

abscess cavity. The core, when it is made of bone, we call a sequestrum. The zone of irritation, with its increased powers of repair, we call the involucrum, and the zone of nutrition, or the innermost layer of living cells, is formed from the innermost layer of the involucrum.

If, in these cases, sufficient drainage is obtained and maintained, tension will not occur, and good nutrition of the fragments within the infected area will be assured. In this way rapid restoration with but little or no loss of tissues will occur. However, if drainage is poor or imperfect, tension will occur, the nutrition of the tissues will be impaired or destroyed, and the formation of a sequestrum with healing long delayed will result.

In operating on compound infected fractures, it is important,

1. To make large incisions; it is usually best to make the incision so that it will be dependent.

2. To remove all foreign bodies.

3. To remove all loose or detached pieces of bone.

The fingers form a good guide to go by. All pieces that can be removed by the fingers without undue effort should be taken away.

4. To maintain drainage; this is best done by the insertion of large fenestrated rubber tubes.

5. To use absolutely no foreign material of any kind in the wound, such as wire, chromic gut or bone plates; the use of these means nothing but trouble.

6. As to the question of amputation, the tendency is rightfully more and more toward conservatism. Under favorable conditions, it is marvelous what nature will do in the repair of broken and infected bones. It is now possible to save limbs and restore them as useful members, whereas formerly it would have been considered entirely correct to amputate. If the economic status of the patient is not to be considered, the question of amputations becomes more and more identical with the question of the limb's viability. With the recent additions to our knowledge in the realms of bone grafting and transplanting, many wonderful results are being obtained.

The after-treatment of compound infected fractures consists in the maintenance of drainage and extension. Both are most important. Dr. Blake has advised a very simple and effective apparatus for extension of the lower extremity. It is much like a Thomas knee splint, resting above against the tuber ischii, the great trochanter and the pubic bone, and extending below well beyond the plantar border. He also made another such apparatus for use on the humerus. Both are made of metal, and can be bent in individual cases to permit of dressing wounds at any location.

The soldier permanently disabled, or injured so greatly as to prevent his return to the army, begins to turn his mind toward the pursuits of peace, toward industrial activity. So in just such cases do we find the surgical problems approaching those of everyday peaceful life. It is here that various plastic operations, repair of nerves, transplanting of bone and other tissues are finding a useful field. All Europe will soon be one great laboratory for such constructive surgery, and he who can will do well to avail himself of the opportunity.

XERODERMA PIGMENTOSUM

ITS TREATMENT WITH AUTOGENOUS SERUM *

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In 1914, two children from Clarinda, Iowa, were sent to the asylum for the blind at Vinton, Iowa. Some time later they were referred to the University Hospital to be treated for weeping eczema.

Family History.—Their father, a carpet weaver, aged 37, was born in Iowa. His health has been good, no history being given of disease or injury before the children were born. Their mother, aged 34, was born in Missouri, and was always healthy. The father and mother are not related, and neither were married before. The mother has had no miscarriages and there is no history of carcinoma, mental disturbance or tuberculosis in the family.

Verdie F., a white girl 8 years old, did not attend school until last summer, at the asylum for the blind. As a baby she was healthy and stout, being undeformed at birth. There is no history of snuffles or adenoids. The present disease began when she was 2½ years of age. It first appeared on the face and limbs as little red spots.

On examination we find the child to be small for her age, fairly well nourished; hair is light colored, the scalp covered with scales. Her face is thin and pinched, the ears are atrophied and hard, the nose is drawn and pinched, the nostrils are flattened, the lips are thin and hard and cannot be everted without pain. The whole face has a shiny, almost a glazed appearance, with underlying telangiectases. The eyes are red, and show conjunctivitis and marked photophobia.

An irregular coalesced tubercle formation appears over the left eye, having almost the appearance of a tumor. It is elevated ¼-inch and is dark brown. Similar formations, but more wart-like and smaller, varying in size from a large pin head to a penny are on the forehead. They have scaly tops and are rough, and variable in color.

Five of these growths are on the forehead, one on the nostrils and two on the chin. The tumors are all located on

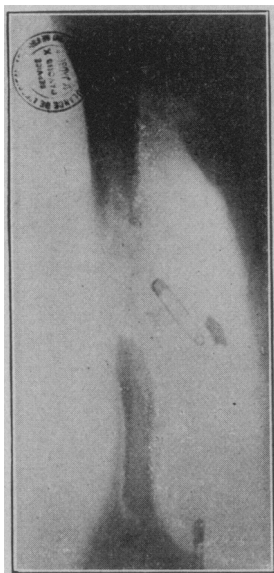


Fig. 7.—Compound infected fracture of humerus, shell wound. Course complicated by typhoid fever. Drainage of upper fragment good. Large sequestrum of lower fragment, the result of insufficient drainage. Roentgenogram ten weeks after injury.

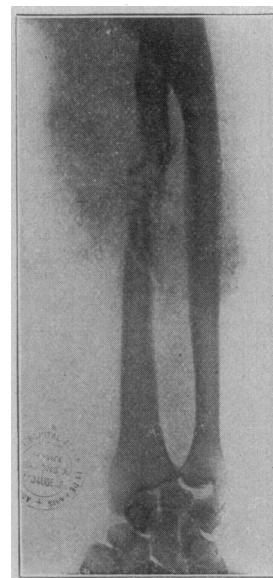


Fig. 8.—Illustrating tendency to fracture only one of two bones in same location. Upper third of ulna beginning to thicken, due to stimulation of zone of irritation. Ulna not injured.

* Read before the Section on Dermatology at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.

the face and head. The other parts involved, show a lentiginous or freckle-like pigmentation, and vascular telangiectases appear from the neck down to the buttocks, caused, probably, from the dress being open in the back. They also appear on the thighs, more profusely on the back than on the front. They are on both front and back of the legs, on the flexors of the feet, and some may be seen even on the toes. The arms show them on both extensor and flexor surfaces. They are on the front and back of the forearms, but on the back only of the hands. The lesions on these surfaces consist of superficial light areas and are scaly with an under pigmentation. They vary in size, and are flat on the surface. On the back of the hands the skin is beginning to take on a furrowed appearance. Conical patches occur which look like those of leukoderma and show no pigmentation. The skin seems to be attached to the underlying structures. The neck is slightly flexed, but rotation and extension are normal. There are no palpable glands. The pulse rate is 84, the temperature at times rises to 99. The lungs and heart are normal. The abdomen shows no pigment. The skin of the neck and face is difficult to pick

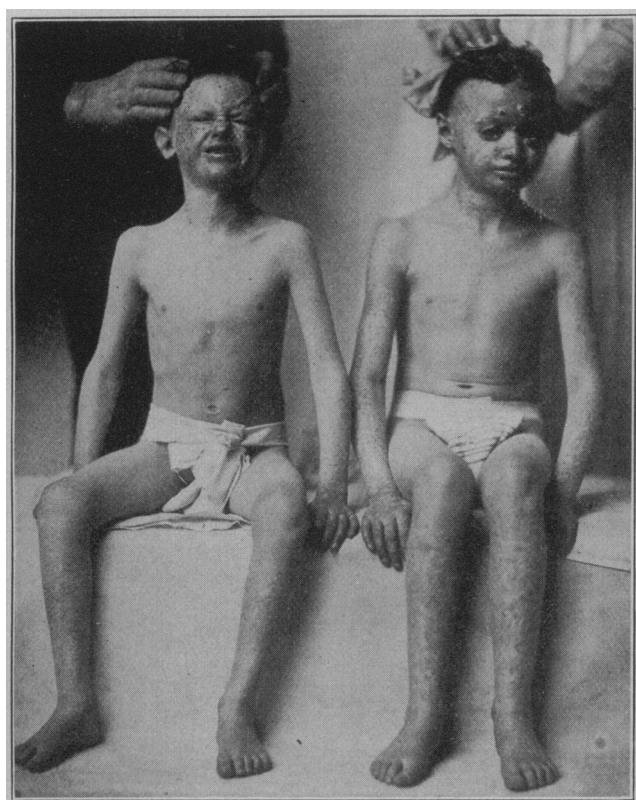


Fig. 1.—Appearance of eruption on front of body. Note elevated nodules on forehead of girl.

up; it is hard and stiff and firmly attached. The skin in other regions varies from normal elasticity to almost entire loss of it (Figs. 1 and 2).

The blood count shows whites 11,800, reds 4,980,000; polymorphonuclears 80 per cent., eosinophils 1 per cent., small lymphocytes 17 per cent., large lymphocytes 2 per cent.

The urine is normal. Microscopic examination shows epithelium but no blood cells, an occasional pus cell, no crystals and no bacteria.

Howard F., white boy, aged 6, began at the age of 2½ to show this disease. The lad is small for his age, and has a shrunken appearance. His legs and arms are small; his face seems to be drawn toward the midline. One is struck immediately by the hanging of the head and the spotted appearance of the face. The chin and the nose are small and angular. The hair is brown, dry and shaggy. The scalp is covered with white scales that are dry and very fine, and closely adherent.

Over the face, neck and ears there are freckle-like spots. The skin has a glossy appearance as if stretched, so that when the boy makes grimaces the skin pulls in fine folds about the neck and mouth. The face has three tints, pink, white and dark brown, which appear as if put on at different times, and cause a mottled appearance. The pigmentation extends entirely over the ears into the external meatus. He has continuous and marked photophobia. His eyes are small and sunken. There are no palpable glands. Freckles and telangiectases appear on the legs, arms, neck, face and ears with marked atrophy of the skin of the ears and face; in appearance he is an exact counterpart of his sister, except that he has no tumors and his back is not freckled.

Orpha F., the oldest of the children, had the same disease, which commenced when she was 1½ years of age, and,

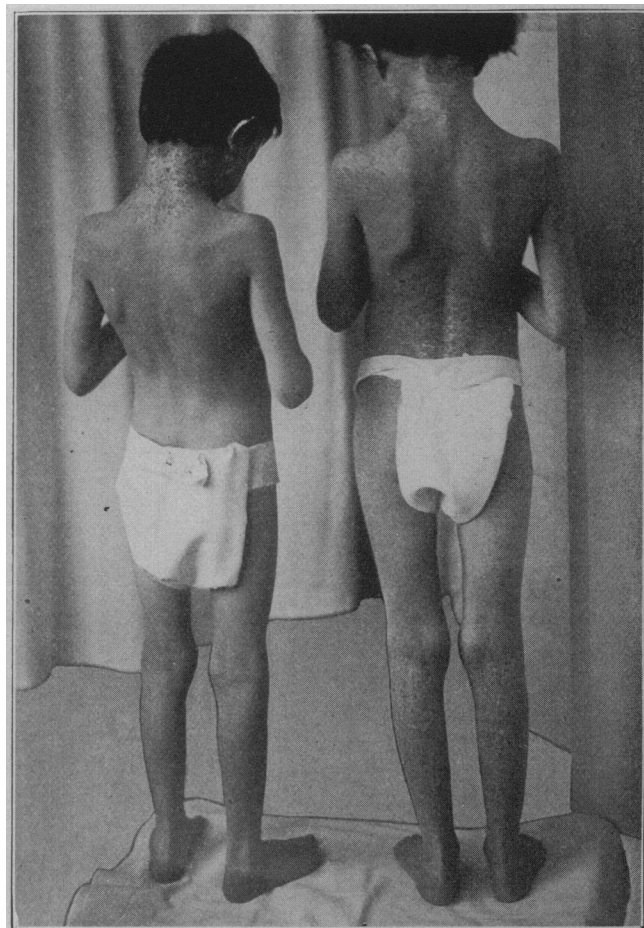


Fig. 2.—Appearance of eruption on back and legs.

at its onset, had the appearance of sunburn. She had atrophic spots, conjunctivitis and photophobia, but no tumors. This child was deformed and an invalid all her life. She died at the age of 13.

One 4-year-old boy at home is healthy. The mother writes us that the children were no more exposed to the sun than her other children and is positive the disease began in the two living children as little red pimples, and in the first one attacked by it as a sunburn. At all events the disease is in locations accessible to the sun's rays.

Gross Pathology (by Dr. Dean).—The tumors removed from the eyelids of the little girl present the following appearance:

The specimen consists of two growths, one removed from the left eyelid and the other from the right. The growth from the left side measured 1.5 by 1.25 by 0.5 cm. It is reddish-gray, is firm and cartilage-like and its outer surface is nodular. The growth removed from the right side is

similar in size to the one described, but is thinner, appearing like a piece of skin with a roughened surface.

Microscopic Examination.—A section of the growth from the left side presents at some portions an irregular and unbroken epithelial border, the superficial layers of which are cornified and overlaid with an accumulation of polymorphonuclear leukocytes. At some points this epithelial border sends strands of epithelial tissue into the underlying structure. These appear as larger and smaller strands or islands, the centers of which show a concentric laminated arrangement of cornified epithelium which stains brightly with eosin. These epithelial islands are present in great numbers, but individually are small and occupy only a small part of the section. The tissue which intervenes between them is, to some extent, of a fibrous nature, but for the most part is made up of round cells, closely packed, sometimes shown in the form of cords of cells, but more frequently arranged in dense masses. Where the round cells are arranged in cords the intervening spaces present a fibrous appearance, which stains a bright blue with hematoxylin. These round cells are a little larger than a red blood cell. The nucleus occupies nearly the whole substance of the cell. It is granular in appearance. Frequently mitotic figures may be seen. A section of the growth from the right side presents the same appearance as that described in connection with the left, but to a much less extent (Fig. 3).

From these findings we would make a diagnosis of squamous-celled carcinoma.

A microscopic section of the contiguous skin shows the superficial epithelium cornified and desquamating. Occasional points of thickening of the epidermis are noticeable by a bulging on its surface and more active cell multiplication in the lower layers. The corium is dense and more or less diffusely infiltrated by small mononuclear lymphocytes. The infiltration is more marked in the vicinity of the hair follicles and excretory apparatus. Small hemorrhages are seen here and there.

Diagnosis.—The appearance of the disease in early childhood, the six kinds of lesions present in the majority of cases, namely, lentigenous or freckle-like pigmentation, atrophic spots, vascular telangiectases, warts, superficial ulcerations and tumors render it unmistakable for any other disease. We were unable to find in the literature any form of treatment of this disease that promised a cure. At a venture we used autogenous serum, thinking it could do no harm. We gave the little girl five treatments and the lad six, at weekly intervals, with daily applications of theobroma to the skin. The general condition of the children has improved and they are gaining in weight. The improvement has seemed to result from the autogenous serum, so that if given in the beginning of the disease, I believe it would be highly beneficial.

I am indebted to Dr. Royce for the pathologic findings.

ABSTRACT OF DISCUSSION

DR. OLIVER S. ORMSBY, Chicago: It is interesting to see these cases occur in family groups. They are like the family groups reported by Dr. Hyde several years ago; there are now several such families. That these growths are malignant

and that the disease terminates fatally, is interesting. The disease is a type of carcinoma. Some of you may have seen the family group which was imported. One of those children developed a huge tumor in the orbit and died very soon. But we do have indigenous family groups in this country and they are interesting.

DR. J. B. KESSLER, Iowa City: The point I lay stress on in this paper was not what I did in these two cases, but what might be done if the cases had been taken in the beginning. The disease in the little girl had existed four or four and one-half years, and that of the little boy two and one-half years. He had not reached the tumorous stage, but had a growth on the cornea. I should certainly try this treatment if I got a case in the beginning. There was an apparent improvement, I did not say there was a cure; that could not be expected after it had gone as far as it had with these children.

INFLUENCE OF AGE AND SEX ON HEMOGLOBIN

A SPECTROPHOTOMETRIC ANALYSIS OF NINE HUNDRED AND NINETEEN CASES (PRELIMINARY REPORT) *

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It has long been known to those who have studied the variations in hemoglobin in the normal subjects that by far the greatest variations are those due to age.

Our real knowledge of the age curve of hemoglobin begins with the work of Leichtenstern, who in 1878 published his results in a monograph entitled "Untersuchungen über den Hemoglobingehalt des Blutes in gesunden und kranken Zuständen." This author recognized very clearly that a precise knowledge of the variations due to physiologic conditions, especially age and sex, was an indispensable prerequisite for the study of the hemoglobin in diseased conditions. Leichtenstern's work was all

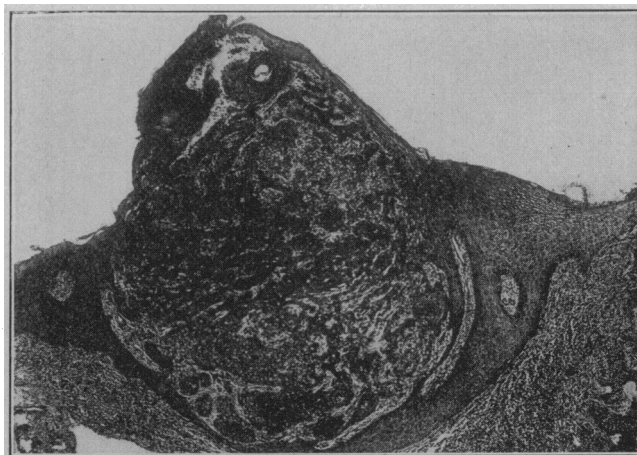


Fig. 3.—Section from nodule incised from eyelid of girl.

done with the then newly discovered Vierordt's method, which was by far the most accurate method then available. This research extended into the estimation of the hemoglobin in a very large number of pathologic conditions, and the study of the variations due to age and sex was undertaken more or less incidentally.

Leichtenstern's results made it perfectly apparent that any comparative determinations of hemoglobin must take the age and sex factor into consideration, or else be grossly inaccurate. In spite of these results and in spite of the authority of their distinguished author, this research made almost no impression on the medical world at large, and but very little on the students of hematology. Even now, in such extensive monographs on the blood, as that of Grawitz, one finds

* Read before the Section on Practice of Medicine at the Sixty-Sixth Annual Session of the American Medical Association, San Francisco, June, 1915.