

others conclude that menstruation relates to an ovum discharged from the Graafian follicle at the preceding period rather than to that of the same period.

First Appearance of Menstruation.—The catamenial flow is not in general of sudden appearance, but is preceded by a monthly swelling and tenderness of the breasts, a feeling of general lassitude and headache, usually accompanied by a white mucous discharge. The actual establishment of menstruation may not take place for several months after the first symptoms and may even then be irregular, appearing one month and failing for several, then reappearing. This is not abnormal. After the thorough establishment of the function, its failure to occur marks either pregnancy or a pathological condition.

The symptoms preliminary to menstruation may be observed as early as the tenth year of age, and the menses proper may appear between the ages of twelve and sixteen,—the average age being fourteen years. It is not unusual, however, to find cases of earlier menstruation or to find it delayed to the twentieth or even to the twenty-fifth year.

The time of the first appearance of the menstrual flow is influenced by race, climate, social conditions, and hereditary and individual peculiarities. In general, girls in warm climates menstruate earlier than those in cold climates, and those of the city earlier than girls of the country; while laboring women menstruate earlier in life than women of the leisure class. Any condition which excites the genital instinct hastens the time of menstruation. Hirst states that in Hungary, the three races—Slavonic, Magyar, and Jewish races—living in the same climate, menstruate at respectively sixteen, fifteen, and thirteen years of age. The girls of Lapland menstruate at eighteen, while in those of Egypt the function is established at the age of ten years.

Menstrual Symptoms.—Menstruation is accompanied by certain local and reflex symptoms. For one or two days previous to menstruation the individual feels a special sensitiveness and nervous excitation accompanied by headache and a general feeling of fulness in the abdomen, all of which symptoms are relieved by the beginning of the flow.

Owing to the increased weight of the uterus and its congested condition, a feeling of weight and pressure is experienced in the pelvic region during the flow. During the first few days of the period women are likely to be nervously sensitive to noise and worry, and predisposed to mental depression. Women of hysterical or epileptic tendency are liable to outbreaks at this time if at no other. The skin shows a greater degree of pigmentation, noticeable in the discoloration about the eyes and blotches upon the face. The skin also becomes congested and may break out into pimples and fever sores.

A not infrequent accompaniment of the catamenial flow is turgescence of the breasts, swelling of the thyroid and parotid glands and tonsils. There is indeed a profound physiological change of which the uterine condition seems to be but a part. According to Hirst the temperature is higher by 0.5° C., while the observations of Giles seem to indicate that the maximum temperature is attained two days before menstruation, followed by a sudden drop on the day preceding the flow.

Character of the Discharge.—There are three distinct stages of the flow during each of which the character of the flow shows certain peculiarities. The first discharge is composed of blood largely mixed with mucus, which gives it a slimy consistence. It contains also epithelial cells from the broken-down membrane of the uterus and tube, together with a glandular discharge, and possesses a strong odor. During the second stage the blood is almost pure, being brighter in color and very slightly slimy. The third stage is marked by the smaller number of blood globules, the reappearance of mucus, and the absence of epithelial cells. Occasionally a woman will have a discharge of almost pure blood following the third stage, but this is unusual.

Menstrual blood is alkaline in reaction, dark in color, and should not clot.

Quantity and Duration of Discharge.—It is difficult to measure accurately the amount of fluid discharged during the menses. It is estimated variously by different authorities at from four to six ounces; from three to eighteen ounces; and from four to eight ounces. From these varying quantities it is safe to conclude that the average monthly discharge is from five to six ounces. The quantity is more usually measured by physicians by the number of napkins, more than three napkins a day being considered excessive.

There is considerable variation in the duration of the flow. In some women it does not exceed two days, in others four, while in a large number it lasts five, six, or even seven days. Ordinarily it lasts from three to six days, varying with the individual. The greatest amount of blood is lost during the first three days, the quantity then gradually decreasing until it ceases entirely.

Cessation of Discharge.—The period of menstruation extends over about thirty years, varying greatly in individuals. As the age of puberty may be any time from ten to twenty, so the menopause may be any time from thirty to eighty. These are, however, extreme figures, the average being between forty-five and fifty. Women who menstruate early are likely to reach their climacteric late; while those who mature late will probably cease to menstruate early. The cessation, like the establishment of menstruation, is in general a gradual change. The first symptom of the menopause is an irregularity of the flow. It may cease for a few months and be followed by several months of regularity, when it may again cease. The irregularity of the occurrence of the menstrual flow may extend over six, nine, or twelve months until the final cessation. There is also usually an irregularity in the duration of the periods and in the quantity of the menstrual discharge at the different periods. The most marked symptoms of the menopause are the accompanying congestion of other than the genital organs, namely, the head, liver, and lungs. Women complain of dizziness, flashes of heat, and mental depression. The sexual life seems to be especially active just before the cessation of the menstrual flow, and it is not uncommon for women who have not conceived for years to become pregnant at this time.

With the cessation of the flow there is an atrophy of the genital organs. First the ovary, then the uterus decreases in size and atrophies, sometimes disappearing entirely. The labia majora lose their fulness, the hair of the pubes turns white and falls, the breasts shrivel, and the individual loses those physical characteristics which are essentially feminine.

It is possible for menstruation to be regular through an entire pregnancy, but this is very unusual.

Comparative Physiology.—For years it was thought that the menstrual function was one peculiar to the human female and that its counterpart did not exist in the lower animal world. So long as this hypothesis was accepted, it was difficult to account for this function in women. All important observations along this line in recent years point to the fact that menstruation is but the analogue of "rut" or "heat" in the female of the lower animals. With this difficulty settled, there is no more mystery regarding the necessity for this function, and we have to deal simply with a highly developed reproductive phenomenon inherited from the remote ancestors of man.

In the lower animals in their native state there are certain breeding seasons specially favorable to reproduction, the season varying with the latitude. Domestication has made many changes in the sexual habits of the lower animals, which now have more frequent periods of reproductive activity. The lower the animal in the scale of life, the fewer are the points of resemblance between the "heat" and menstruation, and conversely, the higher in rank the more numerous are the likenesses between the two. In the domestic monkey, cow, mare, buffalo, zebra, and hippopotamus, if impregnation be prevented, the

periods of "heat" occur with regularity, at intervals of four weeks. During these periods the animals show a nervous excitability, a swelling of the genital organs, a desire for copulation, and a uterine discharge. This discharge is scanty, contains mucus and blood, and the proportion of blood increases as the scale of animal life is ascended.

In dogs the phenomenon is quite similar to that of the human female. There is the same congestion of the uterine mucous membrane and the same rupture of the capillaries, but it is thought that the epithelium is not actually shed. In monkeys the process is still more like the human menstruation. Heape, in his observations upon monkeys, has found that some monkeys menstruate during the non-breeding period. He calls attention also to the fact that in far northern countries women do not menstruate during the winter months.

It has also been shown that while there is now no special breeding season among human beings, there is still in general a greater tendency to fecundity in the spring. According to statistics the largest number of human births falls in February following conceptions in May and June. The largest number of conceptions in Sweden occur in June; in Holland and France they occur in May and June; while in Greece the greatest number of conceptions falls in April.

As we travel south the spring is earlier and the greatest number of conceptions is also earlier.

The large amount of blood in the menstrual flow has been accounted for in part by social and marital conditions and largely by the erect position assumed by the human species.

The Relation of Menstruation to Lactation.—During the congestive period of menstruation, a change is noticed in the mammary glands of many nulliparous women. The nipple becomes erected and congested, secreting a yellowish discharge, the area surrounding the areole darkens and the veins become prominent. Frequently the condition is scarcely if at all to be distinguished from that of the breasts of pregnant women during the first three months.

Menstruation is usually re-established in primipare about the sixth month after delivery. During the second lactation it reappears about the eighth or twelfth month, and during the third or fourth lactation menstruation seldom occurs. The recurrence of menstruation does not necessarily suggest a cessation of nursing, although the quality of the milk is sometimes impaired.

Jeannette Winter Hall.

MENTHODOL is a mixture of four parts of menthol with one of iodol, fused together and moulded into cones and sticks. It is rubbed over a neuralgic area, or on the forehead for headache.

W. A. Bastedo.

MENTHOL.—(C₁₀H₁₈OH). A stearopten (having the characters of a secondary alcohol) obtained from the official oil of peppermint, or from Japanese or Chinese oil of peppermint (from *Mentha arvensis* De C., vars. *piperascens* and *glabrata* Holmes). It is separated from these oils by the action of cold. The enormous extent to which this substance has been adulterated renders attention to the following official description a matter of importance.

Colorless, acicular, or prismatic crystals, having a strong and pure odor of peppermint, and a warm, aromatic taste, followed by a sensation of cold, when air is drawn into the mouth.

Menthol is only slightly soluble in water, but imparts to the latter its odor and taste. It is freely soluble in alcohol, ether, chloroform, carbon disulphide, or glacial acetic acid.

It melts at 43° C. (109.4° F.) to a colorless liquid, boils at 212° C. (413.6° F.), and volatilizes slowly at the ordinary temperature.

When it is triturated with about an equal weight of camphor, thymol, or chloral hydrate, the mixture becomes liquid.

Its alcoholic solution is neutral to litmus paper, and deviates polarized light to the left.

If a little menthol be heated in an open capsule, on a water-bath, it should gradually volatilize without leaving any residue (absence of wax, paraffin, or inorganic substances).

If a few crystals of menthol be dissolved in 1 c.c. of glacial acetic acid, and then three drops of sulphuric acid and one drop of nitric acid be added, no green color should be produced (absence of thymol).

Most of the menthol of commerce is the Japanese variety. The surface is usually moistened with retained oil. When brought in contact with the tissues it acts as a local vascular stimulant and produces a sensation of heat and burning. When its application is prolonged, it deadens the sensibility of the nerve terminals and acts as an anesthetic. This local effect may be very marked but it does not produce any corrosive action. When administered internally it is a diffusible stimulant, increasing the vascularity and tone of the mucous membrane. Its stimulant action extends to the general circulation, increasing the force of the heart's action and improving the vascular tension. Menthol is also an active antiseptic, but is not available for ordinary use on account of its insolubility in water.

As a local application menthol is of service in neuralgia, myalgia, pruritus, and other painful affections. It may be applied in its pure state in the form of cones; or as an ethereal or alcoholic solution, in strength varying from ten to fifty per cent. Its combinations with other analgesics, as chloral and camphor, are very valuable for all superficial neuralgias.

It is rarely administered internally except for its local stimulating and antiseptic action upon the stomach and intestines. It has been given for atonic conditions accompanied by much flatulence. As an anti-emetic it has been recommended particularly in the vomiting of pregnancy. The dose for internal use is from half a grain to three grains, which may be administered in cachets, or in solution in oil or spirits. The following combinations form a permanent mixture: menthol, 3 ij.; alcohol, 3 i.; glycerin, 3 i.; syrup, 3 i.

Menthol has received much attention in the treatment of nasal and pulmonary affections, on account of its local action. A few crystals warmed in a vessel may be inhaled, or a few drops of a concentrated solution may be evaporated and inhaled. Eucalyptol, thymol, resorcin, and many similar drugs may be combined. As it vaporizes at 109° F. it is easily employed by means of an inhaler placed in hot water. Solutions in oil or ether may be applied directly to the mucous membrane of the nose or throat. In this way it has been recommended in hay fever and in laryngeal phthisis. A five- or ten-per-cent. solution should be commenced with. In pulmonary phthisis its intratracheal use has been adopted, one drachm of a ten- or twelve-per-cent. solution in oil being introduced into the trachea twice daily. Its application has also been advised in the treatment of diphtheria.

Beaumont Small.

MENTHOL-IODOL is iodol containing one per cent. of menthol.

W. A. Bastedo.

MENTHOPHENOL is a thick, transparent fluid made by triturating one part of phenol with three parts of menthol. It is an antiseptic, and locally somewhat anesthetic to ulcers and burns, and has been used as a counter-irritant. Fifteen drops in a glass of warm water makes an antiseptic wet dressing or mouth wash.

W. A. Bastedo.

MENTONE (MENTON), FRANCE.—Of the famed winter health resorts of the beautiful Western Riviera, Mentone is perhaps the most typical as well as one of the most attractive. It is five miles east of Monaco and fifteen (by rail) from Nice. Like all the Riviera resorts, Mentone consists of a narrow strip of land on the coast shut in by encircling mountains, rising higher and higher

as they recede from the sea. It occupies the projecting central point of a shallow bay formed by Cap S. Martin, on the west, and Cap de la Murtola, or Mortola Point, on the east. "From cape to cape this bay is about four miles across, and has a southeasterly aspect." The projecting ridge upon which the town is built divides this bay into two lesser bays, the east, which is the smaller, and the west. The climatic characteristics of these two portions of Mentone, the east and the west bays, differ materially, principally on account of the position of the mountains. In the eastern bay portion the mountains and hills come very close to the shore, leaving scarcely any room for the town, which "consists of little more than a road and a row of houses and hotels squeezed in between the base of the mountains and the seashore." Moreover, there are no considerable valleys, bringing cool air down from the mountains, as is the case in the western bay portion. In consequence of this topographical difference the temperature of the east bay is several degrees higher than that of the western bay. In this latter portion the mountain wall is about three miles distant from the town, permitting a greater extent inland for the houses. There are also spurs running down to the coast at right angles to the mountains forming valleys, of which there are three principal ones. From this it follows that the shelter is less perfect, there is more wind, and the temperature is lower than in the east bay. "Mentone's capabilities as a health station are not a little augmented by this provision of two varieties, two modifications, of the Riviera climate within a radius of less than a mile; and a knowledge of the points of contrast between these east and west bay climates is necessary in selecting the place of residence for an invalid.

In the side valleys, before mentioned, grow luxuriantly the orange and lemon, interspersed with figs, olives,

trict are the two great resorts for visitors, the "Promenade du Midi" skirting the sea, and the "Jardin Public." Here from eleven to two o'clock the invalids and their friends take their sun and air bath, fanned by the mid-day sea breeze which frequently blows. The old town in the east bay is picturesque with its winding and narrow streets. "The Mentonian amphitheatre is virtually a great natural hothouse; the east bay is the warmer half of the hothouse; the eastern portion of the east bay, the district called Les Cures, is the warmest corner of all" (Richards). The population of Mentone is 94,000, largely augmented by the winter visitors. There are abundant and excellent accommodations of varying prices, though as a rule the Riviera is rather expensive. The drainage is very good, and, so far as the writer's experience goes, so is the water supply. All the visitor's and invalid's wants can be well supplied at Mentone; there are good shops, good doctors and dentists, and several English churches. The excursions about Mentone are most attractive and varied, and can be made either by carriage or afoot. "The best walks and drives are those along the coast extending from Cape St. Martin to the Italian frontier." Mentone can be reached from London in twenty-eight hours, and from Paris in nineteen and a half.

The characteristics of the Mentone winter climate are thus summarized by Dr. Bennet, who spent many years there: "Absence of frost, prevalence of northerly winds, moderate dryness of the atmosphere, complete absence of fog, paucity of rainy days, clearness and blueness of sky, general heat and brilliancy of sun, cool night temperature, a bracing coolness of the atmosphere generally, and a mean difference of 12.8° F. only between the day maximum and the night minimum."

The meteorological table, on the following page, from



FIG. 3334.—Mentone; the Southern Promenade.

and many other trees and shrubs of a semitropical nature. The time to see nature in her most luxuriant garb is unfortunately when the "season" is over, in the late spring and early summer. The writer, on a visit in June to this place, found a deserted village so far as visitors were concerned, but nature at her best, resplendent in the beauties of a semitropical vegetation. In the west-bay dis-

the article on *Mentone* by Dr. Richards in the former edition of the HANDBOOK gives various climatic data.

The average temperature at Mentone, from October to May inclusive, is 55.5° F. In the east bay it is 56.25° F.; in the west bay it is 54.86° F. The absolute minimum temperature at Mentone during ten consecutive winters, according to Dr. Yeo ("Climate and Health Re-

METEOROLOGICAL TABLE OF MONTHLY MEANS FOR MENTONE. (FROM SPARKS' "RIVIERA.")

Authority and Number of Years.	October.	November.	December.	January.	February.	March.	April.	May.
Mean temperature of West Bay, Freeman, 1863-66	62.2	57.2	51.7	49.2	50.3	51.5	58.6	63.1
Mean temperature of West Bay, Andrews, 1873-78	54.1	49.68	49.05	48.63	50.71	56.69		
Mean temperature of East Bay, Farina and Castillon, 1861-77	65.3	55.3	50.55	49.9	50.6	53.9	58.7	65.76
Mean Maxima, Andrews, 1873-78	61.91	58.01	57.51	57.39	59.38	65.25		
Mean minima, Andrews, 1873-78	46.38	41.51	40.63	39.69	42.03	47.97		
Mean daily range, Freeman, 1863-68	10.7	9.9	9.2	10.5	11.4	11.8	12.5	
Barometer, Freeman, 1863-65	29.84	29.91	30.06	30.03	29.86	29.71	30.01	
Relative humidity, Freeman	72.0*	75.0*	72.0*	72.0*	70.0*	74.0*	74.0*	
Rainfall, Freeman and Andrews, 1863-66 and 1873-78	6.37‡	3.73‡	3.475‡	1.242‡	1.45‡	3.69‡	3.23‡	1
Highest fall in each month (corresponding period)	13.52	6.94	7.43	2.17	3.26	6.33	6.8	3.9
Lowest fall in each month (corresponding period)	1.55	1.05	1.2	1.03	1.31	1.69	1.68	
Rainy days (corresponding period)	8.0	10.1	7.25	5.1	5.66	9.55	9.33	11.0
Rainy days, De Bréa, 1851-60	9.0	9.4	5.9	7.9	5.5	6.1	7.3	9.3
Very fine days, De Bréa, 1851-60	16.1	15.4	19.5	17.3	16.3	17.7	15.3	15.4
Very fine days, Freeman and Stiege, 1863-68, and Sparks, 1875-78	15.0	15.6	14.8	15.0	12.7	15.0	15.0	
Calm days, Stiege, 1863-68	22.0	23.0	19.0	20.0	18.0	18.0	18.0	
Windy days, Stiege, 1863-68	8.0	8.0	12.0	8.0	13.0			

* Two years. † Three years. ‡ Five years. § Eight years. | Four years.

sorts") was 25.5° F. and the absolute maximum 77° F. The mean daily range of temperature was found to be least in December, 9.2°, and greatest in April, 12.5°. The average rainfall from October to May inclusive is 25.61 inches; but if October and May are omitted, it is only 17.87 inches for the remaining six months. The corresponding number of rainy days is 63.8, October and May included, and 45.15 excluding these months. January and February have the smallest amount of rainfall and the fewest rainy days. October is the wettest month. "The average number of very fine days for the six winter months, from November to April inclusive, seems to be about 94.5, rather more than fifteen in each month" (Dr. Yeo). The number of fine days for the year—days on which the sun shines without clouds—is 214; the number of days on which the sun shines with clouds is 45, and the number of days on which the sun does not shine, but which are without rain, is 24. The relative humidity for the year is between 70 and 72 per cent., a little higher than that of the other Riviera resorts, caused by the absence of the dry land winds which are shut off by the neighboring elevations. In regard to the winds, the *bête noir* of all the Riviera resorts, Mentone enjoys greater immunity from them than any other spot on this coast, owing to its better protection. The northwest wind, or mistral, is less common than at some other points on the Riviera, and when it occurs it is most felt on the west bay; while the east bay is scarcely touched by it. Although the prevailing winter winds are from the north, such is the protection from the mountains round about Mentone that they are not felt there, and do not touch the Mediterranean until a point is reached several miles out from shore. "Of other winds," says Burney Yeo, "the east wind is felt chiefly along the shore, and shelter from this wind can always be obtained in the walks and drives along the valleys behind the west bay. South, southwest, and southeast winds, all coming across the sea, have free access to Mentone, but these are not, as a rule, cold winds, although they may blow at times with considerable violence. From the north wind it is completely protected." "In October and the early part of November," says Dr. Bennet, quoted by Richards, "southwest winds prevail, bringing the heavy autumnal rains. Then the north winds gain the upper hand, and usually, but with occasional temporary exceptions, reign until the spring months, March and April. At this epoch the southwesterly and southeasterly winds seem to have the ascendancy, giving rise to the gales and rains of March." In conclusion Dr. Richards remarks that there is always wind enough for health, seldom enough to cause discomfort; and that upon the occasions when too strong or too chilly a wind is felt along the shore line, it may be always escaped by the invalid who will take shelter in some one of the torrent valleys opening into the west bay.

"For those," says Dr. Yeo, "who especially desire warmth and shelter, and a quite indolent life, with plenty of sunshine, and sun heat, and who like to live close to the sea, there is the mild and sedative climate of the east bay." "For those, on the other hand," he continues, "who find an advantage from a more bracing air, who like to have the sun heat tempered by cooling winds, who cannot feel at ease without ample space and room enough to wander free over hill and valley, or who are irritated by the monotonous beat of the tideless sea against the shore,—for those there is the west bay with hotels and villas, some on the seashore, some a little removed from it, some . . . far removed from the sea and high up on the hillside."

The class of cases for which the climate of Mentone can be recommended comprises those who require a warm, sunny atmosphere, and who do best in mild winter weather; the aged, weak, sickly children, scrofula, laryngeal diseases, chronic bronchitis, gouty and rheumatic affections, anemia, convalescence from acute disease, and some favorable forms of pulmonary tuberculosis, although in the writer's opinion, as expressed in the article upon Cannes in this HANDBOOK, the climate of the Riviera is not the most favorable one for the arrest or cure of this disease, notwithstanding the conviction of Dr. Bennet uttered twenty-five or thirty years ago, "that there is a greater probability of the disease (consumption) being arrested, of life being prolonged, and even of a cure being eventually effected if the patient can winter in the south than if he remains all winter in the north of Europe." Since this was written, however, the experience at Davos and at the various sanatoria in Germany seems to have conclusively demonstrated that the systematic use of pure cool air in elevated regions produces better results than mere warm moist air at sea-level. In either case, however, as Dr. Bennet himself says, climate is not alone to be relied on, but the patient must be under constant and judicious medical management. When such medical supervision is available, and particularly if it is exercised in a sanatorium, almost any climate which affords pure air and plenty of sunshine may prove beneficial to the patient. It is said, however, that the climate of Mentone is not suited to certain nervous maladies such as epilepsy, neuralgia, and the violent forms of hysteria.

At Uorbio, near Mentone, is a winter sanatorium, opened in October, 1900. It has fifty-three rooms for patients, and tuberculous subjects of various nationalities are treated there. *Edvard O. Otis.*

REFERENCES.

- Henry Bennet: Winter and Spring on the Shores of the Mediterranean.
- J. Burney Yeo: Climates and Health Resorts.
- Cohen: System of Physiologic Therapeutics, vol. IV., Book I.
- F. Parkes Weber: Climatology.

J. A. Lindsay: Climatic Treatment of Consumption.
S. E. Solly: Medical Climatology.
Thomas Linn: The Health Resorts of Europe.
C. B. Black: The Riviera.
Ziemssen's Handbook of General Therapeutics.
Hermann Weber: The Treatment of Disease by Climate.

MERAN is situated in the Austrian Tyrol, about forty-five miles south of Innsbruck and twelve miles north of Botzen, in a well-sheltered valley, at an elevation of about 1,100 feet above the level of the sea. It is reached from London, via Innsbruck-Botzen, in forty-four hours. The population is 3,000, and the number of visitors is 10,000.

Meran is a health resort of a threefold character, and has three distinct seasons, which, combined, embrace nearly the entire year, with the possible exception of the mid-summer, when the weather is sometimes excessively hot. The three varieties of treatment practised here may with advantage be considered separately.

A WINTER HEALTH RESORT.—The town of Meran, with the neighboring villages of Obermais, Untermais, and Gratsch, lies in the beautiful Etschthal, well protected from the north, east, and west, and exposed only to the southerly winds. The mean annual temperature is about 54° F. It is colder here in winter than it is in most of the health resorts of Southern Europe, but the place has the advantage of a very equable temperature, and of a very unusual number of clear or cloudless days. Although frost and snow are not unknown, the cold is never intense nor of long continuance, and there is a great deal of warm sunshine. The valley is so well protected from the cold winds that the invalids and other visitors are able to take exercise in the open air nearly every day. The air, in addition to being mild and of an equable temperature, is very dry, and the rainfall is comparatively slight, there being an average of only eleven rainy days during the winter. The following table, arranged from figures given by Knauthe, in the article on Meran in "Eulenburg's Real-Encyclopädie," shows the average temperature for the fall and winter months. These temperatures are not given as strictly accurate, but they will serve to indicate approximately the winter climate of this resort.

	Morning.	Noon.	Evening.
September.....	58.3° F.	69.8° F.	64.4° F.
October.....	51.8	60.8	57.4
November.....	37.2	45.7	37.4
December.....	30	37.2	29
January.....	29	36	29
February.....	30	40	34.7
March.....	39.6	54.3	45.5

Vegetation begins again in February, and the winter, strictly speaking, is limited to the three months of November, December, and January, November being the only one in which the weather is at all apt to be disagreeable.

By reason of the climatic advantages just enumerated,—viz., a rather cool, bracing atmosphere combined with equability of temperature, plenty of warm sunshine, and absence of moisture.—Meran is frequented during the winter by numbers of invalids suffering from chronic catarrhal affections, especially those accompanied by profuse mucous expectoration from the respiratory passages. As a further indication it may be mentioned that invalids of this class who seem to derive the greatest benefit from a stay at this resort are those of a scrofulous diathesis, and of a languid or even lazy disposition. Persons suffering from pulmonary phthisis in its early stages are often much benefited by a winter at Meran, but a residence here is said to be contraindicated for those in whom the tuberculous process has advanced to softening and breaking down of the lung tissue, with the formation of cavities. People of an excitable, nervous temperament, who are suffering from insomnia and nervous tension caused by overwork, anxiety, or excesses of any kind, often experience a great amelioration of their condition during a

few weeks or months spent in the mild, dry, equable climate of this valley. The winter season extends from the first of November, the end of the grape-cure, to the first of April, the beginning of the whey-cure season.

THE WHEY CURE.—Whey is made from cows' and goats' milk chiefly. It consists of the serum of the milk remaining after the separation of the fat and casein, and is little more than a watery solution of sugar of milk and of various salts, chiefly chlorides and phosphates of sodium and potassium. It is made by adding rennet to milk warmed to a proper temperature, and precipitating the suspended casein by the addition of a small amount of albumen. The whey used at Meran is prepared at a neighboring village, and brought thence, every morning, in bottles kept in warm water (from 97° to 100° F.) so as to prevent the temperature of the whey from falling below the prescribed degree during its transport. The whey is dispensed in a large building which resembles the Trinkhalle or pump-room of a German spa. The usual time for drinking the whey is from six to eight o'clock in the morning. A large glass is taken about once in fifteen minutes until from four to seven have been consumed, the drinkers meanwhile walking about slowly. About an hour after the last glass has been drunk, a light breakfast, consisting usually only of coffee and a roll, is taken. No acids nor uncooked food are allowed during the whey treatment, and milk, butter, and cheese are also forbidden. These raw-milk products are stricken from the dietary, because they contain precisely the ingredients of the milk which have been abstracted in the production of the whey, and it is regarded as irrational to give with one hand what has been taken away with the other. The whey is taken pure, or it is mixed ("cut," as it is called) with some mineral water, or the expressed juices of certain herbs are added.

THE HERB-JUICE CURE.—This is a mode of treatment practised at many health resorts on the Continent, especially in various parts of Germany and Austria. The juices of various herbs, usually wild plants growing in the neighborhood, are extracted from the fresh plant by pressure, without the aid of water, and are then drunk by the patient. The juice of one herb alone is taken, or those of several herbs are mixed together and prescribed, according to the supposed indications of the individual case. The following are some of the plants from which the juice is expressed and drunk, with their alleged therapeutic properties: *Achillea millefolium*, milfoil or yarrow—a remedy which has been used in flatulent dyspepsia, and also by the Italian peasants in intermittent fever. *Allium sativum*, garlic; diuretic, diaphoretic, expectorant, and alleged also to be emmenagogue. *Apium petroselinum*, parsley; diuretic and aperient. *Cardamine pratensis*, meadow cress; said to possess antispasmodic properties. *Fumaria officinalis*, called also *Herba melancholicifuga*, fumitory; has a popular reputation in the treatment of eczema and various other skin affections. *Glechoma hederacea*, ground ivy; expectorant and tonic. *Leontodon taraxacum*, dandelion; diuretic, aperient, and an hepatic tonic. *Menyanthes trifoliata*, water trefoil; has an intensely bitter taste, is tonic, diuretic, and cathartic. *Tussilago farfara*, coltsfoot; expectorant and demulcent, a popular remedy in coughs. *Veronica beccabunga*, water speedwell; supposed to be alterative and tonic. Many other plants are also used, each locality drawing upon the flora of its own neighborhood.

At Meran the most commonly used herbs are the dandelion, water trefoil, speedwell, and cress. The juices are usually prescribed in conjunction with the whey treatment. The whey is taken in the morning, in the manner described, and in the evening, between five and seven o'clock, from half an ounce to two ounces of herb juice are drunk. At the beginning of a course of whey and herb-juice treatment, the patients are made to rest most of the time, but after a week or so they begin to exercise according to a fixed daily routine, often counting the steps taken, as is the custom in so many establishments of this kind.

Patients suffering from chronic gastritis, certain forms

of dyspepsia, hepatic congestions, anemia, and chlorosis, are not infrequently greatly benefited by the fine climate, and by the regular mode of living enjoined upon those who submit themselves to the whey cure. Patients with respiratory catarrhs or incipient phthisis, who have passed the winter at Meran, often remain in the spring to take a course of the whey treatment. The season for the whey cure extends from the first of April to the middle of June, although by some it is extended through the summer, until the grape-cure season begins.

THE GRAPE CURE formerly enjoyed a greater reputation as an efficient therapeutical measure than it does at present, but it is nevertheless still employed to a considerable extent. Grape juice contains a varying proportion of grape sugar, vegetable albumen, and a number of organic acids existing alone or in combination with inorganic bases. The immediate effects of the ingestion of a large quantity of grapes are a little lightness of the head and slight dyspeptic symptoms, followed soon by rather active movement of the bowels and increased diuresis. This action on the bowels tends to reduce the blood tension in the internal organs, especially those in close anatomical relation to the intestinal tract.

At Meran the grapes are eaten in the vineyards or in the large building, resembling an ordinary German Trinkhalle, where, earlier in the season, the whey is drunk. The daily dose of grapes is from two to four pounds in the morning, before breakfast, and about one pound after each of the two principal meals. The season extends from the first of September to about the end of October.

The grape cure is recommended in the treatment of habitual constipation, hemorrhoids, passive congestion of the abdominal viscera, some forms of chronic diarrhoea and dysentery, cardiac troubles, gout, chronic bronchitis, and even commencing pulmonary tuberculosis. Those who intend to pass the winter at Meran, because of threatened or beginning lung troubles, are often advised to go there a little before the regular winter season begins, in order to take a course of the grape cure.

In addition to the therapeutic methods of which mention has just been made, Russian baths and mud-baths are much used, and fresh milk or kumyss is employed to a considerable extent throughout the year. There are also electric baths, massage, the Terrain Kur, and the compressed-air treatment by the use of pneumatic air chambers.

Meran is a most attractive place for the ordinary tourist in search of pleasure, as well as for the invalid seeking health. It lies in a beautiful valley, and in the neighborhood many agreeable walks may be taken to points affording a view of picturesque scenery, or to the numerous castles, many of them in ruins, for which this part of the Tyrol is famous. A large dike, erected to protect the town from the destructive inundations which, in former times, not infrequently caused serious damage to property and loss of life, is the favorite promenade for the inhabitants and visitors. The hotels and boarding-houses in Meran are numerous, and are, as a rule, clean and well kept, while the cost of living is not very high. At the casino may be found newspapers from all the leading countries. There are numerous churches, and persons of the Catholic, Protestant, or Hebrew faith will find opportunities to worship according to their own belief; there are, also, services for the accommodation of English-speaking Protestants. There are many competent resident physicians in the place.

[From the first edition of the HANDBOOK—revised by Edward O. Otis.]

MERCURIALIS. See *Euphorbiaceæ*.

MERCURY.—I. GENERAL MEDICINAL PROPERTIES OF COMPOUNDS OF MERCURY.—All mercurials capable of gaining entrance into the circulation are competent for a certain peculiar influence over nutrition, as follows: In small dosage the tendency is, as in the case of iron, to increase the quantity of hæmoglobin present in the blood

—an effect trifling in the case of a person in good health, but distinctly marked in an anæmic syphilitic patient. In the syphilitic, furthermore, mercury tends to shorten the course and lessen the severity of the eruptions and inflammations due to the disease. In large dosage, or in too rapidly pushed small dosage, the effects become deleterious. The albumin and fibrin of the blood are lessened in amount, coagulability is impaired, and degeneration and absorption of tissue, and inflammation of certain glands and other structures follow. These phenomena, constituting general mercurial poisoning, may lead to long-continued impairment of health, or even to death. In the medicinal induction of the constitutional mercurial influence, or *mercurialization*, as it is commonly called, it may be necessary, for the gaining of the full therapeutic benefit, to push the dosage until the verge of poisoning be reached, but never further. The symptoms of incipient mercurial poisoning thus become of clinical importance, and are as follows, taking their character from the fact that the salivary glands and buccal structures are peculiarly obnoxious to the poison: *Subjectively*, there are noticed a metallic taste in the mouth, and a little soreness in the sockets of the teeth on bringing the jaws sharply together. *Objectively*, the gums are observed to suffer from a slight inflammation, of which the signs are, first, but very transiently (often escaping notice altogether), an unnaturally white appearance from unduly rapid proliferation of epithelium. This aspect soon gives way to the classical picture of red, swollen, and spongy gums, and along with the development of this condition begin an increased flow of saliva and a little tenderness, perhaps even swelling, of the parotid glands. Simultaneously, there may be a deranged stomach, relaxed bowels, and general mild malaise with a trifle of fever, and unnatural susceptibility to "catching cold." All these symptoms disappear readily and completely on stopping the medication. Beyond them, the effects belong wholly to the category of the poisonous, for the discussion of which see the following article.

An important point of obvious clinical bearing is that in childhood ages—and the younger the more marked—the symptoms of incipient poisoning differ from the picture just given in that the salivary apparatus is comparatively insensible to the mercurial irritation. In other words, *children* are not easily *salivated* in the strict etymological meaning of the word. But while this is literally so, it does not follow, and in point of fact is not true, that children are not proportionately as much *blood-poisoned* by mercury as are adults. Rash over-mercurializing of children, because of the false security drawn from the non-appearance of salivation, may therefore lead to disastrous effects.

The deranging effect of mercury, as thus sketched, upon the human organism, is but a single exemplification of a general tendency which the metal has to poison all living things, animal or vegetable, high or low in the organic scale, alike. Few poisons, indeed, are so universally and so intensely obnoxious to life generally as is mercury. To the low organisms especially, that are associated with the processes of putrefaction and fermentation, mercury is powerfully poisonous, and the soluble mercurial preparations are therefore highly antiseptic.

For discussion of the *absorption and elimination* of mercury, see article on *Mercury, Poisoning by*.

As regards *local effects* there is great difference among the individual mercurials. In general the *mercuric* compounds are more or less decidedly irritant, though not astringent; while the *mercurous* compounds and the preparations containing mercury in the metallic state, are either quite bland or only mildly irritant. In the alimentary canal, all mercurials show a decided tendency to relax the bowels, which, with the large doses possible with the milder mercurials, may develop into full purging. In such case the stool are mucous in quality, and are notable for the considerable amount of bile which they contain. By the very virtue of this purgative effect a mercurial purgative dose is itself hurried along the intestines and discharged per anum before time has sufficed