TABLE I.
B. typhosus proteins (dissolved by phage) applied to mucosa of vagina. Agglutination titer 3 weeks after application.

No. Cases	Dilution	%
9	1:20	12.0
36	1:40	48.0
29	1:80	38.7
1	1:160	1.3

the average titer of agglutinins in the 75 positive cases. A group of 40 of the 98 cases were tested each week for 3 weeks. After 7 days 63% showed positive agglutination, 14 days, 72%, and after 21 days 80%. The agglutination titer remains constant for at least 6 weeks. Further work is in progress upon the antigenic absorption in pregnant women. The work upon the oral administration of antigens has not been completed.

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The Electrical Resistance of Live and Dead Tissue.

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It can be shown that the stationary temperature which results after sending an electric current through tissue for a considerable time depends mainly on 4 factors: (1) the current intensity, (2) the cross section of the tissue penetrated by the current, (3) the specific resistance of the tissue, (4) and the heat conductivity of the tissue, which depends primarily upon the blood circulation. The importance of this factor has been demonstrated conclusively by a recent investigation about the effect of electric currents upon the blood vessels.[1]

The specific resistance is of prime importance, because, in addition to determining the heating effect of a given current, it also influences the path of the current, as soon as this resistance varies over the volume of tissue in question. Therefore the experimental determination of the resistance of the various tissues of the human body as of the animal is of great importance.

Omitting the meagre literature[2, 3] about the subject I will describe

[1] Jaffé, Willis, Bachem, *Arch. Path.*, 1929, v, 244.

[2] Wildermuth, *Mittlgn. a. d. Grenzgeb. d. Med. u. Chirurg.*, 1911, xxii, 511.

[3] Dowse and Iredell, *Arch. Radiol. a. electrother*, 1920, 33.

shortly the experiments which I have conducted partly in collaboration with W. S. Brown:

(1) Eight different organs of a dog were exposed to 3 kinds of current: a. Direct current; b. an alternating current; c. a high frequency current.

(2) These experiments were made under 3 different conditions: (a) *in vivo*, the dog being anesthetized; (b) the organs being left in position, right after the dog had been killed; (c) the organs removed, kept on ice for one night and then brought back nearly to room temperature.

(3) The same organs were taken from fresh bodies and exposed to the same 3 kinds of currents.

By these experiments could be determined: (1) the individual resistance of each organ; (2) the effects which are due to the special character of the current; (3) the influence of the condition of the material (live, dead, fresh, old, etc.); special care was taken in case of the lungs (inflated, collapsed).

The figures obtained from these measurements indicate that the resistance depends very strongly upon the current used. It is smallest for high frequency, medium for low frequency and greatest for direct current. In the latter case the resistance is by no means constant; it increased rapidly in the beginning and slowly later on.

Another result obtained is the change from live to dead tissue. In most cases there is a tendency toward an increase of resistance from life to death; the resistance is still higher after the tissue is kept on ice for a day. An exception is the skin; the resistance decreases markedly from life to death.

A particularly pronounced resistance change was found for the lungs, while inflated and after collapsed. The first observation was made on the extended lungs, with the trachea ligated; then the lungs were allowed to collapse and a second reading taken while the animal was still alive, the third reading was made right after the animal died. The lungs were removed, kept on ice, and a fourth reading made a day later. The drop of resistance is most pronounced at the moment of collapse; from then on there is still a noticeable decrease.

The figures obtained for the human body correspond to the last ones for the dog. In order to get an estimate for the live human tissues one would have to decrease the resistance in the ratio as found in the dog experiment; for the skin, and particularly for the inflated lungs the figures would have to be increased correspondingly.

A few outstanding facts from these observations are the compara-

tively low resistance of skin for high frequency as compared to the immense resistance toward DC; and the fact also that no difference occurs in case of HF for dry and moistened skin. The resistance of bone depends very pronouncedly upon the specimens observed; it was comparatively small for the porous bone of the skull (calvarium); it was very high for the solid bone of the tibia.

Conclusions: (1) The study of electrical resistance should be made with live material because pronounced changes occur in dead tissue. (2) The tissues vary so much as to resistance that the course of the electric current is affected and a great variation of heat production should be expected. This is important for the placing of electrodes. (3) Skin resistance is much greater than the resistance of the average tissue for DC; it is a little greater for HF. Therefore direct current seems more useful for skin cautery while high frequency is less irritative to the skin and more useful for deep therapy.

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The Electrocardiogram in Experimental Obstructive Jaundice.*

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In a previous communication[1] it was noted that there is an age factor in the production of bradycardia in dogs following ligation and division of common bile duct. A slowing of the heart action was observed only in the puppy; in the adult animal a slight acceleration of the heart rate was the rule. The heart rate was determined by ausculation supplemented, in the puppy, by the electrocardiogram. The present investigation purposed to note whether the heart rate of the adult animal as determined by the latter method was in agreement with ausculatory findings, and also to elucidate electrocardiographic abnormalities.

This report is based upon a study of the curves obtained from 13 of 21 animals subjected to ligation and division of the common bile duct. Eight animals revealed extensive biliary or other infection at autopsy; the data that these furnished were derived from the control

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[1] Buchbinder, William C., *Arch. Int. Med.*, 1928, xlii, 743.