COLECTOMY, COLOSTOMY, COLOTOMY. See *Colon.* (*Surgical.*)

COLEMANVILLE MINERAL SPRINGS.—Cumberland County, Virginia.

POST-OFFICE.—Lucyville. Hotel and cottages.

This resort has recently come into notice. Under its enterprising management it gives promise of becoming a vigorous rival to some of the older Virginia spas. The location presents many pleasing features of climate and scenery, but its chief attraction is in the great number and variety of mineral springs in the neighborhood; these are eighty-seven in number. We present the following analysis of two of the best-known springs, made in 1894 by William H. Taylor, state chemist:

SPRING NO. 7.

ONE UNITED STATES GALLON CONTAINS:

Solids.	Grains.
Calcium bicarbonate	7.93
Magnesium bicarbonate	5.52
Iron bicarbonate	Trace.
Lithium bicarbonate	Trace.
Potassium sulphate	0.22
Sodium chloride	1.87
Potassium chloride	0.04
Magnesium chloride	0.45
Silica	3.38
Total	19.41

SPRING NO. 19.

Iron bicarbonate	1.69
Calcium bicarbonate	1.52
Magnesium bicarbonate	1.15
Sodium bicarbonate	1.24
Lithium bicarbonate	Trace.
Potassium sulphate	0.13
Sodium chloride	0.15
Potassium chloride	0.05
Silica	2.45
Total	8.38

The water is used in general debility, gastro-intestinal disorders, and derangements of the liver and kidneys.

James K. Crook.

COLIC, INTESTINAL.—Intestinal colic is irregular and fluctuating pain in the intestines, occurring mostly in seizures of variable duration and at varying intervals, and usually without inflammation, fever, or discoverable organic change. Enteralgia is a term sometimes applied to colic, but more often to a neuralgia of the intestines without spasm. The terms are frequently used interchangeably, and no discussion of either could fail to include, in some measure, both subjects.

ETIOLOGY.—Colic attacks both sexes, is very rare after the middle period of life, but affects all ages up to that point, and is especially frequent in infancy. It is due to many causes, and arises under a great variety of circumstances. *Indigestion* causes a majority of all the cases. Irritating, indigestible, and decomposing food in the intestines causes pain directly, and often provokes spasmodic and painful peristaltic action, while gas is rapidly formed wherewith the bowel is distended to the extent of producing suffering. A diarrhœa may be set up and expel the offending material, when the colic ceases.

In some cases of mild intestinal indigestion there are frequent slight colicky pains without other symptoms.

Constipation may induce colic in the large intestine. The colon becomes distended with hard, dry feces, by which, after a variable period of tolerance, it is stimulated to severe spasmodic efforts to evacuate itself, with the result, usually, of sharp pains. Various *foreign bodies* in the intestines induce pain, as worms, irritating medicines, the indigestible portions of fruits and vegetables, intestinal concretions, and unnatural objects swallowed by accident or caprice. Collections of *gas*, when large or imprisoned so as to resist peristaltic force, cause the severest colic, especially in infants. Even the movement of moderate quantities of gas through the intestine is sometimes painful. *Cold drinks* in large potations, ices and ice cream, may cause colic, and *cold-catching* and chilling of the surface may induce it by congestion of the abdominal organs and disturbance of the nervous system. *Rheumatism* and *gout* may attack the muscular and nervous tissues of the intestine and induce pain.

Alcoholic excesses are sometimes followed by colic. Probably the alcohol simply induces indigestion, which in turn causes the colic. This view seems the more plausible since in many of these cases there are, with the colic or preceding it, vomiting, abnormal thirst, hiccough, and constipation.

Malarial poisoning occasionally produces regularly recurring paroxysms of enteralgia, the periodicity corresponding with that of intermittent fever. *Lead poisoning* is a prolific cause of colic in adults, and poisoning by *copper* induces it in a few cases. *Dysentery* and other inflammations of the colon and rectum are attended with colicky pains, more or less severe and frequent. *Syphilis* is said occasionally to produce nocturnal enteralgia. *Invagination* of the intestine, *hernia*, and *peritonitis*, local and general, may cause interrupted pains in the intestines. Colic is sometimes a true *neurosis*, and is due to the ordinary causes of neuralgia and hysteria. Depressing *emotions* may cause it, and debility from chronic disease or other cause tends to the easy occurrence of intestinal pains.

SYMPTOMS.—The symptoms of colic vary in degree and character. An attack, especially when due to digestive disturbances, may be preceded by such symptoms of so-called biliousness as anorexia, sense of oppression, or weight in the stomach, eructations, and possibly nausea and vomiting. All the forms of colic, and nearly all forms of intestinal pain, are characterized by more or less fluctuation and periodicity in the suffering. The paroxysms last from a few seconds to several minutes, and are followed by remission or complete cessation of pain lasting from a few minutes to many hours. Although colic may occur in any part of the intestinal canal, unless it is in the rectum, the patient usually refers the pain to the neighborhood of the umbilicus, whichever portion is involved. The pain may be felt in other regions of the abdomen, especially in the hypochondria if the disease is in the large intestine; but in some cases of colitis the pain is complained of at the umbilicus exclusively. In non-inflammatory cases pressure on the abdomen frequently lessens the pain.

Colic has all shades of variation in degree of pain. Sometimes so mild as to disturb the patient but little; so slight as not to prevent his moving about and attending to the duties of life; it may be so severe as to cause him to writhe and groan, bend his body forward, plunge his fists into the abdomen, or lean forward over the back of a chair, or roll about in an agony of torture hardly exceeded in human experience. Patients characterize the severer pains by a variety of terms, according to individual fancy, as griping, twisting, cutting, and tearing. The abdomen may be variously distended with gas, or it may be quite flat, so flat that in a thin patient the spinal column may be easily felt from the front. In colic due to indigestion much flatus may exist, distending the abdomen and giving evidence of its active movement during a paroxysm by frequent and loud borborygmi. In the absence of distention, the peristaltic movements and knotting of the intestine by the spasm thereof may usually be felt through the abdominal wall at the moment of suffering. During the paroxysm the intestine is observed to be in strong movement, or in hard masses or nodular tumors, but during an interval the abdomen is soft and without motion. In attacks of pain with inflammation, and sometimes without it, the abdominal muscles may be tense, and the cremaster may be contracted. Frequently with colic there is tenesmus.

The temperature in an attack of ordinary colic is rarely elevated, fever is quite unusual, while the extremities and surface are often cold and clammy with perspiration. The pulse is not usually accelerated; frequently in a

paroxysm it is abnormally slow, increasing its rate immediately afterward.

In infants, who furnish a large majority of all cases of colic, the symptoms during an exacerbation are: repeated or increased crying, refusal to nurse, entirely or but for a moment at a time, flexing the legs and thighs, and bending the body in multifarious contortions.

A number of other symptoms may attend those of colic, varying with many circumstances and conditions; thus there may be nausea and vomiting, dyspnœa and a sense of compression of the chest, faintness, tremor, and vertigo.

In hysterical colic considerable cutaneous hyperæsthesia may be present, causing light pressure and palpation to be quite painful, while firm and deep pressure gives comfort. Other evidences of plumbism nearly always attend lead colic. Among these are anæmia, cachexia, constipation, anorexia, a bad breath, the blue line of the gums about neglected teeth, and paralysis of the extensor muscles in the forearm.

PATHOLOGY.—For the occurrence of intestinal colic there must exist either an irritation or hyperæsthesia of the intestine, or both. There is reason to think that many cases of enteralgia—intestinal pain without spasm—are pure neuralgias of the sympathetic nerves of the abdomen, otherwise neuroses.

The constipation, scantiness of the urine, and retarded pulse, often observed in colic, particularly that from plumbism, are evidences of nervous disturbance as veritable as is pain.[1] The pneumogastric nerves are proven to have relations with the muscular fibres of the intestine, and may be presumed to play some part in their pathology. Electrization of the pneumogastrics causes contraction of the muscles of the intestine. Galvanization of the solar plexus induces contraction of the small intestine. Irritation of the fifth nerve at certain points, and of the medulla oblongata, causes muscular movement of the stomach and intestines.

Colic is in most cases the result of sharp peristaltic contraction of the intestine in its efforts to free itself from some irritation. The contractions are regularly peristaltic, or irregular, erratic, and ineffective toward moving the contents of the bowel forward, but rather preventing it. In severe cases, with agony from muscular contractions, often no evacuation results until the system is brought fully under the influence of opium to stop the pain, when free dejections take place.

In dysentery and other inflammatory states of the colon and small intestine, the colicky pains experienced are probably due in most cases—or chiefly due—to normal peristalsis in a tender intestinal tube. But the inflammation of the intestine probably sometimes induces spasm in other parts than at the seat of disease.

In lead colic the ganglia and filaments of the sympathetic nerves of the abdomen have been found enlarged by thickening of their connective tissue. The sheaths of some of the small vessels of the mucous membrane have likewise been found in this condition.

DIAGNOSIS.—Intestinal colic is to be discriminated from hepatic, renal, ovarian, and uterine colic; from gastralgia, peritonitis, and other inflammations within the abdomen; from intussusception, hernia, and other obstructions of the intestines; from spinal disease, aneurisms of the abdominal aorta, and from labor pains.

From hepatic colic it is distinguished by the relatively long continuance of the former, by the location of the pain with tenderness at the epigastrium, by the relatively continuous character of the pain, and by occasional icterus.

In renal colic the pain is in the region of one ureter, and continues usually much longer than a paroxysm of intestinal colic; pains shoot down into the groin and pubic region, which perhaps never occurs in intestinal colic; and there is a frequent desire to urinate, and bloody urine may be passed after a paroxysm, if not during its continuance. Gastralgia of slight degree at times resembles intestinal colic, but the pain is usually higher in the abdomen than in the latter affection, and has such positive relations with the gastric functions as to make the diagnosis usually easy. Nearly all cases of severe epigastric pain, usually called gastralgia, are cases of gallstone colic.

Peritonitis rarely occurs without some fever and a rapid pulse, although it may exist without either. The patient is quiet, the abdomen is tender in some degree, and there are no moving about and pressing the abdomen for comfort as is seen in intestinal colic. But it is hardly safe to regard all cases of tenderness of the abdomen as inflammatory, since in lead colic—uniformly unattended with inflammation—pressure may cause pain. On the other hand, in some cases of intestinal ulceration gentle and firm pressure gives a sense of relief.

Strangulated hernia has been mistaken for colic, the pain being paroxysmal and referred to the umbilical region. In a case of colicky pains in the abdomen, about which there can be doubt as to its seat and character, careful examination for hernia, in the several regions of its possible occurrence, should never be omitted. Intussusception and twisting of the gut have been more than once mistaken for flatulent colic. In these conditions there are usually complete intestinal obstruction and some vomiting, at first of a simple character, but later consisting of stercoraceous matter, with complete absence of evacuations from the bowels, except in some cases of intussusception in which there may be voided a few small and possibly bloody stools.

There is no certain way to diagnosticate the presence of worms as a cause of colic, except to see them. If they are suspected, the test of treatment may be made with some anthelmintic medicament.

The pain of abdominal aneurism is less severe and paroxysmal than that of colic, there is no movement of gas in conjunction with the pain, nausea and vomiting are absent, as also is a tendency to diarrhœa. Auscultation will readily determine the question of aneurism, and the application of this test should never be neglected in any case of persisting abdominal pain in an adult.

PROGNOSIS.—In the main the prognosis is favorable. Deaths have occurred from rupture of the intestine due to gaseous distention. An occasional death of an infant with convulsions following upon colic seems to be due to this event, but probably in most such cases the colic, the convulsions, and the death are results of some common cause. Severe colic may lead, in infants, to intussusception.

TREATMENT.—The first theoretical indication in colic is to stop the pain and spasm;—after that, the cause is to be removed, if possible. The most practical treatment for the greatest numbers of cases of intestinal colic is free evacuation of the colon by an enema. In cases of moderate severity benefit may be expected from mild opiates and carminatives, warming agents for the stomach and bowels, like cardamon, mint, anise, gaultheria, aromatic spirit of ammonia, compound spirit of ether, and chloric ether. Of the opiates the best for such cases is paregoric.

For severe attacks quick relief is demanded, and a prompt remedy should be chosen. Chloroform and ether by the stomach and by inhalation, and morphine hypodermically, fulfil the indication best. For prompt and certain action nothing takes the place of hypodermic injections of morphine. One moderate dose is usually sufficient. In some intense cases the pain is slow to yield to even repeated doses, and caution is necessary to avoid the introduction of a quantity sufficient to bring on fatal narcotism—a thing that has been done more than once. The morphine should be supplemented by the internal administration of such remedies as chloroform, ether, compound spirit of ether, and chloric ether, and by inhalation of anæsthetics if necessary.

In cases due to indigestion the alimentary canal should be evacuated soon. Next to quieting agents for the pain, mild cathartics and enemata are the most widely useful medicines in colic. Where there is a tendency to the extensive development of gas in the intestines from indigestion, antifermentatives and aids to digestion may be used, as, for example, the sulphites and hyposulphites,

the salicylates, salol, the preparations of pepsin and pancreatin, and the various stomachics and carminatives. In lead colic the first medicine is opium; the system should feel the effect of it before the attempt is made to produce catharsis. One of the best cathartics is croton oil in small doses, but other vegetable cathartics and the salines may be used with good effect. Enemata of mistura asafœtidæ may relieve flatulence—an excellent measure for children—and a long catheter passed up the rectum as far as possible may give exit to volumes of gas. This latter result is more likely to ensue if the body can be to some extent inverted so that the pelvis is much higher than the shoulders, with the spine uppermost. If gaseous distention is so extreme as seriously to threaten the integrity of the intestine, or to portend shock or death from interference with vital organs, it is justifiable to puncture the intestine through the walls of the abdomen with a trocar of small diameter and to evacuate some of the gas if possible. This operation, not devoid of difficulty and danger, may yet, in a perilous meteorism—a most rare occurrence—offer to the patient the lesser of two dangers to life. If the surfaces of the body and extremities are cold they must be kept warm by clothing, a hot bath, or a liberal use of bottles of hot water or some other heated thing. Mustard sinapisms and hot turpentine stupes to the abdomen frequently somewhat relieve slight colicky pains; they are of small consequence for severe pain. Stupes or dry flannels over a part need not be removed or changed for reheating; they may be kept continuously hot by a succession of hot plates laid against them. Where inflammation exists, particularly if the peritoneum is involved, the incessant contact of a hot dressing constitutes one of the best measures of treatment.

The colic of infants requires treatment on the same general principles as that in adults. The cause, which is usually some form of maldigestion, must be discovered and corrected if possible. Infants who are predisposed to attacks sometimes experience much benefit from a protracted slight effect of belladonna or the bromides, or both. For the relief of an attack of colic a few drops of whiskey or brandy, or the compound spirit of ether well diluted with water, slightly sweetened, may be given, or, these failing to give relief, the camphorated or the deodorized tincture of opium may be resorted to with caution. At the same time the mixture of asafœtida may be injected into the rectum. Frequently no permanent relief is experienced from these or any measures till the bowels are freely evacuated, and this should be the first consideration when, as is usually the case, there is reason to think that the intestine contains irritating substances.

Norman Bridge.

[1] J. W. Begbie, Reynolds' Syst. Med., vol. iii., p. 133.

COLITIS, MUCOUS.—A distinction is frequently made between mucous and membranous colitis; it will appear further on that this distinction cannot well be maintained, and it is proposed to treat the subject under the common heading of mucous colitis.

The peculiar group of symptoms variously termed mucous or membranous colitis or enteritis, pseudo-membranous enteritis, fibrous enteritis, etc., constitutes an affection pre-eminently of the female sex. According to Litten, eighty per cent., according to Kitagawa, as much as ninety per cent. of all observed cases occur in women. It is found, however, not infrequently in men and even in children. Löwenstein reports the case of a boy three years old.

The women suffering from mucous colitis show, as a rule, well-marked, more or less extensive neurotic or hysterical stigmata. The same holds good for children. The men are usually distinctly neurotic or hysterical.

Of late years the clinical symptoms and the pathology of this disease have been the subject of much discussion, though nothing essentially new has been brought out since the masterly essay of the late Dr. Da Costa, in the *American Journal of the Medical Sciences* for 1871. The more important clinical symptoms of mucous colitis may be briefly summarized as follows:

Pathognomonic for the affection are the peculiar evacuations from the intestines. Preceded by more or less pain of a colicky character and of varying duration, masses of a grayish white, somewhat translucent, substance are evacuated. These masses vary in quantity and in form; at times they appear as shreds, single or netted together; sometimes as balls and lumps; again as membranes or as longer or shorter apparently solid ropes, or again in tubular configuration representing complete casts of segments of the gut. In some cases only a comparatively small quantity is passed; frequently, however, the mucous masses are very abundant and sometimes appear in really enormous quantities. Fæces are as a rule rarely passed with these masses, which form practically the sole constituent of the stools. When floated and disentangled in water it becomes apparent that in every instance these masses are rather membranous, and are rolled up or balled together to resemble lumps, tubes, ropes, etc. Chemically this substance presents all the characteristic reactions of mucin; though sometimes and inaccurately called fibrinous, no fibrin has as yet been found whenever careful chemical examination was made.

Microscopical examination shows, besides mere traces of fæcal matter, the characteristic striated thready mucoid substances intermingled with innumerable epithelial cells either discrete or else in connected layers. It is of importance to note that leucocytes are never found in great numbers, but occur rather singly here and there, thus offering no suggestion of inflammation or suppuration.

With the discharge of these mucous masses the colic is usually relieved. In rare cases one single attack ends the affection. As a rule the seizures occur again and again. There may be intervals of weeks or months between the attacks, during all of which time the patient may feel entirely well. The attack itself may last for days or weeks or even months. A single attack of colic may occur each day, or there may be several if not numerous ones, so that the patients are often convinced that they have diarrhœa or dysentery.

The pain is variously described as griping, burning, cutting, pressure, etc. Not infrequently there is considerable tenesmus. The pain is located in some portion of the colon, most frequently in the sigmoid flexure or in the cæcum. If in the latter place, it frequently gives rise to a suspicion of appendicitis in the mind of the patient as well as of the physician. From these points of origin the pain radiates toward various parts of the abdomen, most often toward the umbilicus and epigastrium; quite frequently also down one or the other thigh, especially down the left. The abdomen may be more or less distended, but is mostly quite normal and soft. Fever is never present in uncomplicated cases. Nausea is often complained of during the attacks, but vomiting is rare.

Enteroptosis is often associated with this disease, and gastric hyperacidity is not an infrequent concomitant. Characteristic of uncomplicated cases is the fact that in the intervals between the attacks there are no intestinal disturbances, and the patient, aside from possible neurotic complaints, seems quite normal. A great number of this class of patients attribute their pains and discomforts to gastric and intestinal indigestion. They endeavor to establish a connection between the attacks of colic and indiscretions in diet. As a consequence they soon come to dread almost every sort of nutritious food, and, living on an entirely insufficient and irrational diet, lose rapidly in weight and strength, without their local condition being at all benefited. On the contrary, it can be easily seen that in all these cases, with the loss of flesh owing to insufficient nutrition and the accompanying increase of neurotic conditions, the malady becomes steadily worse.

As regards the pathology of this disease, there are still some differences of opinion. Some few still maintain that mucous colitis is an organic lesion of the colon, a true inflammation, a catarrhal or even an ulcerative process, and that besides an abnormally abundant secretion of mucus, portions of the mucous lining are detached and

voided in the form of shreds and membranes. There are, however, serious, and it seems to me, conclusive objections to this view. It is true that dead-house material, by means of which one may study this class of cases, is very scanty indeed. Those cases, however, which while well observed during life have been carefully examined after death by competent observers (Rothmann), showed no anatomical lesions whatsoever. The gut was entirely normal. These observations tally well with the results of the microscopical examination of the mucous discharges. The absence of all evidence of pus, the scanty occurrence of leucocytes, the absence of blood or of any constituents of the intestinal lining with the exception of epithelial cells, all point in the same direction. The multitude of epithelial cells that can be seen in every mucous discharge, and the fact that they are often present in extensive layers, do not of themselves speak for any anatomical lesion. It is well known that intestinal epithelium comes away very readily and yields to slight mechanical influences, and every normal stool contains great numbers of epithelial cells.

The facts that the majority of these cases occur in women, and that in nearly every instance neurotic or hysterical stigmata of various kinds can be established, speak also most emphatically for the merely functional character of this disease. It is therefore safe to assume that the so-called mucous colitis is no colitis at all, but, as was long ago suggested by Da Costa, and more recently clearly stated by Leube, a secretory neurosis, characterized by the abnormal and excessive secretion of mucus in the colon, and on a par with well-known secretory neuroses in other organs. It would be well, therefore, if the name colitis mucosa were abandoned altogether and, following the suggestion of Nothnagel, the disease termed mucous or membranous colic.

It must be borne in mind, however, that this neurosis, like any other, may complicate other organic lesions. Thus, besides the mucous colic, genuine intestinal catarrh may be present. And it is the duty of the physician in every instance to determine first of all whether he has to deal with a case of mucous colic, that is, a pure functional neurosis, or whether there are anatomical lesions—catarrh, ulceration, neoplasm, etc.—complicating the neurosis.

In considering the therapeutics of mucous colic it appears difficult or rather impossible to outline any special method of treatment. As in every other form of neurosis, each individual case must be studied and treated by itself. It is above all necessary to obtain the patients' confidence, to inspire them with the conviction that they can and will get well, and thus become assured of their implicit obedience in the carrying out of every order.

The habit which this class of neurotics invariably cultivate of anxiously scrutinizing each stool for mucus must be stopped. An inestimable advantage is gained if the patient no longer knows that mucus is discharged. Strict attention must be paid to diet. In all uncomplicated cases the diet should be as little restricted as possible and selected with a view to counteracting the habitual tendency to constipation, and increasing the weight and strength. Nothing encourages patients so much as when they find themselves enjoying their food and gaining weight. Exercise in the open air and rational hydrotherapeutics are valuable aids in the treatment of this form of neurosis as in all others. General massage may also be employed, but abdominal massage should be rigorously avoided. Local treatment of the gut by means of injections has been widely recommended. The astringent injections, especially of nitrate of silver, copious lavage of the bowel by means of high enemata or injections, etc., are still favorite methods of treatment in this malady. It is our conviction that all these methods are more harmful than curative. It is not wise in these cases to resort to any remedial measures which keep the patient's attention, already too much occupied with his ailment, still more centred upon his intestinal condition. Aside from this psychological objection, the fact is well established that astringent injections, be they never so mild, even enemata of plain water, or saline, have a direct tendency toward increasing the secretion of mucus. It is indeed possible by means of nitrate of silver to produce artificial casts of the gut. All local treatment, therefore, injections of all kinds, suppositories, etc., etc., should be strictly avoided.

When dietary measures alone are not sufficient to relieve constipation, mild aperients, such as cascara, castor oil, an occasional dose of calomel, etc., may be given. The salines in uncomplicated cases in which no intestinal catarrh is present do not, as a rule, act well. The attacks of pain and the tenesmus, when present, may be relieved by small doses of codeine or opium, though it must be borne in mind that this class of drugs should be employed most grudgingly. Besides the usual roborant and tonic medication (iron, strychnine, etc.) when indicated, good effect is frequently seen from nitrate of silver given by mouth in the form of enteric-, keratin-, or salol-coated pills in doses of gr. $\frac{1}{8}$ to $\frac{1}{4}$ three times a day. Sulphate of atropine in doses of gr. $\frac{1}{240}$ three times a day may also be of use.

Altogether the treatment must be mostly moral and hygienic, and, while all local interference with the intestines should absolutely be avoided, the use of drugs should be restricted as much as possible.

In conclusion it is well to state again that this method of treatment applies only to the uncomplicated cases of pure mucous colic. In all those cases in which there is organic lesion—be it catarrh, ulceration, or neoplasm—and in which the mucous discharge and the neurotic condition are merely complicating incidents, it is obvious that the whole force of treatment must be directed against the organic process.

Isaac Adler.

COLLODION. See *Cotton, Gun.*

COLLOID.—This term is applied to many substances of different origin and nature, but which closely resemble each other physically, in that they are hyaline, colorless or slightly colored bodies of a gelatinous consistence. The colloid of the thyroid may be taken as the type to which the various bodies designated as colloid more or less conform. There is a great divergence of opinion among writers as to the use of the term colloid, some applying it not only to epithelial products but also to the hyaline changes occurring in connective tissue, to hyaline fibrin, blood-plate fibrin, keratin, keratohyalin, etc.; but it seems best to restrict the use of the word to those hyaline bodies formed by the activity of epithelial cells which do not give the staining reactions of mucin or pseudo-mucin. Even with this restriction in its use it is evident that the term is a collective one and that the substances included under it must differ widely in chemical nature. It seems advisable to the author to divide the substances known as colloid into two classes: true colloid, as found in the thyroid; and colloid-like bodies, the latter class including all the hyaline products of epithelial cell activity with the exception of mucin and pseudo-mucin. The corpora amylacea of the prostate, nervous system, and lung may also be included in this class.

In accordance with this classification, the terms colloid and colloid-like have reference only to general microscopical appearances and not to the ultimate chemical nature of the substance. They all, like mucin, are the products of epithelial-cell secretion, and may represent either normal or pathological forms of secretion.

True Colloid.—This occurs normally in the thyroid, where it appears in the form of hyaline, jelly-like masses of the color of honey, filling up the gland spaces and at times extending into the lymph vessels. Any collection of the substance beyond a certain degree is to be looked upon as a pathological degeneration of the glandular epithelium (colloid degeneration); and from this degeneration the condition known as colloid goitre results. Microscopically, the colloid of the thyroid is hyaline or slightly granular; it frequently contains blood cells, blood pigment, and desquamated epithelium showing varying stages of colloid change. Masses of calcification not infrequently occur in it. The substance is very resistant

and is not affected by alcohol or acetic acid. With Van Gieson's stain it is stained yellow or brownish yellow; with eosin and hæmatoxylin it stains slightly with both the nuclear and the diffuse stain. The consistence of the thyroid colloid varies greatly; at times it is very firm, more often gelatinous, while occasionally it is fluid and soluble in water. It contains the active substance of the thyroid, iodothyrin, which is most probably an albuminous body. It is very probable that the chemical nature of the thyroid colloid is not always the same.

Colloid-like Substances.—These in general resemble the colloid of the thyroid, and are found in the hypophysis cerebri, parotid, renal tubules, prostate, ovarian and parovarian cysts, mammary gland, pancreas, etc. The corpora amylacea of the nervous system and lung are also to be included here. In all cases the colloid-like substance appears in the form of a smooth, homogeneous mass filling up the gland lumen or duct, or it may appear in the form of hyaline or laminated concretions. The colloid-like bodies of the kidney tubules are known as *casts*, and are of great clinical importance from their occurrence in the urine in pathological conditions of the kidneys (various forms of nephritis).

Though all of these bodies bear such a close general resemblance to each other, exhibiting similar reactions with ordinary stains, they cannot be identical in their chemical nature either with the true colloid of the thyroid or with each other. Some of them give a characteristic reaction with iodine, others do not, but this varies so much that it cannot be used as a means of classification. We are therefore compelled at the present to apply the term colloid to substances derived from gland cells, which are hyaline, possess a certain degree of firmness, and do not give the reaction for mucin or pseudo-mucin. Beyond this uncertain classification our terminology does not take us. *Aldred Scott Warthin.*

COLLOID DEGENERATION OF THE SKIN.—This is a very rare affection of the skin, first described by Wagner as colloid milium. Hardly more than half a dozen cases of this rare disorder have been reported. It occurs chiefly upon the upper two-thirds of the face, especially upon the cheeks, forehead, and around the orbits; it has also been observed on the cornea and the septum nasi. The lesions form slowly—singly or in groups, never becoming confluent. They consist of pinhead- to millet-seed- or split-pea-sized, flattish, or irregularly rounded lemon-yellow colored papules, having a peculiar glistening, translucent appearance, that suggests their being vesicles, but when pricked only a small amount of a gelatinous substance accompanied by a droplet of blood can be expressed. Occasionally slightly dilated vessels surround the papules. Frequently a depression appears in the centre of the papule and increases in depth until the surrounding elevation disappears altogether; all that remains being a slight depression in the skin. Or, the part becoming inflamed, a scab forms over it and eventually drops off, leaving a mark, but no true cicatrix. The cause of the disease is unknown. It occurs in both men and women from the age of sixteen upward, no deviation from the normal health accompanying the disease to account for it. Most of the cases reported were in individuals living an out-of-door life much exposed to the weather.

Wagner at first thought that the cause began in the sebaceous glands, but this view has been practically discarded. Balzer considers that the colloid degeneration commences as an infiltration in and around the connective-tissue fibres and cells of the upper part of the corium. This change occurs especially in the neighborhood of the sebaceous glands and about the vessels and nerves. The glands themselves and all epithelial structures—except the endothelium of the vessels—escape. Baelzer could not determine the point clearly, but he thought it probable that the affection was due to primary vascular changes. The disease is not identical with hydradenoma, as Philippson endeavored to prove, though the differential diagnosis is often very difficult or even impossible without the aid of histological examination. From xanthoma, with which it most often is confounded, it may be distinguished by the glistening, translucent appearance of the lemon-yellow-colored elevations.

Treatment is unsatisfactory, no external application having any effect. Erosion with a sharp spoon has cured some cases, and electrolysis has been recommended and would seem best fitted to cope with the trouble without leaving very marked scars.

Charles Townshend Dade.

COLOCYNTH.—Colocynthin. "The fruit of *Citrullus Colocynthis* Schad. (fam. *Cucurbitaceæ*), deprived of its rind" (U. S. P.). The colocynth plant bears a general resemblance to the water and citron melons—near connections—but is smaller, slenderer, and besides rough-hairy,

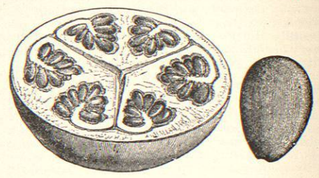

Fig. 1467.—Colocynth Fruit and Seed.

while the others are more nearly smooth. The fruit is globular, from two to four inches (10 to 20 cm.) in diameter, with a thin, leathery, mottled-green rind, and a fleshy, very bitter pulp. The latter consists of the mesocarp and three thick parietal placentæ which entirely fill the cavity and make a spuriously three- or six-celled, out of a normally one-celled, ovary.

The plant is widely distributed over waste and desert places in India, Arabia, Syria, the "Levant," the Mediterranean islands, Northern and Western Africa, the Cape of Good Hope, Java, etc. In the Arabian desert, a resinous extract from the fruit is painted upon the water bags to protect them against attacks by the thirsty camels. It also grows in Spain and other portions of the extreme South of Europe, and has, in addition, been cultivated in several countries for many centuries. Cyprus, the South of Spain, and the African town Mogador, supply it for the market. It is collected when the fruit is ripe, or nearly so, and, in the European varieties, is usually peeled while fresh with a knife. The Mogador colocynth is oftener "coated," that is, dried without removing the exocarp. The soft, moist, greenish-white pulp shrivels considerably as it dries, and becomes nearly white, and very light and spongy. The composition and properties differ with the place of production. Some fruits grown in Texas were of prodigious size, but destitute of medicinal power.

Description.—As usually imported, colocynth comes in very light and brittle round balls, from one and a half to three inches in diameter (0.04 to 0.08 metre), composed of a nearly white, very fragile, cellular tissue; evidently cut over the surface with a knife, and containing numerous white or whitish cucumber-like seeds in six rows. These "balls" are easily broken into three parts, each including one of the placentæ, with a row of seeds on each of its two broken faces. The seeds, which, although of little bulk compared with the rest of the fruit, weigh heavily, contain seventeen per cent. of bland fixed oil, and have no medicinal value. They are thrown away when the pulp is prepared for use. This consists of exceedingly large and thin-walled parenchyma, enclosing about two per cent. of its weight of bitter extractive (colocynthin). The variety described above is Turkish colocynth. The Spanish variety is smaller, has a dark and much less spongy pulp and a larger number of heavier, black or blackish seeds. Not only is the percentage of pulp smaller, but it is also inferior. Colocynth pulp, freed from seeds, ground or whole, is an article of commerce. The presence of starch is an indication of adulteration, as this is wanting in the genuine article.

Composition.—The active constituents of colocynth are resin and *colocynthin*. The crystalline resinous body *colocynthitin* is not active. Gum and pectin are also present. Colocynthin ($C_{56}H_{87}O_{23}$?) is a yellow, powdery, bitter glucoside, soluble in both water and alcohol. It is purgative, but Merck claims that his is not poisonous or drastic like colocynth.

Colocynth itself is a harsh and irritating drastic, and seldom given alone. In small doses, and modified by other cathartics and corrigents, it is an excellent laxative, and in frequent use as a "dinner pill" in chronic constipation.

Administration.—There is but one immediate preparation, namely, the Extract of Colocynth (*Extractum Colocynthidis*, U. S. P.), made by evaporating a tincture. The yield is about sixty per cent. of the pulp. Dose, say 0.03 to 0.12 gm. (gr. ss.–ij.). It is seldom used alone, but enters into the Compound Extract of Colocynth (*Extractum Colocynthidis Compositum*, U. S. P.), which is in every-day use. Its formula is:

Extract of colocynth	16
Purified aloes	50
Cardamom	6
Resin of scammony	14
Soap	14
Alcohol	10

It is a fine powder, easily rolled into a pill itself, or mixed with still other substances. Dose, as a laxative, 2 or 3 dgm.; as a cathartic, five or six times as much (gr. v. ad xxv.). The Compound Cathartic Pills (*Pilulæ Cathartica Compositæ*, U. S. P.) contain about one-third of their weight of this extract. Their composition is:

	Gm.
Compound extract of colocynth	80
Extract of jalap	30
Mild chloride of mercury	60
Gamboge	15

Mix and make one thousand pills. Dose, from one to three pills.

The compound extract is also an important ingredient of the official vegetable cathartic pills.

Pure colocynthin can be given in doses of gr. $\frac{1}{6}$ to $\frac{1}{3}$. A resinous extract is also in the market under the name colocynthin.

Merck recommends, as a purgative rectal injection, ♏ iv. to xvi. of a four-per-cent. solution of colocynthin in equal parts of glycerin and alcohol.

Henry H. Rusby.

COLON. (SURGICAL.)—The colon is wounded in the same manner as, though less frequently than, the small intestines. These wounds may occur from penetration of the abdomen by a knife, bullet, or blunt-pointed object, or rupture may occur from a contusion. Perforation from the effort to use the sigmoidoscope has also been reported. Wounds of the colon often occur in the separation of adhesions during intra-abdominal operations. The symptoms of a wound of the large intestine do not differ materially from those which present themselves when the small intestine is injured. Those wounds which are inflicted during operative procedures or in the course of an examination are readily observed. But accidental injuries can often only be surmised, the diagnosis of the part injured being determined only after an exploratory incision. While shock is to be expected in such wounds, it is frequently absent or present in only slight degree. Pain and tenderness are as a rule valuable symptoms, but their absence does not preclude the possibility of a wound. Paresis of the intestine and the resulting constipation usually occur early as the result of the violence producing the injury and later from the development of peritonitis. Vomiting is frequently an important symptom, especially as sepsis from extravasation develops. The presence of free gas in the peritoneal cavity is, if detected, a positive sign of rupture of the bowel. Tympanites over the area of normal liver dulness is a further evidence of this condition. Senn has advised the rectal insufflation of hydrogen gas to determine the presence or absence of an intestinal wound, especially in connection with perforating gunshot wound of the abdomen; the diagnosis is made when the hydrogen escapes from the wound. When this test is successfully made, it proves positively the presence of a wound, but failure of the gas to escape does not exclude injury. This procedure is not devoid of danger, for the increase of intra-intestinal pressure and the escape of the gas into the peritoneal cavity certainly favor fæcal extravasation and seriously interfere with any operative procedure which may be necessary. This, coupled with the fact that only in from three to five per cent. of perforating wounds of the abdomen do the viscera escape injury, makes it more advisable to perform an exploratory operation, especially as the latter increases the mortality very slightly, if at all, when done with proper aseptic precautions.

The records of wounds of the colon show a larger percentage of recoveries without operation than do similar injuries of the small gut, owing perhaps to the consistence of its contents and to less active peristalsis. These injuries are always serious and require prompt attention, as every hour of delay lessens the chance for recovery. Notwithstanding the number of reported recoveries without operation, the surgeon is certainly not justified in treating these cases expectantly. The method of dealing with intestinal wounds will be fully covered in another portion of this work. It is sufficient to state in this connection that the technique must be thorough and the closure perfect, sufficient lumen for the ready passage of fæces being allowed.

Ulceration.—Ulceration of the colon assumes surgical importance when a tendency to perforation or to the development of stricture results. The causation and clinical history of many of these ulcerations are somewhat obscure. However, we meet with certain ulcers which present characteristics sufficiently distinct to be properly classified as dysenteric, typhoid, tuberculous, etc. The colon may be the seat of simple chronic ulcers similar in all respects to those seen in the stomach and duodenum. They occur very rarely, but are sometimes seen in patients suffering from Bright's disease. Vascular changes and emboli probably have much to do with their development. Sometimes a simple large ulcer is present, but as often several smaller ones are found. The edges of the ulcer are raised and slightly indurated, the base is somewhat regular. Healing may occur at one margin while the ulcerative process extends at the other. The ulcer may terminate by repair, and if, as is sometimes the case, it has extended around the intestine, narrowing may result. Perforation of the intestine is not infrequent and may be followed by fæcal abscess and fistula or peritonitis and death.[1] Parker reports two cases that terminated in fæcal abscess. Collections of fæces retained for a long time in the intestine excite an increased secretion of mucus, produce softening of the epithelium and necrosis of the mucous membrane, and result in the formation of one or more stercoral ulcers. These ulcers may excite a localized plastic peritonitis or they may perforate and cause acute general inflammation of the peritoneum. The shock itself may prove fatal. The sudden onset of pain and prostration in a case of prolonged constipation, especially with the presence of a doughy, irregular, and variable tumor, will point to perforation from stercoral ulcer. Ulceration at the seat of the solitary glands occurs in typhoid fever, and a few cases of perforation from such ulcers have been reported. These ulcers present the same changes which take place in the small intestine. Those ulcers which result from