

which the teeth all point downward when growing; all the species are found on tree trunks. They are easily recog-



FIG. 2265.—*Catastoma circumscissum*. One of the Lycoperdales. Natural size. a, Shows the outer peridium rupturing at the equator; b, shows the upper part removed and overturned with the inner peridium rupturing with a single crater at a point originally at its base; and c, shows the lower half of the outer peridium left as a cup in the earth after the removal of b. (After Morgan.)

nized by their teeth, and the three common species, *Hydnum coralloides*, *H. erinaceus*, and *H. caput-ursi* are all equally edible.

Two pileate species are also edible; *H. repandum* with yellowish or whitish-yellow pileus and teeth very brittle, and *H. imbricatum*, brown with overlapping scales on the pileus and grayish teeth.

4. CLAVARIACEÆ.—The club-fungi growing in the form of coral-like masses with the branches pointing upward in growth contain several edible species. None of them are dangerous, and they form a good subject for experimentation as they are often abundant in moist woods.

It will be readily seen from the above sketch that no hard and sharp rules can be given that will distinguish

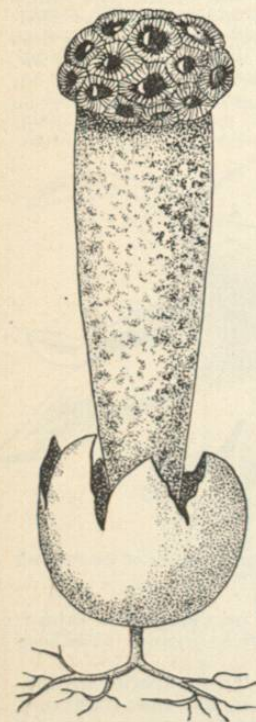


FIG. 2266.—*Simblum rubescens*. One of the Phalloids. In life the stem is reddish; in the early stage the entire plant is enclosed in the cup-like base, then in the form of an egg. (After Gerard.)

edible species of mushrooms from poisonous. Like the higher plants there are good, bad, and indifferent species, and the separate species can best be learned as good or bad by intimate acquaintance with them, the same as we have become able to distinguish apples from pears and carrots from radishes by learning each one separately.

THE GASTEROMYCETES.

The last group of fungi are represented by the puff balls and their allies that in some respects represent some of the highest developments among the fungi. It is scarcely necessary to call attention to the peculiarities of the various orders and families, but attention can be called to a few typical forms, since some of them are abundant and excellent articles of food. Among these is the giant puff ball (*Calvatia Bovista*), which sometimes reaches a prodigious size and often is large enough to furnish a meal for several people. Smaller species ranging from three to six inches in diameter are *Calvatia cyathiformis* and *Calvatia craniiformis*. In the former the mature spores are purplish, in the latter they are olive brown. It is only when the flesh of the puff-

ball is pure white and much the consistence of cottage cheese that it is suitable for food, and any indication of darkening, caused by the ripening of the spores, should cause the plant to be rejected.

A smaller fungus is commonly seen in *Bovista plumbea*, which is only an inch or so in diameter, but is considered a delicacy in some places. The numerous smaller species of *Lycoperdon* are likewise edible, but are usually too small to be considered available for food. Allied to the puff balls are the curious earth-stars of which no less than three genera are represented in America. Fig. 2264 represents the least common form. *Geaster*, more common, differs mainly in being attached to the outer peridium at one point and opening by a single crater.

Another puff ball with the curious habit of overturning and opening at the bottom of the inner peridium is seen in *Catastoma*, whose life history was first studied by Morgan (Fig. 2265).

The stink-horns belong to an order (Phallales) distinct from the puff balls (Lycoperdales). These well-known members of the group are reputed poisonous and all doubtless contain phallin as one of their constituents. They form underground in the shape of an egg, and this bursting allows the rapid distention of the stem by means of which the spore mass is carried up where flies may be attracted to it and aid in their dispersion. Three of the larger species are more or less common throughout the country, and there are several curious forms less widely known, one of which is represented in Fig. 2266.*

Lucien M. Underwood.

FURUNCLE. See Boil.

GAINESVILLE (GA.) MINERAL SPRINGS.—The town of Gainesville is located in Hall County on a small tableland 1,300 feet above the sea-level, and lies between the headwaters of the Oconee River, which flows into the Atlantic, and those of the Chattahoochee, which finds its way to the Gulf. The Alleghanies, stretching around the place to the north and west, form a natural bulwark which breaks the force of the northern winds of winter. The town thus enjoys a dry, bracing climate, without extremes of either heat or cold. Daily observations made for the United States Signal Service during the period of ten years showed a mean winter temperature of 44° F. and a mean summer temperature of 71° F. The health tables of the United States census show a lower death rate in this portion of Georgia than in any other section of the country. White, in his "Statistics of Georgia," makes the statement that no case of consumption was ever known to originate in Hall County. In close proximity to the thriving and rapidly growing little city are numerous mineral springs, some of which have come into use as health resorts. We have thought it advisable to consider these springs in the following group:

Gower Springs form one of the chief attractions of the city. They are located just beyond the corporate limits, and are connected with the city by a street-car line. These springs are chalybeate in character, the iron being held in solution by carbonic acid, which makes it readily assimilable. The following qualitative analysis was made some years ago by Prof. W. J. Land, of Atlanta:

Free carbonic acid.	Iron crenate.
Hydrosulphuric acid.	Lithium phosphate.
Iron carbonate.	Calcium sulphate.
Manganese carbonate.	Magnesium sulphate.
Iron apocrenate.	Potassium bromide.
Potassium sulphate.	Oxygen gas.
Sodium sulphate.	Nitrogen gas.

An excellent hotel is maintained at the Springs, and we are informed that an increased number of visitors come to the resort every year. The waters are recommended in general debility, digestive disorders, and kidney affections.

The *Deal Spring*, located two miles from the city, wells up in a basin of solid rock, and is said to possess excellent properties in the treatment of indigestion and dyspepsia and in the dentition period of children.

*The present illustrations are reproduced from a series used to illustrate an introductory work on fungi, by the author of this article, "Moulds, Mildews, and Mushrooms," New York, Henry Holt & Co.

The *New Holland Springs* are also within two miles of Gainesville, on the Southern Railroad, which has a station at the Springs. The improvements consist of a hotel and cottages for two hundred guests. The situation is in a beautiful and extensive grove of native oaks, and the Springs furnish about two hundred gallons of water per minute. The water is recommended for indigestion and general debility, but we are unable to present a complete analysis in verification of its claims. An old qualitative examination showed the presence of the following ingredients:

Calcium carbonate.	Iron, probably combined
Magnesium carbonate.	with carbonic acid.
Potassium carbonate.	Sodium chloride.
	Carbonic acid gas.

James K. Crook.

GALACTAGOGUES.—(Gr. γάλα, milk, and ἀγειν, to lead.) The secretion of milk is normally associated with pregnancy, but may occur in pseudocyesis, and in ovarian and uterine tumors. It is often seen during the first week of life, in both male and female children. The secretion of milk may be established and maintained by the application of a nursing child to the breast of a woman who is not at the time and never has been pregnant. In one case a child eight years old nursed her mother's infant for some months, and in another a woman, fifty-nine years old, ten years after the cessation of menstruation, nursed a child for some time.

The length of time during which the milk may continue to be secreted varies from nine to sixteen months, but in rare cases this period may be prolonged for as long a time as five years, if the child be allowed to nurse.

The causes of defective lactation are various in character. Thus, for example, there may be some mechanical interference with the escape of the milk, as when the lactiferous tubes and acini are not developed, or the epithelial cells are imperfect, or a previous injury or disease has caused total destruction of the glandular tissue. These conditions are not amenable to treatment. On the other hand, when there is simply a lack of development, or the gland and nipple have received some trifling injury, the condition should be investigated and treated before the end of gestation. The breast of every pregnant woman should be examined by her physician three or four months before the expected confinement, and if the breasts are found to be small and poorly developed and the nipples fissured or depressed, appropriate treatment should be instituted. If the nipples are hard, the application of some bland aseptic oil or ointment—e.g., lanolin and boric acid—will be found useful as a means of softening them. The breast should be massaged, and at the same time the nipples should be drawn out by grasping them between the thumb and finger, while with the other hand the breast is stroked toward the nipple. This should be done daily for five or ten minutes at a time. The adoption of these measures will enable the child, when placed at the breast—which should be done as soon after labor as the mother's strength will permit—to grasp the nipple effectively. After this first attempt at nursing, the child should be placed at each breast, alternately, every four hours. Should the child be unable to grasp the nipple, the latter should be drawn out with the breast pump or a clay pipe, and, if this does not prove sufficient, a glass nipple shield, with rubber nipple, should be employed. The sucking of the child is the best stimulus to the flow of milk, and should always be obtained if possible; but, if the child cannot be made to nurse, then suction will have to be made with the breast pump for five or ten minutes every four hours. The breast at the birth of the child contains colostrum, and at the end of from thirty-six to sixty hours ripe milk. During the first period the child should be nursed every four hours, but afterward, on the appearance of ripe milk, it should be nursed every two hours.

Another cause of defective lactation is a plethoric state

of the body, a condition which readily responds to treatment. The diet should be carefully regulated, milk being made one of its chief constituents, and all stimulants should be avoided. The extract of thyroid gland should also be prescribed in five-grain doses. Under this plan of treatment, combined with the occasional administration of a dose of castor oil, the obstruction to the flow of milk should soon disappear. In these cases the use of the thyroid gland extract not only increases the flow of milk, but at the same time improves its nutritive quality.

Torpor of the mamme is another cause of inactivity of their secretory apparatus, and when this is the case great benefit may be derived from the application of electricity. Both poles having been moistened, the positive one is placed deep in the axilla or on the back, while the negative one is applied gently over the nipple. The current employed should be no stronger than is agreeable to the patient, and this mode of applying it should be continued for about two minutes. Afterward, the negative pole should be glided along the sides of the breast, in a stroking fashion, for another two minutes. Then, finally, the poles should be applied to the sides of the breast for the same length of time. Electricity may be applied in this manner once a day for a period of four or five days; and usually it will be found that a single such séance will fill the breasts after the milk has disappeared for some days.

Among the other local therapeutic methods which have been used with varying success may be mentioned the application of warm poultices made of a weak mixture of mustard (not strong enough to burn) or of calabar bean, or of the leaves of the castor-oil plant. Gentle massage alone will often suffice to start the flow, or we may combine with it inunction of olive oil or of castor oil. Repeated applications of the breast pump and enveloping the breast with warm cloths are also very efficient methods.

The internal administration of drugs, for their galactagogue action, has not proved very satisfactory. *Jaborandi* will, it is true, increase the flow of milk, but its action is only temporary and cannot be depended upon when a prolonged effect is needed. It is best given in the form of the fluid extract of pilocarpus, in half-drachm doses; this preparation being less nauseating than the *jaborandi* itself. Or the effects of the drug may be obtained from hypodermatic injections of pilocarpine hydrochlorate, in gr. $\frac{1}{16}$ doses.

Physostigmine increases temporarily the flow of milk. So also do the preparations of ammonia—the carbonate and the acetate—when given in moderately large and continued doses. The alcoholic stimulants, such as ale, porter, and beer, and the malt preparations possess the power of increasing the quantity of milk secreted, but the quality is thereby deteriorated. To such a degree is this true that they should rarely be used except in small quantities. The volatile oils, especially the oil of anise, impart a pleasant flavor to the milk, and in consequence the child will be likely to draw much better. In this indirect manner they may serve to increase the flow of milk.

The most usual cause of defective lactation is anæmia. It is a well-known fact that the functional activity of an organ is directly proportional to the supply of blood furnished to that organ, and this is a very important law to remember when we are dealing with such a gland as the mammary. We may therefore expect to secure the greatest improvement in the secretion of milk from the taking of those substances and the adoption of those hygienic measures which tend to increase the supply of blood and to improve its nutritious qualities. The mother should be in the best possible condition before and after the arrival of the child, and this result should be secured by the administration of tonics, such as iron, arsenic, nux vomica, and quinine, and by the patient's taking proper food and exercise. The diet suitable for a nursing mother should be nutritious and easily digested. For the first few days of the puerperal period

the mother should have milk, animal teas and broths, eggs, gruel, soups of beans and peas, and small amounts of tea, cocoa, or coffee, with toast and crackers. It is well to avoid the limited diet of tea and toast which so many women take at this time. Later on in this period and during that of lactation, the mother should have an abundant supply of water, soups, meats, milk, eggs, and vegetables. Of the latter turnips, carrots, beets, potatoes, spinach, asparagus, and lettuce will aid in the formation of milk. The mothers of the working class will be found to give milk in larger quantity and of a better quality than do those who live under higher social conditions. This is due to their simple mode of living and to their outdoor life.

Systematic exercise in the open air should be taken as soon after confinement as the mother's condition will permit, for by this means the proteids will be diminished in amount and the fat increased, thus creating a milk which is easily digested by the child.

The mother should at the same time avoid those drugs which decrease the milk supply, namely, belladonna, when taken in large amounts or used locally, and saline and hydragogue purgatives; for the removal of large amounts of fluid from the body will greatly diminish the supply of milk. It is also desirable to prevent, as far as possible, any nervous shock or worry, for the effect upon the mother is likely to be such that her milk will be rendered unfit for the child.

The proper care of the breast during lactation is important. The nipple and breast should be washed with a saturated solution of boric acid both before and after nursing, and these parts should be kept covered with soft sterile lint or gauze held in place by a breast binder which gives support and ease to the breast. If this course is adopted there will be fewer cracked nipples and abscesses of the breast. In cases in which fever occurs during lactation it is often possible to retain the secretion of milk for three or four weeks, if the breasts are gently massaged and emptied three or four times a day with the breast pump. Then, when the temperature returns to normal, the child may again be put to the breast. In those cases in which there has been an abscess of the breast in early infancy, or during a former lactation, the danger of the formation of a fresh abscess is only slightly greater than it is in a perfectly normal breast. If care is taken to keep the parts thoroughly clean, and if they are not allowed to become engorged, we may rightly expect that such a breast will furnish a sufficient supply of good milk. Stricker Coles.

GALANGA; GALANGAL.—Lesser Galangal. The rhizome of *Alpinia officinarum* Hance (fam. *Zingiberaceae*), a perennial herb of flag-like habit and the floral peculiarities of ginger and cardamom plants. It is an inhabitant of Hainan and other parts of Southern China, where it is also cultivated as an article of commerce. Galanga has been long known in Europe, as well as in Asia, and was formerly esteemed as a domestic spice or flavor.

The dried rhizome is cylindrical, often branched, about as large as the little finger, and in pieces two or three inches in length. The nodes are close together and very prominent, as slender annulations. Texture hard, tough; color deep brown; odor aromatic, curcuma-like; taste pungent. It contains an essential oil to which its odor is due, and probably some pungent resin. The oil is reddish-yellow, with the odor of cajeput and the taste of camphor. It has a specific gravity of 0.921, and contains cineol. Its qualities as a medicine are essentially those of ginger. As a medicine galanga is obsolete in Europe, and nearly so as a spice, although it is said to be used with other things in flavoring cordials, in veterinary mixtures, etc. Henry H. Rusby.

GALBANUM.—"A gum-resin obtained from *Ferula galbaniflua* Boiss. et Buhse (fam. *Umbelliferae*), and probably from other species" of *Ferula* (B. P.; no longer official in the United States). It is not certain whether the

product of the "other species" always comes separately, as it certainly sometimes does, or whether the drug is sometimes a mixed product. The plants are huge perennial herbs of Persia and the adjacent region.

The galbanum exists, like other gum resins, in the plant as a fragrant creamy latex, and exudes spontaneously from the crown and stem, or flows upon puncture, in white drops that soon become thick and sticky, and finally hard and brittle, by the action of the air. As they dry, they also turn to a light yellow-brown or buff color. These drops or tears, collected when nearly dry and not sticking together, compose the "Galbanum in tears"; when collected in a softer state, and running more or less completely into a granular or even homogeneous mass, they are the more common "galbanum in mass." The pharmacopoeial description was as follows: "In tears from the size of a pin's head to that of a pea, and larger; mostly agglutinated, forming a more or less hard mass; externally yellowish, or pale brown; internally milk-white, bluish-white, or yellowish, with a waxy lustre; odor peculiar, balsamic; taste bitter and acrid. When moistened with alcohol, galbanum acquires a purple color on the addition of a little hydrochloric acid."

Like other substances of its class, galbanum makes a yellowish emulsion with water, and contains a varying amount of essential oil (six per cent., more or less) according to its freshness and softness. It consists, besides, of about three-fourths resin and one-fourth gum, excluding a variable amount of coarse impurities. The oil is a colorless, pleasant-smelling hydrocarbon of the turpentine type. It is an article of commerce, and described by Schimmel as having a normal specific gravity of 0.930, boiling between 165° and 300° C., and containing cadinene. The resin is a yellowish-white amorphous substance, soluble in alcohol, and remarkable for yielding by dry distillation a brilliant blue, rather thick essential oil (see German Chamomile for similar substance), and the crystalline substance called *Umbelliferon*, which, in its turn, melted with potash, yields the derivative *resorcetin*.

Galbanum was used by the ancient Hebrews as an ingredient of some incenses. Along with other gum resins it has had, in its day, some reputation as an emmenagogue and antispasmodic, and it is still occasionally given with these qualities in view. Somewhat more often it is administered in chronic bronchitis or laryngitis as an expectorant. Rarely it is given in rheumatism, with probably no benefit. The principal present employment of this antiquated medicine is as an ingredient of stimulating plasters.

It should be heated and strained, to separate dirt and refuse, before employment in pharmacy. 1 gm. (gr. x.-xx.) may be considered a full dose, and can be administered in pill form or as an emulsion. Henry H. Rusby.

GALBRAITH SPRINGS.—Hawkins County, Tennessee.

Post-Office.—Galbraith Springs. Hotel and cottages.

ACCESS.—Via Southern Railroad (formerly East Tennessee, Virginia, and Georgia) to Russellville, Hamblen County, thence 9 miles north by private conveyance to Springs.

For the last half-century these Springs have been known and resorted to by the inhabitants of the surrounding districts. In *ante-bellum* days they were frequented by hundreds, who made their temporary abodes in pole cabins around the Springs. The location is in a broken, mountainous country, 1,400 feet above the sea-level. The immediate surroundings of the Springs are uniquely charming in their wealth of vale and wood, brooks, rivulets, and waterfalls, and other features to please the fancy. The situation of the Springs is one mile distant from the Holston River, in a romantic glen, 330 feet above the base of Short Mountain. A path leads to the United States Signal Station on the top of Short Mountain, which is 1,320 feet above the Springs and 2,702 feet above the sea-level. From this point one of

the most extended and charming views to be found among the mountains of East Tennessee is revealed to the eye. The hotel is a very comfortable establishment, where the visitor will soon learn that all the needful arrangements for his comfort and diversion are at hand. Among the amusements at Galbraith Springs may be mentioned bowling, dancing, and music. Hunting and fishing may also be indulged in. The springs are four in number. An analysis was made in 1884 by Prof. W. A. Noyes, of the University of Tennessee, with the following results:

LIGHT CALCIC-CHALYBEATE.

ONE UNITED STATES GALLON CONTAINS:

Solids.	Grains.
Calcium carbonate.....	3.84
Calcium sulphate.....	.92
Calcium nitrate.....	Trace.
Calcium phosphate.....	Trace.
Magnesium carbonate.....	.47
Lithium carbonate.....	Trace.
Sodium sulphate.....	.26
Sodium chloride.....	.07
Potassium sulphate.....	.16
Iron carbonate.....	.41
Alumina.....	.03
Silica.....	.68
Total.....	6.84

Temperature of water, 55° F.

This analysis shows a very light mineralization, yet the water seems to possess considerable merit as a ferruginous tonic, and can be taken in large quantities. It is also an excellent table water. James K. Crook.

GALLACETOPHENONE. — $C_6H_5 \cdot CH_2CO(OH)$, a derivative of pyrogallol, $C_6H_3(OH)_3$, one atom of H being replaced by an acetyl group. It is a pale-yellow, crystalline powder, almost insoluble in cold water, very soluble in hot water, alcohol, ether, and glycerin.

It was introduced as a substitute for pyrogallol (Rekowski; *Therap. Monat.*, September, 1891), the advantage claimed for it being its freedom from toxic and irritating action. Pyrogallol and its derivatives owe their therapeutic properties to their reducing action which is usually too rapid and causes an excessive irritation. Gallacetophenone possesses this reducing action in a lesser degree than the others, although sufficiently strong to prove an efficient antiseptic. A further advantage is that it does not discolor the skin, the hair, or the linen with which it comes in contact. It also is devoid of any irritating or toxic action.

It was recommended for the treatment of skin diseases, particularly for psoriasis. In this condition its beneficial effects were said to be manifested in twelve hours, the patches becoming paler and thinner, and disappearing after ten or twelve days.

This drug has not been much employed. Dr. Herman Soldenburg (New York *Medical Journal*, February 6th, 1892) reports his success with it in several cases of long duration. It is employed in the form of a solution or in that of an ointment, the strength in either case being ten per cent. Beaumont Small.

GALLANOL—gallic acid anilid, gallanilid [$C_6H_5 \cdot NH \cdot CO \cdot C_6H_3(OH)_3$]—is obtained by boiling together tannic acid and anilin. It occurs in colorless crystals or gray micaceous scales, slightly soluble in cold water, soluble in boiling water, alcohol, and ether, and insoluble in benzol. It is bitter and astringent. Having found this tannin compound free from the undesirable properties of pyrogallol and chrysophanic acid, yet as effective in treatment, Cazeneuve and Rollet introduced it in 1893 as a remedy in psoriasis, chronic eczema, and other skin diseases. For eczema it is employed in ointment of three to twenty per cent. strength, or with talcum as a dusting powder. For favus, ringworm, psoriasis, or prurigo it is used in twenty-per-cent. solution in alcohol with a

little ammonia. Before this remedy is applied, the skin should always be cleansed with an alkaline soap solution. W. A. Bastedo.

GALL BLADDER AND GALL DUCTS, DISEASES OF.—(*Krankheiten der Gallenwege; Maladies des voies biliaires.*)

I. CATARRHAL INFLAMMATION OF THE GALL BLADDER AND GALL DUCTS.—(*Catarrhal jaundice; Icterus simplex; Icterus catarrhalis; Icterus gastro-duodenalis; Catarrh der Gallenwege; Inflammation des voies biliaires.*) Since the investigations of Wyss, Charcot, Legg, and others, a broader significance has been given to catarrh of the bile ducts than formerly; and at the present time pathologists are wont to include in the term all forms of jaundice save that due to stenosis and non-inflammatory occlusion of the ducts (by foreign bodies, growths, external pressure, etc.), or to a narrowing occurring as a sequence of a previous inflammation—catarrhal, suppurative, or exudative (see the section on Stenosis, etc., farther on). For a full discussion of these questions, see *Icterus*; suffice it to say that to a catarrh of the finer bile ducts has been attributed the jaundice of acute yellow atrophy of the liver, of phosphorus and other forms of poisoning, and of the various fevers, thus narrowing the limits of hæmatogenous jaundice. This section will be devoted only to an account of catarrhal inflammation of the bile ducts in the common acceptation of the term.

ETIOLOGY.—A predisposition to catarrh of the bile ducts is said to exist in persons of a bilious temperament. Persons liable to catarrh of other mucous membranes are prone to this affection. It arises very frequently from an extension of catarrhal inflammation from the stomach and duodenum, and the causes which excite the latter condition are prominent in the etiology of the former.

Hence an attack may occur as the result of exposure to cold and dampness, of checking of the perspiration, of errors in diet, of over-eating, and of the ingestion of rich or fatty food, and of acrid substances, as well as of certain drugs and stimulants. A debauch is often followed by an attack, and the inhalation of noxious vapors and foul gases has been known to excite the disease. The so-called "epidemic" jaundice is thought to be due to a poison introduced from without through the food, drink, or air. Some epidemics, however, have the characteristics of an acute infectious disease and are attended with considerable mortality. Mennert's report of the Saxony epidemic of 1889 includes 518 cases, of which 73 per cent. were in children. There were 30 deaths. Weil's disease (infective jaundice) has been considered by some to be a modified typhoid infection. Several cases of typhoid fever with marked jaundice at the onset have been reported by Ogilvie (*British Medical Journal*, January 12th, 1901), and their resemblance to this disease noted. The Widal reaction should be of great value in this regard. Dalglish¹ speaks of an extensive epidemic of catarrhal jaundice, at Bloomfontein, which bore a strange relation to the prevalent typhoid and dysentery. Whole families might be attacked, but more frequently it was seen that one or two of a household might have jaundice while the others would be affected with typhoid or dysentery. The disease in most instances ran an afebrile course, was attended with marked gastric symptoms, and was not of as long duration as simple catarrhal jaundice. The possibility of this epidemic being a modified typhoid infection has not escaped notice.

An extensive epidemic occurred in Michigan during the summer and fall of 1897. Six hundred and seventy-five cases were observed, mostly in children. The affection was commonly more severe in adults. Whole families were attacked. Usually after a few days of indisposition, slight fever, gastro-intestinal disturbances, and jaundice, more or less marked, would appear. The symptoms then abating. Jaundice in this epidemic was always of short duration. The liver was rarely enlarged.²

In addition to the causes which set up the catarrh of the bile ducts, either coincidentally with, or secondarily to, the gastro-duodenal catarrh, there are other local