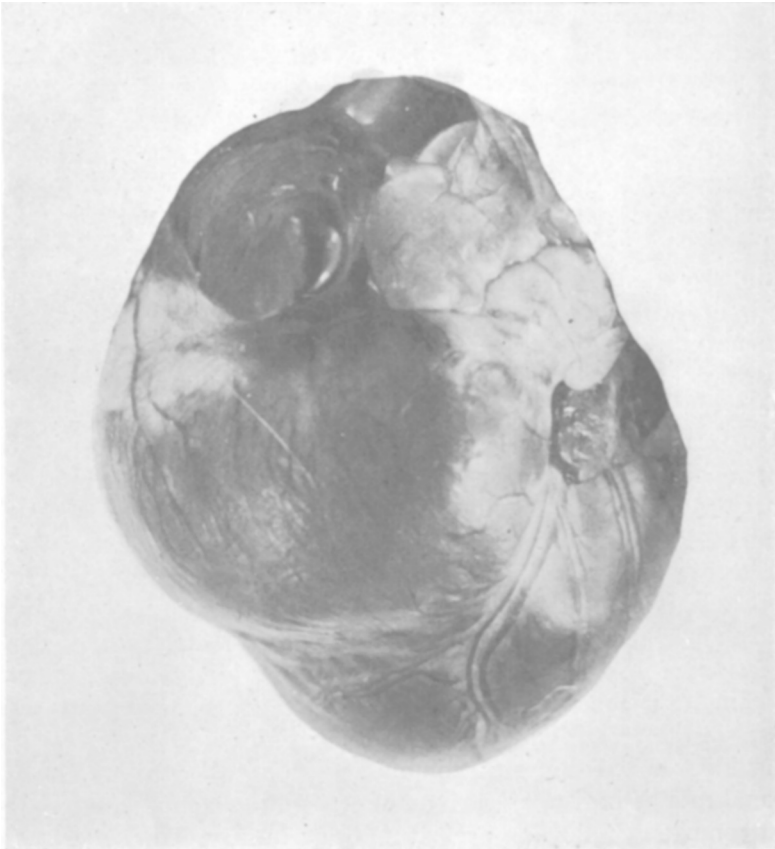


FIG. 1.

Very marked dilatations of the right heart chambers 8 min. after the intravenous administration of 5 cc. metallic mercury. Weight of dog 27.7 kilos. Heart weight 202 g. Amount of mercury recovered from right heart 0.241 g. Animal killed by intravenous ether to lessen struggle.

the T-wave in many curves. Paroxysmal auricular fibrillation was noted in the electro-cardiograms of several animals.

The relatively heavy weight of the metal in the right heart hardly enters as a factor in the interpretation of the curves as the heart empties itself usually quite completely of the metal after a few minutes. It is thought that the acute heart dilatation results from a partial obstruction in the arterial side of the pulmonary circulation.

#### 4844

#### Reflexes from the Gall Bladder to the Heart.\*

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The sudden release of bile obtained by incising the gall bladder of a decerebrated or ether-anesthetized frog is almost invariably attended by an abrupt change in the rate and character of beating of the heart. The first event is a transient arrest of the entire heart lasting between 1 and 10 sec., almost always followed by a sinus bradycardia lasting from  $\frac{1}{2}$  to 10 min. Subsequently there is a return to the initial rate of beating although in a few instances progressive slowing, leading to excessive dilatation and permanent arrest, have been observed. Not infrequently the first event to be noted is a transient acceleration which precedes the slowing. The heart appears to beat much more forcibly with the inception of the slower rate. The latent interval for the reflex is a fraction of a second to a second or more.

Electrocardiograms made from base-apex leads show the cessation of activity of the sinus and ventricular portions of the heart followed by increased amplitude of R and a rather characteristic inversion of T. That the changes in the initial and final ventricular complexes are not directly associated with the reflex are to be found in the repetition of electrical effects, following an occasional sinus block which appears spontaneously after the resumption of a normal rate of beating. Such an effect is quite comparable to aberrant complexes following premature beats in mammalian electrocar-

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