TABLE II.
Extreme Erythrocyte Count in Several Strains (in corpuscles per cu.mm.).

Strain	High		Low	
	male	female	male	female
B. Alb.	11,893,000	10,660,000	8,580,000	7,455,000
C 58	10,110,000	11,657,000	9,013,000	6,693,000
Sto-Li	11,613,000	11,187,000	8,625,000	6,696,000
d. br.	11,507,000	10,487,000	8,608,000	7,600,000

extremely wide, the ranges of the different strains do not differ materially.

From these data, therefore, it must be concluded that these 4 strains do not have an inherited difference in the number of erythrocytes; and, since highly homozygous stock was used, the variations within each strain are not genetic but extrinsic in origin. Further, the average erythrocyte count of 9,700,000 per cu. mm. given in Scarborough, based on the work of 5 separate authors on an assumed total of 48 animals, does not differ widely from the count of 9,550,000 per cu. mm. based on 118 animals in this study.

9251

Experimental Fever Therapy in Myxomatosis and Fibroma of Rabbits.*

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We have recently attempted to test the effect of induced fever on the development of myxomatosis and fibroma in rabbits. There are a large number of fever machines[1] in use in clinics and in offices of practicing physicians, and the subject of fever therapy in various pathological conditions is growing rapidly in importance. In some of these, notably in the acute pelvic inflammation due to *Neisseria gonorrhœæ*, the treatment has proved its efficiency and worth. In other conditions fever therapy is employed experimentally, or empirically, as in the case of arthritis. Clinical results are good, bad, and indifferent, depending upon the individual patient and his dis-

* Appreciation is expressed to the General Electric X-Ray Corporation for its courtesy in supplying us its Inductotherm for experimental use.

1 Krusen, Frank H., *J. Am. Med. Assn.*, 1936, **107**, 1215.

ease. While this type of therapy has been directed for the most part toward bacterial inflammatory conditions, little has been done with the virus diseases. The authors, therefore, have attempted to set up crucial experiments with the viruses of myxomatosis and fibroma in order to determine if induced fever would affect these virus processes in any way.

In the first place, we selected the Inductotherm apparatus manufactured by the General Electric X-Ray Corporation[2, 3] as one suitable for working with small animals such as rabbits, and for convenience in the laboratory. The principle of this apparatus is that of electromagnetic induction, with vacuum tube oscillator which generates an alternating current of 12,000,000 cycles per second. Such a device produces heat in electrolytes in direct proportion to the electrical conductivity of such electrolytes and should produce heat in living tissue in proportion to the vascularity of the tissue.

In testing this heating apparatus on normal rabbits, we found that the animals withstood rather prolonged heating if gradually accustomed to it, but rapid heating for even 10 to 20 minutes frequently killed the animals. Temperatures as high as 107°F. to 110°F. could be reached in from 10 to 40 minutes, but the animals did not survive. On the other hand, temperatures could be raised gradually to 106°F. or 107°F. within 5 to 10 minutes, and fever would persist in the animal for a couple of hours or more without any ill effects. When the temperature fell, it could be gradually raised again and the animal survived.

After learning the limitations of the apparatus and something of the resistance of normal rabbits, we tested the effect of rather prolonged and repeated fever on animals infected with the viruses of myxomatosis and rabbit fibroma. At first these virus tumors were allowed to develop to clinical proportions before fever therapy was begun. Under these conditions, the fever therapy had no effect at all on the progress of the disease process. Gradually the time was shortened until we began fever therapy immediately following injection of the animals with the viruses. The experiment was divided into 2 groups. The first group was given a single 10-minute heating period daily, and the second group 2, 3, or, when the animal's condition permitted, 4 heating periods daily. Occasionally it was necessary to lessen the heating time in order to save the animal since the temperature continued to rise even after the current was turned off. In some instances the maximum temperature was not

[2] Council on Physical Therapy, *J. Am. Med. Assn.*, 1935, **104**, 1706.

[3] Council on Physical Therapy, *J. Am. Med. Assn.*, 1936, **106**, 1091.

reached until 15 to 18 minutes later. Between heatings the temperature was allowed to drop gradually to a point sufficiently low for further treatment. The return to normal temperature required from an hour to an hour and a half. In myxomatous animals, the diseased condition was so advanced after 6 days that treatment was discontinued and death occurred from 2 to 3 days later. In animals infected with fibroma, daily treatments over a period of 2 weeks did not retard the progress of the disease. Again fever therapy had no effect upon the ultimate development of these 2 virus diseases in the animals.

While our report is, therefore, of a negative nature, it is important perhaps to point out that, under the conditions of our experiments, and with the 2 viruses mentioned, fever therapy is apparently without value. In the cases of these 2 viruses, therefore, we have contrast with certain bacterial infections (such as *Neisseria gonorrhœæ*) where fever therapy has been found efficacious. It would seem that at least some viruses are more resistant to induced high temperatures than are some bacterial forms.

9252 P

Effect of Estrogenic Substances in *Lebistes reticulatus* (Guppy).

PHILIP BERKOWITZ. (Introduced by Harry A. Charipper.)

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The adult male *Lebistes reticulatus* possesses, as its secondary sex characters, a gonopod (intromittent organ which is the anal fin in the female, and in young fish of both sexes) and various color patterns. The adult female possesses no such gonopod or colorations, but is much larger than the male. The average length of the male (from tip of snout to base of caudal fin) is approximately 18 mm.; that for the adult female is about 30 mm. (Goodrich, *et al.*,[1] confirmed by present observations). These differentiating secondary sex characters are not present at birth, at which time both male and female are identical in appearance. At about 35 days after birth there is a divergence in size of the 2 sexes, from which time the females normally become larger than the males. The gonopod of the male makes

[1] Goodrich, H. B., Dee, J. E., Flynn, C. M., and Mercer, R. N., *Biol. Bull.*, 1934, **67**, 83.