intimate morphological connection, that the mucus of pertussis also would be affected in a similar manner by quinine.

In this he was not disappointed, the trial equalling his expectations.

In the clinic for children's diseases which he held in Bonn, he says: "I have treated for the past two years all the cases of pertussis, without any exception, with quinine. The best proof of its good effects is seen in the fact that those in charge of the little patients repeatedly call again for the 'bitter medicine' whenever they have succeeded, either by coaxing or force in administering it to them. There was a most striking difference to be seen in those whom it was impossible by any means to induce to swallow the solution of quinine. In these cases the whooping-cough assumed its regular obstinate course; in the others, although living in all other respects under perfectly similar circumstances, the paroxysms were always reduced in frequency and severity." * These good results with quinine, he stated, could only be obtained by strictly observing the following conditions: "*It should be given in solution; the dose should not be too small, and should not be administered in a vehicle that will prevent it from coming in contact with the mucous membrane in its passage through the pharynx;*" and the neglect of one or all of these rules he considers the reason why other observers have seen no positive results from the use of this drug. Certainly it is not just to condemn a remedy as ineffectual when it is not employed in the proper manner.

The assumption that pertussis is a specific local catarrh, caused by a fixed contagion admitted from without, Prof. Binz thinks admits of being hypothetically explained by the fact of adults being almost unexceptionally exempt from it. "The stronger development of the epithelium may be regarded as a protection against the affection of the mucous membrane. This greater development in children probably takes places quicker if those parts of the throat, from pertussis, have been in a hyperæmic condition for weeks, and thus it is easy to comprehend how the immunity originates after the affection has once been surmounted." †

Still another cause of pertussis has been advanced. Dr. Letzerich, of Germany, ‡ in 1871, asserted in a paper on the subject that he had discovered a form of fungoid growth which vegetates in the epithelium of the air passages, and by its irritation causes the convulsive attacks of coughing. The expectorated mucus in patients suffering from pertussis, he says, contains masses of brownish red spores, with occasional threads of mycelium which in the later stages of the disease becomes very abundant. These observations were made by experiments upon rabbits into whose tracheæ he introduced the fungus; in a short time the latter became affected with a noisy and violent cough—in fact, a genuine whooping-cough. The rabbits thus affected were killed and examined, and their air passages were found to contain the same fungus as that found in the sputa of human subjects; in fact, he mucus presented precisely the same appearance.

The fungus theory is certainly a very plausible and possible one, and one that even seems to be proven by the effects of therapeutical measures directed against the development of the fungus.

The fact that narcotic remedies do sometimes greatly influence whooping-cough, does not, however, weaken this latter theory, for by their use the sensitiveness of the pneumogastric nerve, and of the whole nervous system, is so benumbed as to but feebly appreciate or respond to the irritation in the pharynx and larynx.

Quinine, it is well known, has a powerfully destructive effect on true fungi and fungus germs—hence its great power over septic or zymotic affections; and why should it not influence the growth of the fungus of pertussis?

This theory of Dr. Letzerich tends to strengthen our belief in the appropriatenesss of Prof. Binz's treatment, for if the fungus theory is the correct one, then quinine with its destructive effects on fungoid matter may certainly be considered a most appropriate remedy.

Another advocate of the use of quinine in pertussis, a short time after Prof. Binz's views had been made public, was Dr. Breidenbach, who published a paper (noticed in *The Practitioner*, Feb. 1871, London,) on the efficacy of the hydrochlorate of quinine in a violent epidemic of 1870. In all pure cases he states its effects were really surprising, as soon as he had from precise observations determined the proper dose and mode of administration, in in which latter point he thinks lies a great part of his success. The amount administered by him—the age of the subjects varying from three weeks to eight years, and the violence of the attack being very different in different cases—varied from 1½ to 15½ grains. No other remedy than quinine was employed, and some of the children were freely exposed by poverty to the injurious effects of the weather. In the worst cases, he says, after the use of the remedy for forty-eight hours, the frequency and violence of the attacks diminished.

With such strong testimony in favor of the quinine treatment of pertussis, it is somewhat surprising that nothing, or very little, has been done in this country to test its value. Even in our text-books on diseases of children, nothing is said in reference to the use of quinine in whooping-cough, and in such recent works as the last editions of Lewis Smith's and Meigs and Pepper's books, the omission still continues, notwithstanding that the articles already referred to appeared in 1870—1 in an American journal, the only one devoted to diseases of children published in the English language. We can but trust that in the future editions the subject will receive proper attention.

Having opportunities for testing the value of anything new in infantile therapeutics, I determined

* American Journal of Obstetrics and Diseases of Women and Children, vol. iii, No. I, page 8.

† Loc. cit., pages 9. 10, foot notes.

‡ Quarterly Journal Medical Science and American Journal of Obstetrics, vol. iv, page 761.