

ism which appears to be able to multiply in nature outside of the animal body under certain favorable conditions. It is a bacillus which forms spores, and in that condition it is killed only with difficulty by heat and disinfectants, and is able to retain its vitality for years in the soil. It is consequently one of the most persistent forms of contagion, and pastures once infected may be said to be permanently dangerous.

The disease is seen most frequently in cattle and sheep, animals which are very susceptible to it; but it also occurs in horses and mules and in rare instances in swine. It may begin as a local swelling on some portion of the surface of the body, or the infection may enter the body in such a manner that internal anthrax, or anthrax fever, results. In the case of external anthrax, a small, warm, and painful swelling develops—usually on the shoulder, the neck, the throat, or about the head, under the belly, or at some other point—which rapidly enlarges and very soon becomes of considerable size. If incised, a small quantity of colored serum escapes, and fibrinous clots form, having the appearance of yellow gelatinous masses. General symptoms soon appear, and the disease rapidly progresses to a fatal termination, or in some cases there is improvement and the animal recovers in the course of one or two weeks. With anthrax that has no external tumors there are only the symptoms of intense fever with rapid loss of strength, and death in the course of two or three days. Very often the disease is so violent in its manifestations that the animals die within ten or twelve hours. Sometimes they die very suddenly without presenting any marked symptoms.

Post-mortem Appearances.—The carcasses decompose rapidly, the abdomen being distended with gas a few minutes after death. The subcutaneous blood-vessels are distended with blood, and the connective tissue and muscles are stained with hemorrhages of various sizes. Blood and reddish serum escape into the connective tissue and into the cavities of the body. A fibrinous exudate colored with blood is often found in the connective tissue, in the abdominal cavity, and sometimes in the lumen of the intestines. The glands are enlarged, softened, and deeply colored. Ecchymoses on the serous surfaces are common. The liver is generally congested and friable and often of a yellowish color. The spleen is remarkable for its size, being five or six times as large as usual, and is softened, more or less broken down, and engorged with blood.

Diagnosis.—The points by which a diagnosis is made in anthrax are, the existence of the animals in an area known to be infected with anthrax, the rapid development of the disease and the violence of the symptoms, the dark color of the tissues after death, the gelatinous exudates, ecchymoses, and especially the enlarged, engorged, and broken-down condition of the spleen. A microscopic examination of the blood after the death of the animal shows the presence of the *Bacillus anthracis*. In case of doubt the inoculation of a rabbit or a guinea-pig may be resorted to. The death of these animals in from twelve to forty-eight hours with the *Bacillus anthracis* in the blood enables a positive diagnosis to be made.

Anthrax and the Public Health.—Anthrax is a disease very easily communicated to man, and is frequently fatal in its effects. It has often been known as malignant pustule, or wool-sorters' disease. While anthrax is not communicated except by direct inoculation, the contagion is so active that such inoculation readily occurs. Men who handle the carcasses of the dead animals, especially if they try to save the skins or the wool, are particularly exposed to inoculation. Flies which have fed upon the blood of the dead animals may carry a sufficient quantity upon their proboscides to inoculate persons whom they afterward bite. Infected wool, hair, and hides are, however, the principal sources of the contagion with man.

To prevent the communication of the disease from animals to the human subject vigorous efforts should be made to stamp out the disease on its first appearance. The carcasses of animals which die should be burned or deeply buried, being covered with quicklime. If the

infection is from a circumscribed area, all animals should be removed from this to healthy pastures. Great care should be taken in moving the carcasses to the places where they are to be buried. All blood which has escaped from the body should be carefully removed, and the ground upon which the body has lain should be disinfected by burning. In working with wool and hair precautions should be taken to avoid so far as possible the inhalation of dust, and if suspicious swellings develop upon workmen who handle animal products they should receive prompt medical treatment.

Animals affected with anthrax generally present such evident symptoms of disease and die in such a short time that the carcasses very seldom go upon the market for food. However, there have been cases in which meat affected with anthrax has been sold and consumed, and in some cases it has caused many fatalities. The inspectors of meat should be on their guard and should carefully investigate all carcasses in which there are any appearances resembling those seen in this disease.

Prevention of Anthrax in Animals.—In some cases it is possible to prevent anthrax by keeping animals away from the infected pastures and by draining and cultivating such lands. In most cases the extension of the disease may be arrested by the prompt and proper disposal of the carcasses of the animals which die. In sections where the lands are extensively infected, vaccination with a properly prepared vaccine has been practised with considerable success.

GLANDERS.—Glanders is a contagious disease of the genus *Equus*, and is readily communicable to man. It is caused by the *Bacillus mallei*, and is characterized by the formation of nodules or tubercles, which degenerate into ulcers from which there is a characteristic discharge. It is a disease which, as seen in the horse, is generally chronic, with not very apparent symptoms and little fever.

Small nodules, from the size of a shot to that of a small pea, form in the mucous membranes of the respiratory tract. These may be seen just inside the wings of the nostrils or on the septum, and are easily detected. They are at first red and hard, but soon soften, become yellow, and break, giving rise to a small ulcer the size of the tubercle. This ulcer has a grayish bottom and ragged edges, and there is given off from it a viscous, oily discharge which is very characteristic of the disease. Glanders tubercles may also develop in the lungs and other internal organs.

Sometimes nodules appear on the under surface of the skin, which soften, discharge their contents, and are transformed into an irregular ulcer with ragged, overhanging edges. These often lead to irritation of the neighboring lymphatic vessels, which become swollen and indurated and appear as hard ridges which are hot and sensitive to the touch. These ulcers are seen most frequently on the lips and neck, the lower part of the shoulders, and the inside of the thighs, but they may occur on any part of the body. This form of glanders is called farcy. Farcy is sometimes looked upon as a milder disease than glanders, but it should be remembered that both are caused by the same contagion, and that the only difference is the organ in which the lesions are localized. The internal lesions characteristic of glanders, and the farcy ulcers, are often seen in the same animal.

In acute glanders there is a rapid development of tubercles in the respiratory tract, which rapidly degenerate into ulcers. There is an abundant discharge from the nostrils, with considerable fever and a cough which varies according to the location and character of the eruption. Swellings form over the surface of the body, rapidly followed by farcy-buttons which break and form ulcers. Acute glanders is often fatal within a comparatively short time, although in some cases the symptoms subside and the disease takes on a chronic form. Chronic glanders may continue for months or even years. In most cases it results in death sooner or later, but occasionally animals improve and apparently recover. In these

so-called recovered cases, however, the internal lesions usually remain and the animals continue to spread the contagion.

Diagnosis.—The clinical diagnosis of glanders is based upon the existence of the nodules and ulcers in the nostrils, upon the character of the discharge, and the existence of an enlarged, nodular gland beneath the jaw. In cases of doubt, guinea-pigs are inoculated, and these animals develop a specific orchitis which enables a diagnosis to be made.

In recent years the toxin produced by the culture of the *Bacillus mallei*, which is known as mallein, has been used as a test on the same principle that the tuberculin test is applied for the diagnosis of tuberculosis. It is injected subcutaneously, and if the horse is affected with glanders there is an elevation of the animal's temperature and also a large, sensitive swelling at the point of inoculation. Mallein has been found very useful in picking out those animals in an infected stable in which the disease has not progressed far enough to show characteristic symptoms, and those in which the lesions are internal and in which the general health of the animal is not affected.

Treatment.—For practical purposes glanders may be considered an incurable disease. The measures to be adopted for its eradication are the prompt destruction of the diseased animals as soon as a positive diagnosis can be made, and the thorough disinfection of the stables in which they have been kept and of all the articles, such as harness, buckets, curry combs, and brushes, which have come in contact with them. Glanders is a common and widely disseminated disease, and more energetic measures than have heretofore been enforced are needed for its suppression.

Glanders and the Public Health.—Glanders is communicable to man by direct inoculation or by particles of the discharge from a glandered horse coming in contact with the mucous membranes of the eye, nose, or mouth. Usually it is the persons who care for the glandered horses that become affected. Sometimes, however, persons who are passing a diseased horse at the time when it snorts or coughs may become infected by the virulent mucus lodging upon their mucous membranes or on the skin where there is an abraded surface. Cases are also known in which a wife has taken the disease from her husband, and in which persons who have acted as nurses have contracted the disease from a patient. In man it is a loathsome disease and one which usually ends in death. The disease can be guarded against only by reducing the number of glandered horses, and, in case of the disease in man, by taking suitable precautions to prevent the transfer of the contagion to those who care for the patient.

TAPEWORMS OF ANIMALS IN RELATION TO THE PUBLIC HEALTH.—The larval stages of several tapeworms are found in the organs of the meat-producing animals. *Cysticercus bovis* occurs in cattle, and when eaten by man gives rise to the common tapeworm found in this country, known as *Tenia saginata*. This tapeworm is not a very dangerous parasite. It may bring about digestive troubles, and it is occasionally very difficult to expel, but as a rule we may say that the parasite is only of temporary importance, its effects passing off when the worm is expelled.

The *Cysticercus cellulose*, or larval form of *Tenia solium*, occurs in pork. When the infested pork is eaten the adult parasite develops in man. Physicians should distinguish between the two tapeworms mentioned, because *Tenia solium* is a very much more dangerous parasite than *Tenia saginata*. If a patient soils his hands with the microscopic eggs during defecation, or if he has reverse peristalsis of the intestines strong enough to carry one or more segments of the tapeworm into his stomach, he may be infected with the larval stage of *Tenia solium*. In this case the embryos escape from the segments to the stomach and wander to various parts of the body, more especially to the muscles, the eyes, and the brain. If one or more of the larvæ develop in the eye or in the brain, more or less serious conditions may result,

according to the part which is affected. The physician, in treating patients affected with the *Tenia solium*, is also exposed to some danger of infection with the eggs, and such infection would produce the larval stage.

The existence of these two parasites in American cattle and hogs makes it proper to suggest that the practising physician has a duty to perform in seeing that all tapeworms passed by his patients are totally destroyed, unless they are preserved for scientific investigation. It too often happens that the patient is not properly instructed in this matter, and passes the worm in some place where the eggs are scattered so that they afterward infect animals. It has been observed that the meat inspection in Germany has resulted in decreasing the frequency of tapeworm disease in man, and also the infection with the larval stage of *Tenia solium*. We have no exact statistics on this subject in the United States, but it would appear that the meat-inspection system must necessarily contribute somewhat to the decrease of these parasites.

Another parasite of this kind is the echinococcus, which causes the hydatid disease. It is a bladder worm which may be found in almost any part of the body of the meat-producing animals, and especially in the lungs and liver of cattle, sheep, and swine. This parasite is not directly transmissible to man by eating an organ affected with the bladder worm, but if the hydatid is fed to a dog each separate head of the cyst—and there may be thousands in a single cyst—develops into a tapeworm, the *Tenia echinococcus*. This is probably the smallest tapeworm known, having very few segments, and only the last segment is gravid with eggs. The dog scatters the eggs of this tapeworm broadcast, and the domesticated animals become infected with it. Mankind may also become infected by too close intimacy with dogs. In Iceland, where men and dogs live during the long months of winter in the same huts and without any idea of sanitary precautions, it is said that one person out of forty-three is infected with the echinococcus disease. In some parts of Germany the disease is also very frequent. Post-mortem statistics have been given, showing that at Rostock 2.43 per cent. of the cadavers were affected; at Breslau, 1.47 per cent.; at Berlin, 0.76 per cent. The disease can be controlled only by careful meat inspection and the destruction of all hydatids that are found. To prevent the multiplication of this parasite dogs should be prevented from feeding upon the offal of slaughter-houses. Daniel E. Salmon.

VEVEY, SWITZERLAND.—Vevey, situated on the northeastern shore of Lake Geneva, four miles west from Montreux, has an admirable position and a mild climate, but is less favorably situated than the latter resort in respect to protection from the north and northeast winds, and has a more changeable temperature. Its altitude is 1,250 feet above sea level. It is a town of about 8,000 inhabitants, and is renowned for its lovely views of lake and mountain, its charming walks and excursions, and its cleanliness. Some one has called it Dutch in cleanliness, French in gaiety and love of pleasure, and Swiss in its sentiment. Together with the other towns in this protected region, it has been called the "Nice of Switzerland."

It is recommended as a favorable place for the "after-cure" to those who have been taking the waters at Aix-les-Bains, Vichy, Carlsbad, and other spas. It is also a good place for a residence before and after the Riviera season. Autumn is considered the best season, at which time one can take the grape cure, for a description of which the reader is referred to the article *Meran*, in Volume V. of this HANDBOOK. In the summer the milk cure and lake baths are used.

The water supply comes from the mountains, and is said to be unexcelled. The mortality is very low.

In winter the mean temperature never goes below 32.5° F., and in summer rarely above 86° F. The average mean monthly temperature is as follows: January, 32.5° F.; February, 35° F.; March, 40.6° F.; April, 44.9° F.; May, 49.6° F.; June, 57.2° F.; July, 58.8° F.; August,

58.9° F.; September, 54.2° F.; October, 49° F.; November, 39.3° F.; December, 33.4° F. The yearly average is 46° F. The average number of rainy days for the year is sixty, and of snowy days, seven. Fog is rare. The "Bise" or cold north wind is often felt here and produces trying changes of temperature.

On account of the changeable temperature this resort is not to be recommended for pulmonary tuberculosis, but is favorable for convalescents, for persons suffering from general debility or from some nervous affection, for certain cases of digestive disturbances, and for those who for any reason are "run down." Higher latitudes can easily be reached by means of a funicular railway, and one can go from Vevey to the castle of Chillon by electric railway. Within easy distance of Vevey are very many walks and excursions through vineyards, parks, and gardens, affording extended and fine views. One also can make excursions on the lake, and there are boats for rowing. The accommodations are excellent, abundant, and not expensive; pensions abound. There are good physicians, and an English church.

Vevey is easily reached in about twenty-two hours from London, either by rail or by boat from Geneva, or from other points on the lake.

Lausanne, ten or fifteen miles farther west, possesses a climate somewhat similar to that of Vevey. It is cold in

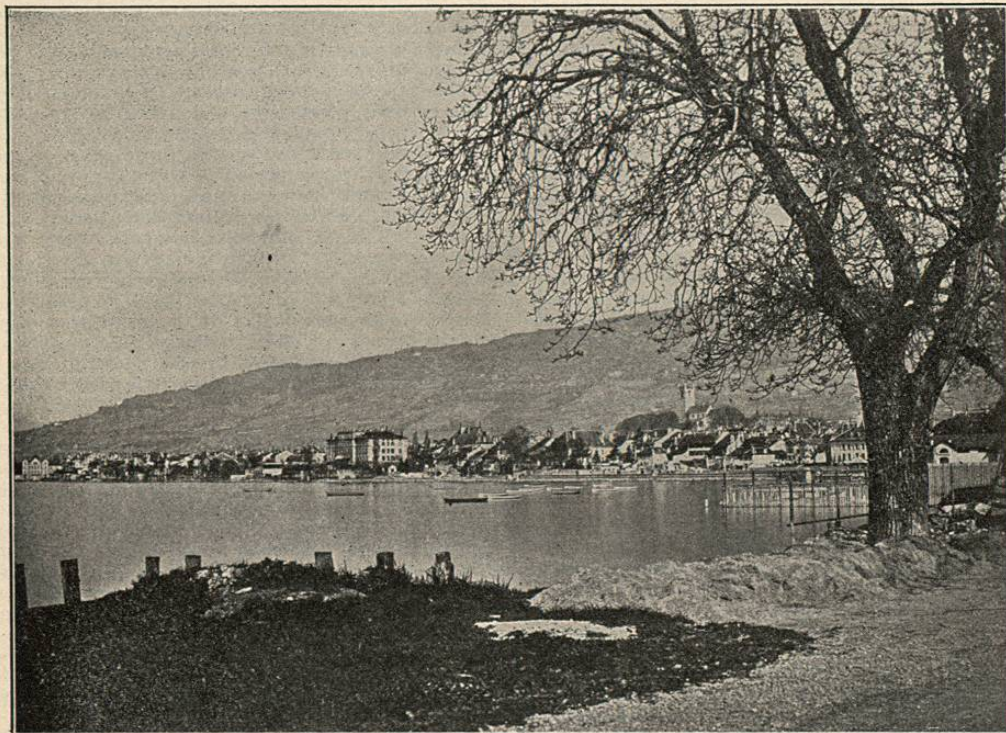


FIG. 5021.—View of Vevey as seen from the Eastern End of the Lake of Geneva.

winter but sunny, and is exposed to the northerly and southwesterly winds. The town is hilly, and is 1,700 feet above sea-level. The especial features of this place are the inexpensive living and the excellent schools.

Of all these resorts on the northern shore of Lake Geneva, Montreux possesses the best climate and has the most protection from the north winds. *Vide Montreux* in Volume V. of this HANDBOOK.

In the Rhone Valley, to the eastward, are several resorts of value, such as Aigle-Les-Bains, a hydrotherapeutic establishment; Champrey; Sierre; and particularly Bex, beautifully situated in the midst of the mountains

and possessing a mild climate. Spring and autumn are the best seasons. Here one can take the grape cure, and also employ the saline springs which are used in the form of baths and douches, excellent facilities for which are afforded at the Grand Hôtel des Salines. (See *Bex* in Vol. I. *Edvard O. Otis.*)

VIBURNUM OPULUS.—*Cramp Bark.* "The bark of *Viburnum Opulus* L. (fam. *Caprifoliaceae*)," U. S. P. This is a large shrub growing in the northern parts of Europe, Asia, and America. It produces red fruits and in one of its cultivated forms is the snowball tree of our gardens. The bark is thus described in the Pharmacopœia:

"In flattish or curved bands, or occasionally in quills, sometimes 30 cm. long, and from 1 to 1.5 mm. thick; outer surface ash-gray, marked with scattered, somewhat transversely elongated warts of a brownish color, due to abrasion, and more or less marked with blackish dots, and chiefly in a longitudinal direction with black, irregular lines or thin ridges; underneath, the easily removed corky layer of a pale brownish or somewhat reddish-brown color; the inner surface dingy white or brownish; fracture tough, the tissue separating in layers; inodorous; taste somewhat astringent and bitter."

It is identical in composition and properties with the next, but is rather more frequently used for abdominal

cramps. The dose is 4-8 c.c. (fl. 3 i.-ij.), and it is commonly given in the form of the official fluid extract.

H. H. Rusby.

VIBURNUM PRUNIFOLIUM.—*Black Haw.* "The bark of *Viburnum prunifolium* L. (fam. *Caprifoliaceae*)," U. S. P. This species is a shrub or small tree growing from Connecticut to Illinois and southward, with oval, obtuse or slightly pointed, finely serrated leaves, and sessile cymes of small white flowers. The stem-bark is in thin pieces or quills, glossy externally, of a purplish-brown color, with scattered warts and minute black dots; when

collected from old wood it is grayish-brown; the inner surface of the stem-bark is smooth and varies in color from white to a pale rust-brown; fracture, short; odor, peculiar, somewhat like that of valerian; taste astringent



FIG. 5022.—Flowering Branch of *Viburnum Prunifolium*. (One-third natural.)

and bitter. The root bark, which is very superior, is in small, chip-like, curved pieces, of a deep rust-brown and much more bitter.

It appears probable that a large part of this bark, especially that coming from the Southern States, is derived from one or two closely related species which have apparently the same properties.

Besides tannin and several organic salts, it contains the bitter glucoside *viburnin* and valerianic acid, the latter probably derived from the former. There is also some resin.

Viburnum is mildly diuretic and strongly antispasmodic, and is used almost wholly as a uterine sedative. This use is chiefly in the prevention of threatened miscarriage, for which it is one of the most generally useful drugs, but it also extends to other spasmodic and painful uterine conditions. The dose is 1-4 c.c. (fl. 3 ¼-i.), and the official fluid extract is commonly employed.

H. H. Rusby.

VICHY, FRANCE.—This far-famed resort, the most frequented in France if not in all Europe, is situated in the great central plain, on the right bank of the Allier River, at an elevation of about 750 feet above sea-level. It is easily reached from Paris, lying almost due south at a distance of about 230 miles. It has a permanent population of 12,000, augmented by from 50,000 to 60,000 visitors. In the season, which extends from May to October, it becomes a sort of second Paris in the character of its amusements and attractions. The climate is mild and much like that of Paris; during July and the first part August, however, the weather is often very hot. In the city there is a park with central garden containing the largest bath establishment in France; there is also a casino with a fine theatre, reading-rooms, etc. Indeed,

every effort is made to render the resort most attractive to the visitor, as well as hygienically wholesome.

The waters are those known as thermal alkaline, different springs differing from one another chiefly in the temperature, which varies from 57° to 113° F., and in the amount of free carbonic acid gas. Some contain a very little iron. There are fourteen regular springs which constitute the principal group of the Vichy waters, and others in the neighborhood. The most important and best known of the Vichy waters are the Grande Grille, Célestins, Hôpital, Puits-Chomel, Lucas, Mesdames, Parc, Lardy, Puits-Carré, and Larband.

The following is the composition of the three first named of these springs according to Cyr in Jaccoud's "Nouveau Dictionnaire de Médecine et de Chirurgie Pratiques," given in grams per litre:

Solids.	Grande Grille.	Célestins.	Hôpital.
Sodium bicarbonate.....	4.883	5.103	5.029
Potassium bicarbonate.....	.352	.315	.440
Magnesium bicarbonate.....	.303	.328	.200
Strontium bicarbonate.....	.003	.005	.005
Calcium bicarbonate.....	.434	.462	.570
Ferrous bicarbonate.....	.004	.004	.004
Manganous bicarbonate.....	Trace.	Trace.	Trace.
Sodium sulphate.....	.291	.291	.291
Sodium phosphate.....	.130	.091	.046
Sodium arsenate.....	.002	.002	.002
Sodium borate.....	Trace.	Trace.	Trace.
Sodium chloride.....	.534	.534	.518
Silica.....	.070	.060	.050
Total solids.....	7.006	7.195	7.155
Temperature (Fahrenheit).....	107.6°	57°	86°

The waters are used both for drinking and for baths. There are several large bathing establishments equipped with every hydrotherapeutic appliance: vapor baths, thermal mineral-water baths, douches, inhalations, douche massage, and carbonic-acid baths and douches. The water is clear, and the taste of the Grande Grille is not disagreeable. The waters are generally taken in small doses, 100-400 gm.—varying according to the individual and his malady—before meals. The waters of the different springs are not drunk indiscriminately, but each according to the malady: thus, for example, the Grande Grille is for hepatic troubles; the Célestins, for gout; and so on. It is well for the patient to consult one of the local physicians as to the kind of waters he should take and the method to be pursued in their use; and one is at no loss to find a medical adviser here, for there are said to be about a hundred.

The affections for which these waters are most frequently recommended are various dyspeptic conditions—the indigestion of chronic alcoholism, chronic catarrhal gastritis or enteritis in which there are no very acute symptoms; hepatic conditions—gall stones. "In the latter affection, the physicians at Vichy claim for the waters an absolutely curative power, asserting that they not only prevent the formation of gall stones, but even relieve the pain of an acute attack, restore the appetite, and cause the jaundice to disappear." Even when surgical interference is considered necessary, it is advised to try the waters before an operation, if one can delay without danger, and, if an operation has been performed, to follow it by a course of the waters. In gout, rheumatism, uric-acid diathesis and diabetes, these waters have been found to be beneficial. In certain pelvic disorders of women they are also said to be of value. At least one-half of all the patients who frequent this spa are said to be dyspeptics.

A course of these alkaline waters is somewhat severe, and one should possess a certain amount of constitutional vigor to take them with advantage. An after-cure in Switzerland or elsewhere in a tonic climate should follow the Vichy "cure."

The accommodations are excellent, and there is an English church service.

The waters are largely exported, and can be had in almost every civilized land. Artificial Vichy, a more or less perfect counterpart of the natural water, is likewise everywhere to be had.

For an extended account of Vichy, its various bath establishments, and indications for the use of its waters, the reader is referred to "Stations Hydro-Minérales, Climatériques et Maritimes de la France," Paris, 1900.

Edward O. Otis.

VICKSBURG, MISSISSIPPI.—This city, picturesquely situated on a high bluff overlooking the Mississippi River, is about equidistant from Memphis and New Orleans. It is not a health resort, but is mentioned here and a chart of its climate is given as illustrating the climate of the lower Mississippi valley. The city is the largest in the State, with a population of about fifteen thousand, and is commercially important. It is, however, best known historically from the important part which it played in the Civil War. Besides the attraction of its fine situation on the river, it is also worthy of a visit from the fact that it contains the largest national cemetery in the country—a sad and forcible reminder of the intense struggle that took place about it.

CLIMATE OF VICKSBURG, MISS., LAT. 32° 22', LONG. 90° 53'. PERIOD OF OBSERVATION, TWELVE YEARS.

	Jan.	March.	May.	July.	Sept.	Nov.	Winter.	Year.
Temperature (Degrees Fahr.)—								
Average or normal	48.4°	59.1°	73.4°	83.8°	79.7°	60.2°	50.4°	65.6°
Mean of warmest	56.4	69.8	83.5	92.3	85.0	66.4		
Mean of coldest	40.7	51.9	64.2	73.2	66.1	46.8		
Average daily range	15.7	17.9	19.3	19.1	18.9	19.6		
Highest or maximum	80.0	85.0	95.0	100.0	98.0	84.5		
Lowest or minimum	10.0	27.0	46.0	62.0	48.0	23.0		
Humidity—								
Average relative	71.4%	64.4%	67.2%	72%	71.9%	70.8%	69.5%	69.6%
Precipitation—								
Average in inches	5.27	6.83	5.18	4.0	4.06	6.5	15.76	60.09
Wind—								
Prevailing direction	N.	S.	S.E.	S.W.	N.	S.E.	S.E.	S.E.
Average hourly velocity in miles	5.9	6.8	5.2	4.0	3.9	6.2	6.2	5.4
Weather—								
Av. No. clear days	6.9	10.2	12.6	10.0	12.0	9.5	23.1	122.6
Av. No. fair days	9.9	10.6	11.7	14.9	11.2	11.1	30.0	142.8
Av. No. clear and fair days	16.8	20.8	24.3	24.9	23.2	20.6	53.1	265.4

Referring to the table, the reader will observe that the climate is quite semi-tropical—mild in winter and hot during a long summer. There is a large amount of rain quite evenly scattered throughout the year, although rather more falls in the spring. Attention is called to the small wind velocity, there being considerably greater freedom from wind in this valley station than at New

CLIMATE OF MELBOURNE, VICTORIA. LATITUDE, 37° 49' S.; LONGITUDE, 9H. 39M. 54S. E.—PERIOD OF OBSERVATION, TWENTY-SIX YEARS.

	Jan.	March.	May.	July.	August.	Oct.	Nov.	Dec.	Year.
Temperature (Degrees Fahr.)—									
Average mean temperature	66.6°	63.8°	53.3°	47.8°	50.2°	57.0°	60.9°	63.7°	60.39°
Average maximum for period 1880-84	79.9	75.5	61.9	55.4	59.9	66.1	70.7	73.7	
Average minimum for period 1880-84	55.2	55.3	47.2	41.0	44.5	46.9	51.1	53.2	
Average daily range	24.7	20.2	14.7	14.4	15.4	19.2	19.6	20.5	
Highest or maximum	111.2	104.6	82.1	66.1	74.7	95.8	103.2	110.7	
Lowest or minimum	42.3	37.1	31.8	27.0	28.3	32.1	38.1	40.0	
Humidity—									
Average mean relative	64%	68%	78%	80%	75%	70%	67%	64%	71%
Precipitation—									
Average in inches	1.60	2.13	2.16	1.78	1.89	2.88	2.44	2.36	25.76
Wind—									
Prevailing direction	S.	S.	N.	N.	N.	S.	S.	S.	N. S. W.
Average hourly velocity in miles (1867-83)	11.0	9.6	9.5	10.1	10.7	11.3	11.1	11.3	10.50
Weather—									
Average number days of rain	7	8	13	13	14	13	11	9	134
Percentage of cloudiness	53	52	64	64	61	60	59	55	58

a general way the climate of the whole colony, and a study of the chart of Melbourne, herewith given, will serve to demonstrate the leading climatic characteristics.

In the first place it is to be borne in mind that Australia is south of the equator, and, hence, the seasons are reversed from those in north latitude; their summer is our winter, and so on for the other seasons. Whereas the mean summer temperature is the same as that of middle Europe, it will be seen that it is subject to great variability. The hot winds blowing from the desert of central Australia produce sudden great elevations of temperature, rapidly followed by a fall produced by a change in the direction of the wind. These hot squalls, as they may be called, produced by the hot north winds, are accompanied by dust and by a very considerable fall in the humidity; indeed, the heat and dryness are so intense that on one occasion apples were literally roasted on the trees. The highest mean temperature occurs in January, and the lowest from the middle of July to the beginning of August.

The winter is usually characterized by frequent rains and high winds. Ice and frost infrequently occur at this season, and at Melbourne the temperature seldom falls much below the freezing point.

The autumn season (March, April, and May) is considered "the most genial and beautiful portion of the year"; the temperature is moderate, the north winds grow cooler, and vegetation, which has been withered by the summer's dryness and heat, bursts forth again as soon as the moisture returns.

The spring (September, October, and November) resembles in character the autumn; the weather is usually mild and even quite warm. Sometimes there is a large rainfall in October and November; or there may be considerable diminution of rain at the beginning of October, and in November the dry and even hot northerly winds may blow and parch the vegetation.

In brief, the climate of this region is characterized by high temperature and frequent dust storms, comparatively mild winters, and agreeable climatic conditions in spring and autumn.

Sudden and extreme variability of temperature is not uncommon, especially in summer. The rainfall varies largely in different seasons—from nineteen to thirty-two inches. The percentage of cloudiness appears to be pretty high, though in general cloudless sunshine is one of the features of the Australian climate. The wind velocity is considerable, and, as has been mentioned, the hot north wind of the summer is a veritable furnace blast.

Melbourne itself, a city of about 500,000 inhabitants, including its suburbs, lies at the head of Port Philip Bay, and is spread out over a large area. There are wide streets, numerous parks, squares, and gardens, and many fine public buildings. The number of suburban towns and the great expanse of the city are a striking feature of the place. Melbourne appears to be a healthy place of residence. In rural Victoria pulmonary tuberculosis is not very frequent, but in Melbourne, as in all large centres of population the world over, this disease is prevalent. In the coast region rheumatism and cardiac affections are said to be common. Malaria does not prevail in Australia.

Edward O. Otis.

VICTORIA MINERAL SPRINGS.—Custer County, Nebraska.

POST-OFFICE.—New Helena. Hotel built recently. New Helena is reached by the Burlington and Missouri Railroad. The springs are seven in number, and are at a level of 2,600 feet above tide water, in a level prairie country having fine roads. It is said that an average of three hundred and fifty clear, sunny days in the year may be counted upon in this region. The accommodations for visitors are limited at present, but improvements are at this time being added. The springs were discovered in 1888, and it is stated that no two of them are exactly alike. The largest, known as the "Magnesia" Spring, is used for bottling. Each spring has a different

flow, yielding from twelve hundred to three thousand gallons per hour. An analysis, made in 1888, resulted as follows (we are unable to secure the name of the analyst): One United States gallon contains (solids): Calcium carbonate, gr. 15.63; magnesium carbonate, gr. 11.27; iron carbonate, gr. 0.08; sodium sulphate, gr. 2.16; calcium sulphate, gr. 18.03; magnesium sulphate, gr. 12.06; potassium sulphate, gr. 1.46; ammonium sulphate, gr. 0.23; sodium chloride, gr. 1.26; iodine, and bromine, traces. Total, 62.18 grains.

The water has an unvarying temperature of 55° F. It is coming into considerable use as a commercial water, and in addition to table and domestic use it is recommended for stomach and kidney disorders.

James K. Crook.

VICTORY STRONTIA SPA.—Put-in-Bay Island, Ohio. This mineral well is located on the spacious grounds of the palatial Hotel Victory, sixty miles by steamer on Lake Erie from Detroit, forty miles from Toledo, and twenty-two miles from Sandusky. The well is four hundred and ninety feet deep, and is sheathed with an iron casing for about two hundred feet. The water rises to a level of twenty-five feet from the ground surface and its supply appears to be practically inexhaustible. The following analysis was made by G. A. Kirchmaier, Ph.D., chemist to the Ohio Dairy Food Commission: One United States gallon contains (solids): Strontium sulphate, gr. 33.75; calcium sulphate, gr. 65.98; magnesium carbonate, gr. 14.35; calcium carbonate, gr. 25.69; iron, gr. 0.20; sodium chloride, gr. 1.12; potassium chloride, gr. 0.91; silica, gr. 0.14; alumina, gr. 0.08. Total solids, 142.22 grains.

This analysis is chiefly noteworthy on account of the large quantity of the comparatively rare ingredient of strontium which it exhibits. The therapeutical relations of this agent have not yet been fully outlined. Some of the salts of strontium have been found to possess a useful application in chronic gouty manifestations, in muscular and in subacute articular rheumatism, and in diabetes. More recently it has been employed with apparent advantage in parenchymatous nephritis. Some observers have recommended strontium as a valuable intestinal antiseptic, and useful in flatulent dyspepsia, with fermentative changes in the alimentary tract. Aside from the possession of this ingredient the waters of the Victory Spa would appear to possess useful properties as a mild saline laxative and antacid. The fortunate location of the well so near the big summer hotel, whose name it bears, will no doubt serve to bring it to speedy notice.

James K. Crook.

VILLACABRAS SPRINGS, SPAIN.—The springs of Villacabras are situated in the province of Madrid, Spain, and are owned by a French company which exports this water under the above name. It is a natural mineral purgative water, and is said to have neither a repulsive smell nor a bitter taste, and to be painless in its action.

The analysis, made by Prof. C. F. Chandler, of New York, is as follows:

In one United States gallon there are (solids): Sulphate of soda, gr. 9,340.5765; sulphate of potash, traces; sulphate of magnesia, gr. 213.3164; sulphate of lime, gr. 119.0627; sulphates of iron and alumina, traces; chloride of sodium, gr. 50.9641; silica, gr. 2.2219. Total, 9,726.1416 grains.

As will be seen from the above, the "Glauber's salt" is the principal ingredient of this water, and the one upon which its purgative action depends. The dose is, as a laxative, from four or five tablespoonfuls; as a purgative, half a tumblerful or more. The effect of the water is said to be increased if it is diluted, and it is therefore recommended that in intervals between the doses some light liquid nourishment or plain water be taken.

Villacabras water can be recommended for those conditions which require a non-stimulating laxative or pur-