

Using urinary extracts, we find that the comb growth is proportional to the amount of hormone present (see chart). We have selected as our cock unit that amount of testiculin which, when injected daily into each of 6 castrated cocks, will give an average increase in comb of 10 mm. in 10 days. Such a cock unit is found in about 75 cc. of an active urine.

The administration of chloroform extracts has permitted the use of more concentrated preparations, without the toxic effects of the urine. Changes in size of comb, in turgor and color are plainly noticeable after a few days of treatment.

As a preliminary to the study of the functional test of gland activity, samples of mixed urines were extracted with chloroform, the residues dissolved in oil and each sample injected into six well-castrated cocks.

Urine sample U.M.2, was obtained from men in the prime of life. The curves show how uniform is the effect of this extract on 3 different groups of animals. U.M.3 represents the urine from men of various ages, and U.M.4 from men between 50-70 years of age. The variation in hormone content is quite evident.

It remains to be seen whether the differences observed can be of service in diagnosis.

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Experimental Treatment of Cardiac Arrhythmias.

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(Introduced by Israel S. Kleiner.)

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Since weakening of the heart muscle leads to incomplete emptying and progressive dilatation, which in turn results in impaired conduction, arrhythmias, and auricular fibrillation, it is conceivable that these conditions would be improved by increasing the force of the heart and slowing its rate by digitalis, or by relieving its load.

In order to accomplish the latter we have bled 5-10 cc. per kg. or changed the distribution of the blood in the active circulation by snake venom (*Lachesis lanceolatus*), histamine, peptone and nitrates.* These drugs were injected into the femoral vein of cats pre-

* We used 47 animals, of which 10 were controls. 34 gave positive and 3 negative results, because of dosage. In many experiments the procedure was repeated.

viously anesthetized with urethane. Respiration and blood pressure curves were taken and checked up by simultaneous electrocardiograms.

After a normal tracing and electrocardiogram were taken, cardiac arrhythmias were produced by chloral or aconitine, mostly the former because of its more uniform results. Fifty mg. of chloral hydrate per kg. was the initial dose used. Occasionally this was sufficient to cause an irregular heart, but as a rule it had to be repeated 2 or 3 times. As soon as the tracing showed an irregularity, an electrocardiogram was taken, and then the therapeutic drug was injected. The electrocardiograms before the injection revealed numerous right and left ventricular extra-systoles, auricular extra-systoles, nodal rhythm, or partial heart block. Some of these electrocardiograms showed a single irregularity, while others showed combinations of several irregularities. In untreated animals the arrhythmia lasted for 15 to 45 minutes. A few animals died within 15 minutes, the irregularity persisting till death.

The first drug used was *Lachesis lanceolatus*, 0.025 mg. per kg., and, as a rule, in about one minute the heart became regular, as shown by the tracing and the electrocardiogram.

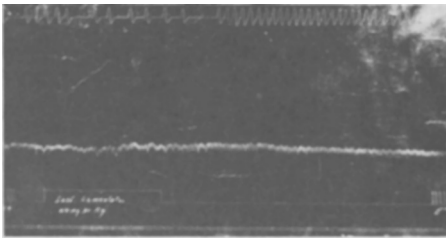


FIG. 1.

The irregular chloral heart became normal in about 1 minute after the injection of *Lachesis*. Note the effect on respiration.

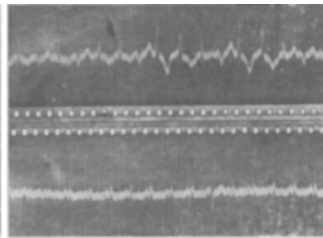


FIG. 2.

The upper electrocardiogram was taken just before *Lachesis* was injected. It shows a number of ventricular extrasystoles. The lower electrocardiogram which was taken at the point marked E10, at the extreme right of the previous tracing, shows a normal sinus rhythm.

Histamine 0.03 mg. per kg., peptone 100 mg. per kg., nitroglycerine 0.4 mg. per kg., withdrawal of about 10 cc. of blood per kg., or pressure on the Inferior Vena Cava gave similar results. The reinjection of the blood withdrawn, or the injection of saline in slightly larger quantities than the amount of blood withdrawn caused the immediate return of the cardiac irregularity.

The fact that bleeding and drugs causing a fall of blood pressure

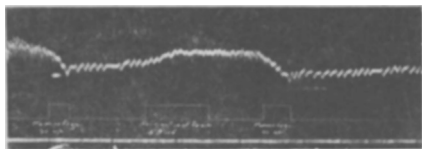


FIG. 3.

Note that the irregular chloral heart returns to normal after bleeding (20 cc.), that the irregularity returns when the blood is reinjected, and becomes regular again when 20 cc. of blood is once more withdrawn.

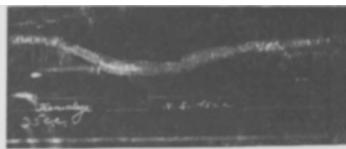


FIG. 4.

The irregular chloral heart becomes regular when 35 cc. of blood is withdrawn and becomes irregular again when 45 cc. of saline is injected.

remove the arrhythmias in a weakened heart, and that the reinjection of rather small amounts of normal saline precipitates the irregularity, indicate the importance of relieving the excessive load in cardiac disease.

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Addiction Edema and Withdrawal Edema in Morphinized Rats.

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Healthy adult male rats on a diet of whole wheat (plus 2% NaCl) were subjected to morphine addiction starting with daily doses of 10 mgm. morphine sulphate (5% solution) per 100 gm. rat, increased every 3 or 4 days up to 100 or more mgm. per kilo. The rats ate well throughout the work except in the early stages of morphine addiction. Weight was usually well maintained. The rats were killed in pairs at various stages, and samples of brain, muscle, skin and liver were dried to a constant weight, with the results shown in the table.

Water Content of Tissues. In the first series the rats were first killed on the 28th day of addiction when all of the tissues were found abnormally wet. The relation of the solids to normal was: brain -22%, muscle -9%, skin -22%, liver -13%. On withdrawal the only analyses in this series were made on the fourth day when the brain was found normal and the other 3 tissues about half recovered. In the second series the changes were followed every 3 or 4 days, and withdrawal begun on the twenty-fourth day.

Addiction edema was found at its maximum at the following