

appetite, hebetude, and malaise. In the "rocky" state following alcoholic excesses a copious draught of a potent carbonated and muriated saline water on rising will do much to restore tone and vigor to the gastro-intestinal tract and liver and assist no little in clearing up the befuddled functions of the central nervous system. Small repeated doses of the stronger alkaline-saline with ferruginous properties are of undoubted value in chronic broncho-pulmonary affections attended by a tenacious scanty expectoration and much debility. The strong carbonated brines are much resorted to at some spas, for their local effects; they are employed in the Schott treatment at Nauheim.

The following analysis of the Livingston Artesian Well of Alabama represents the make-up of a moderately strong muriated saline water:

ONE UNITED STATES GALLON CONTAINS:	
Solids.	Grains.
Sodium chloride	295.43
Potassium chloride	.33
Calcium chloride	2.98
Magnesium chloride	1.84
Strontium chloride	Trace.
Iron perchloride	.19
Sodium bromide	.98
Iron bicarbonate	.20
Magnesium bicarbonate	2.32
Calcium bicarbonate	7.14
Silicic acid and silicates	1.14
<b>Total</b>	<b>312.55</b>
Gases.	Cu. in.
Free carbonic-acid gas (in solution)	21.47
Carbonic acid in combination as carbonates	9.32

In this class the United States possesses a large number of the best springs known. We have space to refer to but a few examples:

Byron Springs, Eureka Springs, and Calistoga Springs, California; Magnetic Mineral Springs, Indiana; Geuda Springs, Kansas; Upper Blue Lick Springs, Kentucky; Clark's Red Cross Mineral Springs, Mount Clemens Springs, and St. Clair Springs, Michigan; Sweet Springs (Akesion Spring) and Blue Lick Springs, Missouri; Glen Springs (Neptune), New York; Wasatka Mineral Spring, Utah; Parker Mineral Springs, Pennsylvania; Addison Sulphur Springs, West Virginia, and Sheboygan Mineral Well, Wisconsin.

The following well-known European springs are of this variety: Cheltenham and Harrowgate, England; Homburg (Elizabeth-Brunnen) and Kreuznach (Oranien-Quelle), and Wiesbaden, Germany; and Barèges (Boncheres), Hautes-Pyrénées, France.

**THE SULPHATED SALINE WATERS.**—The sulphated saline or purgative group of waters are characterized by the presence of the sulphate of magnesia (Epsom salt) or the sulphate of soda (Glauber's salt). These waters usually contain also the sulphate of calcium, sometimes the sulphate of iron, and frequently sulphureted hydrogen. The sulphate of magnesia is exceedingly soluble and is the important constituent of the so-called bitter-waters. The sulphate of sodium, which is also bitter and rather nauseous to the palate, is likewise very soluble and in variable quantities always coexists in mineral waters with the former salt.

**Physiological Action.**—Both these salts are laxative or purgative according to the dose taken. They act by promoting the process of endosmosis and exosmosis, thus abstracting the watery elements of the blood and increasing intestinal secretion. The action of Epsom salt appears to be limited chiefly to the intestinal glands, but the observations of Rutherford and Vignal show that the sulphate of sodium is also a valuable hepatic stimulant. Both salts are diuretic. The sulphates of calcium and potassium are of secondary importance in mineral waters.

**Therapeutics.**—It is in disordered conditions of the alimentary tract and liver, with the concomitant symptom of constipation, that the best effects of the sulphated waters are shown. In sluggish conditions of the liver characterized by yellowness of the conjunctivæ, a sallow

countenance, coating of the tongue, and hemorrhoids, these waters are speedily beneficial. In eliminating chronic malarial and syphilitic infections from the system as well as in expelling lead, mercury, and other metallic poisons, they furnish an important and useful adjunct to other remedial measures. The sulphated waters are also of considerable value in promoting the absorption of pleuritic and peritoneal transudations. A small early morning daily dose of one of the stronger members of this group can be confidently relied upon as a valuable aid to other therapeutic procedures in oedema of the lower extremities and beginning general anasarca. On account of their accelerating influence in metabolism these waters are prescribed with advantage in cases of corpulency and fatty infiltration. The value of a brisk saline will be generally acknowledged in overcoming the disagreeable results of a heavy dinner accompanied with much wine. These waters must be used cautiously in cases of extreme anæmia or great debility; the range of usefulness of sulphated saline waters is materially broadened when they contain muriated saline and alkaline ingredients. The following analysis is of the American Carlsbad Spring of Washington County, Illinois:

ONE UNITED STATES GALLON CONTAINS:	
Solids.	Grains.
Magnesium sulphate	103.70
Sodium sulphate	53.00
Calcium sulphate	65.80
Sodium carbonate	10.00
Sodium chloride	27.40
<b>Total</b>	<b>259.90</b>
Carbonic acid gas not determined.	

Other American sulphated saline springs are as follows: Crab Orchard Springs, Kentucky; B. B. Mineral Spring, Missouri; Tate Springs and Montvale Springs, Tennessee; Gibson Mineral Wells and Wootan Wells, Texas; Fort Crawford Mineral Well, Minnesota; Catoosa Springs, Georgia; Blue Ridge and Yellow Sulphur Springs, Virginia; Salt Sulphur Springs, West Virginia; Cooper's Wells, Mississippi, and Manhattan Artesian Well, Kansas.

Many of the Saratoga waters are excellent mild purgatives, but are bicarbonated magnesian and sodic, and not sulphated. It is only in the class of sulphated salines that the waters of the United States are somewhat inferior, on the whole, to those of Europe.

Among the well-known foreign purgative waters are the following: Carabaña Mineral Spring and the Rubinat Springs of Spain; the Hunyadi Janos Wells and the Apenta Springs of Hungary; the Püllna, Seidlitz, and Friedrichshall of Germany.

**CHALYBEATE WATERS.**—Within the borders of the United States have been found the most richly mineralized iron waters known to the analytical chemist. Iron is perhaps most often found in mineral springs in the form of the bicarbonate—although many analyses show the sulphate, some the oxide, and still others the chloride. The bicarbonated chalybeate waters are usually most valuable for internal administration. Not only does carbonic acid increase the solubility of the iron, but it disguises the otherwise astringent and ferruginous taste and aids in its speedy absorption and assimilation.

**Physiological Action.**—Clinical experience shows that the chalybeate waters cause an increase in the appetite, a return of normal color, a gain in weight and strength, and a general improvement in the bodily functions. Investigations with the hemoglobinometer have further proved that the deficiency of the coloring matter of the blood observed in anæmic states may be speedily made up by the administration of a properly selected chalybeate water. As iron in many of its pharmaceutical forms frequently disagrees with the stomach, we have in natural mineral waters a safe and pleasant means of introducing it into the system. Nor is it essential that the element be present in large quantity. A chalybeate water containing not more than one grain of a salt of the

metal in a gallon will promptly show its influence in the returning color of the face and the increased tone and vigor of the system.

**Therapeutics.**—The indications for the use of iron waters are numerous. It may be said that they serve a useful purpose in almost all debilitated states of the system accompanied by a loss in the hæmoglobin of the blood. In tardy convalescence from acute diseases, in the anæmic state resulting from a severe operation or difficult confinement, in all forms of hemorrhage not due to fulness of the vessels or fragility of their coats, in amenorrhœa when due to chlorosis, in the debilitated catarrhs of the uterus and vaginal mucous membrane, and in the various cachexias, the chalybeate waters supply us with a useful adjunct to the ordinary methods of treatment. Iron waters, like the iron pharmaceutical preparations, must, of course, be used guardedly in cases in which there is reason to suspect the integrity of the blood-vessels. They are as a rule contraindicated in vertigo, in congestive headaches, and should not as a rule be prescribed to stout, red-faced, plethoric persons. The following is an analysis of the "Round" Spring at Aurora Springs, Missouri. It is an almost pure chalybeate:

ONE UNITED STATES GALLON CONTAINS:	
Solids.	Grains.
Ferrous oxide	5.13
Ferrous sulphate	.33
Magnesium chloride	6.95
Sodium chloride	4.01
Calcium sulphate	2.42
Lithia	1.43
<b>Total</b>	<b>20.87</b>

Other American chalybeates are as follows: Matchless Mineral Wells, Alabama; Arkansas Lithia Springs, Arkansas; Pacific Congress Springs, Fulton Wells, and Pagoda Spring, California; Puller Springs, Georgia; Indian Springs, Indiana; White Sulphur Springs, Iowa; Topeka Mineral Wells, Kansas; Addison Springs, Maine; Mardella Springs, Maryland; Brown's Wells, Mississippi; Londonderry Lithia Spring, Vermont; Heath House Spring, New Jersey; Adirondack Mineral Spring and Oak Orchard Acid Spring, New York (all the Saratoga Springs of New York also contain iron, the Putnam having over seven grains per United States gallon); Gaylord and Gulick Springs, Pennsylvania; Austin Springs, Tennessee; Overall Mineral Wells, Texas; Bath Alum and Rock Enon Springs, Virginia.

The following are European chalybeate waters: Pyrmont, Waldeck, Germany (Trink-Brunnen), and Schwabach, Nassau, Germany, (Stahl-Brunnen); Tunbridge Wells, England; Spa (Ponhon), Liège, Belgium; and St. Moritz (Grande Source), Grisons, Switzerland.

**THERMAL AND SULPHURETED WATERS.**—A thermal spring is one whose temperature is higher than the average annual temperature of the surrounding atmosphere. For practical purposes it is customary to classify all springs above 70° F. as thermal and those below 70° F. as cold. Thermal springs having a temperature between 70° and 98° are designated as warm; those above 98° F. as hot. As thermal and sulphureted springs have much in common they may be treated collectively. Hydrogen sulphide gives character to the sulphureted class of waters, and is an important constituent of many of our most valuable thermal springs as well as of a large number of cold springs. It imparts to water a peculiar odor of decayed eggs, which at some springs may be appreciated at a considerable distance with a favoring wind. Hot sulphureted springs are most frequently observed in mountainous or volcanic districts; they contain sulphates of a number of the elements and occasionally sulphides and sulphuric acid.

**Physiological Action.**—The activity of sulphureted hydrogen when taken into the stomach admits of doubt. Valuable alterative effects have been attributed to it, but it is probable that the older writers over-estimated the influence of this substance on the secretions. It seems fairly well established that it promotes to some extent

the activity of the skin, kidney, and bowels. Many of the hot sulphureted waters, even though but lightly mineralized, will secure a speedy evacuation of the bowels if taken fresh from the spring before breakfast.

**Therapeutics.**—The internal use of these waters is highly advocated by medical practitioners of experience in the treatment of gout, rheumatism, chronic synovitis, white swelling, and many of the varieties of skin troubles. Some of the sulphur springs have long been celebrated in the treatment of chronic malarial infection, accompanied by an enlarged spleen and liver and in hepatic congestion, abdominal plethora, and hemorrhoids. They are highly recommended by European practitioners in chronic female pelvic disorders of inflammatory origin. It is quite possible, however, that many of our well-known sulphur springs owe their celebrity more to coexisting ingredients than to hydrogen sulphide. Thermal and sulphureted waters are largely employed for bathing purposes, and we may here consider some points in connection with mineral water baths. It cannot be disputed that many forms of chronic complaints are treated successfully by a systematic course of bathing at a spa, after having resisted all other therapeutic methods. We may properly attribute at least a part of this fortunate outcome to the stricter régime observed at the springs, to the greater willingness of the patient to adhere to rigid instructions than at home, and to the favorable circumstances of environment, climate, scenery, absence of home cares, etc. It is but fair, however, to attribute some portion of the good result to the stimulating character of the waters and possibly to the absorption of some of the ingredients. Sulphureted hydrogen waters are widely used for bathing at springs, and are recommended for many diseased conditions, notably tertiary syphilis, chronic rheumatism and rheumatoid arthritis, stiff joints, old glandular swellings, squamous skin diseases, the effects of chronic malarial toxæmia, portal congestion, metallic poisoning, etc. It is not, however, possible to trace in a scientifically satisfactory way the undoubted influence of sulphureted waters to the gas itself, to which spring managers as well as many physicians have attached so much importance.

The following is the analysis of the Santa Barbara Hot Spring, of California, the composition of a thermal sulphureted water plentifully charged also with carbonic-acid gas:

ONE UNITED STATES GALLON CONTAINS:	
Solids.	Grains.
Sodium chloride	1.74
Sodium carbonate	2.17
Sodium sulphate	14.92
Magnesium sulphate	7.75
Calcium sulphate	6.03
Aluminum	2.90
Arsenic	Trace.
Silica	1.18
Sulphuric acid	Trace.
Organic matter	Trace.
<b>Total solids</b>	<b>36.69</b>
Gases.	Cu. in.
Free carbonic acid	19.14
Sulphureted hydrogen	9.16

Among the many excellent American thermal springs several of which are also sulphureted may be mentioned the following: Arrow-Head Hot Springs, El Paso de Roble Hot Springs, Harbin Hot Sulphur Springs, and Skaggs Hot Springs, California; Arkansas Hot Springs, Arkansas; Glenwood Springs and Hot Sulphur Springs, Colorado; Warm Springs, Georgia; Ferris Hot Springs and Hunter's Hot Springs, Montana; Walley's Hot Springs, Nevada; Hudson Hot Springs, and Las Vegas Hot Springs, New Mexico; North Carolina Hot Springs, North Carolina; Belknap Hot Springs, Oregon; South Dakota Hot Springs, South Dakota; Terrell Hot Medicinal Well, Texas; Beck's Hot Springs, and Utah Hot Springs, Utah; Hot and Warm Springs, Virginia.

Numerous cold sulphur springs are found in all parts of the United States. Richfield Springs, of New York,

and Greenbrier White Sulphur Springs, of West Virginia, are familiar examples.

The following well-known European spas possess celebrated thermal springs: Aix-la-Chapelle, Baden Baden, Ems, Nauheim and Wiesbaden, Germany; Aix-les-Bains, Bagnère-de-Luchon, La (Reine) and Bourbonne, Haute-Marne, France; Karlsbad and Töplitz, Bohemia; Gastein, Salsburg, Austria; Leuk, Switzerland, and Bath, England.

Neutral or indifferent waters of which many well-known examples are found in the American markets cannot, properly speaking, be classified as mineral waters as they contain, as a rule, a smaller percentage of mineral ingredients than is to be found in the potable water supplied to most of our cities. The use of these waters is not to be discouraged, however. Practically without exception they are pure and wholesome, and entirely free from bacterial contamination. There are not wanting numerous reputable medical men who attach a distinct medicinal value to some of these excellent but finely attenuated beverages.

There are a number of well-known springs, some of which are not mentioned in any of the above groups, which owe their virtues to some one particular ingredient. Among these may be mentioned the arsenical, lithia, acid, and iodo-bromated waters.

James K. Crook.

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**MINI-NI-YAN SPRINGS.**—Kendall County, Illinois.  
 POST-OFFICE.—Bristol. Accommodations at private residences.

The village of Bristol is located on the main line of the Chicago, Burlington, and Quincy Railroad, forty-seven miles from Chicago. Five springs exist within a short distance of each other, but only two have been used medicinally. No. 5, the principal one (an artesian spring), yields 10,000 gallons a day, which can be increased to 100,000 by pumping. Two analyses have been made, the first by the chemist of the State University and the second by the chemist of the Chicago, Burlington, and Quincy Railroad. Both of the analyses have been lost. We are informed by Mr. G. G. Hunt, the proprietor, that the water contains about ninety-two grains of solid matter per United States gallon, consisting principally of the carbonates of sodium, magnesium, iron, calcium, and lithium, and the phosphate of lithium. It is also said to contain small but perceptible quantities of iodine, bromine, and manganese. The water is said to exert a very favorable influence in cases of nervousness, headache, insomnia, and functional disorders of the liver and kidneys. In the form of a hot bath it has been found decidedly efficacious in painful swellings of the joints, glandular enlargements, and rheumatic and gouty conditions.

James K. Crook.

**MINNEQUA SPRINGS.**—Bradford County, Pennsylvania.

POST-OFFICE.—Minnequa. Hotel.

ACCESS.—Via Northern Central Railroad, a connection of the Pennsylvania Railroad, forty-one miles north of Williamsport, Pa., and thirty-seven miles south of Elmira, New York.

The Minnequa Springs are located in a rich farming and dairy country at an altitude of 1,500 feet above the Atlantic Ocean. The pure mountain air, romantic scenery, delightful drives, and shaded walks afford abundant opportunities for the enjoyment of outdoor

life. The location is within easy driving distance of Mount Pisga, the highest point in Pennsylvania. The hotel at Minnequa is a commodious structure, containing ten thousand feet of wide verandas, and is well fitted with steam heat, electric bells, elevators, etc. In the building the visitor will find a post-office, telegraph office, and railroad ticket office. Many well-known New York and Philadelphia families have their summer homes in the neighborhood. The mineral springs are three in number, and yield about six hundred gallons per hour. The waters have been examined by several chemists, the following most recent analysis having been made by Charles M. Cresson, M.D., of Philadelphia:

ONE UNITED STATES GALLON CONTAINS:	
Solids.	Grains.
Calcium .....	0.99
Magnesium .....	.20
Sodium .....	.72
Lithium .....	Trace.
Aluminum .....	.12
Iron .....	Trace.
Manganese .....	.23
Chlorine .....	.14
Silica .....	.03
Zinc .....	2.05
Carbonic acid .....	.70
Boric acid .....	2.13
Oxygen (with silicates) .....	.14
Loss .....	.15
Total .....	7.60

It will be observed that the terms of this analysis are expressed in the radicals found. The combinations would be made up of carbonates and chlorides. An analysis of one of the springs made by Dr. Gregg some years ago showed the presence of sulphate of potassium and hydrogen sulphide. The waters of these springs have been used, for medicinal purposes, since the early settlement of this region. They are mildly antacid, tonic, and diuretic in their action. Owing to the presence of zinc and manganese they have been recommended by some physicians in the treatment of certain nervous affections, including epilepsy and chorea.

James K. Crook.

**MISTLETOE.** See *Loranthaceæ*.

**MITOSIS.** See *Cell*.

**MOLASSES.** See *Sugar*.

**MOLLIN** is a potassium soap containing about thirty per cent. of glycerin and fifteen per cent. of free fat in emulsified condition. It is a smooth, soft, yellowish-white, unctuous material, which is miscible with water so that it may be washed off the skin.

Carbolated and creolinated mollin and mollichthyolin are mixtures of mollin with carbolic acid, creolin, and ichthyol, respectively.

W. A. Bastedo.

**MOLLUSCUM CONTAGIOSUM.**—Despite the belief, shared at one period by most teachers of dermatology, that this disease is not contagious, the name given by Bateman has clung to it, and is to-day more appropriate than others which have been suggested, such as sebaceum, epitheliale; verrucosum, epithelioma contagiosum, and acné varioliforme. The last-mentioned designation, given it by Bazin, should be definitely dropped because of the other acné varioliformis, an affection which has been generally accepted as best designated in this way.

Although the lesions are usually of small size and distributed chiefly over the face, neck, chest, and genitals, it is well to bear in mind that a single tumor may at times attain the size of a large orange, and that the lesions may, from their size and long duration in unusual situations, be mistaken for malignant growths. I have removed from the cheek of a young girl a lesion which had existed singly and with so considerable an amount of surrounding swelling that sarcoma had been suspected. Balzer and Alquier<sup>1</sup> report a slowly increasing papillomatous tumor of the sole of the foot in a boy,

which was excised after seven or eight months, and was found to be a molluscum contagiosum.

Upon the penis I have seen a fibert-sized growth which had been mistaken for an unusual form of chancre. Occasionally the lesions are so abundant as to be scattered over almost the entire body, especially when some pruritic affection coexists, favoring dissemination by reason of scratching. Such a condition I have seen in prurigo, and the distinction must here be carefully made between the skin-colored, intradermic, firm lesions of prurigo and the "pearl-button"-like, sessile, pinkish and softer molluscum lesions.

Hallopeau<sup>2</sup> speaks of lesions so closely aggregated that they resembled bunches of grapes, and other groups suggesting frambesiform nævi. I believe I was the first to call attention to lesions upon the mucous surface of the lips. Abraham<sup>3</sup> records the presence of lesions in the mouth resembling large patches of leucoplakia, which were found on close inspection to be made up of numerous small papules merged together. This condition, which I have never seen, might be confounded with an affection of the lips and buccal membrane often observed by myself, and to which Fordyce has directed attention.<sup>4</sup>

**Description of the Lesion.**—Recent lesions are miliary in size and are to be discovered only upon close observation, and better with the aid of a lens. When they are a few weeks old they have somewhat the appearance of milium, but the color is more pinkish. They are more elevated and have rather the appearance of waxy warts, but differ from the latter in showing a central opening through which slight lateral pressure will cause a milky fluid or a soft cheesy material to exude. While the base is usually somewhat constricted, this is not always the case, and, as has been already stated, lesions which attain a great size may be almost wholly intra- or subcutaneous. There are usually no subjective symptoms, aside from those occasioned by secondary inflammatory processes.

There is at the present day no doubt of the transmissibility of the affection, clinical data having been sufficiently substantiated by experimental inoculation.

**DIAGNOSIS.**—While this is a very simple matter after one case has been attentively observed, my experience teaches that not only is the diagnosis rarely made by students in the clinic, but that practitioners frequently fail to recognize the condition or let it pass as something unworthy of notice, thus favoring the spread in the family, school, or institution. It is to be distinguished chiefly from molluscum fibrosus, the tumors of which are much firmer and, in addition, lack the central opening and the semi-solid contents.

The tumors of *M. fibrosus* are deeply embedded in the skin and tissues beneath it. They are much more common upon other regions of the body than the face, and are often found associated with pendulous masses. At times there projects from the central portion of an epithelial molluscum a horny mass. Pathological anatomists are now inclined to place the origin of these soft, semi-globular growths in that portion of the rete mucosum which is continuous with the sebaceous glands, or which dips down between the papille. The view formerly entertained, that the tumors originated in the sebaceous follicles, is still held by some, who look upon them as a transformation of the gland itself into horny amorphous structure surrounded by thickened walls. At times changes can be made out at or near the neck or root of the hair. There seems to be no question that the affection should be classed with new growths.

**ETIOLOGY.**—There is abundant reason for the belief that in time the parasitic nature of the disease will be established. A tender and delicate skin; a cutaneous surface subjected to continuous perspiration; the presence of a pruritic affection—all these are factors which favor the development and spread of the disease. The lesions may exist in large numbers upon the penis, scrotum, and female genitals, especially in young subjects, without reference to venery, although sexual contact favors dissemination.

**PATHOLOGICAL ANATOMY.**—The tumors are made up of diverging lobules opening into a central cavity.

Delicate fibrous partitions separate these lobules, and a fibrous capsule envelops the whole. When the contents are squeezed out of the external capsule, the appearance of the extruded mass is that of a diminutive brain or of an enlarged sebaceous gland. The separate lobules are lined with palisade cells continuous with those of the adjacent rete. They are filled with nucleated epithelium, cuboidal or rounded. In the changes which are taking place in these cells, the outer portion



FIG. 3360.—Molluscum Contagiosum. (From Dr. George H. Fox, American Journal of Obstetrics.)

seems to show numerous granules of kerato-hyalin. Cornification rapidly takes place, producing a capsular covering for the cell. The interior changes are similar to those of colloid or amyloid degeneration.

Molluscous corpuscles or bodies, which have long been recognized, are oval-shaped, homogeneous in their composition, and enclosed in a horny capsule. It is the accumulation of these bodies in the central opening of the molluscous tumor which forms the milky fluid which is noticed when the latter is pressed upon.

These peculiar double-contoured, globular elements resembling psorosperms, and thought at different times to be allied to them, were believed by Virchow to be degenerated epithelium. This eminent scientist believed the molluscum growth itself to be a lobulated glandular epithelioma.

Boeck, who found a strong resemblance between these tumors and sebaceous glands, noted evidences of vascularity in them. In the semi-fluid contents he discovered, beside the molluscum bodies, epidermic cells with peculiar formation, often without nuclei and with sharply defined outline. He believed that the first type of oval, non-nucleated body developed from the second. He claimed that the bodies arose from a change in the protoplasm beginning next to the nucleus. No fat is to be detected by chemical or physiological tests, and these tests also show that these bodies are not amyloid in their composition.

Renaut regards the process as a hyaline degeneration in the perinuclear zone of the rete cells. Geber held the same view in regard to their origin from a hyaline degen-