Occurs in alkaline or neutral urine; (2) in concentrated alkaline urine; (3) in neutral or slightly acid urine containing large quantities of calcium phosphate; (4) chiefly in alkaline urine, particularly after ammoniacal fermentation. It may also occur in feebly acid urine. Needless to say that several of these phosphates may and often do occur together.

Leucin and Tyrosin (see Fig. 4868).—Leucin and tyrosin usually occur together. The microscopical appearance is characteristic. They appear in the urine in acute yellow liver atrophy, in phosphorus poisoning, and in a number of infectious diseases.

Chemically leucin crystals can be recognized by evaporating the crystals with $HNO_3$ on a piece of platinum foil. A colorless residue remains that forms an oily mass when touched with a solution of KOH.

Tyrosin treated in the same way with $HNO_3$ forms a yellow residue, that treated with NaOH gives a reddish color. If the mixture is evaporated to dryness a brown-black mass remains.

Or the crystals of tyrosin may be dissolved in hot water and the solution treated with $KNO_2$ and $HgNO_3$. The liquid turns dark red and precipitates a red sediment.

Cystin (see Fig. 4868, also section on "Cystinuria" above).—The appearance of cystin crystals calls for chemical analysis of the urine for cystin and quantitative estimation of the cystin excretion.

Other Unorganized Urinary Sediments may be mentioned for completeness' sake. They have no clinical significance whatever. The microscopic appearance of sediments of *hippuric acid, cholesterin, fatty crystals, urea nitrate,* occasionally forming on addition of $HNO_3$ to the urine, and *fat globules* (Fig. 4869), should be familiar to the clinician in order to avoid confusion with more important sediments.

Urinary sediments may also contain xanthin, blood pigment, bile pigment, indigo, and numerous accidental contaminations. *Alfred C. Croftan.*

**URISOLVIN** is a mixture of acid lithium citrate and urea, used in 0.2 gm. (gr. iij.) dose as a diuretic and uric-acid solvent. *W. A. Bastedo.*

**UROPHERIN,** theobromine-lithium salicylate, lithium-diuretin, $C_7H_7N_4O_2Li + C_6H_4OH.COOLi$, is prepared by mixing theobromine with the hydroxide and salicylate of lithium. It is a white powder soluble in five parts of water, and differs from diuretin only in the substitution of lithium for sodium. It is strongly diuretic in 1 gm. (gr. xv.) doses repeated frequently.

*Uropherin benzoate* is prepared from the benzoate of lithium instead of the salicylate. *W. A. Bastedo.*

**UROSIN,** lithium quinate, is made by mixing quinic acid, which tends to prevent the formation of uric acid, with lithium citrate, which is a uric-acid solvent. It is held by Weiss and by Sternfeld to be almost specific in attacks of gout. The dose is 0.5 gm. (gr. viij.), frequently repeated. *W. A. Bastedo.*

**UROTROPIN,** hexamethylene-tetramine, aminoform, cystamine, cystogen, formin, ammonio-formaldehyde, etc., $(CH_2)_6N_4$, is made by combining six molecules of formaldehyde with four of ammonia. It forms rhomboidal crystals of neutral or faintly alkaline reaction, and is soluble in 1.2 parts of water, slightly in alcohol, and scarcely at all in ether. In the urine it may be detected by the formation of an orange precipitate with a few drops of a saturated solution of bromine.

Introduced in 1895 by Bordet, this remedy has come into universal use as a urinary antiseptic. It is very rapidly absorbed, Casper finding it in the urine in ten minutes; usually the urine continued to give off formaldehyde for several days. In a few cases no formaldehyde was demonstrable though urotropin was constantly excreted, and Citron calls attention to the fact that formaldehyde is sometimes not liberated in strongly alkaline urine. The blood of a rabbit, to which Casper administered urotropin hypodermically, was shown to contain formaldehyde.

The drug has been recommended as a diuretic, a uric-acid solvent, and a urinary antiseptic and acidifier. Thompson considers its diuretic powers to be very slight, though other observers report considerable increase in the flow of urine following large doses. As a uric-acid solvent Casper found that neither a urotropin solution nor the urine of a patient taking urotropin had any effect *in vitro.* He discovered accidentally, however, that it caused complete cessation of all visible phosphate excretion in a case of phosphaturia.

It is in bacterial conditions of the urine, however, that urotropin finds its chief indication. In typhoid fever there is much evidence that the bacilli are prevented from developing in the urine; at Johns Hopkins Hospital the typhoid bacilli did not completely disappear from the urine, but were much diminished in numbers. Osler recommended the drug very highly in typhoid cystitis. In suppurative pyelitis and cystitis urotropin has the power of greatly lessening bacterial action, while at the same time it tends to diminish the alkalinity or increase the acidity. When the urine is strongly alkaline it sometimes fails to act. Cohn found no improvement in tuberculous cystitis or in cystitis following acute gonorrhœa, but Bangs and others advise its routine employment in gonorrhœa, as it tends to keep the urine antiseptic and to lessen the tendency of the gonococcus to invade the posterior urethra and bladder. A. R. Elliott, of Chicago, gives up to 6 gm. (ʒ iss.) a day, though noting that the acidity of the urine may be so increased thereby as to cause irritation. But there are a number of reports of vesical irritation, hæmaturia, and even melæna following much smaller doses. W. Langdon Brown reports two cases of vesical hæmaturia from ten grains three times a day for eight days. Morton noted burning in the urethra and frequent micturition from twenty-four grains a day. Biss, in three hundred and eleven typhoid cases, noted irritation and slight hæmaturia twice. The general opinion seems to be that the blood comes from the bladder and not from the kidneys, though it is advised not to employ the drug in cases of nephritis. Eastman noted lowering of temperature and pulse. The ordinary dose of urotropin is 0.2–0.5 gm. (gr. iij.–viij.), and Nicolaier advises that 1.5 gm. (gr. xxiij.) a day should not be exceeded. It is best administered with plenty of water in small doses frequently repeated.

Loebisch has proposed the employment of urotropin as an intestinal disinfectant, its administration in intestinal putrefaction being more promptly followed by absence of indican in the urine than is the case with salol and other much-used drugs. It is absorbed very rapidly, however, and practically all of it is excreted in the urine; so it hardly seems probable that appreciable quantities of it can act in the intestine. Joseph Eastman thinks it may prove of value in puerperal sepsis. *W. A. Bastedo.*

**URTICARIA.**—Urticaria is an affection of the skin of which the salient characteristic is the occurrence of peculiar lesions called wheals. The description of wheals therefore covers in large part the objective symptoms of urticaria.

A wheal is a circumscribed elevation of the skin due to œdema of the corium. A typical wheal is the lesion produced in the average individual by the bite of a mosquito or flea. The typical wheal is slightly elevated, sharply circumscribed, with a flat or rounded surface, and of irregular or oval outline. The centre is usually pale and bloodless, but around this pale elevated centre there is an erythematous halo. The pressure of the edge of the finger nail on a wheal causes a slowly disappearing pitting, as in other œdema. The development of a wheal takes place suddenly. The first evidence of it is a rapidly appearing erythematous spot which itches, and upon which there suddenly develops a flat, œdematous swelling. The whole evolution of the lesion may occur in a few seconds. The duration is usually short, from a few minutes to an hour or two, though occasionally the le-





sions last for one or two days, and at times they persist for a week or more. Upon the disappearance of a wheal, if there has been no traumatism from scratching, no trace is usually left. At times, however, there is slight pigmentation, and if, as frequently happens, there has been vigorous scratching, inflamed papules or excoriations remain as a result of the traumatism.

As would be expected of so capricious a lesion there are numerous variations upon this typical wheal, and various subvarieties of urticaria are described according to the predominating form of wheals which characterize them. Wheals vary in size most widely. Typical wheals are usually from the size of a split pea to that of a finger nail. At times they are not larger than small papules and indeed are almost indistinguishable from ordinary inflammatory papules. They are frequently of the size of a twenty-five-cent piece, and in extreme cases are much larger. The writer has seen a wheal of which the elevation was not greater than a quarter of an inch, which extended around the chest from the median line in front to the median line at the back, and from the line of the nipple above to below the border of the ribs (*urticaria gigans*). Their shape is equally uncertain. Usually of more or less oval outline, they at times assume most irregular shapes, and, in persons whose skins are particularly susceptible to the production of wheals, they may be produced of any shape (*urticaria factitia*). In color they vary from inflammatory red to waxy white. If the œdema is intense enough to press out the blood from the capillaries, they show as a pale waxy centre with a narrow red periphery. Where the œdema is not so intense, or where the looseness of the tissues prevents extreme pressure from the œdema, the lesions are red in evidence of the hyperæmia. Occurring in tissues like the prepuce and eyelids, which are lax and offer, therefore, little resistance to the outpouring of serum, the lesions often form tumor-like œdematous swellings that closely resemble an inflammatory process in the same tissues (*urticaria tuberosa*). They are differentiated by their sudden appearance and equally sudden subsidence and the entire absence of pain. Very rarely the pressure of the extravasated fluid in the skin is sufficient to cause uplifting of the epidermis, so that the wheal is capped with a vesicle or bulla (*urticaria bullosa*). In still rarer instances the extravasation of serum is accompanied by enough red blood corpuscles to make the contents of these vesicles or bullæ hemorrhagic (*urticaria hæmorrhagica*).

In an acute attack of urticaria there is a sudden outbreak of wheals preceded and accompanied by more or less itching. There may be only a few lesions, or they may be innumerable. They occur on any part of the body, without symmetry and without any regularity of distribution. The acute attacks are often introduced by a transient systemic disturbance, with evidences of acute gastro-intestinal irritation. The temperature rises sharply three or four degrees, there are a rapid pulse, furred tongue, nausea and vomiting, and more or less prostration. At times evidences of a gastric crisis seem to indicate the involvement of the stomach in this peculiar angioneurotic process. The lesions themselves are characterized by intense itching. This itching may occur not only in the wheals themselves, but often at points where no wheals are present. The itching usually precedes for a few minutes the appearance of the wheals, and it persists during their continuance. It is somewhat paroxysmal in character, varying in intensity, without corresponding variation in the lesions. The itching varies in different cases and in different individuals, and according to the site of the lesions. Lesions in loose tissue may be accompanied by no itching whatever, while those occurring in dense thick skin and where the sensory nerve supply is richest, as on the hands and feet, are characterized by the most intense itching.

The course of an acute attack of urticaria usually extends over a few hours or at most a day or two, the disease passing away after the appearance of several crops of evanescent lesions. At times, however, the disease persists for weeks and months in successive outbreaks of the eruption, and in such cases is characterized as urticaria chronica, the term referring to the persistence of the process as a whole rather than to any peculiarity of the individual attacks. On the other hand, urticaria is persistent at times not only from the occurrence of repeated outbreaks of the eruption, but because the lesions lose their evanescent character and persist for days or weeks (*urticaria perstans*).

The *urticaria papulosa* of children, described by English dermatologists, is the best type of persistent urticaria. The characteristics of this form are the persistence of the lesions and the fact that the true urticarial wheals are followed by inflammatory papules which may persist for several weeks. It is readily seen that the occurrence of successive crops of wheals, which themselves persist for days or weeks and are followed by inflammatory papules which persist even longer, will produce an exaggerated picture of the urticarial skin. In such cases, as a result of scratching, we have inflamed papules, infected excoriations and more or less dermatitis, that results in thickening and induration of the skin. These cases in their most extreme type are strikingly similar to Hebra's prurigo. It is indeed not unlikely that they pass at times into true prurigo.

It is not an infrequent experience to see the vaso-motor mechanism so delicate that wheals may be produced at will by friction or other slight traumatism (urticaria factitia). In cases of acute urticaria this phenomenon is usual. In certain individuals this vaso-motor instability is inherent, so that factitious wheals may be produced at any time by slight traumatism, as drawing a line on the skin with a little force with a blunt stick or a finger nail. In such cases it is of course possible to produce wheals of any shape, so that names and elaborate designs may easily be written in wheals upon the skin (*dermographism*).

Urticaria tuberosa, urticaria bullosa, and urticaria hæmorrhagica have been referred to above. The peculiarities of the lesions of urticaria tuberosa depend almost solely upon their location at sites where the skin is very loose, and the lesions deserve no especial mention except to call attention to their somewhat confusing appearance at times. The lesions of urticaria bullosa and urticaria hæmorrhagica are usually seen in run-down individuals living under unfavorable conditions. Urticaria bullosa occurs most frequently in children. Urticaria hæmorrhagica is frequently associated with other evidences of hemorrhagic tendency, as hemorrhage from the mucous membranes, from the bowels and from the genito-urinary tract, and it is an evidence of a more profound systemic disturbance than usually exists in urticaria. Both of these forms of urticaria are rare.

The term giant urticaria is applied to urticaria which is characterized by the development of one or more wheals of very large size. They may be typical wheals, but most frequently they are rapidly developing œdematous swellings of pinkish color that bear a very striking objective similarity to an acute cellulitis. Such swellings at times present very slight if any resemblance to an urticarial wheal. They occur most frequently about the face and extremities, and often form tense, angry-looking swellings that for the time cause alarming distortion. Frequent sites of these lesions are the eyelid, the cheek, the nose, the lips, and the ear, and on such parts they may cause the most grotesque deformity. The larynx is not an uncommon site for their development, and their occurrence in that location may be the cause of distressing dyspnœa. Very rarely has it been found necessary to perform tracheotomy in such cases. Usually these large lesions occur singly, but they may occur in successive outbreaks or several large lesions may occur at one time. These lesions, like other urticarial wheals, develop rapidly, usually in the course of a few minutes, and after persisting for a shorter or longer time as rapidly subside. They are painless, usually unaccompanied by itching, and, unless they interfere with some important function through their size, are the source of little discomfort. There may be slight constitutional

disturbance such as occurs in other forms of acute urticaria, and typical urticarial wheals may accompany or alternate with these giant lesions.

Giant urticaria is frequently described as a separate disease under the title of Angioneurotic Œdema, or Acute Circumscribed Œdema. It presents, however, no essential difference from other forms of urticaria. Its etiology, its course, and the fact of its being frequently accompanied by ordinary urticarial lesions show its essential relationship to urticaria, and for that reason it is included here. All that is to be said about etiology, pathology, prognosis, and treatment of other forms of urticaria applies with unessential variations to giant urticaria or angioneurotic œdema. The original description of this condition is usually credited to Quincke (*Monatshefte f. prakt. Derm. u. Syph.*, 1882). The condition, however, had been accurately described, and its character recognized previously, by Bannister (*Chicago Medical Review*, June 20th, 1880).

Etiology.—Urticaria occurs at any time of life, but is most frequent in childhood. Among young children acute attacks of urticaria are very common, as a result of imprudent eating or slight disturbance of digestion.

In most urticarias two factors stand out prominently in the etiology. The first is individual predisposition; the second is the presence of some toxic substance which disturbs the local vaso-motor tone. There are other forms of urticaria besides those due to the disturbance of the vaso-motor mechanism of the skin by toxic substances, but they are relatively few.

Underlying the development of urticaria from all sorts of causes is individual predisposition. In certain individuals urticaria can be produced by the most trivial causes, such as the crawling of a caterpillar upon the skin, or the ingestion of the minutest quantity of some particular substance. In other individuals its occurrence is unknown. So violent an irritant as even the sting of a bee may not produce the smallest wheal.

The causes of urticaria may be divided into local and constitutional. Among the local causes of urticaria are especially to be mentioned the bites of parasites, such as fleas, mosquitoes, the various forms of pediculi, bedbugs, and the stings of wasps and bees. The lesions may also be caused by contact with stinging nettle, jelly fish, or caterpillars.

The constitutional causes of urticaria are numerous, but they are largely comprehended under various forms of intoxication. In certain individuals the ingestion of a particular article of food or of a particular medicine is followed by the development of an acute outbreak of urticaria. Among food-stuffs that may cause urticaria are: oysters, crabs, lobsters, and other shell fish; pork, sausage, and other similar highly seasoned meats; mushrooms, strawberries, tomatoes, cucumbers, and nuts. Among medicines: opium, chloral, the salicylates, copaiba, cubebs, quinine, turpentine, valerian, and various coal-tar products. The most frequently offending substances among the above perhaps are shell fish and strawberries, opium, quinine, copaiba, and cubebs. Another form of intoxication from without, which is now a very common cause of urticaria and is a connecting link between the causes of urticaria introduced from without and those developed within, is that from the antitoxins. Urticaria is the most frequent cutaneous manifestation following the use of diphtheria antitoxin. Somewhat similar are the urticarias which have been described from the absorption of hydatid fluid.

The forms of intoxication from within which may cause urticaria are numerous, but far and away the most important is auto-intoxication arising from the gastro-intestinal tract. Over-eating, constipation, and defective elimination are the group of factors most frequently seen in the causation of urticaria. Disturbances of the liver, particularly those which are accompanied by the presence of bile in the circulation, are at times responsible for outbreaks of urticaria. And the conditions which are vaguely described under lithæmia, gout, and rheumatism, of which the essential characteristic is a disturbance of the balance between assimilation and excretion or the presence of suboxidation products in the blood, are frequently responsible for chronic urticarias. Urticaria is also at times a result of malaria, and Matas has reported a case in which outbreaks of urticaria seemed to take the place of the usual malarial attacks. Anæmia is a factor which has to be frequently combated in the management of urticaria, and it occurs also at times in connection with albuminuria and glycosuria.

After auto-intoxication, in the etiology of urticaria, come the various factors which may be included under the head of the nervous causes of urticaria. The condition is seen with considerable frequency as a result of the nervous disturbances accompanying disorders of the genito-urinary tract, in pregnancy, at menstruation, and during lactation. It is excited at times by violent emotional disturbances, as grief, the dread of some impending crisis, or the shock of surgical operations. In particularly unstable individuals it may occur from such slight mental disturbances as anger, confusion, or surprise. Its occurrence as a result of rectal worms, phimosis, and similar forms of local irritation seems to indicate that at times it is due to reflex nervous irritation. The occurrence of urticaria in connection with nervous diseases is well recognized. This is rather frequent in functional nervous disturbances like hysteria. It is rarer in connection with organic diseases of the central nervous system.

Pathology.—Urticaria is distinctly an angioneurotic disturbance. There is a temporary disturbance of the vaso-motor control which results in a dilatation of the capillaries of the part and local hyperæmia. There is a rapid outpouring of serum into the tissues producing an intense œdema. This shows as a swelling of the skin which at first is pink, but as the pressure becomes greater the blood is driven out of the capillaries at the centre and there develops a pale bloodless area surrounded by a halo of hyperæmia. Microscopically the tissues show the evidences of intense serous effusion with more or less diapedesis of leucocytes.

Diagnosis.—The diagnosis of typical urticaria offers no difficulties. Indeed this is usually made without the physician's aid. The rarer varieties of urticaria, urticaria hæmorrhagica, urticaria bullosa, and angioneurotic œdema, may lead to some confusion. In the first two types there are usually evidences of typical urticaria sufficiently manifest to give the key to the diagnosis. In angioneurotic œdema or giant urticaria the suddenness of its onset, its rapid development, the freedom from pain, and the accompanying evidences of typical urticaria usually make the diagnosis from cellulitis, with which it is most likely to be confused, easy. The diagnosis of urticaria in itself, however, is the smallest part of the problem with which one has to deal in the cases. The far more difficult part is the determination of the causative factors. This, in cases of chronic urticaria, often taxes one to the utmost.

Prognosis.—In acute urticarias relief is easy. In chronic urticarias the success of treatment depends altogether upon the difficulty which attends the relief of the underlying condition, and the prognosis as to ready relief in such cases should be very guarded.

Treatment.—The curative treatment of urticaria is altogether a question of the elimination of the underlying trouble and the management of the various cases is along the line of rational therapeutics. In all cases the possibility of the disease being due to parasites should be borne in mind. Where any of these are found to be the cause, the treatment is of course that necessary for the destruction of the particular parasite.

The constitutional treatment of acute attacks of urticaria is simply a matter of the relief of the digestive disturbance which usually is the cause of it. If the cases are seen early an emetic may be indicated. More frequently, however, a brisk cathartic, such as magnesium sulphate, is all that is necessary. The after-treatment of these cases consists of keeping the bowels open, and keeping the patient upon a careful diet until the digestive disturbance is relieved. Frequently an acute urticaria is the culmination of more or less continued digestive disturbance. In such cases the mercurial cathartics are particularly valuable.

In the chronic forms of urticaria permanent relief is usually the result of painstaking investigation into the causation. The questions of defective elimination, constipation, lithæmia, or some lack of balance between assimilation and excretion, particularly have to be taken into consideration. The first attention has to be paid to the digestion. The diet should be regulated, indigestible foods generally prohibited, and a bland, simple dietary followed for a time. The free use of fruits, contrary to the advice sometimes given, is in my opinion usually indicated, and the patient should drink plenty of water. Careful attention should be paid to elimination, especially by the bowels, and for this purpose the rather liberal use of aperients for a time is advisable. Of the aperients I think that calomel and blue mass easily head the list in value; after them come senna, podophyllin, sodium phosphate. In the gouty and lithæmic, alkalies and colchicum are useful. In stimulating elimination I have had excellent results from the daily hot bath, the patient staying in the bath for from ten to thirty minutes each day, so that free sweating occurs. In certain cases the nervous sedatives prove distinctly valuable; the bromides, acetanilid, phenacetin, and sulphonal are all at times useful. The various forms of opium are to be avoided, not only because of their adverse effect on elimination, but because of the marked tendency of opium itself to cause urticaria.

It cannot be emphasized too strongly that in all persistent cases of urticaria the question of elimination and the condition of the digestive tract deserve first consideration. After that the other factors, such as malaria, jaundice, anæmia, and other less frequent causes, are to be investigated, and when found present are to be treated along the usual lines. Rational treatment failing, certain remedies, used more or less empirically, have been found helpful. Quinine, the salicylates, belladonna, and strychnine are useful in certain cases. Calcium chloride has been recommended by Wright, and it has at times seemed to me to be of service. Among the remedies used empirically the one which has given me the greatest satisfaction has been pilocarpine. Given to the point of producing the slightest evidence of its physiological effects, it is valuable in relieving itching and giving the patients rest. In certain intractable cases without gastro-intestinal trouble arsenic is recommended.

*Local Treatment.*—The local treatment of urticaria is almost entirely directed to the relief of itching. For this purpose in acute attacks of urticaria one of the commonest and most useful measures is the alkaline or acid bath. A general bath or sponge bath with sodium bicarbonate usually immediately stops the itching. Equally good results are frequently obtained with similar baths of common salt. Either the salt or the soda bath is most effective when it is rather strong. In place of soda or salt, borax or ammonium chloride may be used with equally good effect. The strength, for ammonium chloride, is one or two ounces to the bath.

Similar baths with vinegar or other acids are often equally effective, but they are not quite so agreeable, and usually nothing is gained by substituting them for the salt or soda bath. In place of the bath alkaline or acid lotions may be substituted. As acid lotions, water and vinegar equal parts, water two parts and vinegar one part, or alcohol two parts and vinegar one part, may be used with good effect. A one- or two-per-cent. solution of carbolic acid with glycerin in water or in a boric-acid solution is a most excellent antipruritic in these cases. In place of the water the lotion is sometimes made more agreeable, and perhaps more effective, by the substitution of distilled extract of hamamelis. Other antipruritic lotions are made with liquor carbonis detergens, or camphor chloral, or resorcin in the strength of one to three per cent. in water. A lotion which I have found particularly useful in severe itching, where the skin is not broken, is camphor chloral and carbolic acid, each one to three per cent., in equal parts of distilled extract of witch hazel and alcohol. This may be made more cooling and more powerful by the addition of one to two per cent. of menthol. In certain cases the addition of an insoluble powder in suspension to these lotions is advantageous. For this purpose suitable powders are zinc oxide and calamine. These may be added to such lotions as have been suggested above in the strength of one or two ounces to the pint. A type of such a lotion, which has given me excellent service, is the well-known calamine and zinc-oxide lotion, with the addition of one or two per cent. carbolic acid and glycerin. A good formula for this lotion is as follows: Acid carbolic, glycerin, āā ʒ i.–ʒ iij.; zinc oxide, calamine, āā ℥ i.–℥ ij.; lime water, Oj. Frequently a most agreeable application, in conjunction with these other measures, is a dusting powder to be applied after the bath or after the application of a lotion. Suitable dusting powders for this purpose are zinc oxide, starch, talcum, or stearate of zinc. A useful addition to these powders is boric acid in the proportion of one-half to one drachm to the ounce, or salicylic acid, resorcin or thymol in the proportion of five to twenty grains to the ounce. Usually, unless there is a secondary dermatitis, ointments are not desirable. They are mussy and inconvenient and dirty and not more effective than the lotions. Where there is a secondary dermatitis, however, as a result of scratching, ointments are frequently useful not only as vehicles for the active medicament, but as a protection for the abraded surfaces. In such conditions the antipruritic lotions have to be used with some care, as they are more or less irritating. Baths are not contraindicated, but the addition of bran or oatmeal to the baths in sufficient quantities to make them slightly mucilaginous renders them more soothing.

*William Allen Pusey.*

**URTICARIA PIGMENTOSA.**—Urticaria pigmentosa is a rare affection which is characterized by the development of wheals which are followed by peculiar persistent pigmented macules or nodules. It differs in many respects from ordinary urticaria, and, although the disease is accompanied by wheals, it is in all probability not a form of true urticaria. Two forms of the disease exist—the macular and the nodular. These at times occur distinctly, or more frequently the disease presents a combination of the two types. All forms begin in early childhood. The first evidence is the development of erythematous spots, which are followed in a day or two by the development of small reddish wheals. In other cases wheals develop suddenly without any noticeable premonitory erythema. In the macular form, upon the disappearance of the wheals there are left fawn-colored or brownish-yellow pigmented stains. These are level with the skin or perhaps slightly elevated. In the nodular form there is the same sudden eruption of wheals which are succeeded by nodular lesions that remain indefinitely. These are at first reddish, but in time become brownish-red or brownish-yellow. Similar lesions continue to appear and the disease thus goes on for many years. Individual nodules may persist for years; at other times they shrink and disappear, leaving brownish, pigmented, atrophic spots. Usually after several years new lesions no longer develop and the disease gradually disappears. In both the macular and the nodular forms factitious urticaria can be produced by friction, and in the same way wheals may be made to develop at the site of the nodular or macular lesions. Itching in these cases is usually severe, and, continuing as it does for years, is the most serious feature of the disease.

*Etiology.*—Its cause is practically unknown. It appears usually within the first six months of life, most frequently before the third month, and only a few cases developing after eighteen months have been recorded. Most of the recorded cases have been in boys.

*Pathology.*—A section from one of the lesions shows no alterations in the epithelial layer except marked increase of pigment in the basal layer and some horizontal stretch-

ing of the epithelial cells. The upper part of the corium is œdematous, and there is a peculiarly abundant infiltration with mast cells. Unna was the first to call attention to the marked accumulation of mast cells in the corium, and his observations have been repeatedly confirmed by other observers.

*Diagnosis.*—The extreme rarity of the disease renders it liable to be overlooked. The presence of factitious wheals and itching suggests urticaria, and when there is added to this the presence of the peculiar brownish-yellow persistent nodules or macules, the diagnosis should readily suggest itself. There is no other disease that closely resembles it. The diagnosis from urticaria is made by the presence of the peculiar persistent lesions. The process might also suggest xanthoma, but the lesions of xanthoma are of a distinctly yellow color, while these are dirty-yellow or brown. Xanthoma does not itch, and has none of the other features suggestive of urticaria.

*Prognosis.*—The disease usually persists for years, at least until the time of puberty, although some cases have been known to get well after a duration of one or two years.

*Treatment.*—Treatment has had no effect upon the course of the disease. Relief of digestive disturbances renders the disease less severe, and careful attention to the dietary of the patients has some effect in improving their condition. Crocker reports that the empirical use of Fowler's solution had a marked effect in preventing the development of new lesions in one of his cases. The itching can be in great part controlled by the use of antipruritic applications, such as are used in ordinary urticaria, and the local treatment is along the same lines as in urticaria. *William Allen Pusey.*

**USTILAGO.**—(*Corn-smut, Corn-ergot,* etc.) The fungus *Ustilago Maydis* Leveille, replacing the grain of *Zea Mays* L. This well-known blight of Indian corn grows upon various parts of the plant—stem, leaf, sheaths, tassels, but especially upon the forming ears. It forms early a fleshy, irregular mass of mycelium embedded in a jelly-like substance, and attains upon the ears, which it transforms or destroys, a size equalling that of a cocoanut, more or less irregularly globular. At maturity it develops into a black, dry, crumbly, or powdery mass of spherical, tuberculated spores enclosed in a cellular pouch. It has an unpleasant musty odor and taste. This ripe mass of spores is the portion used, and it is collected in midsummer, simply freed from impurities and dried. As obtained, it is a mass of powder and shreds of membrane, nearly as black and quite as dusty as powdered charcoal.

Little is known of the constituents of ustilago, except that they are, in a general way, similar to those of ergot. Mitchell has found that in frogs it soon acted as a narcotic, destroying consciousness; it then paralyzed the sensory centres in the spinal cord, and afterward, if the dose were toxic, the motor centres and nerves.

Numerous clinical reports have been made to the effect that it acts upon the parturient uterus much like ergot. Its use was considerably urged from 1876 to 1880, and it became official in the United States Pharmacopœia of the latter year, but its use has now almost altogether ceased. It has also been given in menorrhagia, bleeding fibroids, and other troubles which may be relieved by increasing the tension of uterine tissue. Dose, in infusion or fluid extract, from 1 to 3 or 4 gm. (gr. xv. to lx.).
*W. P. Bolles.*

**UTAH HOT SPRINGS.**—Box Elder County, Utah.
Post-Office.—Utah Hot Springs. Hotel.
Access.—Viâ Southern Pacific and Union Pacific Railroads. The Utah Hot Springs Company's Steam Motor Line runs in connection with the Ogden City Street Electric Line.

These springs flow from the western base of the Wahsatch Mountains into Salt Lake valley, about nine miles north of the city of Ogden. They are located at an elevation of 4,246 feet above the sea-level. The mountains here are very rugged and picturesque, and attain an elevation of more than 5,000 feet above the location of the springs. As shown by the reports of the United States Signal Service, the climate of the Salt Lake valley is very mild in winter and free from oppressive heat during the summer months. The atmosphere is very invigorating and beneficial to almost all classes of invalids. There are three large springs in the group, and when discovered they resembled three immense wells, twenty to thirty feet in diameter, and eighty to one hundred feet deep. Each of these furnishes a large stream of clear, hot, sparkling water, their combined outflow being about 160,000 gallons in twenty-four hours. The temperature varies from 131° to 144° F. An analysis by Prof. Spencer F. Baird, Smithsonian Institution, Washington, D. C., resulted as follows:

One United States gallon contains (solids): Calcium sulphate, gr. 18.07; calcium chloride, gr. 170.49; potassium chloride, gr. 97.74; sodium chloride, gr. 1,052.47; magnesium chloride, gr. 1.07; magnesium carbonate, gr. 11.77; silica, gr. 2.69; alumina, gr. 0.25. Total, 1,354.55 grains. Carbonic acid gas, 37.18 cubic inches.

The Hot Springs Hotel is a frame structure, about three hundred feet long, the north end of which is used for baths. The resort is very well supplied with bathing facilities, containing, besides many private rooms, a large plunge bath for women and another for men, and an immense swimming pool. The water is quite strongly muriated saline. It contains, in addition to the mineral ingredients, a large amount of organic matter in the form of vegetable growths or algæ. These form rapidly in reservoirs containing the water, and, it is said, they impart a soft, unctuous, or oleaginous effect to the water, which is very pleasing to the skin, and believed to be soothing to the nervous system. The baths are much resorted to by persons suffering from rheumatism, gout, syphilis, chronic bronchial catarrh, obstructive jaundice, disorders of menstruation, etc.
*James K. Crook.*

**UTAH WARM SPRINGS.**—Salt Lake County, Utah.
Post-Office.—Salt Lake City.

These springs are situated at the base of the heights of Ensign Peak, in West Second Street, Salt Lake City. The location is about 4,060 feet above the sea-level, or 20 feet above the general level of the Salt Lake valley and 40 feet above the lake itself. The springs are the property of the city, and are leased by the present managers for a period of ten years. An excellent bathhouse, easily accessible from all parts of the city by electric cars, is maintained at the springs. The water has a temperature of 112° F. as follows. It was analyzed by Dr. Charles T. Jackson, of Boston, with the following results: One United States gallon contains (solids): Calcium and magnesium carbonate, gr. 10.22; iron peroxide, gr. 1.70; calcium, gr. 23.21; chlorine, gr. 147.14; sodium, gr. 125.66; magnesium, gr. 15.86; sulphuric acid, gr. 29.94. Total, 353.73 grains. *James K. Crook.*

**UTERUS.** See *Sexual Organs, Female,* and *Gestation.*

**UTERUS, DISEASES OF: AFFECTIONS OF THE CERVIX.**—In considering diseases of the cervix uteri, it must be remembered that the cervix is an integral part of the uterus, and that disease of one part is generally coincident with disease of the whole. The fact remains, however, that disease of the cervix does occur without invasion of the corpus uteri and *vice versa.*

Atrophies.

1. Physiological Atrophies.—*Senile Atrophy.*—Generally with the commencement of the menopause a change in the size and consistence of the cervix takes place in conjunction with changes of a like character which occur at this time throughout the whole genital tract. Instead of at the usual time these changes may appear much earlier in life, and their premature onset, without previous sickness or known cause, is simply an early physiological ending of the active sexual life.





The cervix becomes reduced in size and assumes a conical shape, the mucous membrane loses its pink color and is pale and anæmic; while the folds of the arbor vitæ atrophy and in some cases almost disappear. The epithelial lining of the cavity undergoes retrograde changes, so that the secretion almost or wholly ceases and the canal may be hardly patent. Oftentimes the cervix nearly disappears, and owing to the atrophy of the vaginal fornices remains only as a dimple in the apex of the cone-shaped vagina.

With the cessation of menstruation we have the well-known general symptoms, be it early or late, but the process in the genitals being a physiological one requires no special treatment.

Under physiological atrophy may also be included the change which takes place after castration; the process and symptoms which follow being analogous to those of senile atrophy.

*Atrophy of Lactation.*—It has long been a well-recognized fact that the uterus of a woman nursing her child contracts more quickly and firmly, due to a reflex action upon the uterus. This may go so far that the uterus is smaller than normal.

While this process is perfectly physiological, according to those who have made careful observations on this subject, yet it may go so far as to become pathological in women upon whom the strain of nursing is too severe, or who are suffering from debility. Horn, who has investigated this subject very thoroughly, says that with the return of menstruation the uterus regains its former size. He also found that the atrophy was of two distinct kinds. In one class the uterus became pale, anæmic, and small, with the cavity diminished in size. In the other the walls became thin and flabby and the cavity diminished. The cervix was affected in some cases, while in others it took no part in either form of atrophy. When the atrophy is not of the severe type the cervix is little altered, but with the involvement of the whole genital tract it is markedly affected and becomes small and short.

Prognosis in the lactation atrophy, when the process has not been allowed to proceed too far, is good, even when there is some local or bodily ailment.

Treatment is not usually required, as with the return of menstruation and sexual intercourse the uterus regains its former size. In instances in which there seems to be danger of the atrophy proceeding too far, the child should be taken from the breast and the patient given rest and tonics. If more is needed, treatment should be directed to increasing the blood supply of the uterus by passing sounds, by the use of hot douches, by massage after Brandt's method, or by painting the cervix with Churchill's tincture of iodine. Hot sitz and foot baths, as well as scarification, may also be tried.

2. Pathological Atrophies.—*Atrophy Following Systemic Diseases.*—This has been reported following tuberculosis, diabetes mellitus and insipidus, myxœdema, nephritis, Addison's and Basedow's diseases. Cases have also been seen after scarlet fever and typhus fever, articular rheumatism, after paralysis of the lower limbs, from the morphine habit, and from psychical derangement.

*Atrophy Following Infection of Uterine Adnexa.*—The process here is decidedly different from that of the physiological atrophies. Instead of the simple reduction of the individual muscle fibres as regards size, necrosis and degeneration take place, and large pieces of the uterus may be thrown off, with contraction as an ultimate result. Thrombosis of the veins has been shown to take place with loss of muscular structure and mucosa. The connective-tissue formation and its subsequent contraction cause the reduction in size in the last named.

Infection of the ovaries and the destruction of their function lead to the same results as are seen after castration.

Prognosis in puerperal infections, as regards the ultimate recovery of the uterus from its atrophic state, is especially poor, as the tissue changes are far-reaching and usually beyond the hope of regeneration. The outlook is especially grave when there is great atrophy of both cervix and corpus, or when the inflammatory process has extended to the ovaries.

The acute infectious diseases cause as a rule a temporary atrophy, which soon disappears with the restoration of bodily health.

The prognosis of the uterine changes in the chronic systemic disorders is practically that of the associated disease, for in such instances it is only the local manifestation of a general process.

Treatment of all these cases is usually unsatisfactory, as the pathological changes place the tissues beyond a chance of repair.

Hypertrophies.

*Hypertrophy of the Cervix.*—Chronic metritis is the cause of this rather rare condition, which, as in chronic inflammatory processes elsewhere in the body, brings about a large increase in connective tissue. The muscular structure undergoes fatty degeneration, and bundles of fatty fibres are found enclosed by large bands of connective tissue. Sometimes the blood-vessels are varicose, and sometimes, cut off by these strong connective-tissue bands, their lumen is diminished and the circulation of the part impeded, bringing as a result chronic passive congestion. The entire uterus may be affected and show on section white shining bundles of tough connective tissue with the degenerated muscle fibres between, and small hemorrhages from the walls of the varicose vessels. Occasionally these changes are limited to either the cervix or the body of the uterus; but even when so limited, the remaining part is seldom or never entirely intact. In some instances the hypertrophy of the cervix makes the body appear like a small appendage, and the relations of the body and cervix are as in the child, in whom the cervix forms about two-thirds the entire uterus.

When there is a pre-existing injury of the cervix the lips often spread far apart, become greatly enlarged, and form a knob on the end of the much elongated cervical neck.

Enlargement of the cervix, due to obstruction and retention of the contents of the cervical glands, as the result of endocervicitis, is exceedingly common. It is most often seen after the lacerations and infections of childbirth. The mucous membrane is of a bluish appearance, or at times may appear quite bloodless. The small cysts may give no hint of their presence to the eye, but to the touch they are apparent in all sizes, studding the cervix like small shot or peas under the mucous membrane. They may attain the size of a small marble. At times they stand out like sago grains under the mucous membrane, which is usually hyperæmic, while the so-called erosions are apt to be present, stimulated by the irritating discharges from the cervix. On puncture a clear, cloudy, or even sometimes blood-tinged mucoid substance exudes and the mucous membrane of the gland is seen as the bright, glossy covering of the cyst wall.

As a rule this form of enlargement does not reach the extent of the true hypertrophy, and the cervix usually remains soft and bleeds easily; still it may lead to such contraction and cirrhosis that operations upon such a cervix are practically bloodless. Occasionally, through the increased size of the uterus and cervix, and the relaxed condition of the tissues of the pelvis which generally accompanies the increase in size, the cervix may appear at the vulva. The acid discharges from the cervical canal are irritating to the vagina and external genitals, and are probably the cause of sterility in such cases.

*Hypertrophic Elongation of the Infravaginal Cervix.*—This is generally a congenital affair, but the form which is considered here is the result of metritis, and so belongs properly to the hypertrophies. The process is the same as previously described. It is accompanied by the general symptoms common to most uterine displacements, and may be the means of furthering a procidentia, as the increased weight of the uterus drags it downward with the long cervix to guide it through the vagina.