

convulsions occasionally cause death. In females the deformity of the pelvis is serious, as it may lead to difficulties in parturition.

**Treatment.**—The better the condition of the mother during pregnancy the less likelihood is there of the development of rickets in the child. Rapidly repeated pregnancies and suckling a child during pregnancy seem important factors in the production of the disease. Of the general treatment, attention to the feeding of the child is the first consideration. If the mother is unhealthy, or cannot from any cause nurse the child, a suitable wet-nurse should be provided, or the child must be artificially fed. Cows' milk, diluted according to the age of the child, should constitute the chief food. Care should be taken to examine the condition of the stools, and if curds are present the child is taking too much, or it is not sufficiently diluted. Barley-water or carefully strained and well-boiled oatmeal gruel form excellent additions to the milk.

The child should be warmly clad and should be in the fresh air and sunshine the greater part of the day. It is a "vulgar error" to suppose that delicate children cannot stand, when carefully wrapped up, an even low temperature. The child should be bathed daily in warm water. Careful friction with sweet oil is very advantageous, and, if properly performed, allays rather than aggravates the sensitiveness. Special care should be taken to prevent deformity. The child should not be allowed to walk, and for this purpose splints applied so as to extend beyond the feet are very effective. Of medicines, phosphorus has been warmly recommended by Kassowitz, and its use is also advised by Jacobi. The child may be given gr.  $\frac{1}{10}$  two or three times a day, dissolved in olive oil. Cod-liver oil, in doses of from a half to one teaspoonful, is very advantageous. The syrup of the iodide of iron may be given with the oil. The digestive disturbances, together with the respiratory and nervous complications, should receive appropriate treatment.

#### X. SCURVY (*Scorbutus*).

**Definition.**—A constitutional disease characterized by great debility, with anæmia, a spongy condition of the gums, and a tendency to hæmorrhages.

**Etiology.**—The disease has been known from the earliest times, and has prevailed particularly in armies in the field and among sailors on long voyages.

From the early part of this century, owing largely to the efforts of Lind and to a knowledge of the conditions upon which the disease depends, scurvy has gradually disappeared from the naval service. In the mercantile marine, cases still occasionally occur, owing to neglect of proper and suitable food.

The disease develops whenever individuals have subsisted for pro-

longed periods upon a diet in which fresh vegetables or their substitutes are lacking.

In comparison with former times it is now a rare disease. In seaport towns sailors suffering with the disease are occasionally admitted to hospitals. In large almshouses, during the winter, cases are occasionally seen.\* On several occasions in Philadelphia characteristic examples were admitted to my wards from the almshouse. Some years ago it was not very uncommon among the lumbermen in the winter camps in the Ottawa Valley. Among the Hungarian, Bohemian, and Italian miners in Pennsylvania, cases of the disease are not infrequent. This so-called land scurvy differs in no particular from the disease in sailors. An insufficient diet appears to be an essential element in the disease, and all observers are now unanimous that it is the absence of those ingredients in the food which are supplied by fresh vegetables. What these constituents are has not yet been definitely determined. Garrod holds that the defect is in the absence of the potassic salts. Others believe that the essential factor is the absence of the organic salts present in fruits and vegetables. Ralfe, who has made a very careful study of the subject, believes that the absence from the food of the malates, citrates, and lactates reduces the alkalinity of the blood, which depends upon the carbonates directly derived from these salts. This diminished alkalinity, gradually produced in the scurvy patients, is, he believes, identical with the effect which can be artificially produced in animals by feeding them with an excess of acid salts; the nutrition is impaired, there are ecchymoses, and profound alterations in the characters of the blood. The acidity of the urine is greatly reduced and the alkaline phosphates are diminished in amount.

In opposition to this chemical view it has been urged that the disease really depends upon a specific micro-organism.

Other factors play an important part in the disease, particularly physical and moral influences; overcrowding, dwelling in cold, damp quarters, and prolonged fatigue under depressing influences, as during the retreat of an army. Among prisoners, mental depression plays an important rôle. It is stated that epidemics of the disease have broken out in the French convict-ships *en route* to New Caledonia, even when the diet was amply sufficient. Nostalgia is sometimes an important element. It is an interesting fact that prolonged starvation in itself does not necessarily cause scurvy. Not one of the professional fasters of late years has displayed any scorbutic symptom. The disease attacks all ages, but the old are more susceptible to it. Sex has no special influence, but during the siege of Paris it was noted that the males attacked were greatly in excess of the females. Infantile scurvy will be considered in a special note.

**Morbid Anatomy.**—The anatomical changes are marked, though

\* Henry, Philadelphia Hospital Reports, vol. i, 1890.



by no means specific, and are chiefly those associated with hæmorrhage. The blood is dark and fluid. There are no characteristic microscopical alterations. The bacteriological examination has not yielded anything very positive. Practically there are no changes in the blood, either anatomical or chemical, which can be regarded as peculiar to the disease. The skin shows the ecchymoses evident during life. There are hæmorrhages into the muscles, and occasionally about or even into the joints. Hæmorrhages occur in the internal organs, particularly on the serous membranes and in the kidneys and bladder. The gums are swollen and sometimes ulcerated, so that in advanced cases the teeth are loose, and have even fallen out. Ulcers are occasionally met with in the ileum and colon. Hæmorrhages are extremely common into the mucous membranes. The spleen is enlarged and soft. Parenchymatous changes are constant in the liver, kidneys, and heart.

**Symptoms.**—The disease is insidious in its onset. Early symptoms are loss in weight, progressively developing weakness, and pallor. Very soon the gums are noticed to be swollen and spongy, to bleed easily, and in extreme cases to present a fungous appearance. The teeth may become loose and even fall out. Actual necrosis of the jaw is not common. The breath is excessively foul. The tongue is swollen, but may be red and not much furred. The salivary glands are occasionally enlarged. The lesions of the gums are rarely absent. The skin becomes dry and rough, and ecchymoses soon appear, first on the legs and then on the arms and trunk. They are petechial, but may become larger, and when subcutaneous may cause distinct swellings. In severe cases, particularly in the legs, there may be effusion between the periosteum and the bone, forming irregular nodes, which, in the case of a sailor from a whaling vessel, who came under my observation, had broken down and formed foul-looking sores. The slightest bruise or injury causes hæmorrhage into the injured part. Œdema about the ankles is common. Hæmorrhages from the mucous membranes are less constant symptoms. Epistaxis is, however, frequent. Hæmoptysis and hæmatemesis are uncommon. Hæmaturia and bleeding from the bowels may be present in very severe cases.

Palpitation of the heart and feebleness and irregularity of the impulse are prominent symptoms. A hæmic murmur can usually be heard at the base. Hæmorrhagic infarction of the lungs and spleen has been described. Respiratory symptoms are not common. The appetite is impaired, and owing to the soreness of the gums the patient is unable to chew the food. Constipation is more frequent than diarrhoea. The urine is often albuminous. The changes in the composition of the urine are not constant; the specific gravity is high; the color is deeper; and the phosphates are increased. The statements with reference to the inorganic constituents are contradictory. Some say the phosphates and potash are deficient; others that they are increased.

There are mental depression, indifference, in some cases headache, and

in the latter stages delirium. Cases of convulsions, of hemiplegia, and of meningeal hæmorrhage have been described. Remarkable ocular symptoms are occasionally met with, such as night-blindness or day-blindness.

In advanced cases necrosis of the bones may occur, and in young persons even separation of the epiphyses. There are instances in which the cartilages have separated from the sternum. The callus of a recently repaired fracture has been known to undergo destruction. Fever is not present, except in the later stages, or when secondary inflammations in the internal organs appear. The temperature may indeed be sometimes below normal.

**Scurvy in Children.**—In infants and young children, fed upon improper food, a form of cachexia develops which has been regarded as acute rickets, but which Cheadle and Barlow have shown to be a form of scurvy. The most striking cases develop in infants reared on artificial food prepared with water, though the disease has occurred when these foods were prepared with milk. Rickets strongly predispose to the condition. The cases may occur in infants, or in children up to the age of ten. Barlow thus summarizes the chief features:

“(1) Predominance of lower limb affection:

“(a) Immobility, going on to pseudo-paralysis; (b) excessive tenderness; (c) general swelling of lower limbs; (d) skin shiny and tense, but seldom pitting, and not characterized by undue local heat; (e) on subsidence, revealing a deep thickening of the shaft; (f) liability to fracture near the epiphyses.

“(2) Swelling of the gums, varying from definite sponginess down to a vanishing-point of minute transient ecchymoses. These constitute the chief diagnostic differentia between infantile scurvy and rickets, properly so called. But to them must be added, as the most important diagnostic of all, (3) definite and rapid amelioration by antiscorbutic regimen.” According to Gee, hæmaturia may be the only sign of scurvy in children.

**Diagnosis.**—No difficulty is met in the recognition of scurvy when a number of persons are affected together. In isolated cases, however, the disease is distinguished with difficulty from certain forms of purpura. The association with manifest insufficiency in diet, and the rapid amelioration with suitable food, are points by which the diagnosis can be readily settled.

**Prognosis.**—The outlook is good, unless the disease is far advanced and the conditions persist which lead to its development. The mortality now is rarely great. During the civil war the death-rate was sixteen per cent. Death results from gradual heart-failure, occasionally from sudden syncope. Meningeal hæmorrhage, extravasation into the serous cavities, entero-colitis, and other intercurrent affections may prove fatal.

**Prophylaxis.**—The regulations of the Board of Trade require that a sufficient supply of antiscorbutic articles of diet is taken on each ship; so that now, except as the result of accident, the occurrence of scurvy on



board a vessel should lead to the indictment of the captain or owners for criminal negligence. An outbreak of the disease in an almshouse is evidence of culpable neglect on the part of the managers.

**Treatment.**—The juice of two or three lemons daily and a varied diet, with plenty of fresh vegetables, suffice to cure all cases of scurvy, unless far advanced. When the stomach is much disordered, small quantities of scraped meat and milk should be given at short intervals, and the lemon-juice in gradually increasing quantities. A bitter tonic, or a steel and bark mixture, may be given. As the patient gains in strength, the diet may be more liberal and he may eat freely of potatoes, cabbage, water-cresses, and lettuce. The stomatitis is the symptom which causes the greatest distress. The permanganate of potash or dilute carbolic acid forms the best mouth-wash. Pencilling the swollen gums with a tolerably strong solution of nitrate of silver is very useful. The solution is better than the solid stick, as it reaches to the crevices between the granulations. The constipation which is so common is best treated with large enemata. For other conditions, such as hæmorrhages and ulcerations, suitable measures must be employed.

## XI. PURPURA.

Strictly speaking this is a symptom, not a disease; but under this term are conveniently arranged a number of affections characterized by extravasations of the blood into the skin. The purpuric spots vary from one to three or four millimetres in diameter. When small and pin-point-like they are called petechiæ; when large, they are known as ecchymoses. At first bright red in color, they become darker, and gradually fade to brownish stains. They do not disappear on pressure.

It is extremely difficult to make a satisfactory classification of purpura. Perhaps as good a division as can be made is the following:

**Symptomatic Purpura.**—(a) **Infectious.**—In pyæmia, septicæmia, malignant endocarditis (particularly in the latter affection), ecchymoses may be very abundant. In typhus fever the rash is always purpuric. Measles, scarlet fever, and more particularly small-pox, have each a variety characterized by an extensive purpuric rash.

(b) **Toxic.**—The virus of snakes produces with great rapidity extravasation of blood; a condition which has been very carefully studied by Weir Mitchell. Certain medicines, particularly copaiba, quinine, belladonna, mercury, ergot, and the iodides occasionally, are followed by a petechial rash. Under this division, too, comes the purpura associated with jaundice.

(c) **Cachectic.**—Under this heading are best described the instances of purpura which develop in the constitutional disturbance of cancer, tuberculosis, Hodgkin's disease, Bright's disease, scurvy, and in the debility of

old age. In these cases the spots are usually confined to the extremities. They may be very abundant in the lower limbs and about the wrists and hands. This constitutes, probably, the commonest variety of the disease, and many examples of it can be seen in the wards of any large hospital.

(d) **Neurotic.**—One variety is met with in cases of organic disease. It is the so-called myelopathic purpura, which is seen occasionally in locomotor ataxia, particularly following attacks of the lightning pains and, as a rule, involving the area of the skin in which the pains have been most intense. Cases have been met with also in acute myelitis and in transverse myelitis, and occasionally in severe neuralgia. Another form is the remarkable hysterical condition in which stigmata, or bleeding points, appear upon the skin.

(e) **Mechanical.**—This variety is most frequently seen in venous stasis of any form, as in the paroxysms of whooping-cough and in epilepsy.

**Arthritic.**—This form is characterized by involvement of the joints. It is usually known, therefore, as rheumatic, though in reality the evidence upon which this view is based is not conclusive. For the present it seems more satisfactory to use the designation arthritic. Three groups of cases may be recognized:

(a) A mild form, often known as **Purpura simplex**, seen most commonly in children, in whom, with or without articular pain, a crop of purpuric spots appears upon the legs, less commonly upon the trunk and arms. As pointed out by Graves, this form is not infrequently associated with diarrhoea. The disease is seldom severe. There may be loss of appetite, and slight anæmia. Fever is not, as a rule, present, and the patients get well in a week or ten days. These cases are usually regarded as rheumatic, and are certainly associated, in some instances, with undoubted rheumatic manifestations; yet in a majority of the patients which I have seen the arthritis was slighter than in the ordinary rheumatism of children, and no other manifestations were present.

(b) **Peliosis Rheumatica** (Schönlein's Disease).—This remarkable affection is characterized by multiple arthritis, and an eruption which varies greatly in characters, sometimes *purpuric*, more commonly associated with *urticaria* or with *erythema exudativum*. The disease is most common in males between the ages of twenty and thirty. It not infrequently sets in with sore throat, a fever from 101° to 103°, and articular pains. The purpuric rash makes its appearance first on the legs or about the affected joints. It may be a simple purpura or ordinary urticarial wheals. In other instances there are nodular infiltrations, not to be distinguished from erythema nodosum. The combination of wheals and purpura, the *purpura urticans*, is very distinctive. Much more rarely vesication is met with, the so-called *pemphigoid purpura*. The amount of œdema is variable; occasionally it is excessive. In one case, which I saw in Montreal with Molson, the chin and lower lip were enormously swollen, tense, glazed, and deeply ecchymotic. The eyelids were swollen and purpuric,