

to think by the revival of the word impulse by the visual centres, the revivification of visual symbols being prompted by hand or lip movements.

Patients with the auditory form of sensory aphasia should be patiently taught to repeat words, the meaning of which is conveyed to them through other senses, the visual, tactual, and olfactory. It is apparent that most progress will be made with patients whose general intelligence is least disturbed. In subcortical word deafness the amelioration is always greater than in sensory aphasia due to destruction of the supertemporal gyrus.

The treatment of sensory aphasia conditioned by destruction of the visual centre is most unsatisfactory, and very little can be done to ameliorate the condition of such patients even though all modes of education be assiduously employed. An effort should be made to teach the patient the recognition of forgotten symbols in connection with the arousal of other memories of them, the auditory and the articulatory. In short, the pedagogical treatment of aphasia embraces the methods of the kindergarten and the methods of instruction for those defective in one or more of the special senses. Even with their aid but little can be done, except in the subcortical varieties. *Joseph Collins.*

APHRODISIACS.—Aphrodisiacs are agents whose employment is supposed to increase sexual desire or ability. A division might be made by classing together those causing increased desire or ability temporarily, as do small amounts of alcohol or other stimulant, and those doing so permanently; or a division might be made of those increasing desire as opposed to those increasing ability to perform the sexual act. In no condition must the maxim "remove the cause first" be more considered, and we are dependent upon general measures after the cause has been removed rather than upon the employment of drugs.

Loss of sexual power may have origin in various ways and is frequently divided into *organic, psychical, nervous or irritable, and paralytic*. Organic impotence is dependent upon structural change, either congenital or acquired, such as anomalies, malformations, new growths, etc., for which relief must be sought by surgical or other special treatment.

For *nervous or irritable* impotence, which is due generally to weakness of the genital organs and abnormal excitement of the reflex centres causing premature ejaculations, or due to irritations caused by some morbid condition of the urine or by the presence of strictures, resource must be had to measures such as the passage of a cold sound and other local treatment, which will relieve the causative factor. In *paralytic* impotence, which is usually caused by structural changes in the nervous mechanism of the sexual organs or by disease of the central nervous system, syphilis, grave anaemia, systemic poisoning from lead, tobacco, etc., the prognosis is unfavorable, and we can hope to do little beyond arresting the course of the disease which is causing the trouble and, possibly, by building up the patient, we may restore to him some degree of sexual power. *Psychical* loss of sexual power offers probably the best opportunities for the use of aphrodisiacs. Most cases are due to nervousness, overwrought desire, indifference, grief, fright, and mental preoccupation.

If the case has its origin in nervousness caused by fear of the consequences of early abuse, the confidence of the patient must be obtained and moral suasion be used. He must be told to abstain from all sexual intercourse for ten days or two weeks and may be given a placebo which it is well to tell him will endow him with sexual strength, attention of course being paid to his general well-being. Those cases depending upon overwrought desire, frequently seen in newly married men after long engagements or sexual abstinence, are best treated by the *temporary* use of the bromides, together with suggestion. For these and for the remaining class of cases indications will be found for prescribing such general measures as hydrotherapy with massage, a diet consisting of highly

seasoned food, red meats, and a moderate amount of alcoholic stimulants, and freedom from exhausting mental or physical work. Tonics may also be employed and the reputed aphrodisiac drugs, such as strychnine, in doses approximately of gr. $\frac{1}{30}$ three times daily, and phosphorus, gr. $\frac{1}{15}$ three times daily. Ergot is said to be of value in those cases of impotence which depend upon lack of erectile power, and among other drugs damiana, caffeine, and cantharis have some repute. The use of the last cannot be too strongly condemned, for if it aids sexual desire at all, which is doubtful at best, it does so by causing irritation of the genito-urinary passages and not by irritating or stimulating the nervous system. Other agents used are alternate applications of hot and cold water locally, electricity applied to the urethra or to the rectum, and the passage of a sound either reinforced by electric stimulation or by cold. But to repeat, impotence rarely if ever requires the use of aphrodisiac drugs, and success must come from moral force, general hygienic measures, and the removal of the cause. *Charles Adams Holder.*

APHTHÆ. See *Mouth, Diseases of.*

APLASIA. See *Agenesis.*

APNŒA. See *Respiration.*

APOCODEINE— $C_{18}H_{19}NO_7$, is a reddish, amorphous powder, almost insoluble in water, soluble in alcohol, ether, and chloroform. The hydrochlorate of apocodeine is a grayish amorphous powder, very soluble in water. It is obtained by heating hydrochlorate of codeine for fifteen minutes with a concentrated solution of chloride of zinc, at a temperature of 170° or 180° C. On cooling, a yellowish-brown mass separates from the liquid. This is drawn in thin, silk-like threads, and is almost pure hydrochlorate of apocodeine. The preparation is easy, and there is yielded a much greater product than the morphine salt; it is also much more stable. The base may be obtained by precipitating it from a solution by the addition of carbonate of sodium and extracting with ether.

The reactions produced by reagents upon apomorphine and apocodeine are almost identical, with the exception that the blood-red coloration produced by nitric acid is much more permanent with the latter.

This drug has been introduced as an expectorant and emetic. The dose is from gr. $\frac{1}{30}$ to gr. i. It is recommended in the treatment of chronic bronchitis, croup, whooping-cough, etc. A one- or two-per-cent. solution may be prepared, and from five to ten minims administered. It acts rapidly, and the effect is prolonged. It may also be used hypodermically. *Beaumont Small.*

APOCYNACEÆ.—(The Oleander or Strophanthus family.) A great family of one hundred and thirty genera and more than one thousand species, very abundant in the tropics of both hemispheres, a few extending into the temperate zones. The plants are almost all trees or erect or climbing shrubs, with milky juice, and are highly ornamental and frequently cultivated for decorative purposes. The juices of Landolphia, Hancornia, and some others are utilized in the production of rubber. Valuable timbers are yielded by several species. The most noteworthy characteristic of the family is its poisonous nature, few other families being able to compare with it in this respect. Many of the species have been utilized as arrow poisons, and a number of these have been introduced into the materia medica. The active constituents are mostly glucosidal, commonly alkaloidal.

The action is chiefly upon the heart, stimulant in small doses, ultimately paralyzant, and thus frequently powerfully diuretic. Often, also, they are irritant emetico-cathartics. Their action is so powerful that even minute differences between them are of importance, and new remedies introduced from this family are always worthy

of careful attention. The important medicinal genera are strophanthus, aspidosperma, apocynum, and alstonia.

The poisonous principles are widely distributed through the plant bodies. *H. H. Rusby.*

APOCYNUM.—Canadian Hemp. "The root of *Apocynum cannabinum* L. (Fam. *Apocynaceæ*)." U. S. P. Up to a comparatively recent period the genus *Apocynum* was supposed to contain, in the Eastern United States, but two species, *A. cannabinum* L. and *A. androsaemifolium* L. As the latter was known to have but a weak physiological action, it was supposed to be necessary to exclude only this well-known species from the drug in order to insure its full properties. It is now known that the several supposed varieties of *A. cannabinum* are perfectly distinct species. *A. cannabinum*, therefore, as it has been understood and collected, is in reality several (probably four, at least) distinct species, the true *A. cannabinum* being apparently rather scarce. That some one or more of these species is a powerful and important medicine is indubitable, in view of the evidence presented; but in view of the numerous recorded failures, it is equally certain that not all of them are so. We are at present quite ignorant as to which is the active species, all statements of manufacturers, as well as the Pharmacopœia, to the contrary notwithstanding. The entire comparative study of these species is still before us. Under these circumstances any specific pharmacological account of the drug is out of the question.

The plants are erect, perennial herbs, growing by preference along railroads and roadsides. They propagate by long, horizontal underground structures, which appear to combine the characters of both root and stem. The latter is the part used. The aerial portion may be smooth or pubescent, and is usually purple or purplish, mucronate. The stem is branched above and bears very small white or greenish-white flowers in close cymes. The fruit is a pair of long slender follicles, filled with small plumose seeds. The entire plant exudes an abundant milky juice.

The drug occurs in long, rather straight pieces, of about the thickness of a lead pencil and sparingly branched. It is of a brown color, having an orange shade if not old and stale. The bark exhibits few coarse wrinkles, finer nerves and coarse circular fissures. It is very thick, and pinkish-white internally. The wood is yellowish, very soft and brittle, its pores are large enough to be visible to the naked eye. It contains resin, tannin, starch, an amaroid, and the peculiar crystalline body apocynin, soluble in alcohol and poisonous, and the glucoside apocynin, soluble in water and of feeble action. The apocynin is a nauseating expectorant, and emetico-cathartic in over-doses, like the drug, but none of the constituents yet examined has an action exactly parallel with that of the drug. It is quite likely that they differ in the different species. Apocynum is a cardiac stimulant and a diuretic, as well as a nauseating expectorant. The most important use of the drug is in causing the removal of dropsical effusions. A fluid extract is official, the dose of which is 0.3 to 2.0 c.c. (℥ v. to xxx.). *H. H. Rusby.*

APOMORPHINE.—Apomorphine is an alkaloid derived from morphine by abstracting from the latter a molecule of water. This is done by heating it in sealed tubes with zinc chloride or hydrochloric acid. It may also be derived from codeine. It is commonly used in the form of the hydrochlorate, which is official. The Pharmacopœia thus describes it: "Minute, grayish-white shining, acicular crystals, without odor, having a faintly bitter taste, and acquiring a greenish tint upon exposure to light and air. Soluble at 15° C. (59° F.) in about 45 parts of water and about 45 parts of alcohol; very little soluble in ether or chloroform. When heated to near 100° C. (212° F.), the salt is decomposed, rapidly if in solution, slowly when dry."

The properties of apomorphine are totally distinct from those of morphine. It is primarily an emetic, acting altogether centrally, and with great promptness and power. It is secondarily an expectorant, increasing and greatly thinning the bronchial mucus. In poisoning, there is intoxication or delirium and paralysis of the motor nerves, with failure of respiration and especially of the heart.

In use, apomorphine is probably our most prompt and energetic emetic, its special value being the promptness and certainty with which vomiting can be induced by hypodermic injection when, for any reason, the stomach cannot be acted upon to produce it. As an expectorant, it is perhaps our most useful agent for relieving a "dry" cough. If given early, it will do much to avert bronchitis, and it is also especially useful in the hacking cough of tuberculosis. The emetic dose for an adult is gm. 0.006 to 0.01 (gr. $\frac{1}{15}$ to $\frac{1}{4}$); as an expectorant, gm. 0.0015 to 0.0025 (gr. $\frac{1}{30}$ to $\frac{1}{20}$). *H. H. Rusby.*

APOPLEXY. See *Brain Diseases: Hemorrhage.*

APPENDICITIS.—The term appendicitis is one that has come into general use of late years only, and, while occasional articles in the past have called attention to and well described that disease which now goes under the name of appendicitis, the general recognition and proper treatment of the same may be said to date from the well-known article by Fitz. It is true that inflammation of the cæcum, perityphlitis, and paratyphlitis are terms which express accurately the pathological condition in rare cases, yet inflammation in the right iliac fossa is known to be dependent upon some diseased condition of the appendix save in very exceptional instances. Hence the term "appendicitis" has displaced all others, to indicate inflammatory troubles, either acute or chronic, situated in the right iliac fossa.

The anatomy of the appendix is extremely varied. The organ is the remains of a portion of bowel which, during fetal life, had much the same diameter as the rest of the cæcum, but at birth it presents an appearance which is accurately described by its name, worm-like appendage. It is attached by one extremity to the lower end of the cæcum into which its lumen opens, and a fold of mucous membrane, the valve of Gerlach, more or less covers the opening between the two portions of bowel. The attachment of the appendix to the cæcum will be found at the lower end of the cæcum, where the muscular bands so characteristic of the large intestine come together. Hence by following a muscular band of the colon and tracing it downward, one can reach the root of the appendix. The diameter of the appendix varies greatly. I have seen it an eighth of an inch in diameter; I have seen it dilated until its diameter was not less than one inch and a quarter. Perhaps a quarter of an inch would be not far from the usual size. The length varies as much as does the diameter. An appendix is mentioned in Dennis' "System of Surgery" as being nine and a half inches in length. I have seen it exist simply as a bunch of fibrous tissue not a quarter of an inch long, and between these two extremes the ordinary length will be found. The position of the appendix in relation to the cæcum will vary not less than do its length and diameter; and this is to be expected, since it is attached to the bowel by one extremity only, the other being more or less free. It may lie to the outer side of the cæcum and be turned upward, or behind the cæcum and be turned upward; it may also be so long as to hang over the brim of the pelvis and become an intrapelvic organ. It is surrounded partially by peritoneum. In rare cases it will be found lying entirely in the meso-cæcum, covered little or not at all by peritoneum. It has, under other conditions, a meso-appendix containing blood-vessels and lymphatics, as have the colon and other portions of the intestinal canal. The meso-appendix is rarely as long as is the appendix, to the tip of which it extends; hence this portion of the bowel is bent, sometimes acutely flexed, and thus it may become a cause of trouble owing to obstruction of the

lumen. It is probably very exceptional to find an appendix which is straight.

It is usual to consider that the appendix is histologically similar to the small intestine, namely, that it has circular and longitudinal muscular layers overlaid by peritoneum and lined internally by mucous membrane. The lymphatics from the appendix empty into the glands in the meso-appendix. The appendix is supplied by a rather large blood-vessel which extends to the tip of the organ, and does not at its termination anastomose with another vessel. Obliteration of this vessel at the caecal end will therefore interfere with the blood supply of the whole appendix.

The healthy appendix feels to the touch as does the small intestine. When it is the seat of chronic inflammation, the appendix becomes firm to the touch and may be here and there pouched, or the lumen partially occluded, or, in exceptional cases, entirely closed.

The appendix contains normally mucus. Sometimes a little fecal matter, generally called "concretions," may be found in it, and exceptionally a foreign body.

The physiology of the appendix is unknown. In certain of the lower animals it is a large organ and undoubtedly assists in digestion. There is no reason to suppose that this condition of affairs exists in the human being. After the organ has been removed, or after its lumen has been obliterated, the human economy does not seem to suffer because of either of these conditions. In the female a fold of peritoneum extends from the right ovary to the appendix, and is invoked as a reason why inflammation of the right iliac fossa in the female may involve both organs.

The bacteriology of the appendix will not differ from that of the caecum, with which it is in free communication; a perforation from the cavity of the appendix into the peritoneal cavity can be considered as a perforation of the caecum, the colon bacillus being the organism on which the greatest stress is laid as a cause of the resulting inflammation and sepsis, though many organisms are found.

Appendicitis may occur at any time of life from youth to old age, but between the ages of ten and thirty the majority of cases are met with. Of the two sexes the male seems to be more often affected. In the female inflammation of the right tube may be mistaken for appendicitis.

It is usual to separate appendicitis into certain classes, the better to appreciate the pathological conditions present and the train of symptoms which one may be called upon to investigate; and while there is no hard-and-fast line between the different groups,—the division being purely arbitrary,—clinically such a classification will be found very helpful. Thus appendiceal colic, catarrhal appendicitis, suppurative, perforative, and gangrenous appendicitis are recognized as individual diseases of the appendix.

CHRONIC APPENDICITIS.

In the chronic form of inflammation the appendix has elastic, thickened, white walls and contracted lumen. To the touch the organ feels firm and stiff and more or less straight. An acute flexure exists rarely, for such a condition predisposes to an acute attack and to periappendicular inflammation. The whole appendix appears to be infiltrated with an exudate that usually does not invade the peritoneal coat, which retains its original shiny appearance; occasionally the appendix is adherent to adjacent organs by firm exudate, the evidence of one or more acute attacks. The meso-appendix may be thickened and firm, only in exceptional cases retaining its normal appearance. Whether the appendix lie entirely in connective tissue behind the caecum, or be a peritoneal organ, its walls present when chronically inflamed the same general appearance. Attacks which accompany the condition of the appendix here stated vary in intensity and frequency. They may persist for years, occurring at irregular intervals, or they may occur at more or less

frequent intervals, within a short time. Between the attacks the symptoms may disappear altogether, or there may be a sense of discomfort in the right iliac fossa, with recurring exacerbations. The terms relapsing and recurrent appendicitis are analogous to the terms remittent and intermittent malarial fever. The attack may be so slight as to be worthy of the name only of appendicular colic. Usually the term appendicular is omitted, by the patient at all events, and the term colic only used. It is very probable that a large number of cases of ordinary colic, called attacks of indigestion, are due to an appendicular sclerosis.

The symptoms which have been referred to as present in attacks of appendicitis will be noted, but to a minor degree, in the form of appendicitis which is now under consideration. It is to be remembered also that attacks of chronic appendicitis may become perforative and therefore acute; this is the danger to be feared. With our present knowledge it is not possible to say when the next attack of appendicitis may occur and whether it may be of a serious character or not. Physical exploration of the right iliac fossa between the attacks may enable the examiner to localize the thickened and hardened appendix. Pressure upon it will cause discomfort, if not pain, and especially is this the case just prior to an attack and for some time afterward. The duration of an attack will vary; fever, constipation, etc., bearing a close relationship to the extent of disease present. After a few days, or perhaps even earlier, the symptoms diminish and the patient returns to his usual condition, only to be the subject of another attack later. There is always the chance that an attack of chronic appendicitis may become perforative, with results such as have already been stated.

ETIOLOGY.—No satisfactory cause of inflammation of the appendix is known. Traumatism, constipation, irregular development of the appendix, right tubal inflammation in women, indigestible substances taken into the stomach at meals, a superabundance of glandular tissue in the appendix, bending of the appendix whereby the lumen is mechanically obstructed, and many other reasons, are all put forward as the cause, probably with equal truth. Even the grippe, with which we Americans have been favored of late years, is suggested as a cause, although up to this time the organism peculiar to the grippe has not been discovered in causal relation with appendicitis, and epidemic influenza in the past does not seem to have given rise to appendicitis. The firm, stiff, elastic appendix, the subject of what we call chronic appendicitis, resembles scarcely any other pathological condition met with in the alimentary canal, and it does not seem to be so extraordinary a supposition that appendicitis, with its various terminations, may not be the pathological expression of a constitutional condition not yet recognized and named. Perforation of the appendix and the resulting peritonitis produce a change in the aspect of affairs not more marked than that which occurs after a perforation of the small intestine by a typhoid ulcer.

The complications met with in appendicitis have to do with the extension of the inflammation from the original seat of the disease to other parts of the body, not only through the lymphatic system, but also through the venous system. Among them may be mentioned thrombosis of the iliac vein, abscess in the liver (developed by way of the portal circulation), etc.

Foreign Bodies.—From time to time inflammation of the appendix has been attributed to foreign bodies impacted in the lumen of the tube—prune stones, date stones, grape seeds, etc. Examination shows that such so-called foreign bodies are usually masses of feces more or less hard; and while foreign bodies are occasionally met with they are encountered very rarely. Probably the ordinary pin is the foreign body most frequently found. Not infrequently a fecal concretion is held firmly in the appendix, partly by the swelling of the surrounding mucous membrane and partly by the contraction of the circular muscular fibres. Under this pressure the concretion may gradually force its way

through the wall of the appendix. As to the cause of the impaction, nothing is known, nor do we know whether it is a common thing for feces to enter the appendix and then pass out of it again.

PATHOLOGY.—Inflammation of the different coats of the bowel proceeds from within outward, the mucous coat being first affected, then the muscular, and finally the peritoneal. The ulceration involves a larger area of the mucous than of the muscular coat, and in turn a larger area of the muscular than of the peritoneal coat. The form of ulceration does not seem to differ from that which is met with in similar tissues elsewhere. As yet nothing specific has been discovered. Ulceration may occur anywhere within the interior of the bowel, on the side of the meso-caecum or opposite to it, or at the extremity of the appendix. It is notable that as the ulceration deepens and involves the peritoneal coat, pain is experienced. When the peritoneal coat becomes involved, lymph is effused on the free surface of the serous membrane, and adjacent coils of intestine become adherent to the appendix, thus preventing in many cases extravasation into the peritoneal sac. If perforation occurs suddenly, the adhesions between the appendix and the adjacent coils of intestine may not be strong enough to prevent this extravasation; but if perforation occurs more slowly, these adhesions will probably be sufficiently strong to wall in firmly the extravasated material and the rapidly forming pus. A subsequent giving way of such an abscess into the general peritoneal sac is followed by a furious septic inflammation, which is general and almost necessarily fatal.

If the seat of ulceration and subsequent perforation occurs in a part of the appendix not covered by peritoneum—for instance where the appendix is turned behind the caecum in the connective tissue—the perforation will simply give rise to a circumscribed abscess, into the formation of which peritonitis does not enter. Such an abscess will be in the meso-caecum, and the tendency to perforation will be toward the loin rather than toward the peritoneal cavity. The periappendicular lesions will vary greatly in the two cases, the one giving rise to peritonitis, circumscribed or general, the other to cellulitis, circumscribed always and general never. The situation is far less grave if the peritoneum is not involved, and the symptoms are less severe.

Pus having formed about the appendix and being walled in by the adhesions between this organ and the adjacent coils of intestine, does not remain quiet. It increases in amount and makes its way in the direction of the least resistance, sometimes in one direction, sometimes in another. The advance to the surface may be very slow: down the thigh, through the lumbar region, into the intestine, large or small, are the routes along which it may advance. When an abscess forms and exists for any time, the appendix will often be found floating in the pus, perhaps in its entirety or disintegrated. After the appendix has sloughed off feces rarely are discharged—fecal-smelling matter yes, but feces as such very rarely. The opening of the bowel usually closes without help on the part of the surgeon. It is difficult, from an examination before the operation, to state accurately where the appendix may be situated. I have seen it attached to the liver, which formed one of the boundaries of the abscess. I have seen it also in the scrotum, simulating strangulated hernia; in the left iliac fossa; and in the pelvis behind the rectum.

Left-sided appendicitis is not so very unusual and may occur from a transposition of viscera, from a long appendix, or from an extremely movable caecum, which carries the appendix with it. The form of peritonitis which follows upon the perforation of the appendix will vary largely with the rapidity of the ulcerative process. Sloughing of the appendix and gangrene are more apt to occur when the seat of ulceration is near the caecum, and possibly this outcome of the disease may be traceable to the obliteration of the nutrient artery of the appendix at the seat of the ulceration. Theoretically, at least, such a blocking of the nutrient artery near the caecum would

leave the appendix without vascular supply. This explanation, however, will not suffice for those cases in which the lumen of the artery is found not to be obstructed, and consequently one is forced to suppose that micro-organisms have to do with the production of the gangrene.

SYMPTOMS AND DIAGNOSIS.—If the inflammation involves the peritoneal coat and if it is accompanied by the formation of pus, the examination of the blood will show a leucocytosis more or less marked. In two of my recent cases, in both of which circumscribed suppuration within the peritoneal cavity existed, I found in one case a leucocytosis of 15,000 and in the other case one of 18,000.

So far as the differential diagnosis is concerned, it will be necessary to distinguish between the disease under consideration and renal or ureteral disease, inflammation of the gall bladder, typhoid perforation of the intestine, right salpingitis, abscess of the liver, tuberculous inflammation of the caecum or mesentery, and intestinal strangulation. In a case recently under my care, which came to the hospital forty-eight hours after the commencement of symptoms, abdominal section showed that a Meckel's diverticulum had passed through a hole in the mesentery of the ileum, was strangulated, and gave rise to symptoms which justified the expectation of finding an inflamed appendix. While, then, in a majority of cases inflammation of the appendix, or of the immediate neighborhood, can be diagnosed, in other cases abdominal section is necessary in order that accuracy of diagnosis may be arrived at.

Constipation.—Constipation is an unfavorable sign and can be taken to mean that some part of the intestinal wall is inflamed and consequently is not able to carry on its function properly,—namely, the transmission of feces within the lumen of the tube. Such constipation may give way under the use of purgatives or enemata, but persists when inflammation is advancing. In septic peritonitis, when it is general, the constipation is absolute. So long as it is not present and the bowels act in response to the administration of purgatives, just so long may a favorable prognosis be given. Diarrhoea, in my opinion, is a vastly more favorable symptom than is constipation; indeed, diarrhoea does not occur as a symptom of appendicitis.

Muscular Tension.—The absence of motion which is noticed in the lower portion of the abdominal wall becomes more and more marked as the disease progresses, and this without the sufferer's knowledge. If the appendix is in the ordinary situation, the right rectus and the right oblique muscles will be somewhat more tense than are the corresponding muscles on the other side (left) of the body; this being probably more marked in the case of the rectus than in that of the oblique muscles. Flexion of the right thigh has been referred to below, under the head of attitude. This position of the limb suggests that the appendix is situated behind the caecum rather than in front of it, and it may be so marked as entirely to incapacitate the patient from extending the limb. Muscular tension on the front of the belly disappears when a paresis of the intestinal wall from general sepsis takes place. This is not seen early in an attack. The belly wall then balloons out and justifies an unfavorable prognosis. The abdominal walls may be extremely tense, flat, and board-like. This condition, which is not met with in simple acute appendicitis, is a very unfavorable symptom, and indicates the existence of an acute peritonitis due to the giving way of the wall of the intestine and the extravasation of bowel contents. It is accompanied by high rectal temperature.

Breathing.—The breathing is usually accelerated, and becomes more so as inflammation advances. If the peritoneal coat of the appendix is involved, the patient's breathing will be largely thoracic. Respiratory movements of 22 to 24 per minute may be expected when an acute inflammation is present, and the abdominal wall over the inflamed area will be quiet if not motionless, the breathing being therefore somewhat short. When much peritoneal membrane is inflamed, the belly wall