sulfonamide inhibitor had no discernible effect on the growth of the test organisms.

Our findings on the reversal of sulfonamide inhibition of streptococcal growth by p-aminobenzoic acid are in good agreement with those of Woods. We have in addition demonstrated the *in vitro* neutralization of the bacteriostatic effect of sulfapyridine and sulfathiazole by p-aminobenzoic acid.

The data indicate that the same neutralization mechanism is apparently effective regardless of the organism or inhibitor used in these experiments. There were quantitative differences in the ability of p-aminobenzoic acid to neutralize the 3 inhibitors tested but probably not much greater than could be accounted for by the difference in the molar concentrations of the inhibitors. This suggests that the various inhibitors (sulfonamides) effect micro-organisms in a similar way even though their efficiency varies from one organism to another.

Summary. The bacteriostatic effect, as measured *in vitro,* of sulfanilamide, sulfapyridine and sulfathiazole on streptococci, pneumococci, and staphylococci respectively, has been found to be completely neutralized by p-aminobenzoic acid. This observation suggests that this neutralization mechanism is similar for any of the organisms and inhibitors investigated. The specificity of the sulfonamide neutralization by p-aminobenzoic acid is demonstrated by the inactivity of its isomers and 2 related compounds.

11889 P

Correlation Between Density and Ash, Organic, and Water Contents of Calcified Tissues.*

MARTIN DEAKINS.† (Introduced by H. C. Hodge.)

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There are two reliable methods for determining the density of minute particles of calcified tissues, namely (a) comparison of the refractive index with that of a liquid of known density,[1] and (b)

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1 Manly, R. S., and Hodge, H. C., *J. Dent. Res.*, 1937, **16**, 311.

flotation of the particle in a liquid of known density.[1, 2, 3] Knowing the density of the particle, and the relationship of density to the ash content, one then could roughly estimate the ash in particles of bone or tooth substance too small to weigh accurately. Figure 1 shows this correlation between ash and density. Table I contains data for constructing this chart and similar ones for estimation of the organic and water contents.

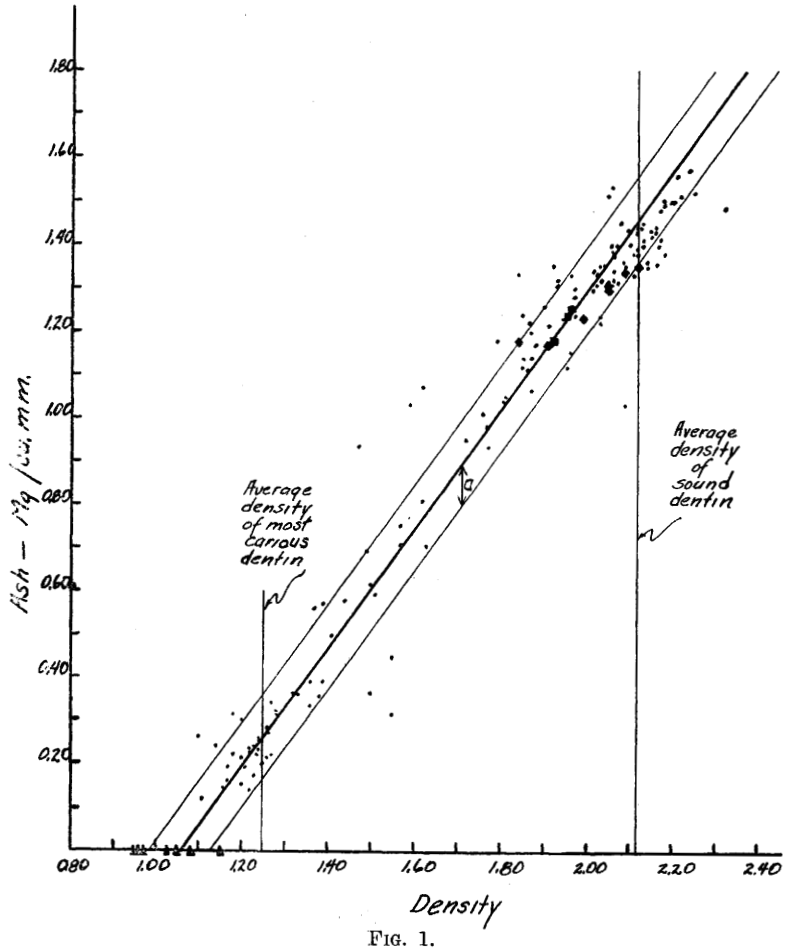

FIG. 1.

● = Dentin, normal and in varying degrees of decalcification.
▲ = Dentin, completely, artificially decalcified.
■ = Cortical beef bone.
a = One standard error of estimate.

2 Thewlis, J., *Brit. J. Radiol.*, 1932, **5**, 353.

3 Brekhus, P. J., and Armstrong, W. D., *J. Dent. Res.*, 1934, **14**, 174.

TABLE I.
Data for Constructing Charts Showing Relationship Between Density and the Ash, Organic, and Water Contents of Calcified Tissues.

Function	Organic	Ash	Water
$\Sigma(y)$	67.636	142.315	55.406
$\Sigma(xy)$	121.424	282.530	85.093
a	+0.168	—1.461	+1.103
b	+0.157	+1.378	—0.427

x = abscissa (density).
y = ordinate (mg/mm³).

$$a = y \text{ intercept (at } x = 0) = \frac{\Sigma(x) \cdot \Sigma(xy) - \Sigma(x^2) \cdot \Sigma(y)}{|\Sigma(x)|^2 - n\Sigma(x^2)}$$

$$b = \text{slope of line (Tan } \theta) = \frac{\Sigma(x) \cdot \Sigma(y) - n\Sigma(xy)}{|\Sigma(x)|^2 - n\Sigma(x^2)}$$

Σ = Sum.
$\Sigma(x) = 265.463$.
$\Sigma(x^2) = 486.419$.
$n = 155$.

Methods. The density of 145 samples of dentin, normal and in varying degrees of decalcification, and 10 samples of beef bone was determined while wet.[4] Ash, organic and water determinations were then made on each sample.[5] The data were treated by the method of least squares[6] and the necessary values (a,b) for construction of the charts recorded in Table I. It must be remembered that "a" is the y intercept at x 0.

11890 P

Effect of Electrically Induced Convulsions on Vago-Insulin and Sympathetico-Adrenal Systems.*

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The influence of electrically induced convulsions on the vago-insulin and sympathetico-adrenal systems was studied by determining the blood sugar of normal, adrenalectomized,† adrenalectomized-

[4] Deakins, M. L., and Manly, R. S., *J. Dent. Res.*, 1939, **18**, 557.

[5] Manly, R. S., and Deakins, M. L., *J. Dent. Res.*, 1940, **19**, 165.

[6] **Gortner, R. A.**, and Gortner, W. A., *J. Gen. Physiol.*, 1934, **17**, 332.

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† This term is used for the sake of brevity. As a matter of fact the adrenal cortex was left intact.