

A further effect of the *Y* gene is that it acts as a lethal when homozygous. Consequently a series of albino mice carrying *Y* were tested to see if a combination of genes which suppresses its effect on color would also suppress its lethal action. Among the forty-four individuals tested none was found in which *YY* had failed to act as a lethal, which indicates that *cc* had been without influence in this respect. The chances against the observations being purely fortuitous are about thirty thousand to one.

The three known effects of the *Y* gene occur at about six, twenty-five, and ninety days after fertilization of the egg, and the evidence cited indicates that a complex which modifies one of these effects may have no necessary influence on either of the others. This points to the conclusion that the genes do not mutually interact in the beginning to produce a certain individual type of protoplasm, but that, on the contrary, they behave as separate dynamic factors in development.

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#### Correlation of Protozoan Infections of Human Mouth with Extent of Certain Lesions in Pyorrhoea Alveolaris.

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Gingival exudate or interproximal debris has been obtained from 350 individuals, displaying a wide variety of periodontal conditions, and has been cultivated for 48 hours at 37° C. in Boeck's medium. This technique reveals many infections of *Endamoeba gingivalis* and *Trichomonas buccalis* in the gums that are negative to other means of diagnosis.

In a quantitative survey of 100 dental students in the University of California we have found that infection with *Endamoeba gingivalis* is closely correlated with the extent of gingival pocket formation (Table I).

TABLE I.  
Relation of amoebic infection to depth of gingival pockets.

Maximum depth of pockets	0-0.5 mm.	0.5-1.0 mm.	1.0-2.0 mm.	Over 2.0 mm.
No. infected with <i>E. gingivalis</i>	1	6	4	9
Percentage of infection	2.27	15.0	57.14	100.
No. free from protozoan infection	43	34	3	0
Percentage not infected	97.73	85.0	42.86	0.

We are indebted to Dr. F. V. Simonton for his generous aid in examining this group.

One hundred and eighty-six prisoners at San Quentin have been cultured and superficially examined. *Trichomonas buccalis* is recovered in culture quite commonly from advanced cases of pyorrhoea. This organism is seldom found in smear preparations. It is never found in the normal mouth but may be found in cases with a recent history of active pyorrhoea. (Table II.)

TABLE II.  
Incidence of protozoan infections of the mouth in San Quentin Prison.

Superficial diagnosis	Advanced pyorrhoea	Uncertain and anomalous cases	Normal mouths and incipient pyorrhoea
No. infected with both <i>T. buccalis</i> and <i>E. gingivalis</i>	43	9	0
No. infected with <i>T. buccalis</i> only	0	5	0
No. infected with <i>E. gingivalis</i> only	6	42	18
No. negative for protozoa	0	10	53

*Trichomonas buccalis* is definitely antagonistic to *E. gingivalis* *in vitro*, so cases harboring both parasites may yield a falsely negative report for the latter when the culture method alone is employed. Putrefactive proteolytic bacteria in excess are antagonistic to the development of buccal protozoa in culture. Protozoa are sometimes closely restricted to limited areas in the gums.

Sixty-four cases have been cultured without adequate dental examination. Twenty-four (37.5 per cent) of these were infected with *E. gingivalis*. Three (4.68 per cent) were infected with *T. buccalis*. The remainder were free from protozoan infections in the mouth.

From these data we conclude that protozoan parasites do not occur in the normal mouth. *Endamoeba gingivalis* occurs in most, if not all, cases of incipient to advanced pyorrhea. *Trichomonas buccalis* appears frequently in cases of advanced pyorrhea, or occasionally in cases with a history of effectively treated pyorrhea.

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A Preliminary Study of *Rhodobacillus Palustris*, Molisch.

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The form studied was obtained by Mr. W. Meehan from the intestines of a Cerambycid beetle. It proved to be a true purple bacterium with the characteristics of Molisch's *Rhodobacillus palustris*.<sup>1</sup>

The Molisch group of the purple bacteria was omitted in a previous study by one of us. Here the spectra of various purple bacteria were considered, including the sulphur bacteria, brine bacteria and the lichen symbiont *Chiodecton*.<sup>2</sup> It seemed, therefore, desirable to determine the spectrum characteristics of the *Rhodobacillus*.

Microspectra were taken with the microspectrograph<sup>3</sup> on Wratten panchromatic film of a very thin layer of pure culture bacteria (one bacillus thick). A control photograph of the lamp was taken on the same film.

The negatives were measured out by means of densitometer attachment to the radiomicrometer.<sup>4</sup> First the raw data were used to calculate the position of the absorption bands. It was found that *Rhodobacillus* is a true purple, inasmuch as the position of the bands agrees closely with the data already obtained (Becking 1. c.). The extrapletions were carried out by means of a triple set of assumed wave lengths and the prismatic spectrum converted by means of v. Hartmann's formula.