

ings. If they have practised deception they will sometimes, when put under strict surveillance, die of inanition without taking food. In the case of the so-called "Welsh fasting girl," who was reported to have lived without food of any kind for weeks, death occurred in eight days after she was placed under strict watch.

Inanition sometimes declares itself during the period of convalescence from acute fevers. There has been a large amount of tissue waste, with perhaps a small amount of nutriment taken. The importance of maintaining the nutrition in fevers is better recognized now than formerly, and probably extreme inanition is correspondingly rarer. But when the amount of food supplied has for some time been inadequate to the combustion maintained, we may expect to find the convalescence impaired by some of the symptoms of inanition.

The effect of starvation on the blood is temporarily to increase the number of red cells. This is apparent rather than real, and is due to a concentration of the blood. It is most marked in proportion as the *fluid ingesta* are withdrawn. In more advanced stages of starvation some deformity of the corpuscles may be expected, and a true anemia.

Patients suffering from stricture of the œsophagus and from cancerous affections causing obstruction of the upper alimentary tract, sometimes die of inanition, though the recent development of the surgery of the stomach has much diminished the frequency of that event. Still, inanition plays a part in the symptomatology of many cases of cancerous disease, its effects being usually associated more or less indistinguishably with those of cachexia. In a case reported a few years since in *The Lancet* (November 27th, 1880), a patient having an œsophageal stricture was for ten months able to take nothing but milk. During this time he fell away in weight from one hundred and twenty to sixty pounds. For the next seven months he could swallow neither fluids nor solids, and was kept alive by rectal alimentation. He was able to walk about and his intellect remained unimpaired till three days before his death. At death his weight was forty pounds.

The new-born are subject to a form of inanition due to incapacity to digest and assimilate the food ingested. Here a diarrhoea frequently replaces the constipation which, as we have seen, is a usual attendant of starvation. There is progressive emaciation, which may increase to the extent of thirty or even forty per cent. of the original weight. The skin wrinkles and the features take on an old look. The skin becomes inflamed from the contact of irritating discharges or from pressure. Often pustules of ecchyma appear. The chest is deformed; there is a sinking just above the epigastrium, while the xiphoid cartilage is pressed forward by the liver. The bones of the cranium overlap at the sutures and the fontanel is depressed. The belly is flattened; the stools are fetid. A peculiar odor, almost pathognomonic of starvation, exhales from the mouth and from the skin. The appetite at first is ravenous and the child calls for the breast constantly; later the appetite fails. The pulse and temperature lower progressively as the inanition increases; occasional transient elevations of temperature may, however, occur. The weight-loss averages, in a child of 3 kgm., perhaps 100 gm. daily, and the duration of life may be eight or nine days. There is some reason to believe that robust infants succumb to inanition more quickly than weaker ones, perhaps because the latter require a less amount of force-production for their daily needs.

CLINICAL OBSERVATIONS OF SIMPLE FASTING IN THE HUMAN SUBJECT.—Few experiments, naturally, have been made upon human beings, and such as have been possible from the willingness of individuals to subject themselves to deprivation of food, have, unfortunately, been almost entirely devoid of scientific value. One is alluded to above under the subject of temperature. In the summer of 1880, a man named Tanner accomplished, as was claimed, a fast of forty days in New York. For the first two weeks he was not watched by any regular

physician, but after that time one or more physicians remained with him constantly, and there seems little reason to doubt that he did actually keep the fast as represented, though there was an unfortunate lack of scientific observation of the phenomena presented. It being warm weather, there was comparatively little demand for heat-production. At the sixteenth day the man began to drink water, which was attended with marked improvement in his condition. The total loss of weight was thirty-two pounds. Toward the latter part of the time there was considerable nausea, ending in vomiting of biliary matter, mucus, epithelium, and a few blood corpuscles. There were very troublesome tympanites and obstipation after the first day. There was mental irritability, but no delirium. During the first part of the time he walked about and rode out daily, but later spent much of his time lying on a cot covered with blankets. One estimate of the urea gave on the first day 29 gm., on the fifth day 18 gm., on the eighteenth day 14 gm.

Famine and siege, which in years past have carried off multitudes of human beings by starvation, are no longer, it is to be hoped, capable of causing such destruction, at least in civilized countries. Shipwreck, however, remains as a not infrequent cause of starvation, under varying conditions as to heat, moisture, etc. Medical observations are not wanting upon the condition of men reclaimed at various degrees of inanition. The members of the Lady Franklin Bay expedition, under command of Lieutenant Greely, passed the winter of 1883-84 at latitude 78° 45' N., longitude 74° 15' W. From November 1st to March 1st, their daily ration was 14.88 ounces of solid food, the regular army ration being forty-six ounces. From March 1st to May 12th, the daily ration was ten ounces of bread and meat, with one to three ounces of shrimps. From May 12th to June 22d, there was no food but a few shrimps, reindeer moss, and black lichen scraped from the rocks. There was water, brackish in quality. The temperature of the surrounding medium was 5° to 10° F. There was no artificial warmth. The men, in general, slept much of the time (sixteen to eighteen hours daily), approximating a condition of hibernation. There was not much pain, even after going several days without food. It was only after the ingestion of food that the craving became great. Constipation was excessive; the intervals between the stools were eight to ten and even sixteen days. The men were obliged to dig out the hardened feces with their fingers—the abdominal muscles being too weak to extrude them—and often fainted after evacuating the bowels. The deaths occurred seemingly from pericardial dropsy. There was œdema of the feet and face, then a short spasm of precordial pain, and a slight general convulsion followed by death. The party consisted of twenty-five men; one died in January, of scurvy; sixteen died between March 1st and June 22d, when the survivors were rescued. The medical report showed the condition at that time to be as follows. (The report of one is given which is closely representative of all.) The patient fainted and vomited on first being removed. A sickly, offensive odor, as of stale urine, was emitted from the body, which was greatly emaciated, with skin hanging from the limbs in flaps. Weight one hundred and twenty pounds, the normal weight being one hundred and sixty-eight. Mind excitable and irritable, at times almost irrational. Loss of memory, attended later by amnesic aphasia. At first very talkative. No pain. Tongue dry and cracked, abdomen empty, and lying almost in contact with vertebral column; had had no stool for six days; ravenously hungry. Pulse 52, soft, compressible. Blowing murmur over base of heart in systole. Respirations twelve per minute. Temperature (under tongue) 97.2° F. No specimen of urine obtainable. Inability to move or stand without support. No sleep. Soreness and pain were felt in the muscles.

In the next few days there were alvine dejections, small, dark, and highly offensive, and showing diminution of bile. The skin became jaundiced for several days. The urine, normal in amount, was highly albu-

minous, and so continued for several days. No casts. Examination of the blood showed marked increase of white corpuscles (one to twenty red). The red corpuscles showed little tendency to cohere or to run into rouleaux. They lacked their distinctive biconcave disc shape. On the third day there were three or four hours of natural sleep. The pulse and temperature gradually rose. The anæmic murmurs continued for some time, as did the albuminuria. After a week the patient had gained nine and a half pounds, and was able to sit up. The appetite was still voracious. The mental condition was tranquil, and the amnesic aphasia disappearing. In six weeks the normal weight had been regained.

The *diagnosis* of inanition admits of no doubt except in cases in which it is complicated with other conditions. Yet it is just here that the diagnosis is sometimes of most importance, as, for instance, in the convalescence from acute fevers, where the success of the treatment depends on recognition of this element. It is first important to bear in mind that inanition is liable to occur whenever the supply of nutrient matter to the body has been interrupted.

In infants, as has often been remarked, most of the symptoms of inflammatory disease of the meninges may show themselves as the result of simple starvation. In fever convalescents there is sometimes delirium with headache, dimness of sight, and hallucinations. This condition has been mistaken for meningitis. But the headache in inanition is usually less severe, and the delirium, which probably corresponds to a condition of cerebral anemia, is generally, though not always, of a calmer type. Still the hallucinations which result from it may lead to suicidal or homicidal attempts. One important point is, that the temperature is usually normal or subnormal, while in most other forms of delirium, save in light cases due to alcohol, it is elevated. The diagnosis of delirium due to inanition depends not so much on any peculiarity in the character of the delirium as upon the complexus of symptoms, the opportunity for starvation to have occurred, and the low temperature.

Sometimes vomiting sets in during inanition, a fact which should be borne in mind, in order that there may be no cessation of the nourishment on account of a misapprehension as to the nature of the vomiting. The food must be made as easy of digestion as possible, and, if it is rejected, rectal alimentation must be used as a temporary expedient. There is nothing in the character of the vomiting which is distinctive evidence of its source being in starvation. But, as with the more common symptoms just referred to, its nature must be diagnosed from the other circumstances. Of course, vomiting may itself be the cause of inanition in cases of structural or functional disease of the stomach, but here we shall have a history of vomiting having preceded the excessive emaciation, instead of having followed it.

TREATMENT.—Much care is required, in the dietetic treatment of persons who have been subjected to starvation, that the nourishment be given in small quantities, and that the ravenous appetite of the patient be not followed as an indication of the amount of food required. In extreme cases some stimulant is often required at first on account of the great reduction of temperature; external heat should be freely applied. Meat seems to be the article best adapted to the resumption of long suspended nutrition. Scraped raw beef is one of the most valuable foods, and should be given in teaspoonful doses, flavored, every hour or half-hour. The fluid preparations of beef are also very useful. Milk may be given in alternation with these. From these beginnings the diet may be built up in the usual way. When inanition has been due to some disease not necessarily fatal, the same method of feeding may be relied upon to restore to health; but, of course, in cancerous and other destructive cases the treatment of the element of inanition is greatly circumscribed. Rectal alimentation should, however, always be maintained as long as possible.

A word should be added as to the use of fasting as a therapeutic measure, which formerly had more adherents

than now, and was dignified with the name *cura famis*. With the increasing belief in the importance of maintaining nutrition for the sake of all vital processes, its application has become more and more limited. Its chief value is in the treatment of acute disorders of digestion, where the temporary withdrawal of food gives the organs a chance to obtain physiological rest.

Starvation, in whole or in part as to some articles of diet, has been made use of, from a therapeutic point of view, in the treatment of certain diseased conditions, notably obesity and diabetes.

Many years ago, one Banting, who was successfully treated by Harvey for obesity, wrote an account of the treatment pursued, from which the noun Bantingism and the grotesque verb "to bant" acquired a place in our language. The rules of Chambers, Banting, Cantani, and others amounted practically to a starvation cure, almost nothing but proteid food being allowed. They are open to the following objections: (1) They are usually tolerated for only a brief period, during which the patient is undergoing the "cure," and are not capable of being followed as a permanent rule and habit of life. Hence, after losing a few pounds of weight under their application, the patient returns with increased avidity to his original diet and at once regains what he has lost. (2) When persisted in, the starvation process is likely to aggravate an anemia to which many obese persons are already liable, and hence to start a new chain of morbid processes. (3) An excessive albuminoid diet often leads to a loathing of all food, to indigestion, and chronic diarrhoea. (4) An exclusive albuminoid diet will, in supplying the necessary amount of carbon, cause the ingestion of something like four times as much nitrogen as the body requires, which overtaxes the eliminative system. (5) In reducing the fatty tissues of the body any starvation cure also reduces the albuminous elements, and so produces a failure in the nitrogenous equilibrium of the body.

The various mineral springs which have been recommended for the treatment of obesity, like Marienbad, Carlsbad, Kissingen, Soden, and Homburg, are effective only when conjoined with a dietetic regimen, and those waters which are strongly purgative are dangerous to many plethoric people.

The most satisfactory regimen for obesity is probably that of Ebstein, which is capable of maintenance permanently and does not incapacitate the patient for work. It contains, however, a qualitative and a quantitative diminution of food. The former, like that of Bantingism and the other starvation methods already noted, excludes carbohydrates. Sugar and sweets of all kinds are forbidden, as are also potatoes. Bread is allowed sparingly. The essential peculiarity of the method, however, consists in the addition of fats to the diet.

As the introduction of fat into the economy checks the decomposition of albuminoids, its effect as a constituent of the diet is to diminish the craving to make good that waste, or, in other words, to diminish hunger. Then the patient will require less meat in his diet. But whereas the amount of fat required by an average laborer is seven or eight ounces a day, Ebstein allows only about three ounces to his obese patient. He further limits the diet quantitatively, giving only three meals a day with three to three and one-half ounces of bread. The green and leguminous vegetables are allowed in small quantity. The proteid food, it is found, when accompanied by fat, can in itself be reduced from the thirteen to sixteen ounces allowed by Banting to two-thirds that amount.

An important addition to the dietetic treatment of obesity is the restriction of water and other fluids ingested. Although this point was made by some of the earlier writers, Oertel was the first to put it forward as a suggestion founded on scientific facts. The only alcoholic drinks allowed are a small quantity of a light red or white wine.

The dietetic treatment of diabetes is discussed elsewhere. But attention may here be called to the similarity in the restrictions called for in this disease and those

called for in obesity. Also it will be noted that in both conditions the inclusion of fats in the diet facilitates the diminution in the harmful carbohydrate group. In applying even partial starvation methods for obesity, then, while we must limit the number of aliments allowed in order that the quantitative restriction may be more readily applied, we must beware of a too rapid and radical diminution in weight, and must make our regimen so tolerable that it can be continued as a permanency.

Charles F. Withington.

STASIS. See *Circulation, Pathology of.*

STATUS LYMPHATICUS.—(Synonyms: *Constitutio lymphatica*; *Lymphatic constitution*; *Lymphatic habitus*; *Lymphatic dyscrasia*; *Lymphatic diathesis*; *Lymphatic-chlorotic constitution*; *Lymphatism.*)

DEFINITION.—A so-called constitutional disorder characterized by a persistence or hyperplasia of the thymus and by general lymphadenoid hyperplasia, frequently associated with cardiac and arterial hypoplasia and the osseous evidences of rachitis.

HISTORY.—The term lymphatic diathesis is an old one in medical literature, and was no doubt applied to certain cases of status lymphaticus as above defined. Inasmuch, however, as scrofulous (see *Scrofula*) or tuberculous adenitis was particularly indicated by this ancient term, and that it was also applied to cases of pseudo-leukemia, chlorosis, and leukæmia, it is impossible to determine in how far it was definitely employed.

The most prominent anomaly of status lymphaticus, the persistent or enlarged thymus, was recognized by early pathological anatomists like Félix Plater (1614), Ch. Richa (1723), Bichat and Verdries (1726), and by Allan Burns, Franck, Kopp, Friedleben, and a number of others in the first half of the nineteenth century. (See also *Thymus, Diseases of.*) These pioneer students in their close attention to the thymus overlooked the accessory anatomical features of status lymphaticus; an error that has persisted to the present time and which has been productive of considerable confusion, since much of the literature bearing upon such clinical manifestations of status lymphaticus as laryngismus stridulus and sudden death is to be found by reference to the thymus alone. A clear conception of the lymphatic state was possessed by that pathological anatomist of wide and fruitful experience, Carl Rokitsky, who, in his text-book (1842-46), under the head of "Diseases of the Lymphatic Glands," mentions "lymphatic diathesis" or "lymphatic habitus." He observes that hypertrophy of the lymph glands occurs in childhood to puberty, or even beyond to mature life. The nodes of the abdomen (mesenteric and lumbar plexus) are most frequently involved, and this condition is commonly associated with hypertrophic development of other blood-forming organs, as, for instance, the thyroid gland, and more especially a highly developed spleen, "obstructed involution of the thymus," a hypertrophic state of the follicular apparatus of the intestines, and hypertrophy of the nervous centres. Such hypertrophies affect either the whole system or one portion, as, for instance, the glands of the abdomen. Under "Diseases of the Thymus Gland," Rokitsky says: "Its abnormal enlargement is almost entirely restricted to children, in whom we simultaneously observe a great predominance of the whole lymphatic system, rachitis, and hypertrophy of the brain." The hypoplasia of the heart and arteries, now acknowledged to be one of the frequently concomitant anomalies, commanded the attention of Wunderlich, Virchow, Rokitsky, Riegel, Kulenkampf, Bruberger, and Küssner between 1840 and 1880. On the assumption that vascular hypoplasia was fundamentally related to chlorosis, the condition was described by Virchow as the "lymphatic-chlorotic constitution."

Interest in the lymphatic state, both from the clinical and from the pathological standpoint, has recently been awakened, principally through the labors of the Vienna school, of which A. Paltauf, whose contribution in 1889 marked the new era, is a representative. The various

morbid anatomical features of status lymphaticus were emphasized by Paltauf and illustrated by a series of careful autopsic studies. He revived the name "constitutio lymphatica," which is widely prevalent in recent German contributions; although, notwithstanding the care with which Paltauf endeavored to demonstrate the accessory relationship of the enlarged thymus, one finds it still occupying the most prominent and often quite exclusive position in the reports of many recent writers.

MORBID ANATOMY.—*Thymus.*—The predominant anatomical feature of status lymphaticus and the one that attracts attention most readily is the enlarged or persistent thymus gland. In children below the period of puberty the thymus of the lymphatic state is usually larger than in normal individuals. The enlargement of this organ has been repeatedly noted in infants dying by one of the several usually abrupt modes characteristic of lymphatism, and, as has already been said, this striking anomaly has often been noted to the exclusion of other accessory features. Such expressions as "thymus swollen," "thymus much enlarged," "thymus hypertrophic," appear in the autopsy protocols, together with data referring to the size and weight of the organ. The enlarged organ, which usually retains its bilobed shape, extends from the isthmus of the thyroid well down upon the pericardium, sometimes even to its diaphragmatic junction. Laterally, the thymus spreads after passing beneath the sternoclavicular union, generally expanding into two leaf-like lobes which reach a combined width of 5 to 6 cm. The thickness varies from 0.5 to 3 cm. The length of the enlarged thymus in children varies from 6 to 8 cm.; and its weight has been recorded as from 20 to 53 gm. Recklinghausen reports a thymus "as large as the liver of a new-born infant" in a boy dying suddenly. A vigorous controversy has been waged as to the possibility of asphyxia from compression exerted by the swollen thymus upon the trachea at the point where the organ passes through the thoracic dome, the "critical space" of Grawitz, and some evidence seems to sustain the pressure theory as applicable to a few recorded cases.

It is generally conceded that the thymus in normal individuals undergoes an involution after the second or third year, and that this involution is usually complete at or soon after puberty (see *Thymus*). But in victims of status lymphaticus the involution of the thymus is retarded, in consequence of which a persistent and sometimes hypertrophic organ is encountered in adults, particularly those less than forty years of age. The location of this persistent thymus corresponds to that in children, and the state of enlargement varies in individuals as shown by the recorded weights of 20-135 gm.

Both in children and in adults the thymus of status lymphaticus resembles in appearance the normal organ of infancy. It is pinkish or flesh-like in color; and a distinct lobulation like that of the sweetbread of the calf, often with clearly outlined follicles, is seen. Its consistency is soft. Hemorrhages and consequent ecchymoses are present in certain cases, particularly those in which asphyxia has accompanied the sudden death. At times the thymus is the seat of an active hyperæmia, and a few instances are recorded in which a milky juice exuded from the cut organ.

The pathological histology of the thymus of status lymphaticus is not yet thoroughly elucidated, and more careful studies of a large material by the use of recent methods is highly desirable. In a general way it appears that the enlarged organ reproduces the microscopic structure of the normal thymus of infancy, differing only in the multiplication of the lymphoid cells which serve to increase the size of the follicles, and to produce new ones both in the normal sites and in the adipose tissue surrounding the gland proper. The normal division of the thymic follicle into cortex and medulla is usually retained, though the hyperplasia of lymphoid cells tends to invade the medulla and to infiltrate the trabeculae of the follicles. Some authors have described an increase of eosinophilic leucocytes in the enlarged thymus, but

we have evidence that this is not a constant feature. Endothelioid cell proliferation has also been described.

But while persistence and hypertrophy of the thymus is a prominent characteristic of status lymphaticus, it is not an invariable one, for we may have a non-thymic lymphatism in which general lymphadenoid hyperplasia and arterial hypoplasia exist with a thymus of normal size or one that has undergone perfect involution.

Further, it is well to recall that the anatomical evidences of the lymphatic state may be erased by a number of different causes, and that the thymus is one of the earliest structures so affected. Advanced years, particularly after the fortieth, usually induce rapid subsidence of the enlarged lymphatic structure. Various chronic diseases, and particularly those associated with debility, marasmus, and wasting, act similarly. Some acute diseases may produce the same effect.

Lymphadenoid Hyperplasia.—A generally hypertrophic state of the lymphadenoid tissue is, next after the anomaly of the thymus, the most noticeable evidence of status lymphaticus. This is shown by an increase in the size and number of the lymph follicles in various portions of the body. In the lymph glands, both superficial and deep, it is made apparent by their increased size and also, at times, by enlargement of the individual follicles. Sometimes the superficial lymph glands are not particularly augmented, while those of the abdomen, especially of the mesentery, are affected. Usually the enlarged lymph nodes remain discrete, but there may be a diffuse increase of lymphatic tissue, particularly in the mesentery.

In the respiratory and gastro-intestinal tracts the lymph follicles are generally very prominent. The faucial, lingual, and pharyngeal tonsils, with the intervening solitary follicles, and those at the base of the tongue, in the larynx, œsophagus, and stomach, participate in the process. In the intestines both the solitary follicles and those aggregated in Peyer's patches are unduly prominent. A distinct adenoid ring may appear occasionally in the duodenum, and more frequently at the ileo-cæcal junction. In the small intestine, and particularly in the lowermost portion of the ileum, the follicles of Peyer's patches may protrude above the surface of the mucosa, sometimes appearing as subspherical projections half a centimetre in height; and such augmented patches may reach a length of 9-11 cm. Here the solitary follicles also project prominently, at times even taking the appearance of polypoid outgrowths. In the colon an increased prominence of the solitary follicles, with their pit-like central areas still remaining, is observed. Taken as a whole, the hyperplasia of the lymphatic structures of the intestines in status lymphaticus closely simulates that seen in the stage of swelling of typhoid fever, and might readily be so mistaken.

The retroperitoneal lymph glands usually participate in the hypertrophy, to the same degree as that observed in the mesenteric nodes; and the bronchial glands are also involved, although not invariably. Of the superficial nodes, those of the inguinal, popliteal, axillary, cervical, supra- and infraclavicular regions may be affected to a varying degree, but usually not extensively. Collections of lymphoid cells have been described in the liver, thyroid, and bone marrow, and Kundrat cites a case in which red marrow was present in the shaft of the femur.

Spleen.—A moderate enlargement of the spleen is the rule in status lymphaticus, while the prominence of its Malpighian bodies is more striking. Generally, the splenic pulp is firm, the organ filling its capsule well. In cases of sudden death in individuals of robust condition the splenic pulp is hyperæmic. In the midst of the more or less deeply colored pulp the follicles composing the Malpighian bodies stand out with startling distinctness as pale round areas, often measuring 2-3 mm. across, and resembling large miliary tubercles.

Histologically one finds the enlarged Malpighian bodies to consist of closely packed small lymphoid cells, generally surrounding the arterioles and supplied with few blood-vessels, thus contrasting sharply with the adjacent

pulp tissue with its dilated and engorged blood sinuses. Not infrequently the hyperplastic lymphoid cells of a follicle will infiltrate diffusely into the adjoining pulp tissue, and at times small foci of lymphoid elements, without direct connection with a well-formed follicle, will be found scattered throughout the splenic substance.

The dilated sinuses of the splenic pulp are filled with blood, and in some cases evidence of extensive hæmolytic and the deposit of blood pigment appear in the pulp cells.

Cardiac and Arterial Hypoplasia.—In certain cases of status lymphaticus, particularly those coming under Virchow's class of "lymphatic-chlorotic constitution," a pronounced hypoplasia of the arteries, and sometimes of the heart as well, has been noted. Some authors have described a general arterial narrowing, others a narrowing of the aorta; in fact, so far as the aorta is concerned, a diminution in calibre has been pretty uniformly discovered. In view of our ignorance as to the causation of aortic narrowing, whether real or only apparent and due to varying degrees of elasticity, we are not prepared to assert just what is the nature of the change found in victims of status lymphaticus; but that the aorta, at times the general system of arteries, and rarely the heart, are smaller than the same structures in average normal individuals is unquestionable. Even in adult lymphatic males of full stature and well developed otherwise, an aorta measuring but 4 cm. in circumference at its cardiac end has been found, and a circumference of 5 cm. at the aortic ring is the rule. These narrow aortas are usually thin-walled and quite elastic. Rupture of such thin-walled arteries has been reported; and in certain cases in which the heart also was hypoplastic, a patent foramen ovale has been found.

Rachitic Bone Changes.—That there is a close morbid anatomic association of status lymphaticus and rickets is abundantly proven, particularly in the case of lymphatic infants. Still we are not at present in a position to say that all cases of status lymphaticus are associated anatomically with the rachitic dyscrasia, nor do all cases of rickets exhibit the evidences of lymphatism, though its coincidence with enlarged spleen and hyperplasia of the mesenteric nodes is well known. In infants dying in the lymphatic state a mild grade of craniotabes, the rosary, curvature of the long bones or spine, and enlarged epiphyses, have been manifested as rachitic osseous changes; and in older children or adults several instances of rachitic spinal curvature, pigeon breast, narrow pelvis, and curvature of long bones have been found. Microscopically the affected bones present the lesions characteristic of rickets.

Skin.—A thick skin and an increased fat layer have frequently been noted among the anatomical findings. In the skin an increase of the elastic elements has been described as a factor in augmenting its thickness. Pallor of the skin of the peculiar kind known as pasty ("pasteos") is looked upon as an evidence of lymphatism.

Blood.—Observations upon the blood in status lymphaticus are still meagre, and a unanimous opinion as to the characteristic alterations has not been reached. One would expect a lymphocytosis in these cases, and this has been reported in several cases. Thus Ewing found a pronounced increase in the number of mononuclear large and small lymphoid cells in the blood of one of his cases, and he suggests that further systematic search may reveal this as a constant condition. In the red cells no abnormality in number or structure has been detected.

Occasional Features.—In many of the cases of sudden death among the victims of the lymphatic state a pronounced active hyperæmia of the thoracic and abdominal viscera, and occasionally of the brain, has been described. Further, particularly in those sudden deaths in which asphyxia figured, hemorrhagic ecchymoses of the pericardium, thymus, pleura, and endocardium were present in the order of frequency of the structures mentioned.

Hypertrophy of the thyroid is a quite common accompanying anomaly. There may be a simple hypertrophy, a parenchymatous goitre, or a cystic goitre. In about