BACTERIA OF LONG SKIRTS.

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BACTERIA OF LONG SKIRTS.

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Advice to women who wear long skirts on the street.

Bacteria are very small plants, which can be seen separately only by the use of a high power microscope. The Science of Bacteriology teaches that these micro-organisms are present abundantly practically every where, in the air,water, food, soil and dust, in decaying organic matter, both vegetable and animal, and even within the tissues and fluids of the living body of diseased persons and animals. In fact it is from the presence of these minute germs, usually, that the disease is caused. To be sure not all bacteria are disease producing or "pathogenic," as those which produce disease are called; but it is the disease producing varieties in which the human body is especially interested. We could hardly get along withiut bacteria in the world, but we could do without very nicely, those which are producers of sickness and disease. How are we to rid the world of these harmful disease-producing bacteria? We may not be able to destroy them, but we can at least contribute our share to the elimination of disease, by being careful and cleanly in our habits.

The conditions favorable for the growth and multiplication of bacteria are warmth, darkness and moisture. In the body all these conditions are found; this is the reason they multiply so rapidly unless the individual's health is so perfect that the body is able to withstand and throw off these germs.

But to come back to my subject of skirts and the harm they produce. As it is, the habits of the Americans are generally very careless. As proof of this we need only to go along some mainly traveled street or pass some corner where crowds of men and boys congregate to note the filth of sputum from careless expectorations on the sidewalk. Go into a car and even here the men are careless enough to expectorate between the seats or even on the carpet in the aisles. What could be more disgusting to a lady or gentleman, if they studied and understood the theories of diseases produced by bacteria, than to go into a seat where some careless man had been sitting and left the floor partially covered with sputum; or pass some crowded street corner and find it the same way. This carelessness is not only uncalled for as a dirty filthy habit but is also a dangerous habit to the health of mankind.

This sputum is stepped in and the diseases of all mankind are carried around on the feet and long skirts of women, sanitary in many other respects, into houses and on carpets. Here the germs find a permanent resting place, where they can dry and be blown about and breathed. Not only are the men to be censured for expectorating on the sidewalks, but also the women for wearing long skirts which are not properly held up, but allowed to sweep the side-walk from one end to the other, gathering up the filth and disease of the town. Behind them is a little cloud of dust which may either fall on some other part of the skirt or be blown up into the faces of people behind. We cannot tell how many of that crowd on the corner may have had tuberculosis or some other infectious disease. The dust around may be filled with these germs and the sweeping of the skirt stirs it up and anyone standing near might become infected either by breathing this dust, or they might have an open wound or scratch on their hand, and thus furnish an excellent accessible means of inoculation.

The woman when she gets home usually shakes or brushes the skirt, thus subjecting herself to infection. But she cannot shake them all off, and perchance she may get her skirt damp as is often the case. It may be hung by a warm stove a while, then in a dark closet or wardrobe, as is usually the case. Here we have three of the best conditions, moisture, warmth and darkness, favoring the growth and multiplication of these germs. Right in your own house you may be harboring and favoring the growth of consumptive germs.

If you will take notice nine-tenths of the men's trowsers touch the ground in the back as they walk. Of course there is not the great amount of goods sweeping the ground that there is in women's skirts and they are not dragged through the dirt as skirts are, but they too furnish a good harbor for bacteria, and no doubt furnish their share of disease.

After making some original investigations, and growing germs found on comparatively clean skirts, it can be truthfully said that some of them were germs which no one would want in the house, to breathe and run the risk of becoming inoculated with; so I can only conjecture what germs some of the skirts worn in the large cities may contain, as the germs worked with were obtained from skirts worn only in Manhattan. The method of investigation used was quite original. Samples of skirts were obtained from the frayed bottom of some skirt which had worn out from dragging on the ground. After clipping off a little piece of the skirt, say an inch square, it was placed in a sterile petri dish and taken to college. There the sample was placed in a tube of sterile bouillon. This was placed in the incubator for a few days, until all the organisms began to grow. The isolations were then made through two tubes of sterile water and a tube of melted agar into plate agar. When the organisms grew on this plate agar inoculations were made from each colony into a new tube of sterile bouillon. After these had grown inoculations were made from each tube into full sets of media, some including the sugar preparations. I then made stain preparations, and by Gram's method, and hanging drop preparations. After having the cultured characteristics and morphology eacg organism could be traced out in Chester and its pathogenesis and habitat found there.

The following is the cultural characteristics of the following drawings, which are some that were isolated and traced out.

PLATE I. Fig. 1

Bact. vermiculosum (Zimmerman).

Morphology. Bacilli 0.8:1.510 micron with capsule. Grow at 37° C.

Gelatin Colonies. Deep; round, gray, granular surface

Surface: spreading, lobed, marmorated.

Gelatin slowly liquified.

Agar slant. Growth moist, opalescent.

Potato. Growth yellowish gray, glistening.

Bouillon. Winklie pellicle, thread hanging from surface.

Gelatin. Surface and stab growth, slightly liquified.

Litmus milk. White, slightly grenish on top.

Habitat. Water.

Figs. 1, 2, and 3 came from a skirt which had been worn while clerking for a rummage sale.

PLATE I. Fig. 2.

M. descidens. (Flugge).

Morphology. Small cocci and diplococci, or in threes and short chains.

Gelatin colonies. Deep; 2 days, small white yellowish; microscopically oval, yellowish brown, granular.

Surface: 4 days, round lobular, 5 - 10 M M. light yellowish, brownish smooth slimy expansions, not at all elevated; finally colonies sink in a flat circular depression.

Agar slant. Cream colored surface growth, also a growth in depth.

Bouillon. White pellicle, sediment in bottom.

Litmus milk. Acid, having pink color.

Gelatin stab. In depth growth white, filiform; on surface growth yellowish brown, slimy becoming sunken.

Potato. Growth yellowish brown, thick, slimy.

Habitat. Air and water.

PLATE II. Fig. 3.

Bact. pneumonicum (Kruse)

Morphology. Short rods -- coccoid forms.

Agar slant. Slight surface growth, translucent.

Bouillon. A very slight white pellicle.

Gelatin. Rapid liquefaction, white surface growth, with slight sediment.

Litmus milk, white, coagulated. Acid.

Milk partly coagulated.

Potato. Growth whitish to brown.

Pathogenesis. Intraperitoneal inoculations of guinea pigs and rabbits cause death; dogs but little affected.

Habitat. Isolated from exudate in lung plague in cattle.

PLATE II. Fig. 4.

Bact. salmoneum. (Dyar).

Morphology. Bacilli 0.5 - 0.6 - 1.0u; occur singly and in chains. Pigment salmon pink.

Agar. Pink growth along line of wire.

Bouillon. No membrane, pink sediment.

Gelatin. Pink growth along stab, arborescent.

Potato. Good pink growth on surface.

Habitat. Air.

PLATE. III. Fig. 5.

Ps. Ambigua. (Wright).

Morphology. Bacilli small, ends rounded, occurs singly and in pairs and filaments. A terminal flag ellum.

Gelatin colonies. Deep: round, entire, granular, brownish

Surface: in 3 - 4 days gray, translucent, slightly elevated, rather irregular, 2 m m, sharp microscopically, granular, yellowish brown in the center, with thin translucent margins, finely radiate. Agar slant. Growth gray, limited, sharply defined.

Bouillon. Turbid; sediment; no pellicle.

Potato. Growth thick, viscid, spreading; gray- creamy.

Litmus milk. Acid, coagulated only after one month and may not be then. Grow at 36°C. Indol positive. Ha

Habitat. Water.

PLATE III. Fig. 6.

B. cloacae. (Jordan).

Morphology. Bacilli 0.7- 1.0:0.8 - 1.9 µ. Grow at 37°C. quite long rods, rounded ends, occur singly, usually in short chains and clumps.

Gelatin colonies. Deep colonies are round and yellowish; the surface colonies are thin, bluish, entire - erose, with a dark center and a clear outer zone, liquefaction crateriform.

Gelatin stab. Liquefaction napiform.

Bouillon. Turbid with a slight membrane.

Agar slant. Growth porcelain white.

Potato. Growth yellowish.

Milk. Acid.

Habitat. Water, sewage. Moore (U. S. Dept. of Ag. Bureau of Animal Industry, Bull. 10, 1896, 45) holds B. zeae Burrill (bacterial disease of corn) to be identical with B. cloacae.

PLATE IV. Fig. 7.

Bact. crassum. (Kreibohm).

Morphology. Bacilli short thick. In body with a capsule.

Gelatin colonies. Aerogenes - like, grayish white, large, granular.

Gelatin stab. A nail shaped growth, with a round head.

Potato. Growth moist, grayish white.

Pathogenesis. Subcutaneous inoculations of mice cause death in two days of septicaemia. Rabbits succomb to intravenous injections.

Habitat. Isolated from sputum.

Figs. 4, 5, 6, and 7, are all from the same skirt.

PLATE IV. Fig. 8.

M. Aquatilis. (Vaughan).

Morphology. Cocci oval.

Gelatin Colonies. Spreading irregularly, microscopically deep brown.

Gelatin stab. Only a slight growth in depth; on surface growth so spreading.

Agar slant. Growth thin white.

Bouillon clear, with ropy deposit in bottom.

Potato. Growth invisible.

Pathogenesis. Negative.

Habitat. Water.

PLATE V. Fig. 9.

B. delictatulus. (Jordan).

Morphology. Bacilli 1.0; 2.0 w. Grow at 37°C.

Gelatin colonies. Whitish, homogenous entire, with radiating edges, in two days a dark nucleus, with a clear zone of liquefied gelatin.

Gelatin stab. In two days a funnel of liquefaction, with a surface membrane and a brownish sediment.

Agar slant. Growth glistening, porcelain white.

Potato. Growth thin, gray.

Milk. Acid.

Bouillon. Turbid with a sediment and a scum.

Habitat. Water.

PLATE V. Fig. 10.

B. vulgaris. (Hauser.)

Morphology. Bacilli 0.6 : 1.2 w threads to chains, in floccose arrangement. Flagella numerous, peritrichic.

Gelatin colonies. In 6 - 8 hours, small depressions, which contain liquefied gelatin and grayish white masses of bacteria; from the edge, Ameboid processes.

Gelatin stab. Liquefaction saccate.

Agar slant. Growth slimy, moist, glistening, translucent.

Milk. Coagulated acid, becoming yellowish.

Potato. Growth yellowish white, raised. Albuminous fluids, give a putrefactive odor and an alkaline reaction.

Gas. In glucose saccarose bouillon; no gas in lactose bouillon

$$\frac{H}{CO^2} = \frac{2}{1}$$

H_2S positive. Indol positive. Urea converted into ammonia.

Pathogenesis. Not properly pathogenic to the smaller animals. Injections of large quantities of filtered cultures, cause toxaemia.

Habitat. Commonly found in putrefying fluids, water, etc.

PLATE VI. Fig. 11.

B. exanthematicus. (Kruse.)

Morphology. Bacilli 0.3 - 0.5 μ thick, often very short, and in 8 shaped forms.

Gelatin colonies. The deep colonies are round and yellowish brown; surface whitish, translucent, spreading, irregular.

Agar slant. Growth glistening gray, translucent.

Potato. Growth gray-brown, translucent.

Bouillon. Turbid, with a sediment and a membrane.

Pathogenesis. Pathogenic to mice, guinea pigs, rabbits, and pigeons, death in 2 - 4 days, local imflammation, enlargement of the spleen, a brownish color to the organs; bacilli present.

Habitat. Putrefying liquids.

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PLATE VII. Fig. 12.

B. Zenkeri or Proteus zenkeri. (Hauser.)

Morphology. Bacilli 0.6 : 1.2 - 4. 0 w - threads to chains, in floccose arrangement. Flagella numerous, peritrichic.

Gelatin colonies. Colonies generally grow just beneath the surface, as branching zoogloea, radiate and filamentous forms.

Gelatin stab. But little growth in depth, but in the upper portion of the line of puncture a radiately, filamentous growth, as in plate cultures.

But slight growth at 37°. Indol not produced, or doubtful.

Habitat. Isolated from the intestines of fouls.

Figs. 13, 14, 15, and 16, obtained from a skirt worn around college, and especially in the Bacteriology Laboratory.

PLATE VII. Fig. 13.

Bact. crinatum. (Wright.)

Morphology. Bacilli large, chains to segmented threads.

Gelatin colonies. Deep, dark, opaque, round to oval, entire, granular margins. Surface: in 2 days, 1 - 2 min., round, glistening, translucent, entire, in 3 days dense, felt-like margins, crumpled slightly sunken, margins also fimbriate to frayed.

Gelatin stab. Liquefaction broadly funnel formed to stratiform.

Agra slant. Growth gray white, frosted.

Bouillon. Turbid with white floculi.

Potato. Growth thick, creamy white, vescid, spreading, becoming yellowish, caseous.

Litmus Milk. Decolorized, amphoteric, becoming viscid, yellowish, caseous.

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Glucose bouillon. No gas. Indol slight or doubtful. Grow at 37°C.
Habitat. Water.

PLATE VII. Fig. 14.

Bact. palidor. (Dyar.)

Morphology. Bacilli 0.5 - 0.7 : 1.0 - 1.3 μ; occurs singly and in chains.
On solid media. Growth pale, whitish orange, almost pinkish, wrinkled, with lobed edges; a crusty brittle texture.
On liquid media. A surface membrane.
Litmus milk. Blue.
Habitat. Air.

PLATE VIII. Fig. 15.

B. arborescens. (Ravenel.)

Morphology. Bacilli slender rods, 7 - 13 times their breadth, occur singly and in chains of several elements.
Gelatin colonies. In 48 hours, blusih, indistinct cloudy dots, easily overlooked, resembling colonies of B. ramosus, but less distinct and finer, i. e. radiate, filamentous, branched.
Gelatin stab. In depth, fine outgrowths, becoming beaded below; on the surface, growth irregular, white, concentric thicker in the center.
Agar slant. Growth a faint, colorless line, with lines of wavy colonies on each side.
Bouillon. Slightly turbid, becoming clear.
Pepton rosolic acid solution. Unchanged.
Litmus Milk. Coagulated in 10 days, decolorized, acid.
Glucose bouillon. No gas. Indoll negative. Optimum temperature 36°C.
Habitat. Soil.

PLATE VIII. Fig. 16.

Bact. AEgyptium. (Trevisan.)

Morphology. Bacteria 0.25 : 1.0 μ; in twos or chains in the pus cells. Decolorized by Gram's Method

Agar slant and bl od serum. At 37° C, isolated colonies, becoming a confluent, glistening, elevated growth.

Slight growth on gelatin. No liquefaction.

Pathogenesis. Inoculation on the cornea of asses, dogs, guinea-pigs, and rabbits, negative; on human conjunctiva, positive in one out of six inoculations.

Habitat. Associated with conjunctival catarrh in Egypt.

PLATE I.

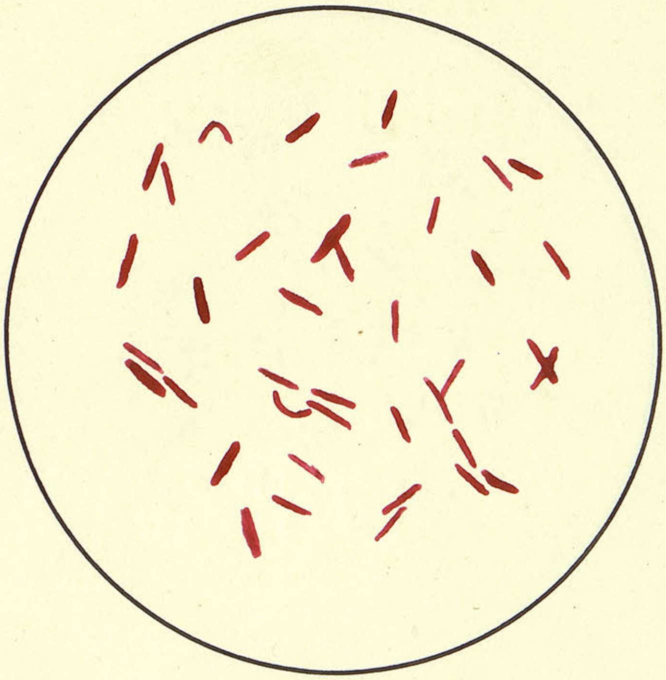

Fig. 1.

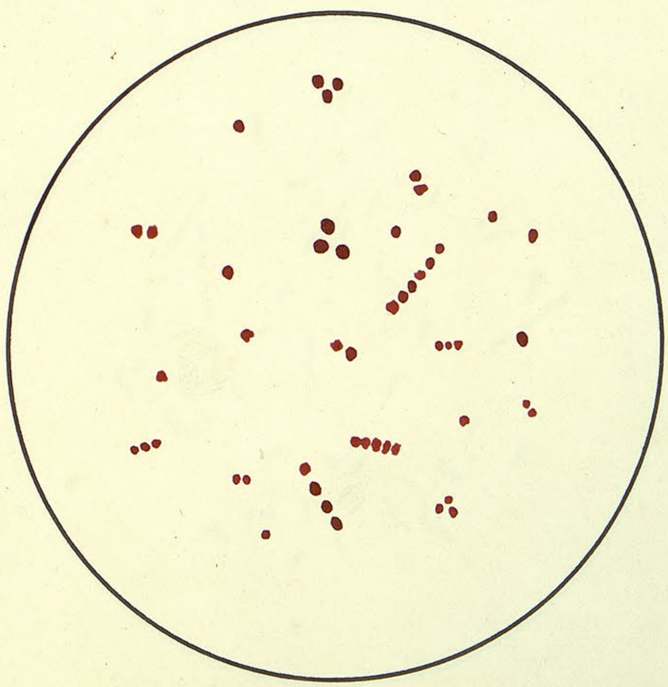

Fig. 2

PLATE II.

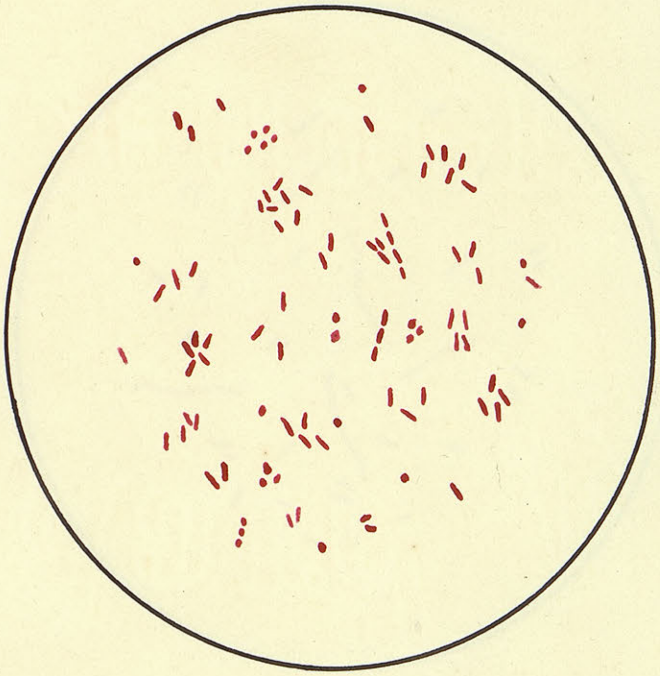

Fig. 3.

Fig. 4

PLATE III.

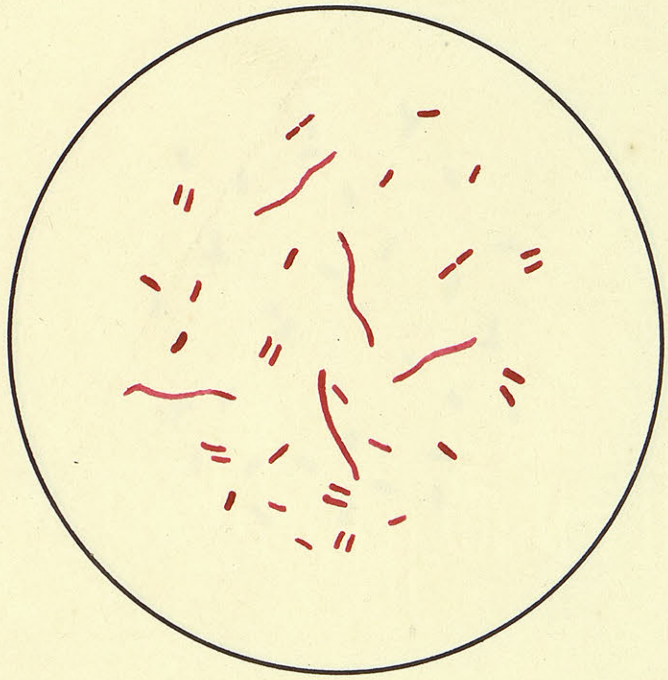

Fig. 5.

Fig. 6.

PLATE IV.

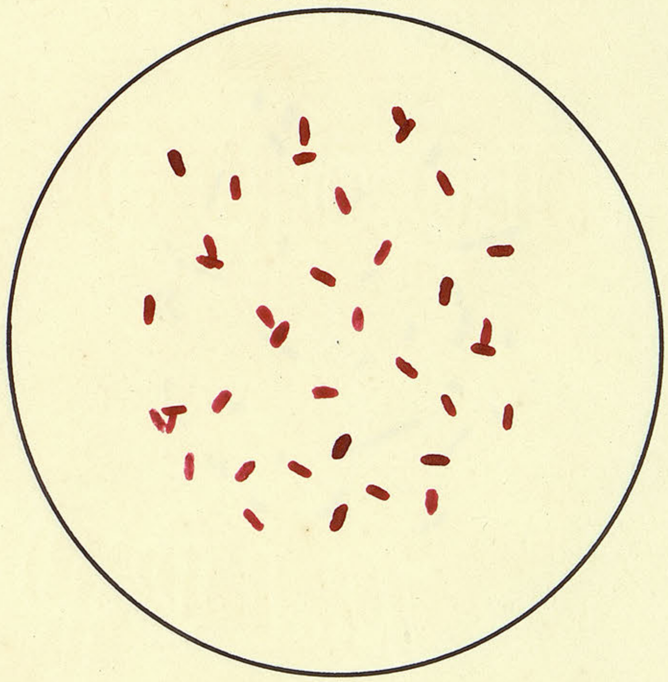

Fig. 7.

Fig. 8

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PLATE V.

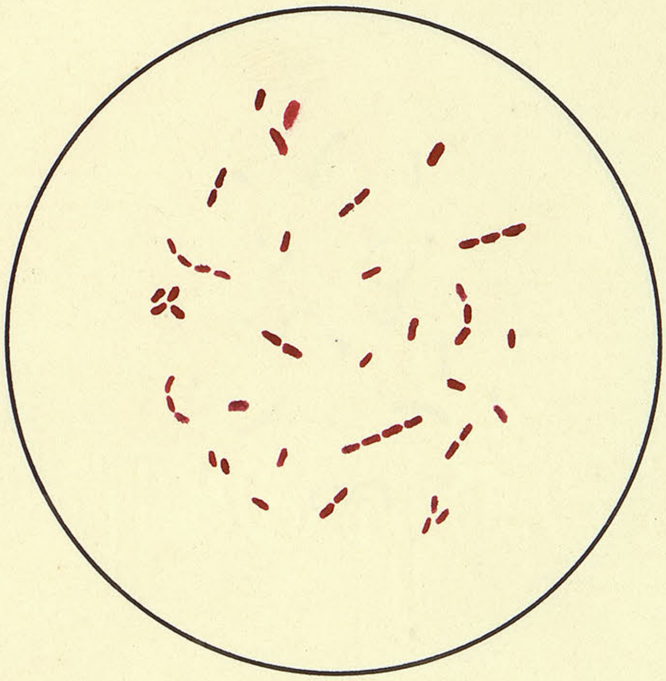

Fig. 9.

Fig. 10.

PLATE VI.

Fig. 11.

Fig. 12.

PLATE VII.

Fig. 13.

Fig. 14.

PLATE VIII.

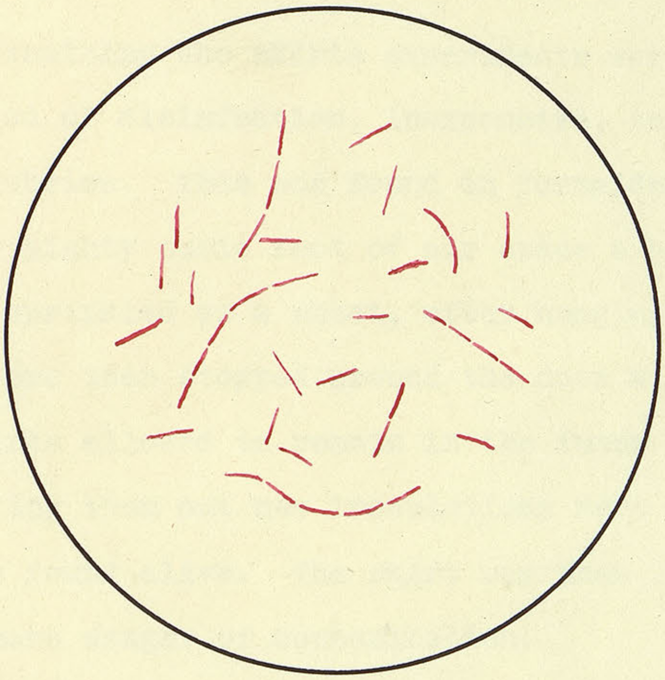

Fig. 15.

Fig. 16.

After examining the skirts experiments were made to find a successful method of disinfection, inexpensive, thorough, and yet harmless to the fabrics. This was found in formaldehyde. In a closet containing eighty cubic feet of air space a half ounce of formaldehyde was sprinkled on a sheet, after hanging some skirts up. The cracks were then stopped around the door with strips of cloth and the skirts allowed to remain in the fumes abouth thirty hours. After taking them out new inoculations were made into bouillon and no germs were found alive. The skirt may then be aired and brushed with no more danger of contamination.
The proportion of formalin is six ounces to every thousand cubic feet of air space.

Ladies, if the men will persist in subjecting you and themselves to danger by expectorating on the walks, you can avoid it somewhat by wearing shorter skirts and by putting in practice this mode of disinfection, which is in reach of everyone.