

efforts had ended indeed in "failure." Looking back over the last ten years, we confess ourselves as surprised as anyone can be at the rapidity with which success has been achieved, with which the cause of Nursing education has been advanced, and with which the three years' system has become almost universally adopted.

Lectures on Elementary Physiology in relation to Medical Nursing.

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LECTURE IV.—THE EXCRETORY ORGANS

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THE next great excretory organ is the Skin; and, as we shall see, just as the lungs and the kidneys remove, from the organism, substances from which it requires to be purified, so the skin plays a most important part also in the excretion of such materials. It will be remembered that the kidneys remove urea, salts, and water; the lungs take away carbonic acid and a certain amount of water; and now we shall find that the skin also takes its share in removing fluid from the tissues, in the shape not only of perspiration which can be seen, but of a large amount of watery vapour which is continually passing off from the surface of the body, especially in hot weather, but which, owing to its being imperceptible, is usually described as "insensible perspiration." The skin, continuous as it is with the mucous membrane lining the internal cavities of the body, consists of two distinct layers, the EPIDERMIS, or scarf skin, and the deeper layer known as the DERMA, or *cutis vera*, or *true skin*. The former is composed of layers of cells, the outer of which are hardish, especially upon the palms of the hand and the soles of the feet, where they are exposed to the greatest amount of pressure.

In health, and even more during certain diseases, the epidermis is constantly being shed or thrown off in fine, almost imperceptible, scales; but in cases in which the tissues under the skin have been swollen, as for example in Scarlet Fever, the shedding may take place in the form of almost a complete cast of the hand or foot, resembling a glove,

and in the form of large shreds or flakes from the rest of the surface. The deeper skin is protected by these superficial layers, from the friction and destruction to which it would otherwise be subjected; and at the same time any undue irritation of the nerves is prevented. In the true skin the nerves of sensation which pass from the brain and spinal cord find their endings, and these are acutely sensitive to external impressions.

Most people know by sad experience the excessive pain which is produced when the nerve of a tooth becomes "exposed;" and were it not for the covering of the epidermis the nerves in the skin would be equally open to painful pressure. The importance of this fact in Nursing should be remembered, because it will explain, for example, the sensitiveness of patients recovering, say, from scarlet fever, and in whom large quantities of the epidermis has scaled away. It also explains the reason for the pain of a deep cut or other wound of the skin, which has exposed the nerve endings in the *derma*, and especially it will make intelligible the remarkable results which follow an extensive burn. When the tissues of the skin have been much affected by great heat or extreme cold, results are produced to which the name of Burn is given, and these consist practically of no less than seven varieties, according to the depth to which the destruction of tissue extends.

The results upon the patient's general condition are more dependent upon the irritation of the nervous system than upon any other effect. A patient, for example, who has had a burn of the second or third degree, which is sufficient to destroy the epidermis over a considerable surface, may present signs of serious constitutional disturbance, although the local injury, consisting in reddening of the surface with the formation of perhaps a few blisters, may appear to be unimportant. The explanation is that, by the destruction of the epidermis, the nerve endings are exposed to the cold or heat, the dryness or the dampness, of the atmosphere, each of which—and the changes from the one to the other—are felt by the excessively sensitive nerves with painful distinctness.

(To be continued.)

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