the use of their hind legs for quite a time after the injection. With 2 animals in which lithium chloride was used, the results were doubtful, one recovering equilibrium in 4 minutes after receiving 40 cc. LiCl m/6, the other only reacted to prodding after 6 minutes, in spite of receiving 20 cc. LiCl. Ammonium chloride, with and without sodium chloride, killed 3 animals with convulsions without any sign of their regaining consciousness.

From these experiments it is obvious that sodium potassium and rubidium ions antagonize the narcotic effects of Mg ions, in accordance with their position in the Hofmeister scale, and their effects upon surface tension and emulsions.

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Clinical Studies on Cardiovascular Response to Adrenalin Administered Subcutaneously.

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One cc. of adrenalin hydrochloride was injected subcutaneously on 19 subjects, 12 of whom were suffering from hypertension. The injections were repeated 1 to 4 times at intervals varying from 2 hours to 1 month.

Normal individuals gave a reaction to first injection characterized by a fairly rapid rise of arterial pressure which lasted 40 to 60 minutes. On a second injection the rise of pressure was much more sudden, but the contrast between the first and subsequent tests was much less marked than in the hypersensitives described below.

It was found that 8 of the hypersensitives on the first reaction presented a slight increase in the systolic blood pressure. On repetition of the injection at least 12 hours later a sudden and severe increase was noted, forming a marked contrast to the slight response on the first occasions. Four hypersensitives gave on the first tests a response resembling that given by the other 8 on second tests.

Two hypersensitives who were again examined in 2 weeks and 1 month respectively, after the first injection did not now show the sudden increase previously observed, and on repetition of the test in 24 hours it was not reproduced.

The diastolic blood pressure in all cases showed a tendency to decrease, except in cases of sudden and intense increase of the systolic pressure, when a slight diastolic increase would occur. Otherwise

the diastolic pressure was not affected by the phenomenon observed above.

The observations on the rate and rhythm of the heart agreed with those of previous observers.

This work was done under the direction of Dr. Henry Ulrich.

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Experimental Tularemia in Ring-Necked Pheasant.

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In his original description of the disease which he called tularemia, McCoy[1] considered the possible susceptibility of birds to this disease. Included in the list of species which he tested for susceptibility to the disease was the common pigeon. In all, he inoculated 4 pigeons with the spleen of guinea pigs dying from tularemia. He reported that the birds remained alive and apparently well.

In a previous paper[2] we reported that the ruffed grouse is very susceptible to tularemia. In a later report[3] it was stated that a varying susceptibility to this disease had been found in a number of other species of bird which had been tested. Further studies have been carried out on the degree of susceptibility of the ring-necked pheasant to experimental tularemia.

Pheasant No. 1 was inoculated in an open abrasion through the skin of the back, with heart's blood from a grouse dying of experimental tularemia. A control guinea pig inoculated with the same material died on the 3rd day with enlarged glands, and spleen and liver typical of tularemia. The pheasant remained apparently well, and was chloroformed on the 27th day. Its blood showed agglutination for *Bact. tularense* in a dilution of 1:10 and above. No scar was discernible on the back at the site of inoculation. Necropsy showed internal organs normal. Three guinea pigs were inoculated from pheasant No. 1 as follows:

No. 1. Spleen. Killed on 17th day. Normal. No. 2. Liver.

[1] McCoy, Geo. W., *Pub. Health Bull.* No. 43, April, 1911.

[2] Green, R. G., and Wade, E. M., PROC. SOC. EXP. BIOL. AND MED., 1928, XXV, 515.

[3] Green, R. G., Wade, E. M., and Kelly, W., PROC. SOC. EXP. BIOL. AND MED., 1928, XXV, 637.