Pacific Coast Branch

*University of California*

*October 24, 1925*

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# The presence of bacterial microorganisms within human gingival tissue in gingivitis.

T. D. BECKWITH.

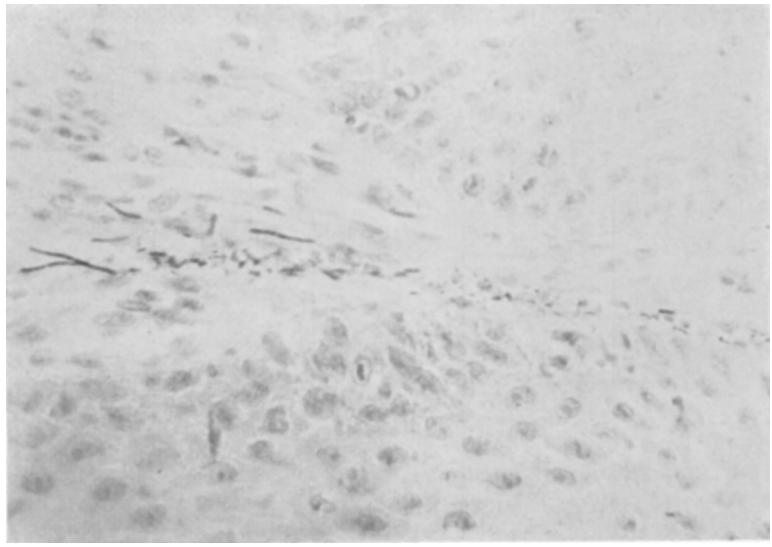
[*From the Department of Bacteriology, University of California, and the California Stomatological Research Group.*]

Human gingival tissue has been obtained at biopsy from subjects showing gingivitis. This has been fixed and sectioned in paraffin. Various methods suitable for pathological histological examination and for the demonstration of microorganisms have been followed.

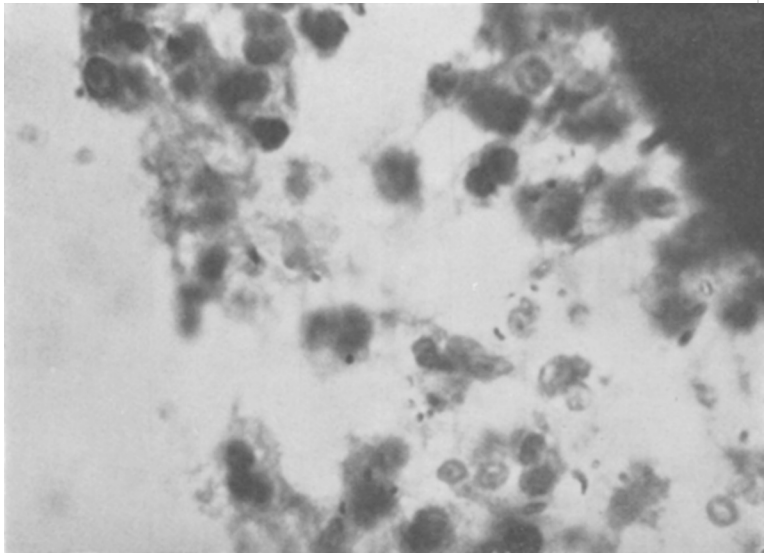
Such tissues show a subacute inflammatory process characterized by the presence of large numbers of lymphocytes and plasma cells. Likewise, there are present within this tissue and closely adjacent to lymph channels, a variety of bacterial forms, especially streptococci and what appear to be diptheroids. The accompanying photomicrographs indicate some of these.

Although it has been denied by certain authors that there is any phagocytosis of microorganisms by cellular elements within this region, it will be noted that there is definite evidence of such reaction in one of the photographs submitted. Careful microscopic examination does not convince us that the engorging cell is the polymorphonuclear leucocyte. Possibly the macrophage may be implicated.

The forms thus demonstrated within gingival tissue also are living and in part at least may be cultivated as follows: The gum surface is first sterilized by careful application of a solution consisting of 2 per cent crystal violet plus 2 per cent brilliant green



Coccus and rod forms within human gum tissue in gingivitis.



Phagocytosis of coccus forms within human gum tissue in gingivitis.

in 50 per cent alcohol. Physiological saline is then injected and then aspirated by means of a hypodermic syringe with a 27 guage needle.

The fluid thus obtained is then cultured in deep beef infusion glucose blood broth and in brain medium. It is then streaked out on blood agar plates.

To date, 149 aspirations have been made from gingival tissue of twenty-four men at San Quentin Penitentiary. These 149 tests have yielded positive cultures in ninety-seven instances or 65 per cent. The distribution of these cultures according to morphology and cultural reactions together with Holman's classification for the streptococci is as follows: Staph. albus, 53; Staph. sureus, 1; Strep.pyogenes, 13; Strep. equimus, 3; Strep. angiosus, 15; Strep. salivarius, 28; Strep. mitis, 26; Strep. infrequens, 3; Strep. ignavus, 6; Strep. non-haemolyticus II, 1; Strep. equi, 1; Micrococcus gasogenes, 1.

Dr. G. W. Simonton, Miss Adrienne Williams, and Miss E. J. Rose have been associated with me in this work and in more complete publication will be given coauthorship in the subdivisions.

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### The effect of dry grinding upon gels.

CARL L. ALSBERG and ELIZABETH P. GRIFFING.

[*From the Food Research Institute, Stanford University, California.*]

The writers have shown that dry grinding in a pebble mill renders starch largely soluble in cold water[1]. They are now able to report that similar treatment renders gelatin temporarily soluble in cold water. Solutions thus prepared set to a gel after a time. The water insoluble colloids, gliadin and glutenin, which together form wheat gluten, are not rendered materially soluble by sixteen hours grinding of the flour from which they are prepared, though their physical properties are changed. If gluten be washed from

[1] PROC. EXP. BIOL. AND MED., 1924, xxii, 60.