

tructive of sheep, especially in France, but which, through Pasteur chiefly, is now largely under control), are interesting to trace. In 1850 Davaine and Rayer noticed in the blood of animals which had died of splenic-fever the rod-like bodies now known as bacteria. In 1861 Pasteur published a paper on the fermentation of butric acid, and described the microscopical organisms that provoked it. Davaine read it, and conceived the idea that splenic-fever might be due to a similar fermentation in the blood of the living animals, produced by the same organisms. Subsequent studies proved such to be the fact. It was found that the rod-like organisms lost their vitality after a few weeks, which led Burton-Sanderson, in 1874, to conclude that the virus existed in two forms, "fugitive" in the rods and "latent" in some form not then determined. At this time young Koch was studying the rod-like organisms, and he found that they could be successfully cultivated. The aqueous humor of the eye of an ox he found to be an excellent field in which to cultivate them. He placed a trifle of the liquid containing the transparent rods under the microscope and watched for two hours before any change could be seen. At that time they began to lengthen, and at the end of four hours were from ten to twenty times their original length. At the end of a few hours they put out filaments hundreds of times the length of the original rods. The filaments lay length-

wise and twisted and filled the whole field of the microscope, making, in short, a luxuriant growth. Had his observations been abandoned at this point his observation would have been of little if of any practical value. Patiently continuing the watch, he saw after a time little dots appearing in them. These dots grew more and more distinct until they could be seen, microscopic ovid bodies, lining the integument like peas in the pod. At last the integument fell to pieces and the field of the microscope was filled with seeds or spores. Here then was the "latent" form of the virus as believed to exist but not demonstrated by Burton-Sanderson..

Cohn, of Breslau, confirmed the discovery. Guinea-pigs and rabbits were inoculated with the seeds and died of splenic-fever within twenty-four hours afterward. So, then, it is shown that disease may be produced by the contagion, directly or indirectly. It explains, too, how contagion clings to a locality and how under favoring circumstances and conditions it springs into light. Apples may be propagated either by cuttings, grafts, or from the seed. So with splenic-fever, [and probably with typhoid and other fevers.—Ed. Prop.], the disease may be contracted at once from the rods or later from the rods having gone to seed. The results are the same but reached by different routes.—O. W. Peck, M.D., Health Officer, Oneonta, N. Y. Read before the County Med. Soc. From the Sanitarian.

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## ON EXERCISES FOR DEVELOPING THE CAPACITY OF THE LUNGS.

FROM A PAPER BY A. H. LEUF, M.D., DIRECTOR OF PHYSICAL EDUCATION AT THE UNIVERSITY OF PENNSYLVANIA, IN THE MEDICAL AND SURGICAL REPORTER.

**D**ISEASES of the lungs cause more deaths than any other class of diseases. A large proportion of the deaths arise on account of imperfectly developed lungs. Parents should always attend to the development of these organs in their growing children. This is a most imperative duty. But it must be properly and safely done, as will be seen in the following extracts :—

As the function of respiration has for its

main object the abstraction of oxygen from the air and the exhalation of carbonic oxide from the blood, the bodily supply of oxygen—vital air, depends chiefly on the capacity or size and structure of the lungs. If these are proportionately small in an individual, a full measure of vigor is wanting, while disease of the organs is the more likely to be developed.

Two points are very important to bear in mind : First, as Dr. Leuf says, chest