

on the organism of the child we may note first its action on the skin, the essential physiological role of which has been too long neglected. The skin is not simply an organ of protection, but also of elimination, of circulation, of innervation and nutrition. Atrophied by the anti-hygienic wearing of clothes, it becomes tonified and pigmented when placed in direct contact with air and sun, its natural elements; it recovers its many physiological functions indispensable to the normal play of the organism and becomes once more, in short, the real clothing intended by nature.

The pigmentation which the teguments acquire under the action of the sun confers upon them a progressive resistance to cold and heat. It favours the healing of wounds by resisting the penetration of germs, and gives the skin relative immunity. Children with bronzed skin are nearly always resistant to the microbic skin-diseases such as furuncles, acne, etc., which in themselves often open the door to more serious infections. But the pigment appears to play a still more important part; it may be said to act as a kind of dynamic accumulator. Experience at least confirms this on showing that the resistance of a patient is nearly always in proportion to the degree of his pigmentation; it acts not only in protecting the skin against the too violent irritation of the ultra-violet rays, but in regularising the thermic contribution of the sun. Finally, it is probable that the pigment receives, furnishes and activates the elements essential to the metabolism of the hormones. Pigmentation is the expression of an increase in the deep biological process of a fermentative and hormonal nature, as demonstrated by Bloch in the skin, by Pinkussen and Rothmann in the blood, and by Biekel and Ischido in the marrow of the bones.

Heliotherapy further exercises a remarkable action on the muscular system of the child. By dilating the capillaries the sun draws the blood from the depths to the surface through the muscular layers, thus acting as the most perfect system of massage. This rebuilding of the muscular system must also be attributed, it would appear, to a constant tonic action on the muscular fibre, an action following upon the vibratory shock which the solar radiations cause upon the close network of the sensorial terminals of the skin in restoring to the muscles and ligaments, those levers of the frame, their original tonicity, the sun-cure favours, by a strictly physiological process, the return of the functions of the joints. Thus heliotherapy may restore to young bodies, even those most atrophied and warped by disease, their natural beauty of form. Little rickety bodies, after a few months' cure, are possessed of firm muscles, full and harmonious forms,

and sometimes lines as pure as those of the young athletes of ancient Greece. A mere glance at a sun-cure balcony will suffice to show that this comparison is not exaggerated. The sun-cure, especially at high altitudes, causes in children an increased activity of the lungs and in consequence increased heart action and general circulation. Under its influence the number of corpuscles is augmented as well as the content of the blood in hæmoglobin, the blood formula improves and the nutritive exchanges are more active. The tonifying power of the sun also acts upon the abdominal organs; the sun-bath, strictly rationed, sharpens the appetite, stimulates the digestive functions, and restores strength. Finally, attention may be drawn to the favourable action of heliotherapy on the endocrinian system and internal secretion. We may recall the interesting fact that Dr. Bezencenet, an old family doctor at Aigle,

used to send children suffering from thyroidal insufficiency to Leysin, long before any sanatorium existed there.

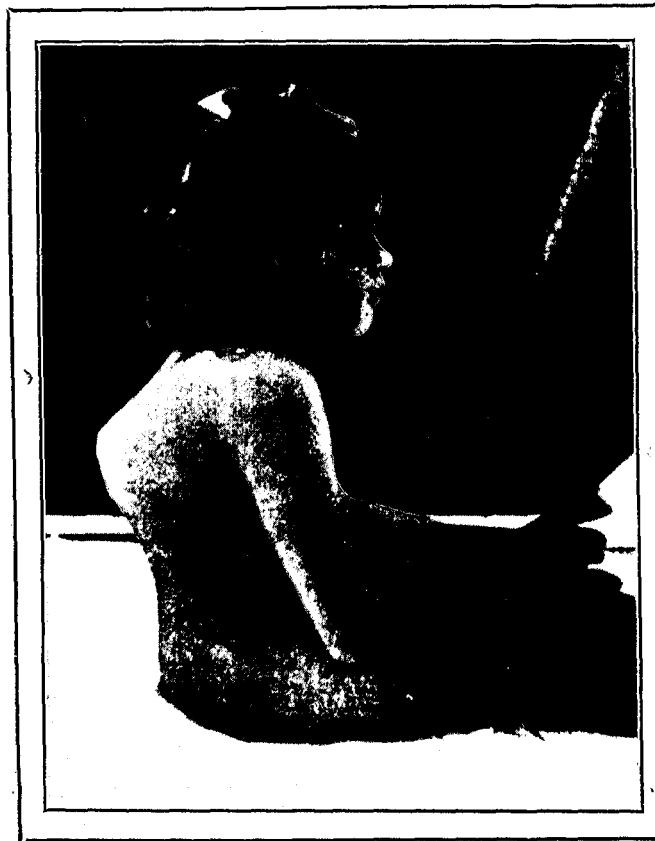
It must be admitted that the biological action of heliotherapy is due not only to the specific excitation of the violet and ultra-violet rays, to the augmentation of the fermentative type of process and of the metabolism of the hormones, but also to the increase of vital energy due to the visible rays and their raising of the temperature of the tissues, which at a depth of two to three cm., may be three to five degrees centigrade higher than the temperature of the skin. (Observations by Sonne, Dorno, Levy.)

Heliotherapy, then, is applicable not only to cases of tuberculosis in children. We have pointed out the important role of the sun in rickets and osseous dystrophy. Its restorative action can also be efficaciously applied to various non-tuberculous affections, which can benefit from its local or general action, or from both combined. The sun destroys the infectious germs, encourages cellular

activity and repairs the tissues; it is, therefore, better than any other antiseptic and fulfils the conditions of an ideal dressing. I have employed it in wounds and traumas of all kinds, in compound fractures, and in osteomyelitis. For the latter the solar dressing has helped to fill up the large osseous cavities caused by trepanation better and more rapidly than the usual methods.

Because of its microbe-killing action on all parasitic elements, and of its reconstructive influence on the tissues, heliotherapy is strongly to be recommended, not only in cases of lupus, but in numerous other skin diseases. Eczema, impetigo, and acne can be quickly cured by sunlight. As already stated, the pigmented skin is rebellious to the development of these various microbic cutaneous diseases.

In many cases, too, heliotherapy has exercised a favour-



PATIENT TWELVE YEARS OLD.

Extreme caries of dorsal vertebræ, with enormous kyphosis. Paraplegia. Atrophy of the muscles. Precarious general condition.

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