cervically along the full length of the amelo-dentinal junction, and peripherally to the enamel surface on the lingual side of the incisal region (Fig. 3). A microradiograph of the same ground section showed high absorption along the amelo-dentinal junction broadening out in the lingual incisal area (Fig. 4).

The polarized light and microradiographic observations thus showed that the later stages of enamel mineralization started at the incisal amelo-dentinal junction and expanded peripherally and cervically in a plane neither parallel nor perpendicular to the striæ of Retzius.

The decalcified sections, however, showed the line of junction between the 'soluble' and the 'insoluble' enamel organic matrix to be at right angles to the striæ of Retzius (Fig. 1).

This result, which is clearly in conflict with the X-ray and polarized light findings, indicates on the Diamond and Weinmann theory a secondary mineralization direction at right angles to the striæ of Retzius.

As the X-ray absorption under the experimental conditions used was almost entirely due to the mineral matter present, it may be assumed that the microradiograph accurately recorded the distribution of mineral matter and hence the direction of mineralization. This distribution was further confirmed by the variations in the sign and strength of birefringence shown in polarized light.

The decalcified sections, however, gave direct information concerning only the enamel organic matrix, not the mineral matter.

These results therefore suggest that the sequence of changes in 'solubility' of the enamel organic matrix does not occur in exactly the same direction as the later stages of mineralization, and is of limited value in assessing the extent and direction of the latter.

A full account of this work will be published later.

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Use of Logarithms to the Base 2 in recording Serological Reactions

The expression of dilution titres for serological reactions frequently requires the use of large numbers. In cases where the antibody content of an immune serum is high, the conventional means of recording the titre may be misleading; that is, the difference between a titre of 1 : 10,240 and 1 : 20,480 seemingly is greater than that between 1 : 40 and 1 : 80 but both represent only a single dilution step in the usual procedure and have the same degree of precision. Since serological procedures usually involve serial two-fold dilutions, the resulting titres are exponential functions of 2. Consequently, we suggest the simple expedient of using logarithms to the base 2 ($\log_2$) to express serological titration data.

A convenient table of logarithms to the base 2 has recently been published[1], and conversion from $\log_{10}$ values is readily made from the relationship,

$$\log_2 n = 3{\cdot}322 \log_{10} n$$

In a serological dilution series of 1 : 2, 1 : 4, 1 : 8, 1 : 16 . . . 1 : 2^n, the resulting $\log_2$ values follow directly as 1, 2, 3, 4 . . . n. In a series in which the initial dilution is other than 1 : 2, it is a simple matter to add to the subsequent 2^n dilution series the $\log_2$ of that initial dilution; for example, in a dilution series of 1 : 10, 1 : 20, 1 : 40, 1 : 80 . . . 1 : 10 × 2^n, the resulting $\log_2$ values are 3·32, 4·32, 5·32 . . . 3·32 + n.

Although titrations of antiserum still are commonly made by serial two-fold dilutions, greater precision may be obtained by using smaller dilution steps. This superior principle has been applied by Horsfall and Tamm[2] using a fractional dilution procedure in steps of 0·1 $\log_{10}$ unit, in which case the titres may be expressed as common logarithms.

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Selectively Balanced Polymorphism at a Sex-linked Locus

A stable selectively balanced polymorphism dependent on a pair of autosomal genes (or chromosomal arrangements) is known to exist when the heterozygote is at a selective advantage with respect to both homozygotes. It has sometimes been assumed[1] that the same conditions apply also to a selectively balanced polymorphism at a locus in the X-chromosome and that the existence of heterosis may consequently be inferred when heterozygotes are found to be more frequent than homozygotes in the homogametic sex. However, these assumptions seem to be unwarranted.

We must take account of the relative selective values of the different genotypes in both sexes. If there are two allelomorphs A and a at a given locus in the X-chromosome, there are two genotypes in the heterogametic sex (which we shall assume to be male) one containing the gene A and the other a. Let the selective values of these two genotypes be in the ratio t_A : 1, where $t_A = 1 + h$, say, will be taken to be greater than one. In the homogametic sex there are three genotypes, AA, Aa and aa, and we shall suppose that their selective values are in the ratio S_{AA} : 1 : S_{aa}. It can be shown that the gene ratio can have a stable equilibrium value if and only if $S_{aa} < 1 + \frac{1}{2}h$ and $S_{AA} < 1 - \frac{1}{2} \cdot \frac{h}{1+h}$. The equilibrium value of the gene ratio in the gametic output of females is then :