

As said before, internal medicines are rarely given. When asked if cod-liver oil was ever given, Von Ruc replied, "Sometimes. When patients decline to take butter or fat, I tell them they must either take cod-liver oil or butter. They usually take the butter. In a few the oil is preferred."

As in the practice of other physicians in the city, the pneumatic cabinet is used at the sanitarium in suitable cases for lung gymnastics, also inhalations of medicated vapor by means of a compound comminutor. In laryngeal cases, where ulceration is slight or not observable, preparations of methyl-blue are blown into the larynx to aid in discovering abrasions, and subsequent applications will tell positively of the progress made.

It is on what he terms his specific treatment, however, added to the above measures, that Von Ruc founds his unusual success in the treatment of pulmonary tuberculosis. This specific is the "watery extract of the tubercle bacilli" obtained from the bodies of the bacilli by a process of his own, and said to be entirely free from everything but proteids.

On going into his laboratory numerous jars filled with cultures of the bacillus in buillon can be seen in various stages of development, the bacilli in a white mat on the surface and extending up the sides of the jar. The fluid beneath supposed to be filled with the toxins of the bacilli is the foundation for Koch's tuberculin and its various derivations.

According to Von Ruc, the bacilli give off but little toxin, and they themselves are insoluble. The fever of tuberculosis is not the product of the toxin of the bacillus, but of the inflammatory action and caseation produced by the presence of the bacillus. The disintegration and cell detritus poisons the blood and produces the fever.

The comparative failure in treatment of tuberculosis by Koch's tuberculin he assigns to the composition of the fluid used, which consists of fat, cellulose and a small proportion of proteids, the latter being the essential factor in the preparation.

In order to obtain as large a proportion of the latter as possible, and to exclude the other useless elements, he finally succeeded by the following plan. To use his own words, published in 1899:

"The tubercle bacilli are filtered out of the rapidly growing and highly virulent culture. After washing with distilled water for the removal of the remains of the culture fluid, they are dried in a vacuum dessicator. Next they are powdered in an agate mortar, and then extracted with sulphuric ether. This extraction removes the fats. They are again dried and powdered as before, and their further extraction takes place in sterilized distilled water over a warm bath with a temperature