lepra nodule. I thus sought a leper who would, for a small inducement, place himself under treatment and succeeded in gaining a beggar for what thus became in truth an *experimentum in corpore vili*, for he is an advanced and wretched case of the tubercular form of the disease. I excised a nodule from his arm; found it very rich in bacilli; ground it with sand and salt solution; centrifugalized; heated to 65–70° C. for fifteen minutes, and added enough 5 per cent. carbolic acid to make a suspension containing 0.5 per cent. of the acid. This suspension is rich in bacilli; of it I make at intervals subcutaneous inoculations of 0.01 ccm., the intervals depending on the general condition of the patient. Experience with the more exact methods possible with the analogous disease, tuberculosis, indicates that minimal inoculations of the dead bacilli must be continued over a long period before a genuine arrest is attained; even, therefore, with the most favorable outcome, I cannot expect to record the results of this treatment for months to come; on the other hand, the case was already so advanced when inoculation was begun that I am not sanguine of any pronounced favorable results. I would only repeat that the method appears to deserve publication, that others with fuller opportunities may test and, it may well be, improve upon it.

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Direct silver staining of spirochetes and flagellated bacteria.

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The discussion of the nature of the structure now called spirochete (Treponema) pallida — whether a microorganism or some histological elements — led me to try to effect the silver staining directly upon smear preparations prepared from serum exudates obtained from syphilitic lesions. While engaged unsuccessfully in this endeavor, Stern[1] of Prag published a simple method for staining the spirochetes directly with silver nitrate. When the deposit of silver presents a metallic sheen, the impregnation is regarded as sufficient. I have found the method very simple and sufficient; but I have obtained better results from long (3–4 days)

[1] Stern: *Berl. klin. Woch.*, 1907, xliv, 400.

than from short (1–2 days) exposures. The length of exposure required will depend somewhat upon the weather (strength of light) and the thickness of the spread. Moderately heavy spreads have given me better results than thinner ones, and impression preparations better than smear preparations. In the shorter exposures, some of the spirals will show uniform breaks between the curves which may be attributed to the relation existing between spirochete and medium, the more superficial curves being first impregnated. By longer exposure, the broken spirals are made complete, probably by impregnation of the deeper-lying curves. Disagreeable precipitation is not present on the serum-covered film, but occurs on the adjacent uncovered glass. The direct demonstration of silvered spirochetes may be taken as a concluding proof of the microorganismal nature of the spirals.

Other spirochetal organisms, from the buccal cavity, etc., may be silvered by this method, and bacteria may also be silvered. In a few comparative tests which I made, the degree of impregnation was greatest with the pallida. Whether this is to be accounted for by elective affinity or difference of medium in which the organisms were embedded I cannot say. In the course of these examinations, I came across examples of flagellated bacteria from the buccal cavity in which the flagella were distinctly silvered. I attempted to stain the flagella of certain bacteria — B. typhosus, paratyphosus, pyocyaneus, hog cholera — from pure cultures, but unsuccessfully. The terminal cilia of the pallida appeared not to be stained by the silver.

I have observed instances in which the silvered films showed many more spirochetae pallida than the corresponding preparations stained by Giemsa's or Proca's methods. I shall mention one instance in which in preparations from a macerated syphilitic fetus, the number of pallida brought out by the silver impregnation was very large, while very few spirals were found in the Proca stained films from the adrenal gland and skin. The silvered film from the skin showed small groups of pallida and a colony-like mass such as I had not observed before in any film preparation.