But to the science of the subject. The cause of *Cholera Asiatica* is the bacteria, or vegetable fungus, found in the body of those dead from the disease and in the ejections and dejections of those afflicted with it. These bacteria belong under the head of those *peculiarly* fatal to mankind. It assumes the shape of a comma, i.e. (,), or an S-shape. It belongs in the class *Spirillæ*, i.e., S-shaped, but has been described by Professor Koch as *Komma bacillus*.[1] Now this *comma bacillus* is found in the intestines of fresh cholera-corpses and in the dejections of those ill with the plague. This being the source of the disease, although not its origin, we readily see that we must study its habits of propagation; its physical characteristics upon certain *organic* matter; its behavior on *living* material. Then we can scientifically regard its prevention.

It grows quickly upon a surface of gelatinous substances, and renders it after a while fluid. Looked at by a strong glass, capable of magnifying it 100 diameters, it looks like a funnel-shaped ring curled upon itself at the edges, if the gelatine or glue has been stuck with a needle.[2] Upon the smooth surface of gelatine it has a rosy shimmer. It requires a heat of the human body to grow, that is, 98.5° F. (37½° C.), so that it will not propagate at ordinary temperatures of the room. It grows on potato parings and pieces of bloody meat at 30° to 40° C. (86° to 104° F.), at 16° C. (61° F.) it ceases to grow, at 10° C. (50° F.) it exists, i.e., is not killed completely.[3] Just here the nature of heat and cold may be noticed. Cold, agreeably with most vegetable seeds or spores, merely places them in a state of non-germination, particularly if dry; instances are easily brought to one's mind in a crude way by the vitality of the wheat, barley, rice, etc., exposed to excessive cold, while in a congenial temperature and moisture they grow. Heat, however, when applied to the boiling point, destroys all germination; because it is a rapid method of degeneration. Further, this *comma bacillus* is *aerobic*, i.e., requires air or oxygen from the atmosphere to live. The bacilli are divided into classes that are *ana*-aerobic, *semi*-ana-aerobic (?), and aerobic, meaning without atmospheric oxygen; sometimes requiring oxygen and sometimes not free oxygen; the last as we have above stated.

The method of discovering this *comma bacillus* in the dejections next engages one's attention. It is easily cultivated under aseptic conditions upon a gelatine surface exhibiting the characteristics spoken of above. It is colored by the method known to all bacteriologists, that of Professor Gram.

Solution No. 1, *a*, watery solution of aniline oil; *b*, saturated accoholic solution of Gentian violet. *a* is made as follows: —

Aniline oil, one (1) part;
Distilled water, twenty (20) parts.

Filter. To the clear filtrate (it must be shaken and filtered until clear) add 5 parts of the *b*, i.e., saturated alcoholic solution of pure Gentian violet, to 100 parts of *a*, aniline water, made above.

After drying on a little piece of glass, the dejecta of a patient sick with *Cholera Asiatica* spread very thin, and then immersing it in the solutions, mixed as above, for three (3) minutes, and then for three (3) minutes more in a solution, 2, made as follows: —

Iodine, one (1) part.
Iodide of Potassa, two (2) parts,
Distilled water, three hundred (300) parts. } solution 2

until all color seems to disappear; then dry the little glass and view under a microscope to 1,000 diameters; the *comma bacillus* will be larger than an ordinary comma (,).

When we really find this *comma bacillus*, then the patient has the epidemic cholera. Upon this fact is founded all the advance in our treatment of it. Here the scientific value of hygienic and sanitary regulations becomes apparent. Pardon me just here for referring to the recent work of Professor L. Brieger, the president of the Medical Section of the Imperial Institute for Infectious Diseases at Berlin, Germany, upon the immunity from the fatal effects of *Cholera Asiatica* which he has been able to produce in Guinea-pigs. The microbes of cholera, technically *cultures*, were raised on agar-agar gelatine, put into peptonized meat-broth, and kept upon ice several days, then injected into the Guinea-pigs, about four cubic centimeters, for five or six days successively, when they could withstand the cholera cultures which, when given to other *unprotected* Guinea-pigs, quickly produced death.[4] Of course, this immunity of the mammal, Guinea-pig, presents a vista of relief by protection similar to that given to us by vaccination from small-pox, and promised by "Koch's tuberculin" in the treatment of consumption (Tubercular Phthisis). We look forward to that day of *scientific* medicine.

The careful, methodical German has been directed by his imperial officers to be very careful in personal hygiene and to observe to the letter the regulations in the case of those sick from *Cholera Asiatica*, while the doctors have been compelled to carefully examine each case by the methods above given, and, if unable to do so, to send some of the diarrhœal fluids to the district police stations to be examined at once at government expense — so careful are they to determine what the disease really is. Then the patient must be isolated, his nurses rendered strictly *a*-septic before being allowed to leave the apartments, all the attendants to be washed in solution of carbolic acid twice daily, and the patient too. No eating, drinking, smoking, or anything in contact with the mucous intestinal tract, such as mouth or nose, allowed in anyone except under strict *anti*-sepsis.

By this means it has been possible to prevent the spread of the disease to another case, if *discovered in time*. This element of *unwell*, but not *ill*, persons with *Cholera Asiatica* is the problem; the half-sick ones damage to the utmost hygienic arrangements, and bring disgrace on the attempts of "State" medicine to prevent its spread. This brings one to the application in a more extended sense of isolation or detention in quarantine of numbers of people. This is a troublesome problem to successfully solve; it is now taxing all the wit and wisdom of our land. We trust it may be successful.

[5] The best disinfectants are:—

1. Lime-water; a quantity equal to the amount of the stool and allowed to cover and remain upon it one hour. 2. Chloride of lime (small boxes); two tablespoonfuls on each stool and allow to remain on it twenty minutes before cleansing the utensils, then washed with lime-water. 3. A soft soap of potash, mixed with 5 per cent of crude carbolic acid solution. This to be used for all vessels, clothes, clothing, both body and bed. 4. A one per cent solution of carbolic acid for bodily bathing of patient and nurses. 5. Daily scrubbing the floor and furniture with lime-water, and two hours afterward with a one per cent carbolic acid solution in the patient's room. 6. A boiling of an hour of all clothing. 7. All the shoes, effects, etc., in the room of a patient either afflicted or dead from *Cholera Asiatica* shall be disinfected and not used for ten days.

The conclusion of the matter is:—

Live carefully; keep away from those afflicted with the disease, except specially protected as aforesaid; keep clean; isolate the patient and his attendants.

Harrisburg, Penn., Sept 13.

[1] Berl. Klin. Wochenschr., 1884, Nos. 31, 32, and 32*a*.

[2] Dr. Carl Gunther's Bakterol: Leipzig, 1890. Pl. viii., Fig. 47.

[3] Bakterol: Diagnos: Eisenberg, Hamburg, 1891, p. 256.

[4] Deutsch. Med. Wochenschr., 1892, No. 31 (Aug. 4, 1892).

[5] Regulations of Minister of Interior, Germany, Aug. 1, 1892.

FLORIDA PITCHER PLANT.

BY CHARLES B. PALMER, A.M., COLUMBUS, OHIO.

AMONG the many curious and interesting objects which came under my notice during a residence of several years in Florida, none interested me more than an insectivorous plant (*Saracenia variolaris*) which is common about Orange Heights, in eastern Alachua County. I have no reason to suppose that it is limited to this locality, but this is the only place in which I have observed it. It is a modest plant, seven or eight inches in height, growing in damp situations among the coarse grass of the pine woods.

It bears a single radical flower, the most striking feature of which is the style, which expands into a broad umbrella, entirely enclosing the flower. But it is not of the flower, but of the pitcher-like leaf that I wish to speak.

When the young leaf first makes its appearance, it is spatulate in form, with a simple notch on one side near the end, ranging upward at an angle of about 45 degrees. As the plant grows, the sides separate, forming a tube, while the notch increases in size and rotates in direction, until it becomes an ample opening ranging downward at an angle of about 45 degrees. At the same time the end of the spatula enlarges into a dome-shaped hood, the upper lip at the opening projecting well forward and downward over the lower. The tube is largest at the top, narrowing gradually to a point a short distance above the ground. The front or open side of the tube has a narrow rib, the rest of the circumference being round and smooth.

Being unable to find in botanical literature any adequate account of the manner in which this plant performs its remarkable functions of catching and devouring insects, I was led to make the study myself. Placing several of the plants in flower-pots for continuous observation, dissecting numbers of others in the woods almost daily, and continuing these observations during several different seasons, the little pitcher has come to seem like a familiar friend, and has yielded me an amount of pleasure and satisfaction that would seem incredible to any but a lover of nature.

If one were to say that he had seen a tree which could catch and eat squirrels, rabbits, field-mice, etc., he would be set down as a bungling imitator of the celebrated Baron; but here is a frail plant which we tread upon unnoticed, that actually captures, devours, and digests number of animals endowed with much greater activity, and doubtless with higher powers of perception, than any mammals.

If the plant has any odor attractive to insects it is not perceptible to human olfactories. But when near the opening they seem possessed with a desire to enter, and the way is open and easy. At the edge of the opening they are seen to sip a secretion of the plant, and immediately hasten on to the interior. Here some of them will continue to eat ravenously until they are seized with a sort of palsy, causing them to tremble violently, release their hold, and fall into the liquid at the bottom of the tube. Others, after entering the dome, become frightened and endeavor to escape. And here is discovered one of the remarkable features of the plant — an arrangement clearly intended to deceive the unlucky prisoner. The hood projecting over the opening forms a dark background, while the opposite side of the dome is brilliantly lighted by means of more than a hundred transparent spots or windows. Just as a bird which has entered a room by a dark passage, beats against the window-pane, so the poor insect exhausts his strength at the windows of his prison, and finally falls exhausted — literally "in the soup."

The bath seems to cure their palsy, for they invariably struggle vigorously to escape by climbing up the side of the tube. But the effort is vain. It seems remarkable that insects which walk upon glass and other smooth surfaces at will can make no progress here. The inner surface of the tube has a wonderfully smooth feel, and under the microscope is seen to be covered with very fine hairs forming a nap in the downward direction. About half-way up the tube there is a change in the appearance. It looks as if the lower part were wet and the upper dry, but the microscope shows that the appearance is caused by a different arrangement of the hairs on the surface. On the upper half, they appear like bundles of grain with the ends well spread. The purpose of this arrangement is not apparent; but having on one occasion found a larva at the half-way point, it occurred to me that possibly certain species had feet able to traverse the lower half, and such would be stopped by the different arrangement above. However this may be, the insect which once enters this doubly and trebly guarded prison "leaves hope behind." Even when rescued, he seems unable to resist the temptation to taste again the insidious nectar which leads him to his doom. Cut away the hood, and let a blade of grass down into the tube. A half-dead fly climbs eagerly out. Too weak to fly, he can be handled at will. Place him on the outside of the tube, an inch or more from the opening, with head turned away from danger. He staggers forward a few steps, stops and considers, then like the confirmed toper in front of a saloon, turns around and goes back for one more drink. At the first taste, he becomes crazed, sips ravenously till the tremens comes on, and drops him down to certain death.

The number and variety of insects disposed of by a single plant is astonishing. Every order is represented. One would think that a grasshopper, large enough to reach across the tube and almost close it up with his body and long legs, would have small excuse for being in such a place. But there he is slowly dissolving. Beetles, moths, larvæ of numerous kinds, including large woolly caterpillers, all go the same way. The hymenoptera are represented by ants, but I have never found any species of bee, though I have searched diligently for that special purpose.

The statements of certain botanists that the pitchers are "half filled with water containing drowned insects," and that "it is difficult to believe that they have any connection with the economy of the plant," need revising. A chemical analysis of the fluid is wanting, but it is a secretion of the plant and not rain-water. The construction of the plant makes it impossible for rain to enter. Furthermore, I have seen a plant which had been cut off at the root send up a new leaf, mature its pitcher, secrete its fluid, and begin business, during a period in which no rain had fallen.

In every healthy pitcher may be found insects still alive and struggling; others dead; others farther down in the mass, coarsely broken up; and at the bottom only a pulp. The fact that the elytra, mandibles, and other hard parts of beetles, are dissolved with the rest, shows that the plant has remarkable digestive powers. Unlike animals, it has no means of rejecting unsuitable portions of food. Everything goes. The front door is always open, there is no back door, all sorts of visitors enter, none escape, every shred disappears.

CURRENT NOTES ON ANTHROPOLOGY.—XV.

[Edited by D. G. Brinton, M.D., LL.D.]

The Antiquities of Catamarca.

AMONG the mysterious civilizations of the New World which were extinguished before the arrival of the Europeans, that of the Province of Catamarca, in north-western Buenos Ayres, is not the least difficult of solution. In this region, over an area about four hundred miles square, the vestiges of a dense population are numerous, and there are abundant proofs that there prevailed a stage of culture definitely above that of the Pueblo dwellers of New Mexico. The ruins of stone-built structures are abundant, and are the only instances of such that we find east of the Andes in the whole of South America. They begin at a height of twelve to fifteen thousand feet, and continue down to the mesas and plains of the lowlands. From their positions and plans most of them were evidently defensive works, occupying points of vantage, and with walls three to five feet in thickness. The entrances are concealed or sometimes none exist, ladders having evidently been used by the inhabitants. They were acquainted with the use of copper, gold, and silver, made excellent pottery, wove fabrics with skill, cultivated maize extensively, and buried in mounds.

An interesting but brief notice of these remains is published by Francisco P. Moreno in the "Revista del Museo de La Plata," 1891. He considers the remains are anterior to the conquest of the country by the Incas about 1450. This is probable, but it would not militate against the evidence I have brought forward in my "Studies of South American Languages," p. 54, that the natives of Catamarca were themselves of the same blood and language as the Incas.

Central-American Languages.

The Empress Catherine II. of Russia at one time planned publishing specimens of every language on the face of the globe, but lost interest in her scheme, and dropped it before completion. When at St. Petersburg a year ago, I inquired about the material collected by her orders, but left unpublished. The Librarian of the Imperial Library could give me no information about it.

Now, part of it arrives in a publication from Costa Rica entitled "Lenguas Indigenas de Centro-America en el Siglo XVIII. MS. del Archivo de Sevilla. Publicada por R. F. Guardia y Juan Fernandez Ferraz. 1892." The editors do not state, and do not