

and ten to one hundred and forty will certainly check some forms of putrefaction. It matters little whether it does this by rendering less active the germ agent which produces the mischief or by repairing its damages, or by rendering the tissues less susceptible to its ravages. The practical end is the same. I have so frequently observed the changes in the secretions of the eye under the influence of hot water that I am positive as to the result. Concerning the exact *modus operandi*, I am not in a position to express a positive opinion.

Dr. Heyl (*Archives of Ophthalmology*, September, 1886) gives reasons for believing that hot water acts beneficially in purulent ophthalmia, by placing the tissues in a condition unfavorable to the growth of *Gonococcus* of Neissar. The same thing is done by the application of nitrate of silver. Hence he commends in this form of disease applications every three hours of a weak solution of nitrate of silver, carefully neutralized with constant applications of hot water.

Dr. Geo. Sternberg (*American Jour. of Medical Sciences*, July, 1887) gives some experiments made to determine the degree of heat necessary to destroy different micro-organisms. He found that a temperature of 132° Fahr., was fatal to the bacillus of anthrax, the bacillus of typhoid fever, the bacillus of glanders, the spirillum of Asiatic cholera, the erysipelas coccus; the virus of vaccinia, of rinderpest, of sheep pox, and probably of several other infectious diseases. As the eye will endure a much higher temperature without injury, as we have demonstrated, it is clear that at least some micro-organisms may be destroyed by the use of water of such a temperature as may safely be applied to the eye. The principle being established, farther observation will determine the limits of its application, and it will become a recognized factor in the management of such diseases of the external portion of the eye as are caused or maintained by micro-organisms.

My third proposition is, that *the local application of hot water to the eyes, in the manner described, promotes the healthful activity of the living protoplasm or living matter.*

One function of living matter is to separate from the blood currents such elements as are required for the repair of worn-out tissues, and elaborate them into tissue proper. Another scarcely less

important function is to remove the broken down or effete materials. Upon the proper performance of these two functions the integrity of any portion of the body depends. That the regulation of the blood currents is essential to such performance is self-evident. Perhaps this may explain the quickening of reparative processes, observable when the eye is suffering from conjunctival or corneal inflammation. Still I think we must look farther for an adequate cause. Other remedies, notably cocaine, are capable of contracting blood-vessels, but they also, in some manner, interfere with the nutrition of the parts, so that they are harmful in purulent corneal troubles, and of doubtful utility in other conditions.

It is well known that each portion of the body thrives best when kept at a given temperature. When it is enfeebled by disease, a different, and generally a warmer, temperature is called for. In other cases a lower temperature is demanded lest the parts be destroyed by the excessive heat. The temperature must be elevated or lowered, as called for under such varying conditions. It would seem from this statement of the case that the natural application to an eye, when its temperature was elevated by an acute purulent inflammation, would be cold. But I have often seen the temperature lowered nearly to the normal by the local application of hot water. When this can be done it is a safer line of practice. That it can be done in every case I cannot affirm, as my observation is limited to a few cases, but in none of these was an exception found. I have explained this effect by assuming that a better circulation through the diseased parts was effected, some of the morbid materials were removed, and the living tissue placed in such conditions that it could act more effectively in resisting the encroachments of morbid agents, and better repair damages. This is not singular as applied to eye diseases, as it has been observed in many other organs, and, to the study of general medicine, may seem trite.

My fourth proposition is: *Hot water has great power in relieving muscular fatigue and spasm.*

Like all other muscles, those of the eye often weary after excessive use. When ocular defects exist fatigue is earlier and more marked. For the relief of this distressing condition I know nothing so efficient as hot water. In the researches of Dr Murray, already referred to, he gives some exact