

life; it is a time when great changes are going on in the whole organism,—when, the animal machine being in a state of increased activity, its parts are more than usually apt to get out of order. Statistics embracing the largest numbers prove the dangers of this period. . . . The error which has been committed with reference to this matter, not merely by the vulgar, but by members of our own profession also, consists not in overrating the hazards of the time when changes so important are being accomplished, but in regarding only one of the manifestations—though that, indeed, is the most striking one—of the many important ends which nature is then laboring to bring about. The epoch of dentition is to be looked at just in the same way as that in which we regard the epoch of puberty. Constitutional disturbance is more common, and serious disease more frequent at these times than at others; but their causes lie deeper than the tooth which irritates the gum that it has not yet pierced, in the one case, or than the womb which has not yielded the due discharge of blood, in the other.<sup>7</sup> The writer admits that these diseases may, in many cases, especially in those attended by slight local inflammation, be entirely accidental complications of dentition, the gastro-intestinal disorders being, for instance, referable to insufficient or improper food, great summer heat, and to the development of the digestive tract, and the cutaneous diseases to hereditary predisposition. In the graver forms of disease, however, the writer believes that the local inflammation due to perverted dental development itself plays the part of both predisposing and exciting cause of the sympathetic disorders. Some of the above-mentioned diseases cannot, perhaps, lay valid claims to the title of sympathetic disorders, but may be due to extension of inflammation from contiguity of tissue. This remark might apply to coryza, otitis, conjunctivitis, and, possibly, to the bronchitis.

Vogel<sup>13</sup> refers the bronchitis to the wetting of the chest by dribbling saliva, and the diarrhoea to the laxative effect of the saliva which is swallowed; but this view is opposed by the fact that these symptoms occur when the chest has been well protected, and when the quantity of saliva is not excessive. Throwing the diseases possibly due to extension of local inflammation out of account, we must still explain the etiology of the graver sympathetic nervous disturbances, above enumerated, and the occurrence of those ailments sometimes due to extensive inflammation when the latter causation cannot be demonstrated.

The writer is of the opinion that their predisposing cause lies in the gradual depreciation of nervous energy by the continued local irritation, and that the influence directly precipitating them is a nervous reflex act, the centripetal impression for which is conveyed through the exquisitely sensitive fifth pair, and is converted, at the motor or vaso-motor centres, into centrifugal impulses affecting the organs in which the sympathetic disease is located.<sup>14</sup>

Barrier refers eclampsia, when excited by dentition, to the causes just assigned by the writer, and, in addition, to the participation of the whole cerebral vascular system in the hyperemia existing around inflamed dental follicles. The enumeration of the symptoms constituting the clinical history of the sympathetic diseases of teething would entail useless repetition of details to be found in the articles, in this HANDBOOK, descriptive of these affections, since their course is essentially the same as when they are not complications of dentition.

The general character of the graver nervous phenomena may, however, be alluded to. The convulsive movements either affect isolated groups of muscles or are general. They vary greatly in severity, and either occur suddenly or are preceded by premonitions, such as unusual restlessness, fretfulness, and general discomfort, together with evidences of great local disturbance. The attacks are single or multiple. In the latter case the intervals are of variable duration. The entire paroxysm may be limited to a few minutes, or may be protracted over several days. One of the milder types of eclampsia

consists in such a contraction of the facial muscles that a smiling expression of countenance results. In other cases the respiration is merely quickened, the pupils dilate, the eyes assume a staring aspect, and the face grows pale or livid. In graver cases laryngismus stridulus occurs, and all the muscles may be successively or simultaneously tetanized. The circulation and respiration are obstructed, and asphyxia, cerebral congestion, or syncope may entail a fatal issue. A lethal result is usually produced by a series of paroxysms rather than by a single convulsion. Partial paralysis, idiocy, strabismus, and cerebro-spinal meningitis are stated to have sometimes followed eclampsia, but their etiological dependence on the convulsions is not established.

**DIAGNOSIS.**—Since the constitutional diseases induced by dentition are often referable, even when developed simultaneously with teething, to other causes, these must be diligently sought in every doubtful case. If no morbid condition of the gum or of the jaw be discoverable, the inference that the disease in question is due to other causes is justifiable. Should the disorder, however, manifest itself at each epoch of dental eruption, subsiding after the completion of the latter process, its etiological dependence upon dentition will be unmistakable.

**Treatment.**—This embraces prophylactic and curative measures, which are either local or general. 1. Local prophylaxis consists in frequent cleansing of the buccal cavity with a solution of borax containing gr. xx. to an ounce of water, or some similar detergent lotion, in order to prevent thrush or simple stomatitis; in gentle friction of the inflamed gums with the ball of the finger, a smooth bone, or the smooth handle of a silver spoon; and in providing the little patient with a hard-rubber object for the maxillary gymnastics to which he is naturally inclined.

2. General prophylaxis. This aims at the maintenance of the general health, and embraces all required hygienic measures. The child should spend a large part of the day in the open air, whenever the weather is suitable. The diet should be carefully supervised, and especial attention given to the care of the bottles of hand-fed babies. Too frequent nursing must be discontinued. The bowels should be regulated, rhubarb and calomel and enemata being used for constipation, and chalk mixture, with bismuth subnitrate and a few drops of *tr. opii camph.* in each dose, in case of diarrhoea. Salol, either alone or in combination with the remedies just mentioned, has, in the writer's experience, proved very efficacious in checking diarrhoea or tympanites. If flatulence exist, a carminative, preferably a mixture of *spts. lavand. co.*, *spts. card. co.*, *syr. zingib.*, and *aq. menth. pip.*, in equal parts, should be employed in ℥x. to xx. doses. If there be considerable febrile disturbance, *spts. ather. nitrosi*, in doses of ℥x. each, may be administered to a child one year old, or tincture of aconite, *gtt. ss.-i.*, may be given, at intervals of one hour, until from four to six doses have been taken. Restlessness and jactitation may be best combated by a mixture containing bromides. Dr. Day<sup>15</sup> recommends the following formula:

℞ Potass. bromid. . . . . gr. ij.  
Potass. iodid. . . . . gr. ʒ.  
Spts. ammon. arom. . . . . ℥ ij.  
Syrup . . . . . ℥ xx.  
Aque . . . . . q. s. ad fl. ʒ i.

**M. Sig.:** To be taken every four hours. For children one year old.

Small doses of phenacetin, phenocoll, or antipyrin may properly be employed, in many cases, instead of the bromide mixture suggested by Dr. Day.

With a view of diminishing cerebral congestion, and thus preventing eclampsia, Vogel<sup>16</sup> recommends affusions of cold water, repeated at intervals of from one to two hours, and Espine and Picot<sup>17</sup> extol tepid baths for the fulfilment of the same indication. The head may properly be bathed, in common with the rest of the body, and warm head coverings should be discarded.

3. *Local curative treatment* is required for the relief of

apthous ulcerations of the buccal mucous membrane, rarely for abscesses in the buccal parietes, for inflamed and painful gums plainly rendered so by obstructed dental eruption, and for alveolar periostitis. Ulcerations of the mucous membrane require strict cleanliness, obtained by thorough rinsing of the mouth with tepid water, and by the use of lotions containing ten grains of borax to an ounce of glycerin.<sup>18</sup> West<sup>19</sup> approves the internal use of potassium chlorate, in doses of gr. iv. every four hours, for a child aged one year. In graver forms of ulceration, nitrate of silver solution, containing fifteen grains in an ounce of water, may be painted over the ulcerated surfaces, and leeches may be applied at the angle of the jaw. Peroxide of hydrogen or permanganate of potash may also be employed as a mouth wash. Abscesses in the cheek must be promptly evacuated. Very painful and inflamed gums are best and quickest relieved by free incisions, executed with a scalpel, a lancet, or a curved bistoury, so guarded as to avoid injury to any but the inflamed parts. The lancet is not to be used save for good and sufficient reasons, but must be wielded with decision, if required at all. The child's head is held between the knees of the operator, the jaws being kept open by his disengaged hand. The incisions should extend quite down to the tooth, and should be longer than the advancing dental crown. The cuts should be crucial for the molars and linear for the cuspids. Sometimes a wedge-shaped piece of the gum may be advantageously removed, if this be the offending tissue. If severe alveolar periostitis exist, the dental follicle may have been so far disintegrated as to have occasioned necrosis of the tooth, which must then be extracted. The measures just described effect almost immediate relief of local symptoms by reduction of tension in the inflamed tissues, and by their depletion. In children of an hemorrhagic diathesis the lancet must be avoided, and reliance placed in the local and general preventive and curative treatment. If the above measures be adopted as soon as the gums are markedly inflamed, the graver sympathetic disturbances will usually be averted. Hence, lancing of the gums is both curative of the local morbid state and prophylactic as regards the sympathetic affections of dentition. For local preventive and curative treatment of otitis, conjunctivitis, coryza, bronchitis, cutaneous eruptions, and incontinence or retention of urine, consult the articles in this HANDBOOK treating of these subjects.

4. *General Curative Treatment.*—The therapeutic measures embraced under this head are intended to take the place of local surgical interference with the gums, when the condition of the latter is not such as to warrant the use of the lancet. These measures must be directed to the cure of whatever constitutional symptoms appear in a given case, and are identical with those required for the relief of similar symptoms when not complicating dentition. The reader is, therefore, again referred to the appropriate articles in this HANDBOOK. The bromides and chloral are second only in value to incision of the gums, in the convulsions of dentition, and are employed with great benefit in cases not adapted to the use of the lancet. Five grains of the bromide of potassium may be given to a child one year old, by mouth, or ten grains by rectum, if the patient be unable to swallow, and the dose repeated every quarter of an hour until the convulsions cease, after which occasional doses may be given as required. At the respective ages mentioned, equal quantities of chloral, dissolved in one-half ounce of lukewarm water, should be given by the rectum, if the bromides have no effect, and may be repeated after an hour, if necessary. Chloroform may be cautiously given, by inhalation, to control the convulsions until a sufficient quantity of the bromide and chloral has been absorbed to fulfil this indication. Cold to the head, hot mustard baths, a cathartic, preferably castor oil, and warm laxative enemata, are valuable adjuvant therapeutic agents.

5. **THE LOCAL DISORDERS OF SECOND DENTITION.**—*Etiology.*—The chief cause of these local diseases which, although rare, greatly predominate over the sympathetic or constitutional disorders of second dentition, is obstruc-

tion to the natural eruption of the permanent teeth. The chief obstacles to eruption are either deciduous teeth which have been too long retained, ossification of deciduous follicles from which the teeth have been too early removed, or narrowness or shortness of the alveolar border, by which the advancing teeth are forced from their natural positions and obliged to effect their exit through bony tissues instead of through the gum, in the direction of their alveoli. Faulty direction of the original follicle, its development in an abnormal position, fibroid induration of the gum, and the growth of supernumerary teeth are other causes of obstructed eruption. Any of the primary teeth may encounter these obstacles, but the so-called *dentes sapientia*, or third molars, are peculiarly liable to do so, since the remaining teeth have attained their full development at the time of the appearance of the wisdom teeth, and in many cases have encroached upon the latter's domain. The wisdom teeth of the inferior maxilla are, from their position in proximity to the ascending ramus and the consequent limited space afforded them for development, usually the starting-points of the morbid processes about to be described.

*Symptoms.*—Encountering one of the obstacles just mentioned, the teeth are directed either against the neighboring teeth or against the cheek or the tongue, and excite either simple ulcerative or suppurative stomatitis, glossitis, gingivitis, or cervical adenitis, while the excessive pressure within the follicles may occasion alveolar periostitis, exostosis,<sup>20</sup> osteitis, and caries or necrosis of the teeth themselves. These diseases of the jaw and teeth apparently owe their origin, in some cases, to extension of the inflammatory process from the gums to the osseous structures, rather than to excessive pressure within the follicles. Should abscesses, developing in the gums, tongue, or cheeks, be left to nature's direction, the pus effects its exit either into the buccal cavity or upon the surface of the cervical or maxillary regions. In some cases the purulent matter may widely infiltrate the subcutaneous or intermuscular cellular tissue of the cervical region, producing sinuous sinuses and fistulae. Other and rarer inflammatory complications of the second dentition are tonsillitis, pharyngitis, otitis, rhinitis, conjunctivitis, and cervical erysipelas. The symptoms of these diseases need not be here enumerated, and allusion will be merely made to the difficulties of articulation and mastication, to the dysphagia, the deafness, otorrhoea, coryza, profuse salivation, and the febrile disturbance which may result from the inflammatory conditions above referred to.

D. **SYMPATHETIC DISORDERS OF THE SECOND DENTITION.**—The principal sympathetic diseases incident to the second dentition are neuralgia of the fifth nerve, which, beginning as an odontalgia in the affected teeth, may develop into hemicrania, tic douloureux, or spastic contraction of the muscles of mastication, leading to a tight closure of the jaws. Other and rarer reflex disorders, included by some authors in this category, are facial paralysis, nystagmus,<sup>21</sup> otalgia, aphonia, hysteria, tetanus, chorea,<sup>22</sup> and even epilepsy.<sup>23</sup>

*Treatment.*—1. Prophylactic: With a view to the prevention of ossification of deciduous follicles and consequent obstruction to the exit of permanent teeth, the milk teeth should be prevented from decay by appropriate hygiene, and if carious, should be filled, instead of being early extracted. Supernumerary permanent teeth, or those developed from misplaced original follicles, should be removed before their pressure shall have displaced the growing regular teeth, or shall have exerted injurious pressure on the soft parts. If the jaw be too small for the accommodation of a full set of permanent teeth possessing normal dimensions, or should unnatural size of certain teeth lead to injurious pressure, a sufficient number of teeth must be sacrificed to make room for the remainder. If ossification of a deciduous follicle be the cause of detaining a permanent tooth in the alveolar process, the only resource is the trephine, after which extraction of the included tooth may become necessary.

2. Curative treatment: Prompt and efficient local treatment will, in most cases, speedily relieve both the local

and the sympathetic disorders of the second dentition. Should the root of a deciduous tooth prove to be the obstacle to the exit of its successor, it must be at once extracted.

If the gum, over a wisdom tooth which is about to make its appearance, be seriously inflamed or ulcerated, it should be incised or partially excised, the borders of the incision being then cauterized, in order that immediate union shall not occur. Should the crown of the tooth be carious, or its direction so abnormal as to threaten injury to the tongue or lips, the tooth must be removed. If it be impossible to find the *dens sapientia* after incision of the gum, owing to its deep inclusion in the alveolar process, the second molar may be removed and place thus be made for the advancing wisdom tooth. In the event of the formation of abscesses, in the cheek, the gum, the tongue, the cervical connective tissue, or the cervical glands, they should be promptly opened. The remaining possible inflammatory and reflex complications of the second dentition, enumerated above, are to be treated, after the adoption of the local measures advised, in accordance with the principles enunciated in the appropriate articles of this HANDBOOK. The spastic contraction of the jaws, already alluded to, occasionally simulates trismus, sometimes greatly interferes with the local treatment, and may be overcome by anesthesia.

William H. Flint.

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**DENVER.**—The city of Denver, Colorado, latitude 39° 45' N., longitude 105° W., lies upon the South Platte River, 35 miles from the main range of the Rocky Mountains, and 14 miles east from their outlying foothills—on the western limit of the great plains which stretch away to the Missouri River. Its elevation above sea level is 5,290 feet.

Besides being the capital and chief business city of Colorado, Denver is the most important railroad and distributing centre for the entire Rocky Mountain region. The city is built upon both sides of the river, but chiefly on the right bank of the stream which, flowing north, bends in the middle of the city to the northeast. The westerly bank rises in a sharp slope about one hundred and fifty feet, while on the east this elevation is not reached till about two miles from the river, the rise being gradual and easy. The immediate river valley is given over to industrial occupation, the residence districts lying to the east, south, and west. The streets are wide, and in the business portion of the city paved with asphalt, as are three of the main avenues into the residence district, where the streets are bordered by parked sidewalks shaded by trees. There are 164 miles of electric street railway reaching to every part of the city. The buildings are substantial, and throughout the city built wholly of brick and stone. The residence districts are noticeably those of homes, there being very few blocks or tene-

ments. The public-school system is excellent and progressive, and the city is well provided with theatres and churches of all denominations. There is a good public library and a medical library of six thousand volumes.

There are five hospitals in Denver: the Arapahoe County Hospital, one hundred and eighty beds; St. Luke's (Episcopal), seventy beds; St. Joseph's and St. Anthony's (Roman Catholic), each ninety-eight beds; and the National Jewish Hospital for Consumptives. "The Home" is a beautifully equipped establishment for the reception of invalids with tuberculosis. Hotel accommodations are numerous and of a high order. The public parks have an area of five hundred acres. There is a system of public sewers which empty into the Platte River below the city. The public water is supplied by a private corporation and is of excellent quality and ample supply.

The population is about 135,000. The health of the community is good, there being a notable absence of diarrheal and infectious diseases other than tuberculosis contracted elsewhere.

The early reputation of Denver as a health resort, especially for those suffering from pulmonary tuberculosis, has been steadily maintained, and while the rapid growth of the city and increase in industries of late years have necessarily rendered the heart of the city unsuited for an invalid, the outlying residence districts are free from contamination, and the city still holds its place among the health resorts of the Rocky Mountains.

*Climatically*, Denver should be classed as a high-altitude resort, with a dry, cool climate of considerable extremes of temperature and abundant strong sunshine.

*Altitude*.—Denver is one mile above sea level, and has a mean barometric pressure of 24.74 inches. It is not, however, in the mountains, but lies upon the open plains fifteen miles east from the foothills. This open situation frees it from the diurnal up-and-down draught of a mountain valley, and the long day of sunshine is unbroken by the shadows of surrounding peaks. This distinct advantage over most high-altitude resorts has a very practical relation to the daily life of an invalid. In Davos-Platz, the most noted of the Swiss high-altitude resorts, which lies at the same elevation as Denver, but in a valley protected by surrounding mountain heights, the sun does not rise on January 1st till 10:03 A.M., and sets at 3 P.M. In Denver, on January 1st, the sun rises at 7:19 A.M., and does not set till 4:49 P.M., giving nine hours and a half of daylight. Speaking of Davos, Dr. Wise says: "An additional hour's sunlight during the short days of December and January is an inconceivable delight." In Denver the eastern horizon is low and level and offers no delay to the warm cheering of daylight. On December 1st the sun rises at 7 A.M.; on January 1st at 7:19, and on February 1st at 7:07. Nor is the day shortened in the afternoon, the fifteen miles "set-out" from the mountains distinctly lengthening the day.

*Sunshine*.—A reference to Table I., column R, will show the total number of hours of possible sunshine at Denver during each month of the year. Even in the months of shortest days, December and January, there are over nine hours and a half of possible sunshine each day.

The percentage of the total possible sunshine actually realized is high, being in the yearly average over seventy per cent, as shown by the records of the Weather Bureau over the last ten years. This large proportion of actual sunshine is quite evenly distributed throughout the year, as will be seen by Table I., columns S, T, and U, where the mean total percentage of sunshine is shown, together with the highest and lowest monthly record during the period of observation. It will be noted that the least amount obtained in any month during the ten years was 51 per cent., or over half the total possible, with the exception of the very unusual month of May, 1892, when the sunshine record was only 42 per cent, and the precipitation was 8.57 inches. A reference to Table I., columns M and N, shows that this is equally exceptional. In the other years of observation the rainfall

TABLE I.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	&	
	Mean barometer in 27 years.																											
	Mean temperature (degrees F.) in 27 years.																											
	Highest mean temperature (degrees F.) in 27 years.																											
	Lowest mean temperature (degrees F.) in 27 years.																											
	Average of mean maximum temperature (degrees F.) in 28 years.																											
	Average of mean minimum temperature (degrees F.) in 28 years.																											
	Average highest temperature (degrees F.) in 28 years.																											
	Average lowest temperature (degrees F.) in 28 years.																											
	Absolute highest temperature (degrees F.) in 28 years.																											
	Absolute lowest temperature (degrees F.) in 28 years.																											
	Mean relative humidity in 27 years, per cent.																											
	Mean dew point (degrees F.).																											
	Average total precipitation in inches.																											
	Highest total precipitation in inches.																											
	Lowest total precipitation in inches.																											
	Number of times above the average in 27 years.																											
	Number of times below the average in 27 years.																											
	Total number of hours of possible sunshine.																											
	Mean percentage of possible sunshine actually obtained, 1891-1899, inclusive.																											
	Highest percentage for the month in period 1891-1899, inclusive.																											
	Lowest percentage for the month in period 1891-1899, inclusive.																											
	Average number of partly cloudy days in period 1891-1899.																											
	Average number of cloudy days in period 1891-1899.																											
	Mean total movement of wind for the month. Average for 12 years. Miles.																											
	Average hourly velocity. Miles.																											
	Mean maximum velocity maintained for a one-hour period between 8 A.M. and 8 P.M. Average for 6 years. Miles.																											
January	24.73	28	38	18	41.7	15.5	61.8	-2.0	76	-29	53.8	19	0.54	2.35	0.05	9	16	301	71	80	60	20	8	3	6,141	8.3	12.9	
February	24.61	28	38	18	44.1	19.5	63.0	-1.9	77	-29	54.3	11	0.53	1.32	.11	12	15	300	68	75	56	15	9	4	6,405	9.5	11.3	
March	24.56	39	46	32	51.5	25.9	71.3	5.3	81	-11	50.7	16	.92	3.10	.20	12	15	371	67	73	55	14	10	7	6,632	9.0	15.2	
April	24.64	47	54	41	60.4	34.7	78.1	14.2	83	4	48.4	16	1.94	4.94	.31	13	14	399	70	84	66	20	20	7	7,210	10.0	14.9	
May	24.60	57	62	52	66.0	43.9	85.3	31.7	92	27	50.0	25	2.86	8.57	.09	13	13	447	60	73	73	15	17	3	6,408	8.6	15.1	
June	24.72	67	72	62	80.7	52.5	93.6	41.4	99	36	45.0	35	1.40	4.90	.09	11	16	449	71	77	62	12	12	1	5,876	8.3	12.8	
July	24.81	73	76	67	85.9	58.5	98.7	50.3	102	42	48.1	47	1.72	4.28	.33	12	15	455	65	73	59	12	15	4	5,519	7.4	10.8	
August	24.72	71	74	68	84.6	57.2	95.1	48.5	105	43	48.5	41	1.45	2.84	.33	12	14	425	70	77	60	19	9	3	5,715	7.7	10.1	
September	24.83	63	66	60	77.2	48.2	90.3	35.2	97	27	44.6	32	.79	2.89	.12	12	14	374	75	89	63	6	6	6	5,185	7.2	9.1	
October	24.73	51	56	46	64.7	37.1	81.8	21.8	90	1	46.2	27	.84	3.22	.12	9	18	345	75	89	63	3	3	4	5,540	7.4	10.8	
November	24.73	38	45	33	51.5	25.9	71.1	4.7	77	-18	49.9	20	.60	1.83	.08	10	17	300	75	89	63	3	3	4	5,800	8.1	12.4	
December	24.71	32	40	44.5	19.7	63.4	-3.5	74	-25	53.2	13	.66	2.32	.01	13	14	282	68	85	52	18	9	4	6,802	9.1	11.9		

and sunshine records have fallen within the line of averages.

During the winter months from December to March the average percentage of sunshine obtained in Denver is 68 with a minimum record of 56, while the average obtained in Philadelphia for the same months is 37.

The average number of wholly cloudy days in a year in Denver is but 45, while 112 are partly cloudy, and 208, or six-elevenths of the entire year, are wholly clear from sunrise to sunset. The 112 days recorded as partly cloudy must not be considered unsuited for outdoor life, for the cloudiness is often light and even a grateful change from the intense brilliancy of a cloudless day. Table I., columns V, W, and X, shows the general evenness of the distribution throughout the year with the slight increase in the partly cloudy days in the spring months due to the occasional showers during that period, as will be seen by comparing the same months in column M.

*Humidity*.—The relative humidity at Denver is very low, being but 58 per cent, at 6 A.M., and 38 per cent, at 6 P.M., with a yearly mean of 49.4 per cent., varying in monthly means from 45 to 54.2 per cent. The absolute humidity is also very slight, being but 1.89 grains of moisture to the cubic foot. This constant dryness of the air has a decided effect upon the sensible temperature of the air, rendering the recorded heat of the summer months not comparable to similar figures in cities upon the seaboard. Evaporation from the skin is rapid in summer, leaving the body dry and cool, while in winter the same dryness of the air makes the low readings of the thermometer less realized. It affects, too, the intensity of the sunlight, causing a variation between the air and solar temperatures of from 40° to 60° throughout the year.

*Temperature*.—The climate at Denver is cool. The mean annual temperature is 49° F., the mean for January being 28° and for July 72°. The range between the highest mean temperature of any month and the lowest mean for the same month is not great, and is remarkably even throughout the year, as shown in Table I., columns C and D. The extremes of temperature during the year appear great, but the average variation of the monthly mean maxima and mean minima seen in Table I., columns E and F, is not great when the balancing effects of dry air and sunshine are considered. Columns E and F represent the average for twenty-eight years of the monthly mean maximum or minimum temperatures of all the days. Columns G and H, on the other hand, rep-

resent the average for twenty-eight years of the single highest or lowest temperatures recorded in the month; while columns I and J give the absolute maximum and minimum temperatures during the entire period of observation.

In comparing these three sets of columns with the mean for the month during the whole-period column, the influence of single high or low readings is discerned. For instance, in the month of January, while a maximum day temperature of 76° has been recorded and a reading of -29° may occur, yet the experience of twenty-eight years shows that the average highest temperature will be but 61.8° and the average lowest only -2°, while the average during twenty-eight years of the mean maxima for the thirty-one days of the month is 41.7° with a corresponding minimum of 15.5°. In summer a similar influence is exerted by an occasional high temperature, but in considering the absolute maximum records of July and August in column I, it should be noted that in the entire period of twenty-eight years the thermometer has been 100° or over but five times in July and only twice in August. The direct sun in summer is very hot, but the mean temperature of the air at 1 P.M. is only 85° in July, 81° in August, and 72° in September. The sensible temperature is even less, for the relative humidity of the summer months in Denver is but 46.5 per cent, as compared with 71 per cent, in Boston, 74 per cent, in New York, and 76 per cent, in Chicago. The shade is always comfortable.

TABLE II.—MEAN TEMPERATURES AT 1 P.M.  
(Degrees Fahrenheit.)

	1886.	Solar.	Air.	Difference.
January	28.5	27.3	27.3	65.2
February	30.3	28.0	28.0	58.3
March	37.8	41.1	41.1	46.7
April	47.6	52.3	52.3	58.3
May	54.3	64.3	64.3	67.0
June	62.7	75.1	75.1	57.1
July	72.7	85.2	85.2	61.3
August	78.7	81.5	81.5	62.2
September	72.5	72.0	72.0	60.3
October	64.2	64.2	64.2	55.3
November	51.3	41.3	41.3	58.7
December	38.2	45.5	45.5	54.7

In winter while the air is cold, perhaps for a number of