

not over two and one-quarter inches in diameter, the size rarely needing to be over two inches.

Aseptic precautions are to be observed before and after insertion, the patient to maintain the horizontal position, and the pessary to be removed at the end of six or eight hours. It may be necessary to repeat this treatment daily until the position of the uterus becomes permanently improved. Care must, of course, be exercised to prevent the induction of abortion by too great or too prolonged pressure due to the presence of the pessary.

Personally I have used this method but once, in which case it did good service. I have preferred to rely chiefly upon the frequent use of the knee-chest position, digital elevation, and packing.

In fact, so common is this condition as a factor, and so effective is the first part of the treatment alone, that I am in the habit of prescribing it as a routine treatment in the ordinary cases of pregnancy vomiting as they present themselves in the hospital clinics and in private practice, and I do not hesitate to assert that relief is complete in eighty per cent. of the cases.

The patient is told to assume a position on her knees, her hips high in air, her chest touching the bed, *every band being loose about the waist*, and then, either by opening the vagina with the finger or by introducing a glass tube, to admit air to the genital tract. This is done regularly night and morning, and at any other time when nausea is felt.

This failing, I place the patient in the knee-chest position and pack; lightly at first, but more firmly as she becomes accustomed to it. At first it is well to pack wholly in front of the cervix, so as to straighten out the flexion, but later a few tampons are best placed behind the cervix for the purpose of stretching the utero-sacral ligaments and so breaking up the impaction. Wool is the only proper material for this packing, as cotton soon becomes matted and hard; and the wool carded in sheets is far more elastic and therefore better than the fine tampon wool. The first one or two pieces may be dipped in a ten-per-cent. solution of ichthyol in glycerin, or in any bland antiseptic solution. I am in the habit of having all the tampons tied in a continuous string, like a kite-tail, so that the patient may be able to remove them at the first sign of irritation, or in order to use a cleansing douche before the next visit.

In one of these ways most cases of pregnancy vomiting may be relieved, but there remain those cases in which other causes are operative.

Retroversion and retroflexion are to be corrected by the aid of the knee-chest position, bimanual manipulation, and packing placed as high up as possible behind the cervix and extending down to the perineum. Once replaced the uterus is to be retained by some form of pessary.

In cases presenting erosion of the cervix, and in not a few cases showing no such sign, relief has promptly followed the nitrate-of-silver treatment. Indeed, so successful has this treatment proved in some hands that it has long been a routine method in the Vienna clinics. It is applied as follows: The cervix is exposed by a cylindrical glass speculum, the end of which it just fills, and after a thorough cleansing enough ten-per-cent. solution of silver nitrate is poured in to cover the exposed surface. After ten minutes this is decanted and the mucous membrane is dried. A second, and even a third, application may be called for after an interval of two or three days.

Should inflammatory processes be present, either in or about the uterus, the ordinary measures of rest, hot douches, and vaginal medication are in order. It is probably in such cases that benefit is had from vaginal suppositories or dressings of belladonna, cocaine, and morphine.

In all the more serious forms of the complication absolute rest in bed, in the horizontal position, is of much importance. Besides its general therapeutic value it permits the uterus more easily to rise above the brim, and aids us in our endeavors to correct displacements and

lesser impaction. Coitus, and whatever may tend to cause sexual excitement or otherwise to increase pelvic congestion, must be avoided.

First discovered accidentally, and then practised empirically, Copeman's procedure has an established place in the treatment of severe cases. This consists in the careful dilatation of the cervical canal up to, but not through, the internal os. The index finger is used by preference, though Wylie has used a steel-branched dilator. Whether this acts by separating constricting bands of tissue, by straightening flexion, by breaking up impaction, or by some less apparent means, is not as yet agreed, but in many cases in which abortion has not resulted, a cure has been obtained.

Personally I wholly disapprove of this treatment, believing it to be dangerous and irrational. The same object is much better attained by the methods already described.

Besides the local cause, however, it is usually desirable to treat the conducting apparatus by which the reflex stimulus is conveyed. In other words, it is well to endeavor to lessen susceptibility to reflex irritation by the use of nerve sedatives, such as bromide, valerian, chloral, and even morphine. Chloral in full dose by rectum, night and morning, sometimes gives great relief, as does also morphine, introduced hypodermically or placed dry upon the tongue.

Chapman's ice bag to the spine has occasionally been found of service.

Then comes the long list of drugs for lessening the real or fancied irritability of the stomach. These must always be of secondary importance, and yet where symptoms are trivial they may answer every purpose at a minimum of annoyance to the patient, and where the outlook is grave we cannot afford to lose any help, however trifling, which may tend toward a cure. While, then, such remedies may always be given a place, reliance should not be bestowed upon them to the extent of wasting valuable time, or to the neglect of more rational measures.

In not a few cases gastric catarrh plays a more or less important part and claims attention. The ordinary remedies may be used, particularly the alkaline salines, taken well diluted before rising. Cocaine in small doses frequently repeated; creosote, or creosote and compound tincture of iodine in equal parts, given in one-drop doses every half-hour; oxalate of cerium in five-grain doses alone or combined with bismuth; calomel and ipecac in minute doses; hydrocyanic acid; tincture of nuxvomica; pepsin; ingluvin; champagne; hot water; ice—these and other empirical means may be employed for their direct effect upon the stomach. In recent years the washing out of the stomach has been tried with manifest relief in not a few cases.

The diet and the mental surroundings of the patient must be carefully guarded. Our endeavor must be to keep up the strength at the same time that we spare the stomach needless effort by giving the lightest and most digestible foods. These are best given in small and frequent portions, it being borne in mind that often food will be retained if given just after a paroxysm of vomiting has spent itself. It must be remembered also that a patient can sometimes retain and assimilate an article of food for which she experiences a marked longing, when seemingly more appropriate articles are at once rejected. The simple expedient of giving a light and easily digestible breakfast an hour before rising will sometimes solve the problem in those ordinary cases which are known as "morning sickness."

When, however, the stomach rebels to such an extent that the patient's strength perceptibly fails, resource must at once be had to rectal alimentation. Peptonized milk, eggs, and predigested beef form the best basis for these enemata, to which may be added, if necessary, a few drops of laudanum and half an ounce of whiskey. Four injections, of four ounces each, given within twenty-four hours, can generally be retained, provided that once daily the lower bowel be well emptied by a

cleansing enema of warm suds. Life can be sustained for weeks in this way when all else fails.

Recognizing the fact that mental conditions play an important part in some cases, the patient must be cheered and encouraged at all times, and so far as possible all causes of worry, anxiety, and undue care must be removed.

We now come to that class of cases which resists all the measures at our command. The patient has reached the second stage described above, and the question of emptying the uterus presents itself. Of course it is assumed that no one will lightly decide upon this last resort without good and sufficient cause; yet, on the other hand, there is need to urge the danger of too long delay. Provided a faithful trial has been made of less radical measures, and yet in spite of them the gravity of the symptoms continues, let no time be lost in producing abortion, preferably by emptying the uterus at one sitting, under ether. The reason for thus urging against delay lies in the fact that even abortion may fail to avert the fatal issue if the third stage be permitted first to make its appearance.

Rufus A. Kingman.

VULVA, DISEASES OF. See *Vagina, Diseases of*.

WACONDA SPRING.—Mitchell County, Kansas.

POST-OFFICE.—Cawker City. Hotel and sanitarium.

ACCESS.—Trains on the Central Branch of the Missouri Pacific Railroad stop within a few rods of the hotel.

This big spring is located within a fine curve of the Solomon River, about three miles from Cawker City, and at an elevation of about 3,500 feet above the level of the sea. The spring is contained in the centre of a huge, circular mound composed of hard rock, which rises to a height of thirty feet above the surrounding surface. The spring is sixty feet in diameter, and is surrounded by a natural platform of rock from eighty to one hundred and fifty feet wide, and so nearly circular as to appear as if artificially cut. The diameter of the base of the mound is one hundred and seventeen yards from north to south and one hundred and nineteen yards from east to west, while its circumference is sixty-six rods. A stone coping has been placed around the spring, and this is surmounted by a light iron fence, to protect the water. Within ten rods of the spring a substantial hotel and sanitarium, supplied with all modern comforts and conveniences, has recently been erected. The water from the spring is supplied to this building and is utilized for the bath-houses, where all varieties of hot and cold or vapor baths will be found. The surroundings of this resort are very attractive, and the climate is of a bracing and salubrious character. The following analysis of the water was made by Prof. G. E. Patrick, of the University of Kansas, at Lawrence:

One United States gallon contains (solids): Sodium chloride, gr. 765.76; sodium bromide, gr. 0.23; sodium sulphate, gr. 183.60; magnesium sulphate, gr. 85.28; sodium bicarbonate, gr. 26.92; magnesium bicarbonate, gr. 27.56; calcium bicarbonate, gr. 31.30; silicic acid and nitrous acid, traces; no organic matter. Total, 1,120.65 grains. Carbonic-acid gas, 91 cubic inches to the gallon; specific gravity, 1.017.

The water has a strong saline taste, and when properly carbonated is clear and sparkling. The analysis shows a water of great potency. It should be fully possessed of the qualities found in the waters of this class. Taken in proper doses it is said to stimulate the appetite, to tone up the nervous system, and to invigorate the spirits and general bodily condition to a remarkable degree. It may be safely recommended in all cases in which this class of waters has been found useful. It is bottled and shipped to any desired point.

James K. Crook.

WAHOO.—(*Euonymus*, U. S. P.; Spindle tree. Burning bush, etc.) The dried bark of the root of *Euonymus atrapurpureus* Jacq. (fam. *Celastraceae*).

This plant is a graceful shrub or small tree of the Middle and Western States, and is frequently cultivated for

its beauty. It is usually about eight to twelve feet high, with opposite, oval-oblong, pointed, serrate leaves, and small, regular, dark purple flowers in axillary cymes. Sepals, petals, and stamens usually four; the latter inserted on a disc which extends over the ovary; pistil one; ovary three- to five-lobed and three- to five-celled, with several ovules in each cell; pods deeply lobed, smooth, bright crimson, drooping on long slender peduncles.

The bark occurs in quilled strips or pieces of very irregular size, usually with a few fine hair-like roots adhering; bark 1-5 mm. ($\frac{1}{8}$ - $\frac{1}{4}$ in.) thick; outer surface ashy or pale brownish-gray, usually with some small dark patches, shallowly fissured and ridged, with a somewhat scaly and soft, friable cork; inner surface whitish or slightly tawny, indistinctly short striate; fracture short, whitish, or the inner layer pale-brownish in bark which has been long kept; when it is slowly broken, the fractured ends are held together by fine, somewhat elastic fibres; odor distinct and characteristic, more or less saponaceous; somewhat gummy in the mouth, the taste sweetish, bitter, slightly acid.

The stem bark, which is in long, tough strips, with a dark gray or blackish cork, should be rejected.

The constituents of wahoo are not very well made out. Several resins, oil, wax, and numerous more ordinary substances have been obtained from it, as well as a glucoside named *euonymin*; indeed, several "euonymins," of somewhat different characters, have been separated by as many chemists. From all of these, again, is to be distinguished the resinoid "euonymin" obtained by precipitating the tincture. Of the latter there are two forms: the "brown," made from the official bark, and the green, made from the stem bark, the latter being inferior.

USES.—Wahoo is a not very certain, usually gentle, but sometimes griping laxative, with a reputation as a cholagogue. It may be given in chronic constipation, or perhaps better in occasional attacks of constipation with dyspepsia, heaviness, and symptoms of diminished hepatic action.

Dose of the extract (*Extractum Euonymi*, U. S. P.), 1 or 2 dgm. (gr. i. ad iij.) in pill form once or twice a day.

Henry H. Rusby.

WALLERIAN DEGENERATION.—The degeneration which occurs in the peripheral portion of a severed nerve fibre is known as the Wallerian degeneration. It is due to the separation of this portion of the fibre from its corresponding ganglion cell, and is usually explained as resulting from a loss of trophic influences, the severed portion being cut off from the source of its nutrition. The fact that a nerve when separated from its trophic centre degenerates in the direction in which it normally carries impulses is known as the *Wallerian law of degeneration*. It is also true that the central portion of a severed nerve—that portion which retains its connection with the ganglion cells—undergoes retrograde changes; but these differ from the changes seen in the Wallerian degeneration, being more of the nature of a simple atrophy.

The first recognizable change in Wallerian degeneration is a loss of the translucency of the nerve fibre. This is followed by a breaking-up of the myelin. Under the microscope the medullary substance is seen to be fragmented into small lumps or segments which become separated from each other. This is followed by a complete degeneration of the medullary sheath in which the latter is distintegrated into small fat droplets, the process suggesting an emulsification. At the same time there is a great increase in the size and number of the nuclei of the sheath of Schwann. Formerly it was believed that the neuraxones degenerated secondarily to the changes in the medullary sheath; but it has been shown that the changes in the former occur coincidentally with those of the sheath. The neurilemma finally becomes filled with the remains of the axis cylinder and medullary sheath. The fat droplets are taken up by fat granule cells, and the detritus is in time absorbed by the cells of the neurilemma. In the neighborhood of the injury the nerve nuclei become en-

larged and show signs of proliferation. The neurilemma eventually disappears, but if the severed ends are again brought together, or if the distance between the ends is not too great, the old neurilemma sheaths may again become neurotized by new axis cylinders growing downward from the central cut end.

Aldred Scott Warthin.

WALLEY'S HOT SPRINGS.—Douglas County, Nevada.

POST-OFFICE.—Genoa. Hotel.

This resort, formerly known as Genoa Hot Springs, is located about fourteen miles from Carson City, the capital of the State. The situation is picturesque, having an altitude of about four thousand feet, with high mountains on the west and a beautiful valley on the east. The prevailing weather is clear and pleasant, the temperature seldom exceeding 90° F. in summer or falling below zero in winter. Mr. H. J. Walley furnishes us with the following analysis made by J. W. Phillips, analytical chemist at the Nevada Agricultural Experimental Station: One United States gallon contains (solids): Potassium sulphate, gr. 0.67; sodium sulphate, gr. 12.41; calcium sulphate, gr. 2.19; sodium hyposulphite, gr. 0.40; sodium bicarbonate, gr. 0.64; sodium bichlorate, gr. 1.45; sodium chloride, gr. 4.78; silica, gr. 2.85; alumina, gr. 0.02; and traces of iron sulphate, magnesium bicarbonate, ammonia, and organic matter. Total, 25.41 grains. Carbonic acid gas, 6.48 cubic inches.

The temperature of the several springs (six in number) varies from 136° F. to 160° F. The baths here are stated to be very efficacious in the treatment of renal and skin diseases and in rheumatism of long standing. The analysis shows a valuable thermal water of the saline class.

James K. Crook.

WART. See *Verruca*.

WASATKA MINERAL SPRING.—Salt Lake County, Utah.

This spring is located in the northern outskirts of Salt Lake City. "Wasatka," or the "Milk Spring," derives its name from the peculiar soft and milk-like flavor of the water. During the past three or four years this water has come into extensive use, and it is said to give ample evidence of remedial value, besides furnishing an excellent table beverage. The following is a recent analysis by Walter S. Haines, professor of chemistry at the Rush Medical College of Chicago:

One United States gallon contains (solids): Sodium chloride, gr. 230.88; potassium chloride, gr. 3.06; magnesium chloride, gr. 21.24; calcium chloride, gr. 11.92; lithium chloride, gr. 0.12; ammonium chloride, gr. 0.25; calcium sulphate, gr. 59.50; calcium carbonate, gr. 4.75; silica, gr. 0.75; iron and aluminum oxide, gr. 0.03; sodium borate and magnesium bromide, traces. Total, 332.50 grains.

The water possesses alterative, aperient, and diuretic properties, and is recommended by Utah physicians in functional diseases of the digestive organs, liver, and kidneys. It is bottled and shipped to many points in Utah and the adjoining States.

James K. Crook.

WASHINGTON, D. C.—Washington city (latitude 35° 53' 39" north, longitude 77° 2' 48" west), the capital of the United States of America, is in the District of Columbia, on the east bank of the Potomac River, about one hundred miles from its mouth. The Anacostia River (or Eastern Branch as it is sometimes called), a small tributary of the Potomac, bounds the city on the south, separating it and the suburb, Anacostia. Rock Creek, another small stream, which flows through the western part of the city, was at one time the boundary between the cities of Washington and Georgetown, but this municipal distinction is now not made. Between these two streams is an area of about eight square miles, having a general altitude of twenty to eighty feet above the level of the Potomac River. Upon this area the greater part

of the city is built. Elsewhere the land rises to a general plateau, averaging from two hundred to three hundred feet above the river level, which also is practically sea-level.

The District of Columbia, originally styled "Federal Territory," was laid out in 1791 by commissioners appointed by President Washington, and in pursuance of an act of Congress, which gave the President the authority to select the site of the national capital. At the time of the selection, the District of Columbia was about the centre, geographically, of the original thirteen States of the Union. The original territory had an area of one hundred square miles, and was ceded, as equally as the nature of the site chosen admitted of, by the States of Maryland and Virginia. Subsequently, in 1846, the part given by the State of Virginia was ceded back to it by the national Government. The present area of the District is sixty-four square miles.

Washington has had no corporate existence apart from the District of Columbia since 1874. From 1802 to 1871 there was a municipal form of government, the chief executive being a mayor elected by the citizens. From 1871-74 the District and the city had a territorial form of government, the chief executive being a governor. Since 1874 the city and District have been governed by three commissioners, the Board of Commissioners of the District of Columbia, appointed by the President of the United States and confirmed by the United States Senate. These officials are appointed for terms of three years: two must be residents of the District for three years before appointment and of opposite political parties; the third must be an officer of the engineers, United States army, of a rank not lower than that of captain, and he must have served at least fifteen years in that branch of the military service. The Congress of the United States legislates directly for the District, and the commissioners execute the laws so enacted. There is thus in the capital of the greatest republic of history the spectacle of the citizens of that capital without direct representation in their own government. On the whole, however, the plan works well.

The population of the District of Columbia, according to the census of 1900, was 278,718, of which 191,532 were whites, 86,702 negroes or of negro descent, 455 Chinese, and 29 of all other races. Within what was the city of Washington as defined by its limits of 1874, there were 218,196 inhabitants, in what was Georgetown, 14,973, and scattered throughout the remainder of the District 45,973 inhabitants, mostly located in the suburbs known as Anacostia, Brightwood, Brookland, and Tenleytown. The average death rate of the District, including the city of Washington, for the last ten years is 17.57 per 1,000 for whites and 30 per 1,000 for negroes. The chief cause of mortality is tuberculosis. While there appears no undue prominence of any cause, contrasted with neighboring cities, there are certain conditions which, if removed, would greatly increase the longevity of the community. Typhoid fever has now a larger death rate than it will have when the contemplated water-filtration plant is in operation. Much improvement can be made in the sanitary requirements of house construction, especially in the matter of requiring ample initial air space in all dwellings, and in the prevention of overcrowding, particularly in the houses perniciously tolerated and still permitted to be erected in alleys and courts.

The water supply of the city is taken from the Potomac River about eighteen miles above the city, and is conveyed in a covered conduit to the distributing reservoirs. This conduit crosses a deep ravine on the famous cabin John Bridge, the largest single span stone arch in the world, two hundred and twenty feet from pier to pier, fifty-seven feet rise, and twenty feet wide. The distributing reservoirs being at a higher level than the greater part of the city, gravity is sufficient for household supply. However, there are several pumping stations for such parts of the city as cannot be fed by gravity. The quality of the water is soft, and during dry weather the water is clear. The water-shed is not thick-

ly populated, there being no cities of any size within the area. So far, there has been no serious suspicion of typhoid or other infection emanating from the city water supply. From the frequency of rains, and the consequent turbidity, many persons object to using the city water on aesthetic grounds, and they resort to pumps within and to springs outside the city. There is reason to believe, from investigations made some years ago by the Medical Society of the District of Columbia, that these waters are more dangerous than the less inviting Potomac water. Contracts have been awarded for gravity sand filter beds, and when these are constructed and in operation the city will have a water supply of unimpeachable purity.

Sewage, both house and street, is removed by water carriage. At present there are several mains discharging at different points. Plans are in progress to converge these mains to a central pumping station, from which a trunk sewer will convey the total sewage across Anacostia River and thence along the Potomac, to be discharged into that stream some miles below the city.

The streets are wide, varying from sixty to one hundred and twenty feet, and are paved, with few exceptions, with asphalt. The street plan is simple. The original topographic map was designed by a French engineer officer, Major L'Enfant, into whose hands the work was entrusted by President Washington. The centre of the plan is the Capitol. Radiating from the Capitol are three streets, one running north, called North Capitol Street, one running east, East Capitol Street, and one running south, South Capitol Street. West of the Capitol a line of parks extends to the Potomac River. These streets and the line of parks serve to divide the city into four sections, denominated the Northeast, the Southeast, the Southwest, and the Northwest, respectively. What are distinctively named *streets* run east and west, and north and south, intersecting each other at right angles; another class, called *avenues*, intersect the streets and each other obliquely.

The east and west streets on each side of East Capitol Street and its westward park prolongation are designated by the letters of the alphabet (except that there are no J and X streets), and the north and south streets on each side of North and South Capitol streets are designated by numbers. The avenues are named after the different States of the Union. Streets and avenues receive in addition the names of the sections in which they are located. The city, however, has extended northward beyond the original street plan, and, as no provision had been made for uniformity in naming the new east and west streets, considerable confusion has resulted. Efforts are now making to rectify the oversight. The intersections of the avenues and the streets afford many opportunities for small parks, laid out in triangles, circles, and small rectangles. There are a number of large parks; the total parking area being somewhat over three thousand acres. A conspicuous feature of Washington is the great number of trees ornamenting the streets, and so thick are they that their summer foliage shuts out the houses from view.

As might naturally be expected the city has many public buildings. The most imposing are the Capitol, the Library of Congress, the Treasury, the State, War and Navy building, the Interior Department, the President's House (or popularly the White House), and the Post-office. The many other public buildings are not architecturally striking enough to be named.

The Capitol, the largest and most noticeable structure, has a length of 751 feet 4 inches, and a breadth varying from 121 to 350 feet, and covers an area of 153,112 square feet. The central part of the building is surmounted by an iron dome, 135 feet 5 inches in diameter at its base; on its top is Crawford's bronze statue of liberty, 19½ feet high, its crest towering 287 feet 5 inches above the earth. The body of the central part of the Capitol is built of free-stone, the two wings of marble, and the dome, as above stated, of iron. The corner-stone was laid September 18th, 1793, by President Washington. The interior of the original building, at that time only the wings, was

burned by the British in 1814. The present central structure was begun in 1818. The building as it exists at present was practically completed in 1865. The total cost has been somewhat in excess of \$15,000,000. The Library of Congress, just east of the Capitol, is one of the most imposing structures to be found anywhere. It is built of granite, covers about three and three-quarter acres of ground, and cost \$6,347,000.

Perhaps the most striking structure after the Capitol is the Monument, situated about a mile and a quarter west of the Capitol. This is a plain, rectangular, marble shaft, five hundred and fifty-five feet five and one-half inches high, and is the highest stone structure in the world. Its interior is hollow and is provided with a stairway and an elevator, both leading to a chamber just under the capstone. An excellent view of the city and surrounding country can be had from this point. Many small monuments and statues ornament the different parks. Educational advantages are excellent. There are ample public schools and the system of instruction is good. The Columbian University and the Georgetown University are old institutions, and offer first-class facilities for advanced instruction in all branches of study. The Catholic University of America, a comparatively new school, offers at present chiefly advanced instruction in theology and philosophy. The American University, a Methodist institution, is yet to be developed, but it promises to become a factor of educational importance. There are many smaller colleges and universities so called. The scientific work carried on in the different departments of the national Government gives exceptional opportunities for post-graduate work. The immense libraries—the library of Congress, that of the Surgeon-General's office, United States army, and of the other departments and bureaus of the Government—afford better facilities for gaining access to the literature of science than are to be found anywhere else in this country. There are a number of large and well-appointed hospitals. From a political and from a social view-point the advantages offered by the city, being the seat of the National Government, are obvious.

The facilities for living compare favorably with the other large cities of the country. The markets are well supplied the year round and prices are reasonable.

The climate is variable, but on the whole pleasant. A better idea can be had of it by consulting the table contained in the article on *Climate* in Vol. III.

W. F. R. Phillips.

WASHINGTON SPRINGS.—Washington County, Virginia.

POST-OFFICE.—Glade Springs. Hotel and cottages.

ACCESS.—Via Norfolk and Western Railroad to Glade Springs depot; thence two miles by hack or carriage to springs.

This resort is ensconced in a delightful location among the hills, at an altitude of 2,250 feet above the sea-level. The situation is opposite to and faces the White Top Mountain, one of the highest peaks in Virginia. Close by are the Chilhowee Sulphur Springs, Seven Springs, and Emory and Henry College. An excellent hotel, with provision in various ways for the comfort and amusement of the guests, is maintained. The springs are seven in number, and have an average flow of thirty gallons per hour. The water has a temperature of 51° F. We present analyses of the "Sulphur" Spring and the "Magnesia Soda-Iron" Spring, by W. H. Seamon, analyst of Crozet, Va.:

One United States gallon of the "Sulphur Spring" contains (solids): Iron carbonate, gr. 0.52; calcium carbonate, gr. 2.99; potassium carbonate, gr. 0.11; sodium carbonate, gr. 0.29; calcium sulphate, gr. 6.47; calcium phosphate, gr. 0.14; sodium chloride, gr. 0.09; strontium sulphate and arsenic chloride, traces. Total, 10.41 grains. The water also contains a certain amount of hydrogen sulphide.

One United States gallon of the Magnesia Soda-Iron Spring (Washington Spring) contains (solids): Calcium sulphate, gr. 0.10; magnesium sulphate, gr. 4.04; stron-