

taste. Benzoic acid sublimes from it. Five parts of warm alcohol should dissolve nearly all of it, if pure.

Siam benzoin is packed in similar boxes, but consists of a porous mass of tears only, loosely cohering or separate. These tears are known in trade as "marbles" or "almonds" and the respective grades are known as "large" or "small marbled." The outer surface of these tears becomes of a darker yellow or brown than the Sumatra, but they also are white internally. They are much more fragrant, reminding one somewhat of vanilla. This variety is much more expensive than the Sumatra, and is little subject to adulteration.

Penang benzoin was a very highly valued variety of Sumatra, but is now obsolete in commerce.

The principal constituent of benzoin, as to percentage, constituting almost the whole of it, is resin, but its active constituent is benzoic acid, which see. There is a trace of cinnamic acid and a little volatile oil.

Action and Uses.—So far as the medicinal action and use of benzoin is concerned, it is identical with benzoic acid, in proportion to its percentage. Otherwise it is used in pharmacy for perfuming medicinal substances or for rendering them antiseptic, and very largely in the manufacture of perfumery. The official preparations are the *Adeps Benzoinatus*, or *benzoinated lard*, which contains 2 per cent. of it, the tincture, of 20-per-cent. strength, which is the distinctly medicinal preparation, the dose 2 to 4 c.c. (fl. 3 ss. to i.), and the compound tincture or "Friar's Balsam," containing 12 per cent. of benzoin, 8 per cent. of storax, 4 per cent. of balsam tolu, and 2 per cent. of purified aloes, the dose being the same as of the last.

Henry H. Rusby.

BENZO-IODO-HYDRIN.—Glyceryl-chlor-iodo-benzoate; chlor-iodo-benzoyl glycerin ester— $\text{CHC}_6\text{H}_4\text{CO}_2\text{H}_2$. It is a product of the interaction of benzoyl iodide and epichlorhydrin, and is a yellowish-brown fatty mass, insoluble in water and glycerin, and soluble in alcohol, ether, and petroleum oils. At the boiling point of water it is decomposed, iodine being liberated. It is claimed that this substance possesses the same value as potassium iodide without any tendency to produce iodism or to derange the digestion. Two grains of benzo-iodo-hydrin may be given with sixty grains of sugar, this dose being equivalent to fifteen grains of potassium iodide.

W. A. Bastedo.

BENZO-NAPHTHOL, BETA-NAPHTHOL BENZOATE— $(\text{C}_{10}\text{H}_7\text{O}, \text{C}_7\text{H}_5\text{O})$. Obtained by the reaction that takes place between beta-naphthol and benzoic acid. It is a whitish, crystalline powder, very slightly soluble in water, freely soluble in chloroform and alcohol.

It is recommended as a substitute for salol or betol, having the advantages that benzoic acid possesses over carbolic or salicylic acid. When introduced into the intestines it breaks up into beta-naphthol and benzoic acid.

The former is not absorbed and remains in the intestines until excreted; the latter also exerts a local antiseptic action, but ultimately is absorbed and eliminated with the urine.

This is one of the newer intestinal antiseptics that have secured a favorable recognition. Its continued use has added to its repute, and it may now be looked upon as a remedy of decided value. It has proved of value in ordinary fermentative changes in the intestine, and in the diarrheas of children and adults, both acute and chronic. Reports show it to be of particular use in chronic conditions in which there are follicular disease and ulceration. In an epidemic of acute dysentery in Cuba it proved of marked value, the death rate in those cases in which it was employed being only two per cent., while under other methods of treatment it was nine per cent.

The ordinary dose is given as from five to ten grains three or four times a day, but when a more decided action is desired a larger dose must be administered—forty grains a day to children and from sixty to ninety grains to adults. No ill effects have been reported from the employment of this remedy.

Beaumont Small.

BENZO-PHENONEID.—Tetra-methyl-diapsido-benzo-phenoid. A non-irritating though powerful germicide, obtained by the decomposition of an aniline dye. It is similar to pyoktanin, is soluble in 100 parts of water, and is not caustic. Like yellow pyoktanin it has been used in corneal ulcers, pustular keratitis, and various ulcerative lesions of the skin and mucous membranes.

W. A. Bastedo.

BENZOYL-AMIDO-PHENYL-ACETIC ACID.— $\text{CHC}_6\text{H}_4\text{CO}_2\text{H}_2\text{NHC}_6\text{H}_5\text{COOH}$. Amido-phenyl-acetic acid is dissolved in a twenty-five-per-cent. solution of sodium hydroxide, warmed, and benzoyl chloride added; this mixture is then poured into dilute hydrochloric acid, and the resulting precipitate washed and dried. It is in white, needle-shaped crystals, slightly soluble in water, and forming with the alkalies soluble salts. Both the acid and its salts are used as antiseptics in the alimentary tract, and they promise to be of value when putrefaction is taking place in the small intestine, with headache, indicanuria, etc. Clinical data are wanting.

W. A. Bastedo.

BENZOYL-EUGENOL.— $\text{C}_6\text{H}_5, \text{C}_2\text{H}_5, \text{OCH}_3, \text{OCOC}_6\text{H}_5$.—a combination of benzoic acid and eugenol, combining the antiseptic properties of oil of cloves with those of benzoic acid. It occurs in large colorless prisms or in small needle-shaped crystals, is odorless and tasteless, insoluble in water, and freely soluble in alcohol, ether, chloroform, and acetone. It is an intestinal antiseptic, and being to some extent eliminated by the lungs, it acts as a stimulant and antiseptic to the respiratory tract. So far its use has been confined to cases of pulmonary and intestinal tuberculosis. Dose, gr. viij. to xv. in powder or capsule, or mixed with milk.

W. A. Bastedo.

BENZOYL-TROPEINE.— $\text{C}_8\text{H}_9, \text{C}_6\text{H}_5\text{CONO}$. Tropine, the mother substance of atropine, is heated to 100° C. with benzoic acid and dilute hydrochloric acid. The resulting silky needles constitute benzoyl-tropeine. They are insoluble in water, have a strongly basic reaction, and with acids form soluble salts. This compound seems to stand chemically between cocaine and atropine, and it partakes of the nature of each. Thus Filehne found it to be a valuable local anesthetic when applied to the eye, it at the same time causing dilatation of the pupil. The soluble salts may be used in one to four per-cent. solution.

W. A. Bastedo.

BERBERINE.— $2(\text{C}_{20}\text{H}_{17}\text{NO}_4 + 9\text{H}_2\text{O})$. An alkaloid obtained chiefly from *Berberis vulgaris* L., but very common in other plants, especially in the families *Berberidaceae*, *Ranunculaceae*, and *Menispermaceae*. It occurs in yellow, needle-shaped crystals, or as a yellow crystalline powder, and is soluble in alcohol and hot water. It forms numerous yellow crystalline salts. It is not poisonous. Aside from its effects as a simple bitter, its physiological action is rather weak. It is somewhat stimulant to unstriated muscular fibre, yet it causes a fall of blood pressure and slightly lowers the temperature. Large doses are irritant and may produce purgation. It is usually given as the sulphate. The dose as a tonic is 0.03 to 0.06 gm. (gr. ss. to i.). Doses of ten to fifteen times these amounts are antiperiodic.

H. H. R.

BERBERIS L.—BARBERRY. A genus of the family *Berberidaceae*, containing more than one hundred species, very widely distributed throughout the north temperate zone and extending along the mountains into and through the tropics. They are beautiful erect or prostrate, yellow-flowered shrubs or small trees, the evergreen leaves mostly pinnate and usually spinulose-toothed. All parts are permeated by the alkaloid *berberine*, the largest percentage occurring in the bark, and more particularly in that of the root. In most places where the species grow they have gained a high reputation as bitter tonics.

B. vulgaris L. is an erect species of Europe and ad-

acent Asia, naturalized to some extent in North America, its scarlet fruit largely used in olden times as cranberries now are. Both the root and the bark have long been used medicinally as an antiperiodic, febrifuge, and tonic. Besides the berberine, it contains the alkaloids oxyacanthine and berbamine. Oxyacanthine is at first white, but turns yellow on exposure to light. The two last-named alkaloids apparently do not exert much influence, as the action of berberis is practically that of its berberine.

B. aquifolium Pursh, Oregon grape root or mountain grape, is a low, diffuse, blue-fruited species, very abundant in the Northwestern United States. It holds a remarkable place in the esteem of the miners and mountaineers, who rely chiefly upon this and the mountain sage (*Artemisia frigida*) in the treatment of fevers. Its constituents are about the same as those of *B. vulgaris*. The root is used. Very many reports agree in attributing to this drug, in addition to the ordinary tonic properties of a vegetable bitter, a special power in stimulating nutrition. The dose of both species is 0.2 to 0.6 gm. (gr. iij. to x.). Large doses are laxative. The best form of administration is the powder, fluid extract, or tincture.

In India, *B. aristata* D.C., *B. Lycium* Royle, and *B. Asiatica* Roxb. are similarly employed.

Henry H. Rusby.

BERCK-SUR-MER.—A sea-coast village in the Department of Pas-de-Calais, France, lying upon the shore of the English Channel. This place is mentioned only in order to call attention to the seaside hospital there existing, which has accommodations for five hundred patients. Lombard tells us, in his "Traité de climatologie médicale," vol. iv., p. 604, that this hospital was established in 1870, in consequence of the excellent results in the treatment of cases of scrofula and rickets obtained at the hospital, containing one hundred beds, that had been founded at this place by the city of Paris for the use of the poor. The present hospital contains eighty beds, intended for the children of such parents as can afford to pay the small sum of one franc eighty centimes (thirty-six cents) per diem for their board, lodging, and medical treatment. The idea of founding such establishments for the benefit of poor children, the victims of scrofula and kindred diseases, appears to have originated with the Italians; and no less than thirteen such charitable institutions exist upon the Mediterranean and Adriatic shores of the Italian peninsula. The reports of these hospitals show excellent results from this most admirable and commendable charity. At Biarritz, Cette, Cannes, Arcachon, Pen Bron, Cap Breton, Hyères-Giens, and Ver-sur-Mer, as well as at Berck-sur-Mer, the French have made further provision for this class of patients.

Huntington Richards.

[There are also hospitals or sanatoria for scrofulous children on the coasts of Holland, Belgium, Denmark, Austria, Germany, Russia, and England, the one at Margate having been founded in 1796.

It is well to emphasize here the great value of seaside residence for scrofulous or tuberculous children, and the importance of such establishments as these upon the coasts of the various European countries, where at the same time the children can receive proper attention and nourishing food. In this country the example of Europe might well be followed in this respect, and many of our admirable seaside resorts be utilized for this purpose.—*E. O. O.*]

BERGAMOT, OIL OF.—OLEUM BERGAMOTTE. "A volatile oil obtained by expression from the rind of the fresh fruit of *Citrus Bergamia* Risso et Poiteau (fam. *Rutaceae*)" (U. S. P.). The bergamot tree is a small evergreen, very much like the bitter orange in almost all respects, but the leaves are obovate, with narrowly winged petioles, and the flowers are smaller and fewer. It is not known in a wild state—indeed, it was not known at all until about two hundred years ago, when it appeared in the south of Europe. There is no doubt it is a hybrid

or cross of some kind, probably between the bitter orange and the lemon or citron. The fruit is about as large as a small orange, and has the same general structure. It is rounded, pear-shaped, about as broad as long, with a broad, flat, or even depressed apex; the skin is soft, smooth, yellow, and very fragrant. The pulp is sour and bitter.

Bergamots are raised in the vicinity of Reggio, in the south of Italy, and in Sicily, and the oil is exported from Messina and Palermo. This is collected mechanically by rupturing the vesicles, sometimes by the old sponge process used with oranges and lemons in obtaining their oils, but more generally now by a sort of hand-mill, into which the fruits are put whole, and rolled and rubbed against a series of knives, which cut or scrape the surface and so liberate the oil. It flows to the bottom of the mill, and out through suitable apertures. One hundred fruits yield two and a half or three ounces of the oil (Flückiger).

It is a thin, mobile, pale-green, or greenish liquid, with a very fragrant, pleasant odor, and a bitter, aromatic taste. Its specific gravity is 0.883 to 0.886, its reaction slightly acid. Its active portion is linalyl acetate. Like the essential oils in general, it dissolves readily in alcohol, chloroform, ether, and fats, and only very sparingly in water. The green color is due to chlorophyll.

The medical properties of oil of bergamot are those of essential oils in general, but it is never used internally. On the other hand, its delicious odor has made it a universal favorite in perfumes and toilet preparations. The world-renowned Cologne water has it as its principal ingredient, modified by other aurantiaceous oils. There are numerous formulæ for making it; one, formerly official as *Spiritus Odoratus*, is as follows:

Oil of Bergamot	16 parts.
Oil of Lemon	8 "
Oil of Rosemary	8 "
Oil of Lavender Flowers	4 "
Oil of Orange Flowers	4 "
Acetic Ether	2 "
Water	158 "
Alcohol	800 "

1,000 parts.

W. P. Bolles.

BERIBERI. See *Neuritis*.

BERKELEY SPRINGS.—Morgan County, West Virginia.

Post-Office.—Berkeley Springs. Hotel.

Access.—Via Baltimore and Ohio Railroad to Hancock Station; thence by Berkeley Springs and Potomac Railroad direct to springs. Trains on the latter road make close connection with all day trains during the season. The location is six miles southwest of Potomac River and Hancock Station.

These historic old springs are situated in a narrow valley, about eight hundred feet above the sea level, and issue from the base of a steep ridge rising at this point about four hundred and fifty feet above the valley. Tradition has it that the waters here were well known to the aborigines, who, although generally at war among themselves, established a standing truce around the springs, that all might avail themselves of their potent virtues. They have been known and used by the whites since 1730, and it is said they were visited by George Washington while employed with a surveying expedition in 1748. The Father of his country was so appreciative of the many attractions of the neighborhood that he afterward acquired property immediately adjacent to the principal spring, on which he erected two "comfortable and convenient houses." General Horatio Gates, Charles Carroll of Carrollton, and other well-known figures of Revolutionary days were also represented among the owners in the old town established in 1776.

The location of Berkeley is in a beautiful mountain region, covered for the most part by primeval forests, with a botanical undergrowth peculiarly rich, varied, and interesting. The scenery is wild and romantic, and the country is threaded with pleasant walks and drives in all directions. The air is pure and wholesome, and the heat during the summer months is rarely oppressive. The streams in the neighborhood are well stocked with fine game-fish, chief among them being the black bass. The forests also abound in the larger game, including deer, wild turkeys, and pheasants, which afford good sport after September 1st. The spacious hotel at Berkeley, having a capacity for five hundred guests, has recently changed hands, and has been entirely renovated and refitted. Water from the spring is supplied to each floor. All varieties of hot, warm, and cold baths are at hand, and two large plunge and swimming pools have been constructed. The springs discharge from five principal sources, all within a radius of one hundred yards. The water is clear and sparkling, and tasteless. Its temperature is 75° F., which does not vary, and the flow is about one hundred and twenty thousand gallons per hour. The following analysis was made by Prof. A. A. Hayes, of Massachusetts, in 1855:

ONE UNITED STATES GALLON CONTAINS:	
Solids.	Grains.
Calcium carbonate	5.00
Calcium crenate	3.64
Iron crenate	.08
Sodium chloride	.89
Calcium silicate	.64
Magnesium sulphate	.36
Calcium chloride	.21
Loss	.06
Total	10.88

The gaseous contents are one-twenty-eighth of the volume of the water, and are composed as follows in one hundred parts:

Carbonic acid	19.00
Oxygen	16.60
Nitrogen	64.30
Total	99.90

The water is evidently of the light saline-calcic variety. An analysis made by J. H. Dickson, chemist of Pittsburg, Pa., in 1892, shows a total of 13.49 grains per United States gallon. The qualitative results are practically identical with those above shown. The baths at Berkeley have been celebrated for many years in the treatment of gout, sciatica, and rheumatism. The internal use of the water is said to produce excellent results in chronic dyspepsia and diarrhoea. Many Virginia families take their children to this resort on account of its reputation as a restorer in rachitis and general feebleness and on account of its value in summer complaints during the period of dentition. The baths possess a marked cosmetic effect, rendering the skin soft, fresh, and elastic, and aiding in the removal of tans and freckles. There are also in close proximity two strong chalybeate springs and a sulphur spring. *James K. Crook.*

BERKSHIRE HILLS.—The hilly country lying between the nearly parallel ranges of the Hoosac and Taconic Mountains, in the extreme western part of the State of Massachusetts, has long been noted for the beauty of its scenery and for the general healthfulness of its climate, and has become, in consequence, a very favorite and fashionable resort, more particularly for dwellers in the cities of Boston and New York who desire to escape from the heat and vitiated air of a large town during the summer months. Not only do many such persons possess, in and about the chief towns of this region, handsome and attractive homes, where they reside during the warmer months of the year, but a considerable number of the wealthier class reside in this neighborhood throughout the entire course of the year.

The Hoosac range of hills vary in height between

1,200 and 1,600 feet, while Greylock, the highest peak of the Taconics, rises some 3,500 feet above the sea level. The summer climate of the Berkshire country is cool, and it is claimed that at all seasons a protection is here enjoyed against the dampness brought by easterly winds from the Atlantic and by westerly winds from the Great Lakes, a good part of their load of moisture being deposited by these winds upon the Hoosac Mountains, which form the eastern, and upon the Taconic Mountains, which form the western, boundary wall of the region.

The length of the Berkshire Hill country is about fifty miles from north to south; its breadth from east to west about fifteen or twenty miles. The following remarks on the healthfulness of the country are quoted from a paper written by Dr. J. F. A. Adams, of Pittsfield, and read before the Berkshire District Medical Society, December 27, 1883: "The registration reports show that the mortality from consumption is less in Berkshire than in any other county of the State, being but little more than half what it is in some of the maritime counties, and physicians know that of the cases which do occur here, the great majority are factory operatives, whose mode of life renders them peculiarly liable to this disease. . . . The dry atmosphere tends also to the prevention of rheumatism, which is very prevalent along the seaboard. For children the air is extremely favorable, cholera infantum, the summer scourge of cities, being rarely seen, and other summer diseases are comparatively mild. . . . Although malaria was for many years quite unknown in Berkshire, it has, since 1877, existed in a few low places adjacent to reservoirs or swamps. It is now, however, fast disappearing, and the indications are that it will soon become extinct. Those localities which under any circumstances would naturally be selected for a healthful residence have not been invaded, excepting here and there in the immediate vicinity of some marshy spot, and we need not regard this temporary and localized prevalence as an objection to taking up a residence in Berkshire. No part of the world possesses a more enchanting summer and autumn than Berkshire."

The winters in the Berkshire Hill region are decidedly cold, as the figures given below will show; but they are spoken of by the writer just quoted as being "delightful, with a dry, crisp, stimulating atmosphere, and plenty of snow." The universal testimony borne by residents and by visitors as to the purity and the bracing effect of its atmosphere would seem to recommend this region as a place of summer sojourn not only for persons suffering from incipient phthisis, but also for those whose general health has suffered impairment by overwork and by prolonged residence in the vitiated air, and amid the social and business excitement, of a great city; while for some persons who are merely "threatened with," or who, perhaps, may have already manifested in slight degree the commencing lesions of pulmonary phthisis, and who cannot go to such places as Davos, Colorado, etc., a continued residence among the Berkshire Hills, winter and summer, would be likely to check, and, perhaps, to arrest permanently, the progress of the disease. For such persons it would be a matter of no small importance that, over and above its beautiful scenery and its pure air and generally healthful climate, this particular region is superior to most similar sections of the United States, in that it presents throughout the year the attraction of good social advantages, a good percentage of its resident population being persons of cultivation and refinement.

The short tables herewith subjoined are extracted from those published in "Smithsonian Contributions to Knowledge," Nos. 277 and 222. Table A gives the latitude, longitude, height above sea level, and average monthly, seasonal, and yearly temperature of five of the chief towns or villages of the Berkshire country; Table B shows the extreme range of temperature throughout a series of years at one of these places (Williamstown); Table C presents the figures for the average rainfall, in inches, at the same place. *Huntington Richards.*

TABLE A.

Town.	Latitude.	Longitude.	Elevation.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.	Spring.	Summer.	Autumn.	Winter.	Year.	PERIOD OF OBSERVATIONS.		
																					Begins.	Ends.	Ext.
Hinsdale . . .	42° 27'	73° 08'	1,300	24.13	21.15	23.87	42.08	53.05	64.76	69.59	66.27	58.54	43.08	33.00	23.17	39.87	66.87	44.87	22.82	43.61	July, '68	Dec. '70	2 3
Lenox . . .	42° 20'	73° 18'	1,000	22.77	18.77	29.92	37.24	51.51	63.27	64.92	64.36	54.62	42.86	32.79	21.93	39.56	64.18	43.42	20.49	41.91	Jan., '37	Dec. '38	2 3
Pittsfield . . .	42° 27'	73° 15'	1,084	23.30	28.20	34.41	44.01	57.89	68.18	71.57	68.70	62.32	49.53	36.03	25.60	44.32	69.48	49.27	23.86	46.71	1851	1853	1 3
Richmond . . .	42° 27'	73° 22'	1,100	21.80	24.17	30.89	44.01	57.89	68.18	71.57	68.70	62.32	49.53	36.03	25.60	44.32	69.48	49.27	23.86	46.71	1851	Dec. '70	14 10
Williamstown . . .	42° 43'	73° 13'	686	21.63	22.92	30.93	43.60	55.78	65.56	69.66	66.52	58.81	46.92	30.34	25.28	43.44	67.25	47.36	23.28	45.33	Jan., '59	Dec. '70	36 8

TABLE B.

Town.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Period of Observations.
Williamstown	61	61	71	87	95	95	97	96	85	72	59	Year of extreme heat, 1820 *	January, 1816. December, 1870.
	-30	-28	-12	17	28	35	43	38	28	13	-3	Year of extreme cold, 1835 . . .	

* Also in 1825 and 1826.

TABLE C.

Town.	Lat.	Long.	Elev'n.	Jan.	Feb.	Mar.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Spring.	Summer.	Autumn.	Winter.	Year.	Period of Observations.
Williamstown	42° 43'	73° 13'	686	2.47	1.89	2.48	3.09	3.94	2.94	4.79	5.02	3.58	3.60	3.38	3.40	9.51	12.75	10.56	7.76	40.58	Sept., 1854. Dec., 1867.

[The admirable results obtained at the Massachusetts State Sanatorium for Consumptives at Rutland, in the centre of the state, where the climatic conditions and elevation are similar to those of the Berkshire Hills, would indicate that the climate of the latter region is a favorable one for the hygienic-dietetic treatment of phthisis during the whole year. We now know from abundant experience that cold is no disadvantage, but rather an advantage, in the open-air treatment of phthisis when there coexist pure air, freedom from high winds, abundant sunshine, and a fairly dry atmosphere. The mortality from phthisis among the inhabitants of the Berkshires is more than fifty per cent. below the average for the State.—E. O. O.]

BERMUDAS.—The Bermuda Islands lie about six hundred miles east of the North American coast, upon a coral reef which rises from the bed of the Atlantic Ocean. The entire group comprises no less than three hundred and sixty-five islands, but, with the exception of some twelve or fifteen, they are far too small to be suitable for human habitation, and of these twelve or fifteen inhabited islands, only five or six are of any considerable size. The largest island of the group is that of Great Bermuda, also called Long Island, which has a length of about sixteen miles, is but one mile and a half broad, and has an area of nine and a quarter square miles. When it is taken into account that the whole group of the Bermudas are comprised between Lat. 32° 14' and Lat. 32° 25' N., and between 64° 38' and 64° 52' W. Long., occupying, therefore, a portion of the earth's surface only 11' long by 14' wide, it is easy to understand how closely packed and crowded together these three hundred and sixty-five islands and islets must be. The coral reef underlying this little archipelago, and of which its cluster of islands are merely the most prominent portions jutting out above the surface the ocean, extends on the western side for a distance of about ten miles beyond the limits of the islands themselves, and it may well be understood that the navigation of these coasts, and the approach to the Bermudas, are extremely dangerous to

* Considerable portions of the present text have, with the author's permission, been taken bodily from the excellent article contributed by Dr. Huntington Richards to the first edition of this HANDBOOK.—E. O. O.

ships, and that the services of skilled pilots are always required by vessels entering or leaving their harbors. Nevertheless, the art of scientific engineering has so far overcome these natural obstacles that the island is now one of the chief naval stations in the British empire, to which the Bermuda Islands belong. At Ireland Island, at the entrance of Hamilton harbor, is the largest floating dock in the world, and Hamilton harbor itself, although by no means so large as that of St. George's, is nevertheless navigable to vessels of many tons' burden, and is the port of entry for the steamers of the Quebec Steamship Company, plying between Bermuda and New York. At Grassy Bay, opposite Ireland Island, is the fleet anchorage of the British North Atlantic fleet, which makes its winter headquarters here.

The porous limestone rock, underlying the thin layer of surface soil which covers the islands, rapidly absorbs all the water which falls upon them from the clouds, so that no marshes are to be found anywhere throughout the extent of the Bermudas. Streams of running water and wells are equally absent, and rain water alone constitutes the supply for drinking and for washing purposes. This water is stored in large tanks, each house having one, and no new house is allowed to be occupied until the sanitary inspector is satisfied that the tank has been constructed as directed by law.

The character of the soil is especially suited to the construction of good roadways, hard and smooth, and delightful drives abound in every direction; cycling is also a favorite amusement, and the roads are excellent for this form of outdoor exercise. The facilities for fishing and yachting are also unsurpassed. The existence of the important naval station at Ireland Island insures to the Bermudas at all seasons a resident population possessing a larger degree of cultivation than is generally to be found in places having so small a number of inhabitants and situated so far from the greater centres of civilization. Such being the character of Bermuda society, it is no surprise to learn, as we do from the writer in Appleton's "Handbook of Winter Resorts," that at the town of Hamilton "there are good schools."

The following table, condensed from an article in the *British Medical Journal*, 1897, ii., p. 1233, upon "Bermuda as a Health Resort" by E. Harvey, M.D., gives the meteorological data:

CLIMATE OF BERMUDA—LATITUDE, 32° 17' N.; LONGITUDE, 64° 47' W. PERIOD OF OBSERVATION, JANUARY 1, 1893, TO DECEMBER 31, 1896. ELEVATION OF PLACE OF OBSERVATION, 150 FEET. (Fahrenheit Scale.)

	Average mean temperature deduced from three daily observations.	Average maximum temperature per period.	Average minimum temperature per period.	Mean monthly range of temperature per period.	Mean relative humidity. Per cent.	Average number of fair days.	Average number of clear days.	Average number of fair and clear days.	Average rainfall. Inches.	Prevailing direction of the wind.	Average velocity of wind in miles per hour.
January	62.5°	67.0°	57.5°	9.5°	76	18	32	20	6.25	N.W.	10.8
February	62.2	66.4	56.9	9.5	78	19	33	22	3.98	N.W.	1.8
March	63.9	67.8	56.8	10.0	80	21	33	24	6.53	N.W.	10.2
April	66.1	69.4	59.2	10.2	79	22	34	26	3.08	S.W.	7.9
May	71.4	76.0	64.6	12.0	82	24	35	29	4.86	S.W.	7.2
June	77.7	80.9	70.0	10.9	82	23	33	35	5.59	S.	6.9
July	79.8	84.5	73.1	10.4	83	25	32	37	5.10	S. and S.W.	6.8
August	81.0	85.6	74.0	11.6	81	23	32	35	4.23	S. and S.W.	5.0
September	78.0	83.2	72.3	10.9	80	23	33	36	7.11	S.	5.9
October	73.7	77.5	69.3	8.2	80	23	33	35	6.07	N.E.	8.7
November	68.6	73.5	65.3	8.2	81	19	31	20	3.89	N.E.	9.1
December	64.8	69.0	60.8	8.2	81	18	31	19	5.84	N.	11.0
Spring	67.1	71.4	61.4	10.0	80	20	32	23	14.47	N. and S.W.	8.4
Summer	79.5	84.5	73.1	10.4	82	25	32	37	14.32	S. and S.W.	6.2
Autumn	73.4	77.5	69.3	8.2	80	23	33	35	17.07	S. and N.E.	7.9
Winter	63.2	67.8	56.8	10.0	78	19	33	24	16.08	N.W. and N.	7.2
Year	70.8	75.4	64.6	10.4	80	25	32	28	62.54	S. and S.W.	8.4

From the above table it will be seen that the mean temperature for the year is 70.8° F.; for the winter 63.2°, and for the spring 67.1° F. The four months of December, January, February, and March have a mean monthly temperature not varying more than one or two degrees for the several months. The average mean yearly range of temperature is 10° F. The relative humidity is high, the annual mean being 80 per cent. The average rainfall for the year is 62.54 inches. The prevailing winds are from the south and southwest, and, from the personal experience of the writer, are frequent and high.

The average number of fair days in the year is 255, being about the same for each month. The average number of fair and clear days is 282,—considerably over two-thirds. The winter and early spring are the seasons of resort to the islands; the summer being extremely debilitating. The characteristics of the climate, then, are equability, a high degree of moisture, a pure atmosphere free from malaria and fogs, and a large number of fair and clear days.

Although, with the exception of the very damp and warm period, comprised chiefly within the two months of August and September, the degree of elevation attained by the thermometer in Bermuda may indicate a moderate summer temperature, and although the combined features of its climate may indeed render the place an agreeable residence for many persons during the warmer portion of the year, nevertheless, in view of its great humidity, the summer climate can hardly be considered desirable for, and is little likely to be sought by, invalids dwelling in the United States. To many such persons, on the other hand, its mildness and its comparative equability may well recommend the climate of these islands for residence during the whole or during a portion of the winter and spring seasons. There is little doubt that to all persons coming to Bermuda from the severely cold and very changeable winter weather of the Northern United States, the weather of the "Isles of Summer" would appear by comparison delightfully warm and very free from sudden changes of temperature; nevertheless, lest too great and too absolute a standard of equability should be expected by such would-be refugees from our own inclement winter weather, it may be well to remind them that the Bermudas are extra- and not intra-tropical islands.

Bermuda is connected by cable with Halifax, Nova Scotia, from which it is some seven hundred miles distant. The time of passage from New York, which is also about seven hundred miles distant from the island, is from forty-eight to sixty hours, and generally, on account of crossing the Gulf Stream, the voyage is rough and disagreeable. The population of Bermuda, in 1896, was 16,000. The vegetation is of a semi-tropical char-

acter, and very luxuriant. In the season one sees everywhere the white lily fields perfuming the air with their fragrance. The oleander bush grows also in great profusion, and is used for hedges; the banana, guava, pomegranate, avocado pear, tamarind, arrowroot, and many other semi-tropical fruits are found here. The onion, potato, and lily bulb are the principal products exported. In the private gardens many tropical fruits are also found. The houses are all built from the coral rock, and are likely to be damp. The accommodations are good, especially at Hamilton, the principal town of the island and the place generally selected by the visitor for his residence. Here there are several large hotels and some boarding-houses. Thanks to the presence, during the winter months, of the British North Atlantic fleet in the harbor, and of the garrison on shore, there is no lack of social attractions. The beautiful coral sea gardens, where one sees this curious product in an infinite variety of shapes and colors; the innumerable excursions by sea and by land; the dingy boat sailing; the golf, the bathing, and the fishing; the bicycling and the yachting—all these things afford an abundance of entertainment and outdoor exercise. There is no rainy season, and hardly ever an entirely wet day. The rain quickly soaks through the porous coral soil. The inhabitants spend the greater part of their life in the open air.

In conclusion I would say that Bermuda is not the sort of place to which patients suffering from phthisis should be sent. Nor is to be selected for cases of chlorosis, general anæmia, functional debility, angina pectoris, or palpitation associated with chlorosis. "The class of invalids most benefited by this climate are those in want of mental or bodily rest, or those who should spend most of their time in the open air; cases of mental disease with excitement; the neuralgic, hysterical, hypochondriacal; those addicted to the opium habit, and those who are sufferers from insomnia or from chronic disease of brain or cord" (Harvey: *loc. cit.*). To the overworked professional or business man of our Northern cities, Bermuda is a veritable paradise. *Edward O. Otis.*

BETEL LEAF. See *Piper*.

BETEL NUT. See *Areca*.

BETHLEHEM, N. H., is picturesquely situated on the western slope of the White Mountains, in the northern part of the State. It is seventeen miles west of Mount Washington. It has been named the hub of the White Mountains, as almost all places of interest in this region are in close proximity to it. As it is located upon the west of the mountain range the air is very much dryer

than that to be found on the eastern side; for the humidity from the Atlantic Ocean is deposited on the eastern slope, while the filtered air is what we find in Bethlehem. Then, again, there is a scarcity of lakes and waterways of any extent in the vicinity, and for this additional reason, therefore, the climate contains less moisture than that found in regions where these abound. The normal population of Bethlehem is about 1,500 people, but as the place is a favorite summer resort, the number of inhabitants is increased by from 3,000 to 4,000 visitors during those months. There are ample accommodations for all classes of guests, from the modest New England farmhouse to the well-organized hotel.

Bethlehem is 1,459 feet above the sea level. The prevailing wind is southwest, and there are an unusually large number of clear days, the average for both July and August being 23; and out of 21 days in September, 17 were clear. Even during the days that are called cloudy, one can sit out-of-doors most of the time. The mean temperature for the season of July, August, and September is 62.3° F. The relative humidity, taken from the tables of Dr. W. H. Geddings, is 61 per cent. for the season.

mended as a substitute for salol in rheumatic affections, cystitis, intestinal catarrh, etc. It has the advantage over salol of being composed of less toxic constituents. The dose is from five to eight grains. In combination with salicylate of bismuth it is particularly recommended in the treatment of the summer diarrhoea of children and in typhoid fever. *Beaumont Small.*

BETONY WOOD.—*Stachys Betonica* Benth. (fam. *Labiata*) is a perennial herb, 30 to 60 cm. (one or two feet) high, with purple-red flowers, and long-stemmed, mostly radical leaves. These are from 5 to 8 cm. (two to three inches) in length, oblong crenate, heart-shaped at the base, and hairy. The plant is a native of Europe, growing in pastures and woods. The leaves, when fresh, have a faint, disagreeable odor—which mostly disappears upon drying—and a bitter astringent and nauseous taste.

Betony in former times had a high reputation for a variety of troubles; at present it is not in use. Dose of the dried leaves as a "nervine, expectorant, sudorific," etc., is from 1 to 3 gm. (gr. xv. to xlv.). The root is said to be emetic. *W. P. Bolles.*

CLIMATE OF BETHLEHEM, N. H.—LATITUDE, 44° 16'; LONGITUDE, 71° 41'. PERIOD OF OBSERVATION, JULY, AUGUST, AND FIRST THREE WEEKS OF SEPTEMBER, 1892, 1893, 1894, 1895, 1896, 1897, AND 1899; ALTITUDE, 1,459 FEET. OBSERVATIONS TAKEN BY C. F. MCGAHAN, M.D. (Fahrenheit Scale.)

Month.	Mean temperature from 7 A.M., 2 and 9 P.M. observations.	Mean daily variation in temperature.	Mean temperature from maximum and minimum.	Mean maximum temperature.	Mean minimum temperature.	Absolute maximum temperature.		Absolute minimum temperature.		Relative humidity.* Per cent.	Wind.	Average number of clear days.	Average number of rainy days.	Average number of cloudy days.
						Highest.	Lowest.	Highest.	Lowest.					
July	65.0°	10°	67.7°	79.3°	36.2°	88°	68°	62°	50°	63	S.W.	23	5	3
August	62.5	11	62.9	75.3	50.5	86	69	59	39	60	S.W.	23	4	4
September	59.3	14	61.8	75.4	48.3	83	64	61	36	60	S.W.	17	3	1
Mean	62.3	...	64.1	...	...	...	...	...	...	...	...	...	...	...

* Relative humidity is taken from the observations of the late Dr. W. H. Geddings.

It is here that the Hay Fever Association of the United States holds its annual meeting, and its members state that more of them are exempted from this disease at Bethlehem than at any other place. Even those who do not entirely escape the coryza in Bethlehem are exempt from the asthma; but most of the hay-fever sufferers pass through the summer here without realizing that they had ever been victims of the disease.

For the amusement of the visitors there are two golf links of nine holes each—one at Bethlehem and one at Maplewood Hotel, only a mile from the centre of the village. There is also a fine casino where provision is made for all indoor amusements.

The water supply is derived from a system of mountain springs which are located upon the mountain above the habitations. The water has been analyzed and found to be absolutely pure. The system of sewerage is thoroughly modern. *Charles F. McGahan.*

BETOL.—The beta-naphthol ether of salicylic acid, analogous to salol, which is the phenyl ether of salicylic acid. It is obtained by the reaction between beta-naphthol and salicylic acid in the presence of a dehydrating agent. It forms in small, white, brilliant crystals, almost devoid of taste and odor. It is insoluble in water, but dissolves in alcohol and oils. Betol possesses antiseptic and antipyretic properties. It is not acted on in the stomach, but when it reaches the alkaline fluids of the intestines it breaks up into beta-naphthol and salicylic acid. It is recom-

BEX.—A popular thermal and climatic station in the Canton of Vaud, Switzerland. Famous "salines."

LOCATION.—Bex is beautifully situated in an expansion of the Rhône valley, and is at no great distance from Vevey, on the lake of Geneva. It is 1,427 feet above sea level. The little village is well known in Europe, but only very slightly in America. The writer, having spent several seasons at this resort, knows that it deserves greater recognition than has been hitherto accorded to it in our country. The "salines" themselves are of no



FIG. 479.—View of Bex, Looking toward the Dent du Midi.

mean importance, and the principal bathing establishment is a modern and commodious one. As for milk, whey, and grape cures, there are few places where these