(1) The dynamic surface tension of solutions of normal tissue is, in general, lower than that of solutions of pathologic tissue (carcinoma and sarcoma) prepared at the same time.

(2) The dynamic surface tension of solutions of both normal and neoplastic tissue kept in closed vessels, in general, increases with time.

(3) The rate of increase is *less* for solutions of normal tissue and tissue which has been radiated than for solutions of untreated neoplastic tissue.

(4) The tension reaches a nearly constant value in one to three weeks (depending upon the nature of the solution) which is slightly (one or two dynes) higher than that of distilled water at the same temperature.

(5) The temperature coefficient of the tension is greater than that of distilled water, being larger for solutions of normal than for solutions of neoplastic tissue.

(6) Upon cooling the solutions to the original temperature, the tension is always lower than at a corresponding temperature on the heating curve, an effect which is more pronounced for solutions of normal tissue.

The above results are consistent with the theory that the value of the dynamic surface tension of a solution of tissues is depressed below that of the solvent (distilled water) by the action of the colloidal particles from the tissue and that these particles undergo transformation with time in such a manner that salts are formed which ultimately cause the tension to be elevated slightly above that of distilled water. Due to the presence of excess salts in the solutions of neoplastic tissue, the tensions of such solutions are higher than those of normal tissue, and their rate of increase is more rapid, since the salts tend to coagulate its protein content of the colloidal material.

DONALD C. A. BUTTS
THOMAS E. HUFF
FREDERICK PALMER, JR.
HAHNEMANN MEDICAL COLLEGE
AND HOSPITAL,
PHILADELPHIA, PA.

AN ATTEMPT TO CORRELATE THE JOULE MAGNETOSTRICTIVE EFFECT AND HYSTERESIS LOSS IN A SERIES OF NICKEL STRIPS

IN a very interesting study of the parallelism of the Joule magnetostrictive effect and the hysteresis loss in nickel as different degrees of tension were applied to the rods, Wwedensky and Simanow[1] found a very striking correlation between the two. This parallelism between magnetostriction and hysteresis loss seems to be borne out by the work of McKeehan and Cioffi,[2] who found that at approximately 81 per cent. of nickel in permalloy no magnetic change in length occurred and also the hysteresis loss was negligible.

In the first paper mentioned, this parallelism was obtained by varying the tension and in the second paper by varying the amount of nickel present.

The author has been studying[3] the magnetic properties of a group of eleven strips of nickel, all cold rolled from the same heat of nickel. These strips were cold rolled to varying thicknesses and thus a series of nickel strips with different degrees of hardness were obtained. If the change in length of these strips for any given field strength and the hysteresis loss are plotted against the hardness values of the same strips, the curves thus obtained ought to show a similarity if the parallelism is a constant for all factors imposed on nickel.

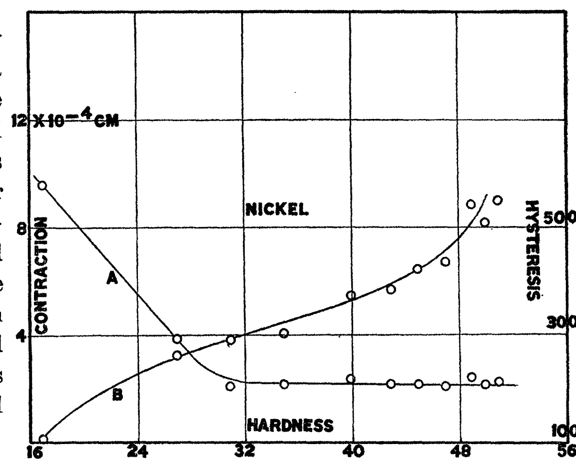

FIG. 1

Curves showing this relation are given in Fig. 1. The values for the changes in length of the various strips were those obtained when a field strength of 57.7 gauss was applied to each one of the specimens of nickel. The same relation would hold for any other field strength. The hysteresis loss per cubic centimeter per cycle is for B_{max} carried to a point of saturation. Curve A presents the relation between the hardness and the contraction of the various strips, while curve B is the corresponding curve for the hysteresis losses.

The results seem to indicate that the hardness factor does not produce a parallelism between hysteresis and magnetostriction.

S. R. WILLIAMS
FAYERWEATHER LABORATORY OF PHYSICS,
AMHERST COLLEGE

1 Wwedensky and Simanow, *Ztschr. f. Physik*, 38, p. 202, 1926.

2 McKeehan and Cioffi, *Phys. Rev.*, 28, p. 146, 1926.

3 Williams, Trans. A. S. S. T., 1926.