isolation is not enforced, the healthy as well as the sick should be prevented from mingling with others until cultures or sufficient lapse of time give the presumption that they are not carriers of contagion.

12. Diphtheria bacilli may be present, and multiply in the throat without causing symptoms or lesions. They must find susceptibility to their pathogenic action in order to cause diphtheria.

13. In three hundred and thirty persons who gave no history of direct contact with diphtheria, virulent diphtheria bacilli were found in eight, of whom only two subsequently developed diphtheria. Bacilli, indistinguishable morphologically or in cultures from the diphtheria bacillus, including the formation of acid in forty-eight hours in bouillon, but entirely devoid of virulence, were found in twenty-four of these persons, in most of these instances in large numbers. The pseudo-diphtheria bacillus was found in twenty-seven.

14. Instances are given in which the diphtheria bacilli were found on various objects outside of the human body, viz., bed-clothing soiled with discharges of diphtheria patients; the shoes and the hair of nurses in attendance on diphtheria patients, and a brush used in sweeping the floor of a diphtheria ward.

15. Some of the various ways in which the diphtheria germ is transported are summarized.

16. A bacillus in no way distinguishable in morphology or in cultures, including the formation of acid in bouillon, from the usual diphtheria bacillus, but devoid of virulence, exists. The virulence was tested by injecting into half-grown guinea-pigs ½ to 1 per cent. of their weight of forty-eight hour bouillon cultures. This bacillus, although it has been called by some investigators the pseudo-diphtheria bacillus, should not be so designated. It is the genuine diphtheria bacillus devoid of virulence. It was met with in a comparatively small number of cases out of a large number examined. Exceptionally, it may occur together with the virulent diphtheria bacillus in diphtheria, and occasionally it takes the place of the virulent bacillus during or after recovery from diphtheria. In several instances it was found in healthy throats.

The name pseudo-diphtheria bacillus should be confined to bacilli, which, although resembling the diphtheria bacillus, differ from it not only by absence of virulence, but also by cultural peculiarities, the most important of the latter being greater luxuriance of growth on agar and the preservation of the alkaline reaction of bouillon cultures. The pseudo-diphtheria bacillus may render bouillon cultures acid in forty-eight hours when grown anaërobically. The pseudo-diphtheria bacillus in this sense was found in a number of cases, but not frequently. It is probably of different species from the genuine diphtheria bacillus, and is without diagnostic importance.—Wm. H. Welch in *Am. Journ. Med. Sc.*

TREATMENT OF DIPHTHERIA.

The conclusions derived from this series of cases, together with investigation and observation on a much larger number of cases, lead us to believe:

1. That frequent washing of the air-passages attacked by diphtheria lessens the duration and mount of diphtheritic membrane.

2. The addition of antiseptics, in sufficient strength to be germicidal, to the irrigating fluid is irritating to the mucous membrane, thereby causing extension and persistence of false membrane rather than the effect desired.

3. The addition of antiseptics to the irrigating fluid is liable to cause systematic poisoning and disagreeable complications from the swallowing and absorption of some of the fluid used, *e.g.*, the two bichloride cases cited above.

4. Spraying the throat (also the pernicious treatment of swabbing), whatever solution is used, can have no good effect, as the parts reached by the spray must necessarily be very limited, excepting possibly in the hands of an expert. Furthermore, the spray cannot be used with young children, as anyone can testify who has tried it. This is especially true of some solutions where it is necessary to use a glass syringe.

5. Frequent cleansing of the throat and nasal cavities with a bland solution, such as plain warm water or normal salt solution, is easier of application, is more agreeable to the patient, and does all that any antiseptic solution can accomplish, either upon duration of the membrane or the period of isolation.—A. Campbell White in *Med. Rec.*, N.Y.

DIPHTHERIA IN ITALY.

The author presents an interesting statistical study of diphtheria in Italy for the years 1887 to 1892 inclusive. During that period the number of deaths fell from 24,637 to 13,434, the smallest number being 12,284 in 1890. The disease is very unevenly distributed throughout the peninsula, the mortality ranging from 1.8 per 10,000 in the marshes to 15.8 per 10,000 in the province of Basilicata. The mortality in the country districts is much higher than that in the cities. As regards seasons, the disease prevails especially in the winter, the mortality figures for the four seasons being as follows: Winter, 10,945; spring, 9,293; summer, 7,315; autumn, 8,320. The greatest number of deaths occurred in children between one and five years of age, the preponderance of males over females being very slight.—Achille Sclavo in *Gazzetta degli Ospedali edelle Cliniche*, October 20, 1894.