

which have resulted from this "new treatment" during this last quarter of a century!

Man is not always inclined to accept his blessings. It may at first sight seem a strange thing that results like these should not have been hailed with universal acclamation. An account of the objections to the New Surgery, the refutations of its principles, the would-be demolitions of its claim to a scientific basis would make an interesting chapter in the history of medical science.

Scepticism has done much to purify and strengthen Faith. Opposition and ridicule may have done more to establish Listerism than any amount of praise from followers whose zeal was often greater than their discretion. Hostile critics, by pointing out weak spots have been helpers to one who "kept ears and eyes for the time and a heart for the event," who welcomed the truth from whatever source it came, and who has never hesitated to abandon methods elaborated with infinite toil and patience by himself, when better procedures could show credentials for their adoption.

A favorite cry of certain critics is that Listerism is continually changing its base. This is simply not true. Listerism has never changed its base. The solid ground and the *raison d'être* of Listerism is the Germ Theory. It is by the validity of this theory that Lister's must stand or fall. In a famous debate on antiseptic surgery in London, Mr. Timothy Holmes is reported as having said he saw no proofs of the Germ Theory. This was in 1879; he would hardly say so now.

Will any man, who has followed the new science of Bacteriology, deny that this "Theory" is one of the best established laws of nature, no longer a speculation but an ascertained truth, and a key which has unlocked many of the mysteries of life, growth and decay. No man can do so except he take a metaphysical standpoint and ask what is knowledge.

It is with physics rather than metaphysics that we have to deal and the facts which go to demonstrate the Germ Theory are physical experiments which any one with fair technical skill can make for himself. Belief in this Law, which has all along been the main principle of Listerism, has not weakened; it has rather gained in clearness and precision.

Details of treatment have changed, have been changing every year from the first, and may go on changing; and we hope, improving

for years to come, keeping pace with new discoveries. Is this any sign of weakness in the youngest born of the sciences? Anæsthetics have been in use twice as long as the antiseptic system, and authorities are not yet apparently satisfied as to which is the best method of producing anæsthesia. This uncertainty is surely no proof that the practice is unscientific.

The principle change of method of late in Listerism is doubtless the discontinuance of the spray. To a superficial observer visiting Lister's clinic a few years ago the spray might seem the principal element in his treatment; and in the same way the use of carbolic acid was by many regarded as the essential feature. The phrase "carbolic acid treatment" was often used as synonymous with Listerism.

Until within a few years ago carbolic acid was the best known germicide applicable to wound treatment, and it is indeed still considered by some superior to any of the newer solutions. Its toxic effects have been much over-rated. When, however, in consequence of Koch's experiments in disinfection, Lister became satisfied that solutions of the perchloride of mercury had advantages over carbolic acid he at once made the change.

The spray was certainly a prominent feature, and the inconveniences attending its use made it the *bête noir* of all proselytes to the New Surgery. Its use was strictly logical and justified by the state of our knowledge at the time, but Lister always took pains to point out that it was the least essential detail in his treatment. Bruns of Tübingen was, we believe, the first of the Listerians to discontinue its use, and in alluding to his action Lister said if it could be shown that the spray was unnecessary no one would rejoice more heartily than himself.

But the germ theory is not the only pathological basis on which Lister has founded his practice; and before discussing the present methods of antiseptic surgery we shall indicate two other facts which have a great bearing on the whole question.

Lister has always laid much stress on the power of the healthy living tissues to protect themselves from infection. He has also woven into his system the results of his researches in the pathology of Suppuration.

The whole object of Listerism is to reduce open wounds to a condition of sub-cutaneous injuries; or, what is practically the same, to avoid suppuration.