

whole body surface. The therapeutic value of these circulatory changes is indicated by Winternitz, who expressed himself thus: "This process of alternately emptying and overfilling blood-vessels is capable of temporarily depleting congested organs, of in this way restoring their normal tone, of stimulating tissue change in these organs by accelerating and briskly altering the blood current, and by thus furnishing new material for the re-establishment and sustenance of the functional activity of these organs. A still more important effect of this changing current is the excretion and washing away of the morbid products which, as the results of decomposition and retrograde metamorphosis, have accumulated in the congested parts."

Let me briefly refer to some physiological and clinical experiments by which the effects of water applications upon the circulation have been strikingly demonstrated. Schüller trephined rabbits, and through the opening made exposed a circumscribed area of the meninges. Whenever a cold-water application was made to the abdomen of the animal dilatation of the vessels of the pia mater was distinctly noticeable. A warm-water application to the abdomen was followed by contraction of the meningeal vessels. Immersion of the animal in cold water was promptly followed by wide dilatation of the meningeal vessels, immersion in hot water caused forcible contraction. What a valuable therapeutic indication there is in these observations for the treatment of all conditions in which a depletion of the encephalic circulation is desirable; *e. g.*, apoplexy! Winternitz showed that during a cold sitz bath the circumference of the arm increased; in a hot sitz bath it decreased.

It would lead us too far away from our subject to enter any more deeply into the physiology of water applications. Enough has been said to show the deep and lasting effects which

may be produced upon the vital functions of the organism (circulation, respiration, excretion, nutrition) by the scientific use of water.

As I have mentioned before, Kneipp employs five distinct forms of water applications. Four of these—namely, the moist pack, the bath, the steam bath, and the ablation—were in use long before Kneipp's time. It was Priessnitz particularly who systematized these various methods and determined their technique. The douche, as a therapeutic measure, is Kneipp's own idea. His suggestions as to the best way of hardening the body and rendering it insusceptible to disease (walking barefooted, walking in newly fallen snow, etc.) are based upon the old German adage:

"Recht kühlen Kopf und warmen Fuss  
Gesunder Mensch stets haben muss."

Cold applied to the feet will bring about a powerful reaction, which will draw an immense amount of blood to the lower extremities. In this way congestions in the upper part of the body are counteracted and the feet remain warm. Among the therapeutic applications of water used by Kneipp the best and most effective is unquestionably

*The moist pack*, which, in justice to its originator, ought to be known as the Priessnitz pack. It consists of a cold wet cloth over which dry pieces of woollen material are placed. The size and the manner of packing will, of course, depend upon the part of the body to which it is applied. If the whole body is packed, from the feet up to the neck, a cold wet sheet, in which the patient is enveloped, answers best. The outward covering consists of a number of woollen blankets. The action of the moist pack is as follows: The cold moisture of the sheet causes contraction of the cutaneous vessels. The blood is forced into the vessels of the contiguous structures, causing an acute hyperæmia. Soon, however, the re-