(3) A mixed infection of gonococci and other pyogenic organisms, to account for the symptoms and results.

With respect to the first, direct simple infection with the gonococcus, it may be said that, owing to the many unsuccessful attempts to demonstrate the organisms either in the blood or in the exudate in the affected joint or pleura, it remained for some time a matter of doubt as to their relations to the pathological changes. However, with improved methods and more suitable media, there is now sufficient evidence to show that gonococci circulate in the blood. Since 1898, Panichi, Ghon and Schlagenhaufer, and Thayer and Blumer have found gonococci in cultures taken from the blood, and in some cases after death in the heart lesions.

The second part of the pathologist's answer points out a factor in the pathology of the disease which plays an important, if not the most important, part in the production of the general symptoms. On good authority it is stated that "this irritating toxin produced by the gonococcus in the process of its growth in the human body is the direct cause of all the symptoms of the disease" (referring to the generalized infection). This statement is based upon experiments made upon animals with the toxins which resulted in local and general reactions characterized by inflammations, malaise, rise of temperature, and loss of weight. There is an interesting theory concerning the action of the toxin, which may be briefly set forth here. Podrez in 1885, and Drobney in 1898, observed that those cases of gonorrhœa in which the gonococci were within the white cells or pus cells, ran a milder course than when the organism was free. It is claimed, partly on this ground, that the toxin inhibits phagocytic action and thus affords an opportunity for widespread invasion. This view finds further support in the experiments of Christmas, by which he showed that the gonococcus when injected into human beings and guinea pigs died within forty-eight hours.

Concerning a mixed infection with pyogenic organisms, it may be said that, as attempts to produce abscesses by inoculations of gonococcus cultures were unsuccessful, it was thought that pus was rarely if ever produced by this organism alone, and thus when so found in gonorrhœa it was concluded that pyogenic organisms must have produced it. Up to 1893 this view obtained more generally than at present, for since the work of Lang and Paltauf in 1893, and Bujivid in 1895, Jundell in 1897, and Young since that date, pyogenic properties have been ascribed with good reason to the gonococcus.

The following cases have served as interesting clinical studies from time to time during the past two years, and illustrate many of the features which characterize the course of a general gonorrhœal infection.