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ARTICLE VII.

An Essay on the Adaptation of Climate to the Consumptive, for a permanent residence; embracing an Examination of the Climate of certain localities of frequent resort; and also, an Investigation of the degree of adaptedness of the Pacific Climates of the United States. Presented to the Medical Society of the State of Georgia, at its annual meeting, held at Atlanta, April 13th, 1859. By WILLIAM HENRY DOUGHTY, M. D., of Augusta, Ga. (Ordered to be printed.)

(Continued from February No., Vol. 16, page 100.)

A COMPARISON OF THE ENTIRE PACIFIC COAST, WITH THE STATE OF FLORIDA, ADOPTING THE MOST ELIGIBLE LOCALITIES OF EACH, WITH THE VIEW OF SHOWING ITS GREATER ADAPTEDNESS AS A RESORT FOR THE CONSUMPTIVE.

The remaining period—that of cold or of the declining temperatures—extends from October to March inclusive; thereby embracing the winter season, and the coldest and most variable, of the spring and autumn. In so arranging this period, our design is not only to embrace those months, which, although strictly speaking, do not belong to the winter season, yet have some degree of identity with it, but to present to the reader a connected history of the entire period, during which depressions of temperature, periodic or non-periodic, may occur; and also to represent them in such a manner as that the relative merits of both sections may be fully exposed.

Proceeding to the comparison, we take up first the difference of the successive months of the period.

	Oct.	Octo Nov	Novto Dec	Decline from				
				Dec to Jan	Jan to Feb	Feb to Mh	Mh to Ap	
San Diego, Cal., (5 to 6 yrs)	65° 50	-8° 58	-5° 22	+0° 20	+1° 57	+2° 73	+5° 2	
San Francisco, " 3 to 5 "	57° 91	-8° 60	-3° 11	-1° 60	+2° 18	+1° 09	+2° 5	
Ft Vancouver, Or, 3 to 6 "	53° 30	-6° 79	-16° 10	+4° 05	+1° 10	+2° 48	+2° 44	
" Marion, Fla., 20 "	71° 88	-7° 76	-6° 66	-0° 23	+2° 91	+3° 40	+5° 44	
" King, " 16 "	70° 66	-7° 37	-4° 64	-0° 07	-0° 27	+6° 15	+7° 05	
" Barrancas, " 17 "	70° 68	-9° 06	-5° 45	-1° 56	+1° 97	+6° 23	+6° 71	

By comparing this table with the corresponding table of advances in the other period, it will be observed that the mean temperature of the month occupying its leading column, is uniformly higher, except at Fort King, than that of the other. This is a fact which perhaps is true generally of the climate of the United States, the exceptions to it being found in high northern latitudes, or where the vertical configuration alone is sufficient to prevent it.

This table of course presents only a part of the period of an actual declination of heat, at the Florida posts, and at most of those of the Pacific, because the highest monthly mean temperatures are recorded in the summer season, and from which to this month a decline occurs. At Florida, the highest summer mean is in the month of July, but on the Pacific, this varies at the different posts—August having the highest at San Diego, September at San Francisco, and July at Fort Vancouver. Hence at the latter, the culminating point varies with the latitude. These things being so, the commencement of the actual decline of temperature varies at the two places, and is of longer or shorter duration. Upon the eastern and western coasts of Florida, as represented by Fort Marion and Fort Barrancas, the decline continues until the month of January, but at Fort King, intermediate to them, it is still further protracted to February—this month here affording the lowest monthly mean. At San Diego, on the Pacific, the monthly means continue to decline to December, and thus give a shortened period of five months' continuance. At San Francisco, the means cease to decline after January, so that with the highest mean in September, it occupies only four months. At Fort Vancouver, also, it embraces a period

of five months—from August to December inclusive. Hence the whole time occupied by a decline of the monthly mean temperatures at Florida is six months, and in some instances seven, whilst on the Pacific coast, of the three stations, the greatest length is five months, and the least four.

The character of this decline in the State of Florida is at its commencement quite small, but rapidly increases after the passage of the last summer months; so much so, that the decline from September to October at its three stations, will average more than seven degrees. The same rate is preserved from October to November, and that from November to December is about five and a half degrees. Indeed the progress of the decline from the summer to the fall months is not only rapid, but very abrupt, that from September to October, being suddenly increased to fully three and a half times that from August to September. Moreover, this elevated monthly decline is preserved until the month of December; and the actual amount of declination from September to December, is at Fort Marion $21^{\circ} 34'$ —at Fort King $19^{\circ} 63'$ —and at Fort Barrancas $22^{\circ} 90'$. But December, having been reached, the retreat to January is very small, being only one-third of a degree at Fort Marion—one-eighth at Fort King, and $1^{\circ} 96'$ at the other post. The decline to February at Fort King is also very small.

Again, the reaction from these low winter means begins in January at the two opposite posts: at Fort Marion, it is firm and steady to the spring season, the greatest monthly advance being from March to April; at Fort Barrancas, it is much more rapid, and preserves an average advance of over six degrees from February to April. And at Fort King, where the reaction is postponed to February, from thence to April, a similar rate is also maintained.

Of the Pacific stations, two give a similar record to these, namely, the most northern and southern. At San Diego, the fall of temperature from the mean of August is even greater than at two of the southern stations, but that from September to October is less; so that the whole decline

from August to October scarcely equals the latter. From October to November, it becomes again greatly increased, exceeding that at Forts King and Marion, although less than at Fort Barrancas; and from this month to December, a further reduction of $5^{\circ} 22$ occurs, after which the reaction begins. At Fort Vancouver, the measures of monthly decline are even more irregular and abrupt than this, and in the passage from November to December, which has the lowest mean for the year, shows a decline of 10° . The entire retreat from the mean of August to December is at San Diego, $21^{\circ} 98$, and at Fort Vancouver, $29^{\circ} 05$. These two posts, then, although differing from each other, and also from those of Florida in the measures of heat experienced by them, nevertheless present great analogy with the latter, both in regard to the irregularity and abruptness, and also to the extent of the declining temperatures.

With the remaining station of the Pacific, the most interesting comparisons are to be made. And this post differs almost as widely from those of its own section as it does from the others. The period of decline here embraces only four months, from October to January, and the character of the monthly decline is uniformly small to the period when the temperatures begin to rise. The greatest difference of the successive months is only $3^{\circ} 60$, and the actual fluctuation in the means from the highest mean of the dry season, to the lowest winter mean is only $8^{\circ} 31$, far less than half of that of the least of the Florida posts. After the lowest mean has been attained and the period of reaction begins, in February, an advance, as uniform and small and gradual is preserved to the spring season. In fact, the whole series of the monthly advances and declinations for the year is characterized by such a degree of uniformity of temperature, and such small ranges in the monthly fluctuation, as to render its temperature condition far superior to any other single station with which we are acquainted. Hence the portion of the coast represented by this post, is possessed of much more uniform features than the stations of Florida, and in the limited decline from the higher summer means

mean—the two being characterized by great and unusual extremes directly opposite in their nature. December of the same year, gave a mean nearly eighteen degrees lower than November, although it was but little less than its common mean. At Fort Barrancas, in December, 1845, the mean was more than ten degrees below the average, and yet the January mean was above its average. Again, in 1852, the mean of January was $44^{\circ} 16$, nine and a half degrees below the average, whilst that of February was above its common mean. In such data as these, which are only to be had by a period of lengthened observation, the true character of climate is made to appear, and although they are to be regarded in the light of occasional phenomena, nevertheless they exert a controlling influence in all investigations, seeking uniformity and regularity of seasons. Such investigations are not confined in their practical benefits to medical subjects, but are in no less degree important and beneficial to the agricultural bearings of the climate. It required a number of these examinations of the strictly local features of the State of Florida, to arrive at the conclusion that tropical fruits could not be successfully or profitably cultivated, north of 28° lat.—one of the principal reasons for its impracticability, further north, being the continental or variable nature of the climate, or in other words, a want of permanence in the temperature of successive years, as well as in the parts of the same seasons. The neglected remains in East Florida of the beautiful orange groves that formerly flourished there, abundantly attest the variability of its climate, and the failure of the inhabitants to renew the attempt at their cultivation, is sufficient evidence of their want of belief in its stability. For some years, these groves yielded abundantly, for the repay of the husbandman, but the cold changes and depressions of temperature occasionally felt here, have caused them one after another to disappear, and sometimes collectively, so that at the present time, no particular pains are taken with them. There are instances on record, where some of the oldest orchards were blasted in a single season by the severity of the cold, the

oldest trees being killed to the roots, and some of which never sprouted again.

Throughout the extended period under consideration, the temperature condition of this State is liable to the most signal fluctuation. And whilst the general range of the individual months for the entire year may be stated to be very great, yet that of the fall and winter months is much greater than all others. From its commencement in October, the range at Fort Marion is observed to be very great, more than double the greatest range of any post of the Pacific, and from thence to February, it steadily increases to $20^{\circ} 39$. The range of March is also greater than that of October, although less than that of February. The measures of heat experienced at this post are those generally recorded throughout the State, although they are here possessed of a greater general range. At Fort Barrancas, on the Gulf coast, the ranges of the two fall months are not so extensive as at Fort Marion, but upon the accession of the winter months, a similar degree of fluctuation is preserved to the spring month. Of the three Florida posts, Fort King gives the shortest ranges for the individual monthly means, although still great—the lowest range being $4^{\circ} 90$ in January, and the greatest $10^{\circ} 59$ in February. The extreme range of the winter mean is also less than the others—that of Fort Marion being $15^{\circ} 44$ —of Fort Barrancas $9^{\circ} 64$, and of Fort King $7^{\circ} 64$.

Mr. Blodget, whilst contrasting the range of the winter means in the extreme northern, southern and western portions of the United States, elicits the fact that the range at the south, as at Fort Moultrie, ($16^{\circ} 7$), at Fort Jessup, La., ($14^{\circ} 8$), and at St. Augustine, Fla., ($15^{\circ} 4$), is greater than at Hancock Barracks, in Maine, at Fort Brady, Michigan, Fort Mackinac, Mich., and Fort Winnebago, Wisconsin—whose maximum winter ranges were respectively, as follows: $7^{\circ} 1$ (17 years), $7^{\circ} 2$ (31 years), $9^{\circ} 4$ (24 years), and $9^{\circ} 4$ (16 years). The greatest winter range at Fort Snelling, in a period of thirty-five years, was just equal to that of St. Augustine, and was nearly a degree less than Fort Moultrie.

It may be of interest to some readers to know the conclusions drawn from these comparisons by the writer referred to. He says that "the posts of the western interior are seen to be exceptional, and to have nearly as great a range as those of the south, yet it is clear that low temperature alone, beyond a certain limit, has the effect to diminish the range of non-periodic oscillation, and to render the climate more equable. If this outlined result shall be found to be sustained, it would point to the conclusion that the great non-periodic variations of temperature are confined to the temperate latitudes mainly, or are only intruded into the arctic regions in the summer and in connection with a certain degree of heat, and certain conditions characteristic of temperate climates. *The most striking range is shown at Charleston, (Fort Moultrie), and in the absence of supporting observations, its accuracy might be doubted, but the extreme dates, which are 1828 for the high temperatures, and 1831 for the cold extreme, are also the dates compared at St. Augustine, Florida, with nearly the same range.** At Augusta Arsenal, Georgia, the same dates give a range of $14^{\circ} 3$, and at Fort Johnston, N. C., a range of $16^{\circ} 7$, or precisely the same as that observed at Fort Moultrie." Finally, in reference to the winter data of this State, we may remark that these are startling facts to those accustomed to regard it as the most desirable winter climate or residence for the consumptive. And if the contrast was stated in its most positive manner, that the range of variability of the winter means at St. Augustine, for twenty years, was as great as at Fort Snelling, in the extreme north-west, in thirty-five years, it would scarcely receive credit. Yet so the record proves it, as absurd as it apparently is. One other circumstance we would call attention particularly to before closing our remarks, namely, the time, that intervened between the great oscillations which determined this excess in range—they occurred within three years of each other—thus demonstrating the truth of the remark already made by us, that the existence of a severe or mild season of one year, affords no clue to the probable character of the succeeding

* The Italics are our own.

one. The risk, therefore, of such precariousness of seasons, ought to be taken into account in the estimation of a proper climate for the consumptive. If a change of climate be necessary, let him repair to such an one as is stable and permanent in character, and not where he may perhaps be surrounded with changes similar to those from which he retreated.

Widely different from this record is that of the Pacific coast. Indeed, so great is this difference, that we deem it wholly unnecessary to do more than present a few prominent points. The greatest range of any month at San Diego is $5^{\circ} 95$ in October, and the greatest recorded range of either of the winter months here is only $5^{\circ} 46$. At San Francisco, three months—October, November and March—give a range of $6^{\circ} 00$, but the winter months proper give a limited range—less than at San Diego. At Fort Vancouver, the greatest ranges are recorded, but they do not approach those of the Florida stations. In reference to the range of the winter means, we shall simply give the following quotation: “On the Pacific coast the periods are insufficient to show what the range of the winter may be, but *the greatest recorded in periods of six years is four degrees. It is undoubtedly less than that for any other districts, as, at Key West, years next succeeding each other frequently give a greater range, and the greatest in fourteen years is $8\ 2$ degrees.*”*

Here, then, greater stability and permanence of climate is manifested than in Florida—the ranges of the winter means, as well as those of the individual months from October to March, being much less. It may be proper to remark further in regard to these features of the peninsula of Florida, that the wide ranges here given are not exclusive to the posts selected as proper exponents of its climate, but that the northern portion, in any part of it, may be characterized in any series of years by similar extremes. In other words, this extremely continental character is the controlling form of its climate, and constitutes no exception to the general rule of the American climate—variability

*The italics are our own.

and changeableness. The protection of the Pacific coast from such continental influences by the long and elevated mountain ranges, and its almost exclusive exposure to the mild impressions of the Pacific waters, (which, like all other waters, resist sudden changes of temperature, and are slow to partake of their nature,) serves to secure to it a sameness or uniformity of temperature condition, from which but little departure may be expected in successive years, and but slight differences in the natural thermometrical status of the months immediately succeeding each other. It is not free from non-periodic changes, but the character of such changes is vastly less objectionable, as far as the present records extend, than those of the Eastern States. In the middle latitudes of this coast, near and south for some degrees, of San Francisco, so far as the variation of the monthly means is concerned, there are two periods of the year, at which they vary most, the other portions indicating thus far a comparative exemption from them. The periods referred to embrace the later fall months, and approaching and earlier spring temperatures, and the fact, as observed, we have elsewhere stated to be due to the lost action and balance of the sea-temperature at this time.

3rd. The extreme single observations of the individual months.

	October.			November.			December.			January.			February.			March.		
	Obs.	Pos.		Obs.	P.		Obs.	P.		Obs.	P.		Obs.	P.		Obs.	P.	
	Ht.	Lt.	R.	Ht.	Lt.	R.	Ht.	Lt.	R.	Ht.	Lt.	R.	Ht.	Lt.	R.	Ht.	Lt.	R.
San Diego, California.....	99	44	55	84	37	47	74	29	45	80	31	49	75	34	41	84	34	50
San Francisco, ".....	85	42	43	74	38	36	71	23	43	69	25	44	84	30	54	80	34	46
Fort Vancouver, Oregon.....	82	28	54	59	25	34	53	7	51	61	19	42	61	19	42	80	21	59
Fort Marion, Florida.. (13 years) ..	89	43	46	86	34	52	82	23	59	84	21	63	86	26	60	88	32	56
Fort King, " 5 " ..	99	31	68	88	23	60	83	27	61	85	24	61	86	11	75	93	27	66
Fort Barrancas, " 10 " ..	89	36	53	80	29	51	74	18	56	76	10	66	73	29	49	86	34	52

Decidedly the most interesting features of the fall climate in its relation to the consumptive, is at that period of it, when the low temperatures begin to intrude upon the higher ones. This period, as we descend the Atlantic coast is postponed later and later, until having reached the peninsula of Florida, we observe that it does not influence the means until the month of October—perhaps the middle of the season. The advent of it marks the beginning here

of those non-periodic oscillations, which stamp its climate with uncertainty and irregularity. As an evidence of the irregularity produced by these non-periodic visitations, the date of the first appearance of frost is so uncertain, that at Fort Marion, in 1849, it was not noted, until December 6th, in 1852, in December 18th, and in 1853, in December 30th; whilst in the above table, the lowest extreme in thirteen years in October, approached that point very closely, and in November, the temperature was reduced within two degrees of the freezing point. In the latter, during thirteen years, temperatures below 40° were recorded six times. Looking still further at Forts King and Barrancas, we observe that the freezing point was attained at the first in October, and at the second, it was low enough to produce a killing frost. November, at these posts, gave still farther reductions, so much so that ice was probably made—the extreme being four and three degrees respectively below the freezing point. The low temperature of 31° was noted only once in five years at Fort King, but, although isolated, it is a significant occurrence when regarded in connection with its southern latitude. November, however, gave in the same length of time, temperatures below 35° every season. Fort Barrancas gave the low extreme of 36° only once in five years, but in a period of seven years, November in five of them, gave figures below 36° . So that whilst frost may not be expected every season in October, yet it is not at all unusual in some parts of the State, and in November, it forms properly the rule of the climate. At some periods, even ice may not be unreasonably looked for in October, and that too in some of its central latitudes. It is said that “in five years of a period of twelve the formation of ice occurred so generally as to destroy vegetation liable to be so cut off, before the close of October in the States bordering the Gulf, and it may be safe to assume that in *the half of any period of years this will occur at all points north of the 30th parallel.*”* In regard to the liability to frost and ice in

*The italics are our own.

November, the same author continues: "There are no exceptions to the liability in alternate years, at least for any point except the south of Florida, from Fort Brooke to Key West, and at the mouths of the Rio Grande and the Colorado of California."*

On the Pacific, frost and ice make their appearance in the northern portion in October, and at points remote from the coast in September, but "in California the coast stations observe no ice until November, when it occurs at all points, and as decidedly at San Diego as at San Francisco." The lowest recorded temperatures at both of these places, as given in the above table, in October, are not low enough to produce a deposit of frost under the most favorable circumstances. This, however, cannot be stated as the invariable or absolute rule, for Mr. Blodget gives on page 291, of his work, the 14th of October at San Diego, as the earliest date of its appearance, and the 27th of October, as the earliest at San Francisco; although in searching the record we have been unable to find temperatures low enough to produce it. So far as its earlier or later appearance at the two sections is concerned, it is later on the southern part of the Pacific coast than in Florida as a general rule. Hence the degree of cold usually experienced at the latter, in October, is greater than at the former. The opposite extreme of these two months equals in excess the one just remarked upon, and though non-periodic in their occurrence, are of no less significance. And if the two greatest extremes here given for these months, should occur in the same month, which is by no means impossible, the system would find itself subjected to high summer temperatures coincidently with the low winter ones. The greatest extremes on either hand are recorded at the middle post, which in five years gives the extraordinary range of 68° —the temperatures ranging from the freezing point to blood heat in October, and in November within ten degrees of the last. The possible range of these months at all of the Florida posts exceeds those of the Pacific stations.

*See Blodget's *Climate, &c.*, page 290.

But the lowest extremes of cold, as continued from the later fall temperatures to those of the winter months, assume still greater severity. In December at Fort Marion, the lowest is 23° —that of January, still lower, 21° , and that of February but little advanced to 26° . December in six, out of thirteen years' observations, gave temperatures as low and lower than 32° , and four times below 30° . So that nearly one-half of a series of years would give low extremes, ranging from 23° to 32° . In January, at the same place, in the same length of time, there were ten years that gave observations below 40° , and six of them were at and below 30° . February also showed, in a similar period, nine years below 40° —seven of which were even below 36° . In March also in seven of twelve years' observation, the lowest extremes ranged from 32° to 40° . At Fort King, in December, during five years' observations, all of the lowest extremes were at or below 36° , and two of them gave 27° . In January, at this post, four out of five years indicated extremes extending from 24 to 30° ; and in February, three of the five, gave them varying from 11 to 27° . In March, also, four years gave a range from 27 to 38° . At the other post, in December, in seven years, they extended in five of them from 18 to 28° , and the highest recorded in that time was 37° . Throughout a period of ten years at this post, in January, the lowest extremes were at or below 34° , and two of them gave the extraordinary record of 10 and 18° . In February, for ten years, they were below 34° . In March, also, extremes of seven out of nine years were still below 40° . The opposite extreme during these various periods of observation, were above 80° at all of them, throughout the season, except at Fort Barrancas in the three winter months. The resulting ranges for the winter months were at Fort Marion from 59 to 63° ; at Fort King from 61 to 75 ; and at Fort Barrancas from 49 to 66° . The range of March, also, at all of them, was about the same as those of the other months.

Of the winter months, at the two southern posts of the

Pacific, it will be observed, that in December the lowest extremes are above those of Florida, and also that the highest are many degrees below the latter, so that its ranges are reduced thirteen degrees and more, under those of the latter. January and February also show still higher figures for the lowest extreme, and together with the highest, produce monthly ranges twenty-two and thirty-five degrees less than those of the same months in Florida. March also reveals the same general relation. It then follows from the comparison, that both the higher and lower extremes of temperature are more excessive in the State of Florida, than at this portion of the Pacific, and also that its fluctuating capacity is much greater. Moreover, the frequency with which these low extremes are met with in this State, is far greater than the present record in the south of California will admit for it.

It is impossible to give a thorough representation, or to convey a perfect idea of the true character of the non-periodic changes which are common to the climate of Florida, by means of statistical tables like the above. These are so sensible in their appearance, and so palpably uncomfortable and disagreeable to the senses, as to force their observation upon those, who are in no wise, directly interested in their discussion. Hence in addition to the statistical data, accumulated by scientific investigations, which in some respects are deficient, we have the writings of more disinterested observers. And there is no reason that they should be excluded from notice in this comparison, since they alone can furnish the full severity of those vicissitudes alluded to. In the various meteorological registers, we have the temperatures given at particular hours of the day, which can enable us inferentially only to arrive at the lowest attained degrees, and where sudden changes occur give no correct account of the exact period at which they occurred, or of their rapidity. These latter are furnished by amateur observers particularly, because it is their apparent character, which renders them particularly noticeable in their minds. We may then be indulged in the presentation of

the following incidental facts, which have a direct bearing upon this climate—particularly the extremes of temperature. “It is evident,” says one, “that the coast of Florida has a much milder climate than the interior; for Fort King, which is more than half a degree south of St. Augustine, has nevertheless a much more severe climate, as will be still farther shown. In February, 1841, the frost was so severe on Pease Creek, in lat. 28° , for several nights in succession, that thick ice was formed, and the horses’ hoofs clattered on the frozen ground, as loudly as at the north in the severe cold of November. No observations were made with the thermometer. This frost must have extended several miles lower, or at least to lat. 27° , as it is seen that on the western coast, (in a milder climate) at Sarrasota, (lat. $27^{\circ} 20'$), the thermometer was down to 30° .” Further on, he continues, “it appears, then, that the winter climate of the coast on the Gulf is more severe than that of the Atlantic coast, and that of the interior is more severe than either. The eastern coast is warmer in winter than the interior, in consequence, do doubt, of the Gulf Stream passing northward through the Straits of Florida. But whatever the cause, it is certain that the cold of the interior is much more severe than on the coast, and that the winter weather is colder on the western than the eastern side of the peninsula. Scarcely a year passes at Tampa Bay without ice, and the bodies of the orange trees are all seared from the effects of the cold winds.” (DeBow’s Review, page 342.)

Again, the writer (Dr. Kitchen) in the Nashville Journal of Medicine and Surgery, to whom we have already referred, spent the greater portion of the winter of 1855–6, at Middleburgh in the interior. “The site of the town is a sand hill, and immense pine forests surround it, which serve to shield it from severe winds.” The hours of observation were “7 A. M., at 1 P. M., and soon after sun-set.” “The thermometer was under cover, but exposed to the North, East and West winds. The temperature of St. Augustine was noted down for me by a friend, at the same hours and under the same circumstances.” “The following is a con-

densed statement" of his "observations for the winter." December was mild and pleasant, as was the case "almost throughout the United States. On only one morning during the month was the mercury found below the freezing point on Christmas day, however, there was a sudden and severe change of temperature, *amounting to twenty degrees in one hour.*" "The extremes for the month at 7 A. M., were 30 and 71°, and at 1 P. M., they were 57 and 87°." January, 1856, was characterized by frequent and violent changes, and by blustering winds; in fact, there was much weather that would be called extremely disagreeable in any country. The thermometer indicated a condition of the atmosphere below the freezing point on nine different mornings, and ice two inches in thickness was formed." "The extremes of temperature at 7 A. M., were 20 and 68°, though on one occasion the mercury was seen at 16°, in a thermometer which hung in a more exposed situation than mine. At 1 P. M. the extremes were 38 and 80°." There were also nine days on which a heavy fall of rain occurred. "February was more pleasant than January." There was ice on two mornings; but "four rainy days" only. "The extremes at 7 A. M., were 22 and 63°, and at 1 P. M., 40 and 80°." March was distinguished for copious rains, dark clouds and high winds. Only eight really pleasant days were seen within four weeks, and it has never fallen to my lot to see heavier rains than fell on six different days. Some frost occurred as late as the 28th of the month." At St. Augustine the temperature was about the same as at Middleburgh. The December extremes were 32 and 84°—those of January were 22 and 76°, and those of February 23 and 82°. "At both places the mean temperature of the coldest winter day was 34°." He next particularizes the daily changes observed, which have been furnished in another part of this essay. In eleven of ninety-two consecutive days, the changes of temperature in the morning, amounted to "from twenty to thirty degrees." "On one occasion, *the mercury fell forty-six degrees*" in twelve hours, and "on another *thirty-eight degrees* in the same length of

time." We would observe, just here, that perhaps one of the strongest comments and severest criticisms, that could be made upon the winter climate of Florida, is the conclusion arrived at by Dr. Kitchen. "The winter," he writes, "was *excessively cold*, yet it was uniformly so, and the atmosphere for a long time was without humidity, *in fact, just such a climate as Dr. Drake, in his great work, recommends**—Fort Snelling being suggested by him as a suitable location." Here then was the singular anomaly of an invalid seeking a uniform and equable warm winter residence, but finding in its stead, a climate as rigorous and severe as that of the far north-west.

Enough has perhaps been said upon this point to enable our readers to apprehend correctly the varying winter climate of this State, but we desire to offer an additional survey of the great winter extremes of temperature, as given in Mr. Blodget's work, commencing at page 144. "In February, 1835, nearly the whole area of the eastern United States was swept by a simultaneous refrigeration, reducing the temperature on an average fifty degrees below the mean for that month—in Maine nearly 65°; in New York 55° to 60°; at Washington 53°; at Augusta, Georgia, 62°; in Northern Florida, 65°, and at Key West, 22°." Also, "at the 30th parallel these great oscillations may reduce the temperature to a point only 10° above zero in any winter-month, and reduce the mean by at least 12°." In the year 1800, "Snow and hail fell the whole day on January 10th, at St. Mary's River, Florida, and on the 11th, the snow was five inches deep. The lowest temperatures were 10th, 37°; 11th, 28°; 12th, 34°; In the winter of 1830-31, the means of January and February, at Tampa Bay were reduced 5°, and at the close of 1831, a second depression occurred, which reduced the mean of December at St. Augustine, 5° below its average. February, 1835, gave a single extreme of 11° at Fort King, and reduced its mean 5° 4. It was during this month of this year, that "a large inland area of the north of Florida was also below zero, its limits being about

*The italics are our own.

the 29th parallel." For four days, 7th to the 10th, excessively low temperatures were experienced near Jacksonville, the temperature at 2 P. M., of the 9th, being 36° , and at 7 A. M., of the 8th, was at 8° . "Evergreen oaks shed their leaves from this frost, and began to show new leaves again on the 20th March following. The orange trees were split to the roots, and of course were killed root and all." Again, in 1843, the lowest of January at Fort King was 23° ; of February 18° , and at Fort Brook, it retreated to 38° in March, reducing its mean 5° below its average. These extreme temperatures were experienced again here in 1845-46. In December the lowest observation at Tampa Bay was 34° , and its mean was reduced 6° ; and at St. Augustine, the lowest was 23° , and it had its mean reduced 7° ; and at Pensacola, it was 21° , with a reduction of $10^{\circ}2$, in the mean. In the winter of 1851-52, in the Central and Southern States January was 6° to 10° below the average, with severe effects on the sub-tropical vegetation." The lowest observation at Pensacola was 10° , and at Key West 49° —the mean of the month at the first was $9^{\circ}5$ below the average, and at the latter $5^{\circ}5$. On the 13th January, snow fell at Jacksonville, Florida, through the entire day. "In 1854 a similar instance of severe cold occurred, which was more general however, occurring on the interior and Pacific coast, and also in England. At Fort Snelling and the northeast the thermometer fell below the freezing point of mercury," and at Fort Ripley, "the mercury receded entirely into the bulb of the thermometer, and fifty grains placed in a charcoal cup were completely frozen." This was the year which furnished the lowest depressions of temperature recorded for most of the Pacific posts in the winter season. At San Francisco, the lowest measure was 27° , and at San Diego,, 31° . At Fort Barrancas, in Florida, the lowest of this year was 27° in December, and those of January and February were 30° and 32° respectively. At San Francisco the extreme data were recorded one month later than in this State, in January; the lowest measures of December and February, were 38° . This is the only instance, that

we recollect to have seen specifying the low measures of the Pacific, and whilst it shows very unequivocally its liability to non-periodic changes, yet, although so general as to alter the temperature condition of the climate of England, taking the whole season into view, it was not so severe as at the posts of Florida mentioned. Moreover at Fort Brooke, Tampa Bay, lat. 28° , the minimum temperature of December was less than at San Francisco in the same month.

Further on this subject, we find in the Patent Office Reports for 1857, a summary of the meteorological conditions of San Francisco and St. Augustine, which we may compare with profit. This is of special interest because it prolongs the period of observation at the Pacific post, beyond that embraced by the different tables, and moreover affords an insight into the concurrent refrigeration at both places. The lowest extreme at San Francisco, in January was 36° , and the range of the thermometer for the month 30° : at St. Augustine, the lowest was 19° , and the range 50° . In February, the lowest was 38° , at the first, and 48° , at the second—the range however was greater at the last. In March, the lowest at St. Augustine was 41° , and at San Francisco, 47° —the ranges were as 38° to 28° . The lowest of April was also one degree less than at the Pacific station, and the same is true of October. The lowest of November at San Francisco was 46° , and at St. Augustine 39° ; the ranges were as 24° to 44° . December at San Francisco however was below the other.

Finally, the following statement of the daily ranges of the thermometer, and some of the more prominent features of the months of this period, at San Francisco, and Warrington, Florida, is of additional importance in this connexion.

Warrington, Fla., in November, 1857.—Lowest Extreme, 32° —Monthly Range, 50° —Mean Daily Range, $11^{\circ}7$ —Highest Daily Range, 20° . (There were 7 days, with a range of 15° and over.)

San Francisco, Cal., in November, 1857 & 1858.—Lowest Extreme, 46° —Monthly Range 26° —Mean Daily Range, 42.8 —Highest Daily Range, 132° . (A mean of 7.5 days per month, for the 2 years, gave a daily range of 15° and over.)

† The data from which they are calculated, may be found in the Patent Office Reports for 1857 and 1858.

Warrington, December, 1857.—Lowest Extreme, 41°.—Monthly Range, 83°.—Mean Daily Range, 15°.—Highest Daily Range, 26° (3 days.) (There were 10 days with a range of 20° and over, the most of which changes took place in 7 hours.)

San Francisco, December, 1857 & 1858.—Lowest Extreme, 30°.—Monthly Range, 29°.—Mean Daily Range 7°.—Highest Daily Range, 15° (1 day.) (7 days, per month, gave a daily range, amounting to 10°.)

Warrington, January, 1857.—Lowest Extreme, 14°.—Monthly Range, 58°.—Mean Daily Range, 13°.—Highest Daily Range, 35° (1 day in seven hours.—(Thermometer at and below 32° on 9 observations—5 days gave a range, over 20°, 3 of them in 7 hours.)

San Francisco, January, 1857 & 1858.—Lowest Extreme, 36°.—Monthly Range, 30°.—Mean Daily Range, 7°.—Highest Daily Range, 14° (1 day.) (8 days, per month, gave a range (daily,) of 10° and over.)

Warrington, February, 1857.—Lowest Extreme, 36°.—Monthly Range, 39°.—Mean Daily Range, 12°.—Highest Daily Range, 27° (1 day.) (On 11th, there was a difference of 27°, in fourteen hours.)

San Francisco February, 1857 & 1858.—Lowest Extreme, 33°.—Monthly Range, 33°.—Mean Daily Range, 9°.—Highest Daily Range, 21° (1 day.) (17 days in February 1857, gave a range of 10° and upwards—8 days only in 1858.)

Warrington, March, 1857.—Lowest Extreme, 41°.—Monthly Range, 39°.—Mean Daily Range, 9°.—Highest Daily Range, 21° (9 days with a range of 12° and upwards.)

San Francisco, March 1857 & 1858.—Lowest Extreme, 42°.—Monthly Range, 33°.—Mean Daily Range, 10°.—Highest Daily Range, 20° (2 days.) (An average of 9 days, per month, with a daily range of 12° and upwards.)

The mean daily range for the five months is at Warrington, 11° 7, and at San Francisco, 8° 7.

It thus appears that the lowest extreme of every individual month of the period, except December, at this Florida village, for this year, was below by many degrees that at this Western city, in twice the length of time. Moreover the monthly ranges of the thermometer were far greater, as well as the mean daily ranges. And as to the incidental occurrences given in the above, we still observe that they were greatly more severe and extreme in Florida. The record here given of Warrington in Florida, may perhaps be assumed as that characteristic of the greater part of its Northern section, not excepting even the Atlantic coast, and this assumption is supported by the irregular, continental features already brought to light. A portion of the warm season, June, July, and August, perhaps, are the months which so far as we are able to judge, give the least daily range in Florida, and this arises partly, if not chiefly, from the precipitation which occurs at this time,—the fall of rain, as is well known, by the giving out of sensible heat, exerting an influence towards the mitigating of extremes. We speak reservedly on this point because the limited inspection of the daily temperature phenomena in this State, prevents a positive expression of opinion. On the Pacific coast however, as shown by San Francisco, the daily range throughout the year may be stated at about ten degrees, and is subject to material variation at two periods only—at the time, embraced in the

substitution of the seasons. There are reasons, which present themselves to the mind, why certain parts of the Pacific coast have a less daily range, than the peninsula of Florida. They are found in the circumstances, proper to itself and derived from the sea, already alluded to and discussed, which conspire to produce a uniformity of temperature condition.

Winds and Weather.—Equally irregular with the temperature of the peninsula of Florida, is its course and method of circulation of the atmosphere, upon which latter, the former is to a greater or less extent dependent. The same general causes, due in most cases to the surrounding topography of land and sea, which operate to produce an extreme variability and extensive fluctuation of its thermometrical status, are at work also to render uncertain, both as to force and frequency, the character of its winds. We have already seen, that it is possessed of no general atmospherical circulation, similar to that which is found upon the western coast of the continent; but that, occupying as it does, what has been termed the transition belt between a tropical and a temperate clime, it derives its chief climatological characters from local circumstances, which vary in themselves at different seasons of the year. Thus, in the summer season, the temperature of the atmosphere over the land is elevated much above that of the neighboring waters, and consequently the circulation of the air is toward the land, and surpasses in strength and continuance the ordinary sea-breezes of sea-shore localities. But in the winter or period of low temperatures, in the absence of this great distemperature, this continuous tendency toward the land is subverted, by a “natural reversion” towards the warmer waters of the Gulf of Mexico particularly. This natural reversion cannot be taken in an absolute sense, because we know that it holds a direct relationship to the temperature of the winter both of the State, as well as of the continent. If the season throughout the United States, be characterized by a general refrigeration in which this State participates, the preponderance of

land winds will be strictly maintained during its continuance, and hence but little benefit will be derived by its proximity to the warmer southern waters. But if the winter season be mild and warm, the sea-winds obtain a temporary ascendancy. The same winter season may be characterized in the months which compose it, by both of these conditions, for as the various months are warm or cold, so will the manner of circulation of the air conform to it—the sea-winds in the warmer ones, and the continental in the colder. Like the temperature, the circulation differs somewhat upon the two coasts—the eastern, having a greater prevalence of easterly winds than the western, but both are subject in like proportion to northern and north-western winds. Nevertheless western winds of some strength are not unfrequent upon the eastern shore.

At Fort Marion, as the higher fall temperatures decline, the frequency of the south-east winds is reduced in favor of those from the north-east to north-west; the latter, having their greater prevalence in those years, in which the low temperatures set in early. Of the single winds, we believe that the north-east are most frequent, and have sometimes a very great relative force. In October, during four years' observation, the north-east, east, and north-west were most frequently recorded, and November presented but little difference—the principal, being in an increased number of winds, due west and north. In the warmer days of these months, the southern winds were recorded. In December, in the same length of time, the north-east and north-west were the predominant ones; but they also had a similar proportion from the west, south-west, and north, in the two preceding. In January, the north-east and north-west were still ascendant, but there was also a greater frequency of the west winds. During February, of four years, the predominant ones varied amongst those from the north, north-east, west and north-west—although during this time, the south-west and south winds were often recorded. March gave a similar record with February—the north, north-east, west, and

north-west winds, being oftenest observed. Nevertheless the southern winds were increased over the winter months. A close examination of the monthly records of the winds, both here and at all other parts of the peninsula, clearly prove the uncertainty of their prevalence. No calculation, likely to prove correct, can be made as to the probable prevalence of any particular winds at any part of the Northern section, for the whole period seems to be occupied in a general conflict of the continental or northern, and the oceanic or southern influences, in which each at irregular intervals obtains a temporary sway—the result of some action totally independent of the peninsula itself.

The Pacific coast, being embraced within the limits of the belt of westerly winds, common to the north temperate zone, has a more uniform circulation. The south and west winds in the aggregate, preserve a constant ascendancy over the north and east, and the severity of the latter, as experienced in Florida by the sudden and extreme reductions of the temperature, is counteracted by the constantly present, warm influence of the Pacific. To the southern parts of it this is more particularly applicable, for the protecting and counteracting agents are more active here, than in the vicinity of Fort Vancouver, or on the coast of Oregon. The situation of Fort Vancouver, in the imperfect valley of the Willamette River, secures to it irregularities, both of temperature condition and atmospherical circulation, similar to those noticed in Florida. But at the southern part of the Californian coast, greater regularity obtains, and the character of the winds in general are those which, in a sanative point of view, are most desirable. The northwest wind, which is found to blow frequently here in the winter, is of a totally different character from the same wind in Florida; at the latter, it is cold and dry, as a general rule, whilst, at the former, coming as it does, over a water surface of higher temperature than the land, it must bring warmth and moisture. The north-east winds also differ at the two places.

Of the weather the following is a summary for the winter months :

	December.			January.			February.		
	Fair,	Days. Cl'y.	Rn'y.	Fair,	do. Cl'y.	Rn'y.	Fair	do. Cl'y.	Rn'y.
San Diego, Cal.	19.8	11.2	7.4	21	10.	3.2	17	11.2	7.6
" Francisco, "	16.3	14.6	11.3	16	15	9.5	15	13	9.5
Fort Marion, Fla., (4 yrs)	18.5	12.5	7.2	19.5	11.5	5.5	17.4	10.8	5.4
" King, " (5 ")	20.8	7.4	2.8	20.3	5.9	4.8	20.4	8.0	4.4
" Barrancas, " (3 to 4 ")	16.2	15.	7.5	16.5	14.5	9.5	15.7	12.5	6.0

The respective means are as follows :

San Diego	Fair Days	19.26—Cloudy	10.8—Rainy	6.06.
" Francisco	"	15.6	14.2	10.1
Fort Marion	"	18.46	11.6	6.03
" King	"	20.5	5.43	4.0
" Barrancas	"	16.13	14.0	7.66

We have already shown the varying degree to which the wet season, as evidenced in the amount of precipitation, of the Pacific coast is established in its different latitudes. The farther north we proceed, during this season, it is found to increase so rapidly, that at San Francisco the measurement is nearly double that at San Diego, and at Fort Orford on the coast of Oregon, it is four times that at San Diego. As a consequence, the relative number of fair, cloudy, and rainy days, must correspondingly differ. Between the divisions of the weather at these higher latitudes, and those of the State of Florida, no comparison need be made, for the direct relationship at the former, between the frequency and the duration of the precipitation, determines such a large proportion of cloudy and rainy days, and so reduced a proportion of fair days, as to render them incomparable. Farther south, however, we find a much greater resemblance and less contrast between the two sections of the continent. San Francisco gives a higher proportion of cloudy and rainy days for each individual month, than either of the posts of Florida; although a general predominance of fair days is preserved. An average of one-third of the months is occupied here in rainy days, and nearly one-half in cloudy; whilst, on the western side of the peninsula of Florida, which indicates the highest proportion, the average per month, of rainy days is only 7.66. Nevertheless the average number of fair and cloudy days differ but little from the proportion here recorded. At

Fort King, as compared with San Francisco, there are a much greater number of fair; and less than half the number of cloudy and rainy days.

The proportion of fair days at San Diego, very nearly equals those of this central southern post, but still has twice its number of cloudy and one-third more of rainy days. The record at San Diego, is however superior to both of the other stations of Florida: as compared with Fort Barrancas, it has a larger proportion of fair days, and a smaller number of cloudy; and the ratio of rainy days just equals those of Fort Marion. At this part of the western coast, the general preponderance of fair weather is as marked as in the greater part of Florida, and in many respects the record is very similar.

As tending to a more correct apprehension of the state of the weather during the period from October to March, we present the following facts, taken from the meteorological reports for 1857 and 1858—for Warrington, Florida, and San Francisco.* The record is made up of daily observations at 7, 2, and 9 o'clock, which were designed to show the relative state of the weather, as to the amount of cloudiness. It embraces one year at Warrington, and two years at San Francisco. At Warrington, in October, there were four cloudy days (entire cloudiness,) twenty-one fair, five partly cloudy and fair, and one cloudy and rainy. At San Francisco, the means of the two years, were, 11.5 fair—3 cloudy—14.5 cloudy and fair—0.5 cloudy and rainy, and 0.5 rainy.

At Warrington, in November, there were, 16 fair—6 cloudy—6 cloudy and fair—and 2 cloudy and rainy. At San Francisco, the means were 11.5 fair—6 cloudy—9 cloudy and fair—2 cloudy and rainy, and 0.5 rainy.

At Warrington, in December, there were 14 fair—8 cloudy—6 cloudy and fair—1 cloudy and rainy—1 fair and rainy. At San Francisco, the means were, 10.5 fair—4.5 cloudy—13 cloudy and fair—0.5 cloudy and rainy, and 1.5 rainy.

At Warrington, in January, there were, 14 fair—7 cloudy

* See Patent Office Reports for 1857 & 1858.

and 10 cloudy and fair. At San Francisco, the means were, as follows: 12 fair—5 cloudy—7.5 cloudy and fair—2 cloudy and rainy—2 rainy, and rainy and fair.

At Warrington, in February, there were, 7 fair—3 cloudy—18 cloudy and fair. At San Francisco, the means were, 10.5 fair—1.5 cloudy—8.5 cloudy and fair—3.5 cloudy and rainy—3.5 rainy, and 0.5 rainy and fair.

At Warrington, in March, there were, 13 fair—2 cloudy—10 cloudy and fair—5 cloudy and rainy, and 1 rainy. At San Francisco, the means were, 9.5 fair—2 cloudy—17.5 cloudy and fair, and 1.5 cloudy and rainy.

This series, though comprising the record of so short a period as one and two years respectively, is nevertheless of great value, and aids materially in the endeavor to elucidate the probable daily condition of the weather of the two places. It will be perceived, that whilst the two fall months at the Florida station, have a larger number of days that are entirely fair; yet the proportions of cloudy, cloudy and rainy, and rainy days are about the same. At San Francisco, the largest number of days in these two months, as well as in the winter months, are recorded as cloudy and fair, or such days as are clear and free from cloudiness at some one or other of the hours of observations, and have a certain amount of cloudiness at the others. Thus the morning observation at 7 A. M., may be with a clouded sky, and the remaining,—at 2 P. M. and 9 P. M.,—be fair and unclouded. In December, the post of Florida still has a greater number of fair days—but also has twice the number of days of unbroken cloudiness. The cloudy and fair days of San Francisco are twice as great as at Warrington, but the ratio of cloudy and rainy, and rainy days is about the same. In the month of January, Warrington has two more of fair; two more of cloudy, and a larger number of cloudy and fair days, than San Francisco: but it has no record of rainy days at all. In February, we find the fair days in Florida reduced below those at the Pacific post—the cloudy greater, and the cloudy and fair more than twice as great: but the usual proportion of the latter has been replaced by a

greater number of cloudy and rainy days, of rainy, and of those upon which there was a fall of rain at some period of the day, the remainder being fair.

This examination, among other things, affords an insight into the character of the wet season at this part of the Pacific coast. We are apt to associate the idea conveyed by the term, wet season, with a state of continuous rains for lengthy periods—day and after day. But the daily record which we have before us proves differently, for during the two years' observations of the wet season, scarcely a rainy season, embracing more than two days occurs, and hence a large part of the precipitation which takes place at this time, must fall in those days which we have termed cloudy and rainy. Between this series of daily statistics, and the records already given of the proportion of rainy days to each month of the wet season on this coast, there appears some discrepancy. Such however is not really the case, for the proportion of rainy days in the monthly computation embraces all upon which a fall of rain occurs, no matter whether it occupied only a part or the entire day. In conclusion, we think that we are justified in assuming for the southern part of the Pacific coast an equal degree of general fairness of weather with the State of Florida during the period of low temperature—the idea to be conveyed by the term *general fairness*, relating simply to the amount of out-door exercise to be had.

Rain in Inches.—The mean fall of rain is at Fort Marion, for the autumn, 9.56 inches, and for the winter, 5.88—that of the entire year is 31.80 inches. At Fort Barrancas, the mean of autumn is 13.71 inches, and of winter, 11.72 inches: that of the entire year, 56.98 inches. We have no record of the precipitation at Fort King, or at any of the interior places of the northern section; but, upon examining the autumnal hyetal chart in the Army Meteorological Register, we find the entire gulf coast, and at least three-fourths of the entire Northern division, represented by a measure of twelve inches at this season. The only portion of the State, that is not included within the dark

shading, is a narrow strip extending from the Georgia line, southward along the Atlantic coast to Fort Pierce. The measurement of this portion is ten inches, and Fort King is embraced within its limits. In the winter season, the middle and eastern parts of this section still have an amount of twelve inches; whilst its more southern part, together with all of the central latitudes of the peninsula, have it reduced to eight degrees. At the extreme southern point of the State, the measurements of this season, are only half as great as those of its northern latitudes, and two-thirds the middle ones.

On the Pacific coast, at San Diego, the mean fall of autumn is 1.24 inches; of winter, 5.90: the mean annual quantity is 10.40 inches. At San Francisco, the fall mean is 3.37 inches, and the winter mean 11.38 inches: that of the year is 23.59 inches. At Monterey, an intermediate post, the autumnal mean is 1.65 inches—the winter mean 5.9 inches, and that of the year is 12.20 inches. At posts, Del Chino and Jurupa, between Monterey and San Diego, the summary is, the fall mean 1.67—the winter mean 7.42, and the annual mean 13.77 inches.

From this statement it is evident, that the whole northern area of Florida, except a small part adjoining the Atlantic ocean, although enjoying at this season the least precipitation for the year, still has measurements larger than that part of the Pacific, embraced between San Diego and San Francisco. And this fact shows the precise signification of the term “dry winter,” that has been applied to it: it must have a strictly comparative meaning, and be used only in contradistinction to the larger precipitations of the summer and early fall. According to our present calculation, we are justified in assuming that, notwithstanding the existence of the wet season at this reserved part of the western coast, yet its equivalent in the amount precipitated, is scarcely equal to the normal general measurements of the dry, northern part of the State of Florida.

As to the more intimate characters of this precipitation at the latter place, we cannot do better, than present to our

readers the following quotations from Mr. Blodget. He says: "The autumnal distribution of rain in Florida is more difficult of explanation than that for any other district, *from its great irregularity*,* and from the inadequacy of the periods of time during which the observations have been made, to reduce the prominence of the differences arising from this irregularity, and to establish any definite rule of the relations of the several months." Again, "from these results it is evident that a comparatively dry season succeeds the profuse rains of August and September in Florida, and the portion of the Atlantic States bordering it, and also that this dry season *does not extend westward beyond Pensacola*."† "By reference to the general tables it will be seen that there is a marked tendency toward the development of a winter dry season, even in the States next to Florida, and that in Southern Florida this is quite decided and almost as fully developed as in the recognized tropical climates. As before remarked, however, there are great irregularities, and often quite contradictory results for single years." The winter dry season here referred to for tropical Florida, cannot be taken in that absolute sense, given to the dry season of the Pacific slope, which is "the close of vegetation for most of this region because of its aridity," but only in contrast to those heavy precipitations, which occur at this time in the lower part of the Mississippi Valley. "Comparing Baton Rouge, as the central point of this district of profuse winter rains, with the posts of Southern Florida, the contrast is at once apparent." He continues: "The first approach of this dry season in Florida is made in October, and from the minimum, which appears to occur in November, there is a partial resumption of the rains apparent in mid-winter, to be followed by other months of less rain. But as a whole, the winter, from October forward, is a dry season on the peninsula of Florida, and to some extent on the South Atlantic coast." "The irregularities in this succession of the months are not suffi-

* The Italics are our own.

† The Italics are his.

cient to change the character of this district as one of constant precipitation, however, nor is it rigidly any the less identified with that of equally distributed rains in the general sense in which the term is used. But in Florida a different designation applies, though we are yet unable to say precisely what that designation should be. It appears to be a climate ordinarily of a division into two principal seasons in regard to the rains, the wet summer and the dry winter, *yet either may be interrupted by extremes of an opposite character much greater than those occurring in any other known district.*"* Yet again, he remarks in relation to these "winter rains and their partial periodicity," as presented by the contrast of Florida and lower Texas. "It is difficult to account for these features satisfactorily upon any received principles of winter distribution of atmospheric humidity, unless we suppose these extreme southern points to be more nearly assimilated to tropical districts in regard to rain than they are in temperature. *In truth, they lie in the neutral latitudes, which afford the anomalies of Africa and Asia, and which appear to be controlled by the configuration of the districts, and by accidental or anomalous atmospheric movements resulting from peculiar relations of the sea and land areas.*"†

The concluding point of the comparison—that of their relative humidity of atmosphere—will next engage our attention. We have in an early part of this article, stated that the positive hygrometrical condition of the atmosphere of the State of Florida could not be given by us; the sum of our information in regard to it being entirely confined to such incidental facts and circumstances as are found in scattered fragments throughout the promiscuous writings of others. Some of these incidental allusions have already been given, sufficient perhaps, in some cases, to convey a good general idea of the probable degree of dampness incident to some of its seasons. Thus, we have alluded to its humidity as compared at all times with more northern regions; the heavy

* The Italics are our own.

† These are ours.

dews of winter; the extreme difficulty experienced in preventing the oxidizing of surgical instruments; the moulding of books; the rusting of 'keys "in one's pockets" in the summer; and the luxuriance of such vegetable fungi as find their habitat in localities of moist situation. Besides, we have spoken of the prevalence of the paroxysmal fevers as indicative of its dew-point they being universally recognized as the necessary supplement to a high temperature and a high dew-point, and as sources for this moisture we have referred to its own internal topographical sufficiencies, as well as those of the adjoining seas, the winds being employed as the useful agents in its transfer from the latter to the land-atmosphere. The very level character of the entire peninsula, and its slight elevation above the level of the sea, materially increase the transporting power of the winds, and favor largely the production of a moist atmosphere even throughout the entire northern section. Furthermore, in relation to the circulation of the atmosphere it cannot fail to be observed, that the winds from only two points of the compass, north and north-west, are from a quarter that will warrant the supposition of a dry character for them. From northeast to west circumferentially, they are either derived solely from over water surfaces, or have in their pathway a continued expanse of ocean surface. On its eastern side, those particularly from the Atlantic individually, are able to induce a state of sultriness and oppressiveness of the weather by transporting the humid atmosphere of the Gulf stream; and in the case of the northeast, which courses along the coast line, and thus in some measure avoids the warmer atmosphere of the Gulf stream, a corresponding degree of humidity is produced. It was under this apprehension of its characters, that Dr. Forry remarks of St. Augustine: "the chilly northeast blast, surcharged with fogs and saline vapors, sweeping around every angle of its ancient and dilapidated walls, often forbids the valetudinarian venturing from his domicil." And again, "if the wind be cold and damp, like the northeast winds of St. Augustine, the system of the pulmonic is especially liable to all the irregular action of the capillaries generally imputed to the operation of these causes."

On the western side of the peninsula, the south and southwest winds, though differing from those upon its eastern in point of temperature somewhat, have undoubtedly a similar hygrometrical status. For in both cases, they originate in a maritime sphere and are subjected to no previous conditions by which they could be made to part with their dampness. And here we would inquire, who will essay to place the limit for its extension inwardly? Shall we assent to the ignorant presumption, that it is confined entirely to the sea coast, or its immediately contiguous land areas? The temperature of these winds, as determined at the coast line, may be lost before they reach the more interior parts, but the contained vapor of water is assuredly borne over its entire superficies, although it may not be so apparent there, on account of the increasing capacity of the air for moisture, caused by the elevation of temperature natural to the central parts through a large portion of the year.

As furthering our apprehension of the degree of humidity of atmosphere induced by these winds, we shall submit a few abstracts from the hygrometry of the winds that prevail at New Orleans.* These will also furnish some idea of the state of the north and northwest winds in this latitude, in regard to dryness or remoteness from saturation.

At new Orleans the degree of drying power of the northwest was $11^{\circ}.29$; north $10^{\circ}.06$; north-east $9^{\circ}.28$; east $8^{\circ}.84$; south $8^{\circ}.21$; and southeast $7^{\circ}.56$. Now the east wind here will probably correspond in absorbing capacity with the east and west of Florida; the southeast here will correspond with the southwest of the latter, and also with the southeast: the north and northwest winds in Florida, will probably have a superiority in this respect over those of Louisiana—being at the latter more closely confined to the immediate atmosphere of the Mississippi Valley. The amount of moisture contained by these various winds (saturation being 1000), at New Orleans, was N. W. .677; N. .698; N. E. .763; E. .768; S. E. .720. It is quite likely that the various proportions assigned to these winds also afford a near approximation to those of

* See Southern Medical Reports, vol. ii., p. 149. Dr. Barton's Report of Louisiana.

Florida, except the north and northwest, whose evaporating power at the latter has already been assumed as greater than at the former. The average amount of moisture at New Orleans, superinduced by all of the climatological agents there operating for eight years, was from October to March inclusive at sunrise over .850; at midday .685, and at 9 P. M. .808. (Saturation being 1000.) And the degree of dryness on the thermometric scale was during the same time, at sunrise $4^{\circ}.25$; at midday $11^{\circ}.91$, and at 9 P. M. $6^{\circ}.29$. The extreme dampness of the atmosphere of the City of New Orleans is much greater than that of the interior towns of Florida, and is at all times more sensible to the feelings. But with a proper allowance for the difference of the local topography we may estimate the comparative difference in regard to moisture between them.

In the summer season, during the months embraced by the precipitation of rain, the humidity of the atmosphere is very great, probably much greater than at any other period of the year, notwithstanding the increased capacity of the air for moisture. One of the chief indications of the actual quantity contained in the atmosphere is the regulation of the daily range of the thermometer, and another that we may mention is the oppression felt by the animal system under the associated heat and moisture.

In conclusion, in view of these various circumstances, we think we may safely assume a high dew-point at all times for the State of Florida. It differs in the interior in the winter and colder months from the warmer ones, but the diminution is probably more apparent than real, and like the fall of rain, the dryness of the winter is only to be taken in contrast with the extremity of the summer and fall, and not as expressive of an absolute real condition. During those warm winters, common to this State, and characterized by an increased prevalence of the southern winds, the dew-point probably varies from that obtained during the cold ones, to which it is no less liable.

We deem it useless to reproduce here the various circumstances which have induced us to assume a moderate dew-

point for the State of California and the southern part of the Pacific coast. Those who may wish to array the evidences of the humidity of the two sections side by side, are respectfully referred to the several places where the discussion was carried on. The southern part of this coast is the only portion which can lay claims to superiority in this regard over the State of Florida. And the numerous determining causes of its relative humidity being found to be far less than at the latter, and having also the general testimony of the most prominent writers and authors in its favor, we think that we cannot err materially in assuming that it is less injurious in this element of its climate to Consumptives. With the following quotation from Dr. Thomas M. Logan's letter to Dr. Fenner we close our remarks on this part of the subject. "The winter and wet season have passed away without the prevalence of either the rains or the morbid affections which the experience of the last year led us to anticipate. Indeed, such has been the unprecedented *mildness and dryness*, that I know not at present which to commend most, the salubrity or the pleasantness of the winters of this portion of the Eureka State."*

We have thus demonstrated that on the southern part of the Pacific coast, as represented by San Diego and San Francisco during the period of heat, the difference of the successive months, or the rate of advance from month to month to the highest monthly means, together with the whole amount of augmentation of temperature from the lowest to the highest mean, is less than in the State of Florida; that the position of the spring mean is more uniform even to the extreme northern limit of this coast; that the variability of the monthly means is also less, the mean possible range of the monthly means in Florida from April to October, being $8^{\circ}.96$; that in April and May, the single extreme monthly observations are more variable and extreme in Florida, thus creating a greater possible range of the thermometer; that the daily range on the southern half of the Californian coast from May to September, is as favorable as in Florida; and furthermore, that the winds of the Pacific coast are more uniform in their occurrence and

* He wrote from Sacramento City.

prevalence than in Florida, where they are irregular both in force and frequency.

During the period of cold the rate of a declination of temperature at San Francisco is much less and more uniform than in Florida, which resembles the extreme northern and southern parts of the Pacific coast. An extensive general range of the means of the winter months and season also characterizes the climate of Florida, much more so than of this coast. The low temperatures are generally experienced at an earlier date in Florida than at its southern part, and are commonly much more severe in the winter; the highest and lowest extremes are more excessive; the possible monthly ranges of the thermometer much greater; and it also has a greater frequency of the occurrences of the low non-periodic extremes. On the southern part of this coast the daily range of the thermometer, as a general rule, is less than in Florida, and in the history of the daily records of temperature, sudden and abrupt depressions in the winter months in short periods of time—as a day—occur more frequently at the latter. The winds of the latter are still more variable and irregular, and the general fairness of the weather is about the same at both sections. On the south of this coast, the amount of precipitation at this time scarcely equals the normal general precipitation of the northern section of Florida.

If now we associate the various meteorological conditions incident to each, we will readily perceive the superiority of the climate of the southern part of the State of California over that of Florida. The conjunction of a high summer temperature, tropical in character, with an oppressive dew-point and forcible winds, in the period of increasing temperature in Florida; and of an average high dew-point, with extensive monthly ranges of the thermometer, constant variations of the monthly means, sometimes extreme in character, the want of uniformity in the successive declination of the monthly means, the excessive range of the winter means, the variable and irregular character of the prevalent winds, with their changing hygrometrical conditions, the extreme character of the non-periodic oscillations of temperature and precipitation, the

frequent extreme daily ranges of the thermometer common to the winter, and their liability to occur in periods of shorter duration in the season of declining temperatures, render the climate of this State wholly unadapted to those who require a climate warm and equable, free from excesses on either hand, and whose various climatic features are reliable and uniform in their character and occurrence. The temperature of the Pacific coast in the vicinity and south of San Francisco for some degrees, is at all seasons much more uniform and equable than that of Florida, and its associated conditions of atmosphere, a moderate dew-point, and uniform prevalence of westerly winds, more desirable. These various circumstances are convincing to our minds of the greater adaptedness, or at any rate, of a less degree of unadaptedness to the Consumptive. Of course, we must be understood as entertaining this opinion in a qualified sense, because the limited record on the western coast prevents the definite settlement of the question. A longer record here is alone adequate to it, that at Florida being sufficiently extensive to warrant the belief that its controlling and distinguishing features of climate have already been exposed.

If in conclusion, we are asked to state the most favorable localities on this coast, we must reply, that we can do no more than remark, that they are to be found somewhere between San Francisco and the southern boundary of the State of California. Most probably in some of those "sheltered valleys along the coast," which are said "to enjoy a delicious climate, equally removed from the chilliness of the exposed points of the coast and the heat of the great valley between the coast range and the Sierra Nevada." In further answer to such an inquiry, we would add, that our object has been simply to institute a general investigation of the Pacific climates, in order to exhibit the comparative merits of its various sections; hence, with even a short record, our results must be only general in their nature, and before being acted upon must quietly await their confirmation or rejection by the profession. And whatever may be hereafter determined in reference to the truth or falsity of these results, we shall be equally satisfied, having no desire but to see the real merits of the various sections noticed fairly exposed.

So far as our labors have related to this coast, we shall feel amply repaid if they shall succeed in eliciting such attention as will lead to its correct apprehension by means of more thorough examinations of it. Already numerous investigators are engaged in the solution of the problem of its meteorological relationship to various of its prevailing diseases, though different from the field entered and pursued by us, and we are encouraged to hope that but few years will be allowed to elapse ere the public and professional mind shall be made fully acquainted with its true relationship to diseases of all characters, and particularly to phthisis pulmonalis.

On the Relations of Belladonna and Opium, and on Poisoning by Belladonna.—By JAMES SEATON, L. R. C. S. Edin., L. A. C.

The following cases, which occurred in my practice in September, 1858, will, I hope, prove interesting to the Profession, as illustrating the symptoms produced by belladonna in poisonous doses, and showing the relation which exists between that poison and opium. I was led to the use of opium by the perusal of a paper read by Mr. Benjamin Bell, before the Medico-Chirurgical Society of Edinburgh, and which appeared in the *Edinburgh Medical Journal* of July, 1858.

Two young men having gathered about a pint of the ripe fruit of the atropa belladonna, which they found growing in an old quarry a few miles from Leeds, on their arrival home they distributed them among their friends, believing them to be innocuous. The cases which follow were the result of their imprudence. The berries appeared to be ripe, were in size a little less than a small cherry, and were described to have a mawkish, sweet taste.

There resulted from this distribution of the poisonous fruit, *ten cases*, all of which came under the observation and treatment of Mr. Seaton. Seldom does any one practitioner have the opportunity of treating ten cases of poisoning by Belladonna. This treatment consisted in emetics, purgation with castor oil, followed by repeated small doses of Landanum, varying from 5 to 12 drops every two hours—in accordance with the violence of the symptoms and the age of the patient. We transfer the account of the only fatal case (which includes

report of *post mortem* appearances,) and then give the remarks of the author.

S. W., aged 14. About seven P. M. on Sept. 12th took berries, but the exact number is unknown. Had the same symptoms as already described. At three A. M. on 13th she vomited. At seven A. M. was ordered castor oil, and tinct. opii *m viij.* to be taken every two hours. At eleven A. M. the dose was increased to *m xij.* every hour up till four o'clock, after which she took no more medicine. From four till seven P. M. she continued delirious, but having intervals of complete unconsciousness; after seven she fell into a state of total insensibility; at ten, she was incapable of being roused, and at twelve P. M. died in a comatose condition. The pupils, at the moment of death, were so widely dilated as to render the iris scarcely visible.

Post-mortem, thirty-seven hours after death.—The external appearance of the body was that of a subject of scrofula. The limbs attenuated, and considerable swelling of the face from carious bone. The superficial vessels of the brain were slightly congested. A section of the organ showed the vascular points to be scarcely, if at all, more developed than natural. The ventricles were empty, the substance firm, and the arachnoid perfectly glistening and transparent. Both lungs were entirely adherent to the walls of the chest, the result of old pleurisy. Structure of the heart pale and flabby; valves healthy, and the cavities filled with fluid blood. The blood in the large vessels was very dark coloured, and flowed out like water on their being divided.

The stomach was partially distended with gas, and contained about an ounce and a-half of yellowish fluid, and a small piece of undigested apple. The mucous membrane was somewhat paler than natural, except two or three small spots of very slight congestion, situated near the pyloric orifice. No appearance of inflammation was observable. The mucous membrane of the intestines was also perfectly healthy. A number of seed were found scattered over the surface of the duodenum and jejunum, and near the middle of the latter a whole berry was seen. The contents of the bowels were of a black colour, owing to the patient having been taking iron medicinally up to the period of her death.

It would appear, from the above cases, that the violence of the symptoms did not correspond with the number of the berries taken, as J. W., who had only two, was very alarmingly ill; while H. W., who had eighteen, escaped with scarcely any bad effects. The reason probably is, that while

in the one case the berries were completely absorbed, in the other they were vomited before sufficient time had elapsed for their digestion. The first symptom appears to have been dryness of the mouth and throat; next, indistinctiveness of vision and dilated pupil; and, afterwards, in the more severe cases, delirium supervened. I found in one man, who had only swallowed one berry, the dry mouth and fauces without any affection of vision. The indistinctiveness of vision was the most persistent symptom; in all the cases it existed to a greater or less degree for several days, and the boy C. C.'s vision continues defective up to the present time. The delirium was of a busy, restless, vivid character, but generally rather pleasing than otherwise. The patients appeared to think that they were pursuing their ordinary occupations; one boy appeared eager in flying a kite; another pulled tables and chairs about, thinking he was working in a coal pit; while the woman, E. W., appeared to be remarkably busy with her ordinary household duties. All their movements were of a quick, excited character strikingly resembling delirium tremens. There was no very marked vascular excitement, the skin was, in most of the cases, moderately cool, and the pulse rapid, but without power.

The remarkable tolerance of opium in these cases would appear to bear out the conclusion at which Mr. Bell, Dr. Graves, and others have arrived; that opium and belladonna mutually counteract each other. In none of the cases in which delirium was present, were the symptoms alleviated until sleep was obtained; and, after sleep, the patients felt comparatively well. The pupils were widely dilated so long as the delirium continued, and, when sleep was obtained, were either contracted or reduced to the natural size.

With regard to the fatal case, I may mention, that she was decidedly scrofulous, and had been under treatment for several months for disease of the bones of the face. It will be observed that she took much less opium than several of the cases which recovered, and that, at the moment of death, the pupils were very widely dilated.

The post-mortem appearances are chiefly valuable for their negative testimony. The condition of the brain appeared to be as nearly as possible perfectly natural; as was the mucous membrane of the stomach and intestines. The only thing which was abnormal was the remarkable fluidity of the blood in every part of the body.

53, Kirkgate, Leeds.

Case of Poisoning by Atropine.—By C. HOLTHOUSE, F. R. C. S.—Surgeon to the Westminster Hospital, etc.

As a pendant to the interesting cases of poisoning by belladonna berries, published in the last number but one of the *Medical Times and Gazette*, I forward you the notes of the following case of poisoning by a solution of atropine, which happened to one of my own children.

At nine o'clock on Sunday morning, the 17th of last July, my second child, a hearty little boy, 3 years and 8 months old, was brought to my bed-room by the nurse, who said she did not know what was the matter with him, but he seemed very giddy, and could not stand. I had never seen a case of belladonna poisoning before, and the bedroom blinds being down, I did not at first notice the state of the child's pupils, or recognise the source of the symptoms; while all that could be gathered from the nurse was, that hearing what she supposed to be quarrelling between him and his brother, who were alone together in the breakfast-room awaiting our assembling at breakfast, she took him into the kitchen, and on setting him on his feet he fell down; she lifted him up, and told him to run along, but he again fell, and appeared to have no power of standing. On observing this, she immediately brought him up to me.

His face was at this time flushed and mottled with white, his eyes brilliant, and his manner and appearance altogether very strange and excited, while the expression of his countenance was quite maniacal. He was evidently unconscious, and very irritable, striking his mother when she took him from the nurse. On placing him on the bed he immediately began to pick at the bed-clothes, and to grasp at imaginary objects. About five minutes afterwards, the nurse returned with two bottles, which my eldest boy told her his brother had been playing with. One of these, a half-ounce stoppered bottle, which was quite empty, I immediately recognised as the one in which I kept a solution of atropine, of the strength of two grains to the ounce, and which the day before had contained from a drachm and a-half to two drachms of the solution, the bottle being not quite half full. The cause of the symptoms was now but too apparent: I rushed with the child to the window, and the fully dilated pupils at once confirmed my suspicion. Dr. Fincham was now sent for, but long before his arrival, and in about five minutes after the discovery, I administered twenty grains of the sulphate of zinc, and on the arrival of the Doctor some mustard and water was also given; but

three quarters of an hour elapsed from the giving the sulphate of zinc before vomiting took place. The quantity of fluid expelled did not exceed that given with the zinc, which was ejected by one effort, and no subsequent retching could be produced by mustard and water.

It deserves mention that a little of the fluid the child vomited, too small to excite notice at the time, accidentally entered my eye, which within an hour of the time had fully dilated the pupil. As no more vomiting could be excited, and it seemed probable that all the poison which was not absorbed had been ejected, stimulants were had recourse to, viz., brandy and water, ether, and ammonia, one or other of which were given every quarter of an hour; there was, however, great difficulty in getting the child to swallow, each attempt to do so producing paroxysms of suffocation, which appeared to threaten his existence; a good deal of what was put in the mouth was thus wasted. During the whole of this time till one o'clock, P. M. the child was insensible, the pupils were widely dilated and immoveable, the eyes open, and the lids not winking on passing the finger in front of them; there was occasional jactitation, the skin was pungently hot and dry, and covered with a rash closely resembling that of scarlatina, which the child was frequently scratching; the pulse was 170, and somewhat feeble.

From one to two P. M., brandy and milk was given from time to time; an enema of two drachms of spirits of turpentine, an equal quantity of castor-oil, and six ounces of gruel, was also administered, and brought away a small quantity of feces. He vomited once during this period, and was evidently becoming more conscious; he made efforts to speak, and said "papa;" his face was less red, and the expression more natural.

From two to five P. M.—The symptoms during this period exactly resembled those of delirium tremens. There was incessant rambling delirium, great restlessness, a grasping at imaginary objects, and occasional screaming from fright. The character of the delirium varied; sometimes the child saw objects which frightened him, and the utmost terror was depicted on his countenance, and he clung to his nurses neck, or threw himself violently in different directions, as if to escape them; this kind of delirium prevailed chiefly at the beginning of this period; towards the latter half, the delusions were of a more pleasurable kind, his talking was more intelligible, he mentioned the names of

his brothers, his nurse, and "mamma," and grasped at his toys, as his whistle, which he blew in imagination; and he drew imaginary sketches with his pencil, and was very busy two or three times in putting into his mouth and eating imaginary currents, etc.

A mixture of egg and brandy, with milk and sugar, was given him at short intervals, and just before five he was sick for the third time (a portion of the fluid so ejected was saved for analysis.) After this he fell into a quiet sleep, and so remained till 6 P. M., his pulse having fallen to 144, his skin being still hot, but not so red.

From six to seven P. M.—Great restlessness and returning consciousness characterised this period; he recognised me by my voice, kissed me, and jumped out of bed, and said he wanted to ride on my shoulders—an amusement he was occasionally indulged in. The skin was less hot and red, and there was very little delirium. He refused to take any kind of food or drink.

From seven to eight P. M. there was less restlessness, and when quiet he sucked his thumb (a habit he always indulged in when well,) he sneezed and rubbed his nose frequently; consciousness increasing, but intermittent; he recognised my watch, put it to his ear, and remarked, "it's ticking;" but on giving it to him again a minute afterwards, it was not recognised, and he put it in his mouth.

From eight to ten P. M. there was more restlessness than for the last hour or two, and a constant motion of the hands to the mouth, as though eating something. Taking advantage of this action, a small piece of bread and butter was put into his hand, which he ate greedily; but there was a difficulty in getting him to drink. He talked frequently about persons and things which he fancied were before him. At a quarter to ten his bowels were moved, the evacuation smelling strongly of turpentine; he also passed water for the first time. A powder, which was ordered by Dr. Fincham, containing two grains of calomel, and five of jalap, was now given him.

From ten to twelve P. M. he lay on the bed tolerably quiet; he winks a little when the candle is put close to his face, but he sees nothing else; he has just said, "I can't see Mamma." At a quarter past eleven he took, with some difficulty, a saline mixture ordered by Dr. Fincham, after which his bowels acted to a greater extent than before, and he also passed water again (both saved for analysis.) When his mother lay down on the bed beside him, he raised him-

self voluntarily, and kissed her twice. At midnight he took a little milk and brandy, and fell into a quiet sleep.

July 18.—From twelve to two A. M.—He slept quietly till a quarter past one, when he awoke, and, before he could be raised in the bed, he had a violent and somewhat copious motion of a waterly character. After this he took a small quantity of milk, and a teaspoonful of brandy, with some resistance; put his thumb in his month, and again went to sleep.

From two to four A. M.—He slept very quietly till four, when his bowels were again moved slightly, and he made water also (saved for analysis.) Though his pupils are as much dilated as ever, he can now distinguish objects, for he told his mother he could see her; and he also took a cup of milk from her hand, and a little bread and butter. A dose of the saline mixture was also given him, which he would not take without the usual resistance.

From four to eight A. M.—He slept peacefully the whole of this time, lying on his back with his eyes and lips a little apart, and awoke well. He remarked that he could see “gan-mamma” over the chimney, (a photograph of his grandmother, and he ate with evident relish a basin full of bread and milk. As the morning advanced he said, more than once, that he wanted to have his clothes on, and before he was dressed he was running about the room in his nightgown, playing with his toys. His difficulty in seeing small objects, which were near him, was now the most prominent feature remaining of his illness; and his attempts to make out the letters of a newspaper which happened to be in the room, putting the paper first in one position and then in another, and eventually throwing it from him in disgust, were highly amusing. The dilation of the pupil gave his face a singular expression, and they did not recover their normal size and movements for nearly a week.

It will be seen by the above notes that some of the fluid vomited just before five P. M., which was the third and last time the child was sick, and also some of the alvine dejections and urine voided at half-past eleven, P. M., and at four, A. M. (mixed together) were saved for analysis. Having submitted the same to Dr. Marcet, that gentleman very kindly furnished me with the following report:—

Laboratory, Westminster Hospital, July 22, 1859.

“My dear Holthouse,—I received from you on the 18th instant the following—

"1st. A six ounce bottle containing $5\frac{1}{2}$ ounces of a mixture of urine and nearly liquid feces.

"2nd. A second bottle smaller than the last, and containing about one and a half drachms of a colourless fluid, which you stated to have been vomited.

"3rd. and 4th. Bottles containing matters not connected with this case.

"The result of the examination of these various substances was as follows:—

"1st. The mixture of urine and feces yielded to analysis a fluid which by direct contact with the eyeball, dilated considerably the pupils of a white mouse, without, however, exerting on the animal any other physiological action: It contained, therefore, a very small quantity of atropine.

"2nd. The vomited fluid yielded to analysis by the same physiological test, the presence of a trace of atropine, inasmuch as it also dilated the pupils of a white mouse, although not so readily as in the preceding case.

"Yours very truly, W. MARCET.

2, Storey's-gate.

Hygienic Treatment of Diabetes Mellitus, or Glucosuria—(From the French of Bouchardat.

This paper contains the results of the labors of Bouchardat, for more than twenty-five years, on the most important portion of the treatment of glucosuria.

Food.—The first rule to be observed in the alimentation of a patient affected with glucosuria is the suppression, or at least a large diminution in the quantity of feculent articles; such suppression or diminution constitutes the basis of the treatment. The following should be prescribed, as far as possible: ordinary bread made either of wheat, rye, or barley; pastry of rice, corn, or other grains; potatoes and potato-starch, arrow-root and other forms of starch; vermicelli, semola, macaroni, etc.; leguminous seeds, such as kidney-beans, peas, lentils, and common beans; chestnuts, buckwheat; sweetmeats and saccharine drinks. The exclusion of saccharine food from the regimen should be absolute, and continued for a greater length of time than that of feculent articles. The use of milk is unfavorable.

The articles of food which are allowable are very numerous. Meat, poultry and other kinds, can be recommended; and they can be prescribed boiled, broiled, or roasted, or cooked in any other way, with all the condiments that may

stimulate the appetite; avoiding, however, the use of flour in the sauces. Liver should be prohibited, as well as gelatinous preparations. Fresh and salt-water fish offer a rich variety for the table of the patient. Other animal food, such as oysters, muscles, snails, lobsters, prawn, frogs, etc., may be employed every day with advantage. Eggs, in all the forms that culinary art has devised, are very useful. Although milk is but little suited for glucosuric persons, yet good fresh cream is, on the other hand, allowable. Cheese of all kinds should be forbidden. The list of legumes allowable is tolerably large; it need only be remarked that fatty bodies (oil, butter, grease, etc.,) should be employed in more than ordinary quantity in their preparation; that, in the sauces or dressings, the yellow of eggs and cream should replace the proscribed flour; and that, whatever they may be, those legumes should always be avoided which are very feculent. Mushrooms and truffles may be employed.

From time to time, in moderate quantity, the following fruits can be used: apples, pears, cherries, raspberries, strawberries, pine-apples; but always without the addition of sugar, and only when the urine is not saccharine.

Before speaking of beverages, we must notice a matter of great importance—the replacement of bread and pastry. Patients affected with glucosuria complain bitterly of being deprived of bread and feculent food; if the desire for such can be diverted, it is always well. For seventeen years that I have employed gluten bread, its usefulness has not been denied; and it is an adjuvant which has been very important in a large number of cases of glucosuria. Some have pretended to find in gluten bread a cure for glucosuria; such was never my opinion. I sought simply for an article of food which might replace bread without having its inconveniences for patients, and I believe this is such an article.

Some patients support, without any great annoyance, abstinence from bread and starch food; for such gluten bread is not required; but, I am bold to say, they are exceptional cases. For such, one or two cakes, in the course of the day, answer instead of bread. Some, indeed, whose attack is but slight, can, by simply diminishing the amount of starch ingested, or by the employment of alkalies or energetic exercise, cause a return of the urine to its original condition; such have no need of gluten bread. But these cases are by no means serious, and are unfrequent.

Beverages.—Wine plays an important role in the treatment of glucosuria, and I firmly believe that I have rendered a service just as great to such patients, by substituting alcoholic beverages for feculent articles of food, as in demonstrating that abstinence from such articles was indispensable to them. The old red wines of Burgundy and Bordeaux are preferred; yet all red wines, that are rather astringent than acid or sweet, suit very well. As regards quantity, I do not give less than a litre (about one quart apothecary's measure) in twenty-four hours; and for vigorous men, who exercise much, it is sometimes proper to give still larger quantities. Beer is very unfavorable, and the dextrine which it contains explains this action. I proscribe saccharine *liqueurs*, but I grant freely the use of a small glass of rum, brandy, or kirschwasser, at the principal meal. Coffee is useful for almost all patients affected with glucosuria, and, if not contraindicated, I prescribe at least one cup after the principal meal. It should be taken without sugar; but a little rum, brandy, or cream may be added. Some patients take two or three cups a day.

Wine and water is preferable to all tisans. Sometimes it is well to take an infusion of hops or of bitter vegetables. Under any circumstances, it is well for patients to drink with great moderation. A quart of pure Bordeaux wine will allay the thirst of the day, if the regimen suggested is followed.

Lemonades, etc., sought after by patients with much desire, are very detrimental; they do not appease thirst better than cold water, and they contribute to the saturation of the free alkali of the blood, which prevents, as Chevreul has long since proven, the prompt destruction of combustible alimentary material incessantly introduced into the circulatory apparatus, from the digestive apparatus. I forbid them absolutely. Mialhe has also insisted, with as much earnestness as reason, against the use of acid drinks.

Patients should drink small quantities at a time; large quantities of liquid ingested at once may contribute to keep up the abnormal secretion in the stomach, with reference to which I have so much insisted. They should always eat slowly. This is for a double reason; first, to avoid indigestions, which are to them more unfortunate than to other patients; secondly, to favor the return of the stomach to its ordinary dimensions. To attain this end, also, we may employ a band of flannel, slightly tightened about the region of the stomach.

Clothing.—I have shown that sudden chills were pernicious to patients afflicted with this disease. Hence the propriety of employing good flannel underclothing. This also serves to re-establish the functions of the skin, which should be active. Hence, I always prescribe flannel garments, covering the whole body, so as to keep up gentle moisture of the skin.

Exercise.—Patients who have had the disease for some time experience spontaneous weariness—a sensation of debility, sometimes accompanied with pains in the thighs, legs, and articulations, which are increased by the slightest work or smallest exertion; it is difficult to require them to exercise, but as soon as, from a suitable regimen, their forces begin to return, they must use exercise. Walking, exercising the whole body by some manual labor, or some gymnastic recreation, are of undoubted utility. The exercise should be progressive; if too violent, it will determine injurious curvatures; neglected, it will retard the complete establishment of the strength, and, consequently, the cure.

Sea-bathing and Hydrotherapeia in the Treatment of the Disease.—River bathing, when it is aided by exercise in swimming, is useful; but the advantages of sea-bathing, when it can be supported, are more constant and greater. To determine diaphoresis in difficult cases, I have sometimes employed hydrotherapeia; but the patients should be continually under supervision in the use of such treatment, as when badly employed, it may produce serious accidents; but when wisely directed, and seconded by a regimen intelligently adapted, it has rendered me excellent service.

It is evident that the treatment should be only gradually abandoned, and when the glucose has disappeared from the urine. It is proper always, *then*, to augment the quality and quantity of the calorific articles of food. Good beer may be taken after each repast; three or four spoonfuls of cod-liver oil during the day; these are the articles which I would require during the use of sea-baths, or the employment of hydrotherapeia. There must be no caloric; it is necessary that a supply of calorific articles at least equal to the loss should be furnished.

By way of *resume* as to the indications and contraindications for hydrotherapeia in this disease: When the glucose disappears, or is diminished, so that feculent articles can be more largely employed, and there is daily increase of strength, hydrotherapeia and sea-bathing are most efficacious methods of treatment in glucosuria; when, on the contrary,

under such treatment, the glucose increases, the strength diminishes, etc., these methods aggravate the disease; for we are abstracting caloric from a machine which is already too much impoverished. L. H. S.

Clinique Européenne and Am. Med. Monthly.

On Diabetic Cataract—By JOHN F. FRANCE—Ophthalmic Surgeon to Guy's Hospital, and Lecturer on Ophthalmic Surgery.

I beg to offer, in confirmation of views recently propounded in this Journal and in the Ophthalmic Hospital Reports, some additional evidence relating to the above subject.

There may possibly exist scattered cursory notices of cataract in association with diabetes of earlier date, but Dr. McKenzie, of Glasgow, was, I believe, the first to indicate a connexion between these diseases. "I have in three instances," he says, speaking of the causes of cataract in 1840, "seen lenticular cataract attack women, of from 18 to 25, labouring under diabetes mellitus." "I have, also," he adds in 1854, "met with the same complication in males at a later period of life." So Dr. M. Duncan, of Edinburgh, in a foot-note at page 15 of his translation of "Braun on Uræmic Convulsions," recognises a similar relation in the sentence—"In diabetic patients there is a tendency to cataract." Dr. Duncan has favored me, in a private letter, with the information that his remark was drawn forth by the singular coincidence of having three poor diabetic patients at one time, labouring simultaneously under cataract. Not being interested particularly in the subject, he, unfortunately, did not take further note respecting the latter disease; but the occurrence attests in a striking manner the connexion between the two maladies.

Valuable testimony to the same effect is afforded by Mr. Wilde, of Dublin, in a late communication to this periodical intended to impugn my observations (a.) For, while controverting the proposition, that "According to the latter authority it would seem that there was a special disease of the lens set up in patients labouring under diabetes," he virtually confirms it by adding, "I have seen patients labouring under diabetes where cataract also existed;"—for reiterated examples of so peculiar a complication do establish the fact of connection.

The accuracy of my description of these cases is disputed by the same author. On this point I will merely say, in the first place, that if the counter-statement is founded on two or three instances only, and those quoted from memory, they are insufficient grounds of objection; while, if on several, then at least they proportionably help to justify the obnoxious term "Diabetic Cataract," by raising the numerical frequency of the affection.

The distinctive characters which this class of cases presents, are, however, an after-question to that of recognising them as a class; and I would not attempt to dogmatise upon it, though entertaining a strong conviction, that the description I have given will be found in the main correct. It certainly applied to, or rather was drawn from, those examples which have fallen under my own special observation and care; it derives independent support from Mr. Walton's interesting case, in the *Medical Times and Gazette* of the 12th ult.; and is further corroborated by the following, not less interesting, which has since been communicated by the kindness of my friend Mr. Veasey, of Woburn.

He writes:—"Your remarks on cataract associated with diabetes, recall to mind a case resembling the general outline which you sketched in the *Ophthalmic Hospital Reports*." He then goes on to relate the history, of which the subjoined is an abstract. The patient was a poor married woman, aged 31, the mother of three children. Diabetes had existed for some time in an aggravated degree. Her countenance was worn and anxious, the eyes sunken, the lips and skin parched, the tongue dry and chapped, the breath sweet; yet the urinary disease had been disregarded until the sight began to fail. Both eyes were the seat of a soft, bulging cataract, and dilated pupil; but vision was still useful; there was no inflammation. Operation "was long delayed, and when at length keratonyxis was performed in the County Hospital, no impression appeared to have been made on the lens, and the corneal wound healed badly, leaving a weak eye. Three or four months after this operation the poor woman, now wholly blind, besought me to operate. The needle was introduced through the sclerotic, and a complete division readily effected. No inflammation ensued, and absorption was just perceptible, when constant sickness with general failure of power, precluded all further attempts, and that scanty vision which had returned was shrouded in death." It is evident that the disease in this case (related by a most intelligent practi-

tioner,) agreed closely with the typical character of diabetic cataract as observed by myself: and the unfavorable result of the first operation (though no doubt in a measure attributable to the advanced state of general cachexia, which primary disease had induced,) illustrates anew with what caution these cases should be approached in the way of operative procedure.

The marked concurrence of similar features in all the examples hitherto circumstantially recorded of this comparatively rare affection, points in no ambiguous manner to the general uniformity of the class. Guided by this indication, I was enabled in the last case narrated in the Ophthalmic Hospital Reports, to recognise its special character, and anticipate its cause, before any complaint of diabetic symptoms (which were afterwards conclusively proved) was made by the patient. Now, bearing these facts in mind, I cannot but conclude, that results thus deduced from cases noted and related in detail are entitled to, and will receive, greater weight in an inquiry of this nature, than a loose general contradiction, as if *ex cathedra*, from however respectable an authority. In actual practice, at least, it will be well to remember what seems to be ascertained with regard to diabetic cataract; and I may be permitted, in conclusion, to say, that the communication of any instances which may occur to the readers of these remarks, would be esteemed a favour by their author.

24, Bloomsbury-square.

On the Efficacy of Cold Affusion to the Head in Narcotism.
By Dr. A. REEVES JACKSON.

In the first two cases the narcotism was from opium; in the third from belladonna.

Case 1.—On the 6th of March I was called in haste, by an Irish laborer, who lived about one mile from this place, to see his son, a child eight months old. The father told me that the child was “clean dead,” and “kilt entirely,” when he left home; but was unable to give me any further information. On arriving at the place, I found the little patient in such a condition as almost to justify the father’s expression.

Lying on the lap of its mother, its face was of a deathly pallid hue; the breathing slow, interrupted, gasping; the extremities were cold, and the skin covered with a clammy

perspiration. The pulse at the wrist was barely perceptible in its feeble, thread-like beat.

I learned from the mother that she had been in the habit of administering to the child the preparation of opium known as *Godfrey's Cordial* to make it sleep; and that having occasion to go to the village, where she expected to be absent some length of time, she gave it, before starting, a little more than usual, in order that it might sleep until she returned. The quantity given on this occasion, she said, was about two teaspoonfuls, but as she made this admission with great reluctance, it was probably much greater. She was absent three hours, and when she returned the child was sleeping soundly, and she made no effort to arouse it until nearly an hour afterwards, when observing that it was unusually pale, she made an attempt to awaken it, but found it impossible to do so.

Five hours had now elapsed since the dose was administered. It was evident that the child was rapidly sinking, and that unless relief was quickly had, it would soon die. The stupor was so great that emetics could not be given—nothing could be swallowed. I had no stomach-pump at hand, and there was no time to send for one; beside which, these means could not *rouse the patient*, which was to my mind the prime indication. I remembered that cold affusion to the head had been used successfully in some published instances, and I determined to give it a trial, although without the slightest expectation that it would be of any avail in this case.

Accordingly I ordered the father to procure a bucketful of cold water, and having the head of the child held over it, face downwards, filled a coffee-pot (they had no pitcher), and poured from it a steady stream upon the occiput in such a manner that the water ran off into the bucket beneath.

I had poured on two or three gallons in this manner, when suddenly I was started by the child making a long, gasping inspiration, accompanied by a convulsive movement of the arms. My first impression was that it was dying. Raising its head, however, I saw that its eyes were open, and that its breathing was rather better than before the treatment was commenced. The eyes were almost immediately closed again, and somewhat encouraged, I again poured on the water as before. In a very few minutes the child began to moan, and the breathing became more distinct; continuing the use of this remedy a few moments longer, it uttered a feeble cry.

I now desisted for a time, with a view of administering a solution of sulphate of zinc in warm mustard-water, but during the time occupied in preparing it the child relapsed into such a stupor that it was found impossible to rouse it by ordinary means sufficiently to enable it to swallow.

I again had recourse to the cold water, and with the same happy effect as before. In a very short time the child was once more roused to susceptibility, and cried out quite lustily. We now forced it to take a few doses of the emetic, which, aided by tickling the fauces, produced free emesis in half an hour. The matter vomited gave but little evidence, however, of the presence of the medicine.

Very little subsequent treatment was necessary. I ordered that small quantities of wine-whey should be given occasionally, and that frictions to the lower extremities be made with warm infusion of mustard, to obviate the resulting debility. In two or three days the child seemed to have regained its usual health.

Case 2.—James H—, æt. 19, a blacksmith's apprentice, had been subject to neuralgia of the face, for the relief of which he used the camphorated tincture of opium, or paregoric elixir. About the middle of February, 1857, being attacked with the disease, and not having any of his customary remedy at the time, he procured from a neighbor a vial of laudanum, and being under the impression that the doses of the two articles were the same, he poured out a large tablespoonful and drank it. This occurred at ten o'clock in the forenoon. In a few minutes he began to feel drowsy, and went to bed. About four o'clock, P. M., one of the members of the family went up stairs for some purpose, and found him in what was supposed to be a dying condition. A messenger was immediately dispatched for medical assistance, and the writer was summoned to see the case.

I reached the bedside of the patient about five o'clock—seven hours after he had taken the medicine—and learned the above particulars.

He was then under the full poisonous effects of opium. His surface was cold and clammy; his breathing irregular, slow, and stertorous—respirations eight in the minute; the pulse full, slow, and very irregular; the pupils were tightly contracted and totally insensible to light; the countenance calm and pale.

I at once endeavored to rouse him by speaking to him in a loud voice, by roughly shaking him, and by striking him

smart blows with the open palm. These failing, we took him from the bed with the intention of moving him about the apartment between two assistants, but he was unable to bear the slightest amount of weight on his limbs. We then placed him on the bed again, and commenced beating the soles of his feet with wet towels. This also failed to elicit the least token of sensibility. I then dashed cold water in the face, hoping that I might rouse him sufficiently to enable him to swallow an emetic, although I thought it improbable that any of the poison still remained in the stomach. Although this caused him to start, and move his hands towards his face, yet as soon as the dashing of the water ceased, he at once became insensible again.

I now concluded to use cold affusion to the head; and having everything properly arranged, commenced pouring the water upon the head from a large pitcher held at a height of about eighteen inches. The effect appeared almost magical. Before the pitcher was emptied he opened his eyes, and evinced by his actions that the treatment was unpleasant. It was continued, however, and in a short time he was fully aroused. Nausea and vomiting now supervened, and the retching was so violent and long-continued, that all remaining symptoms of drowsiness were banished. A cup of strong coffee finally checked this and completed the cure.

Case 3.—Mrs. H—., the wife of a clergyman, had been suffering several days with severe neuralgia of the rectum, caused by the irritation of internal hemorrhoids. I had been using a great variety of remedies, but, as is usual in such cases, none produced more than temporary relief.

On the evening of May 7, 1858, the pain was unusually intense, and I ordered a suppository containing one-third of a grain of sulph. morph. This gave almost entire relief from the pain, and she passed a tolerably comfortable night. Next morning, however, she awoke with headache, an intolerable itching, and nausea and vomiting, which continued throughout the day, and she positively refused to use opium in any form again. In the evening the pain returned as severely as before. I ordered the bowel to be cleansed by a laxative enema, to be followed by an injection consisting of a watery solution of extract of belladonna. I used the Shaker preparation, and laid out a portion containing about one grain, directing that it be dissolved in two ounces of water, and thrown into the rectum and retained there.

About midnight I was hastily called to see the lady, and

on my arrival found her surrounded by her friends, who were greatly alarmed at her condition. She was lying on her back in bed, completely insensible. The face was of a bright red color, and somewhat swollen; the breathing slow and quiet, entirely without stertor; pulse 130, small and hard. The eyelids were closed. On separating them, the globe appeared injected and prominent; the pupils were widely dilated, and directed forward with a fixed vacant gaze. The patient appeared entirely unconscious, although she occasionally made an apparently painful attempt to speak. The muscles of the face, particularly about the mouth, moved convulsively. The arms were also slightly convulsed. The skin was warm and perspiring abundantly.

The husband informed me that inasmuch as the anodyne enema I had ordered had failed to allay the pain, he thought best to repeat it, and did so in *one hour* after giving the first. He said he had used a piece of the extract about the size of a *pea*—that he thought it was about the same size as the portion I had used. He further stated that in a short time after using it the patient complained of feeling very warm, of some derangement of the head, and of an unquenchable dryness of the mouth and throat, with difficulty of swallowing. She also complained of confusion of vision, of giddiness, and of headache of a beating, throbbing character. These symptoms were followed by a light, good-natured delirium, a wandering loquacity, and extravagant, ridiculous actions, together with occasional nausea without vomiting, and ineffectual efforts to urinate.

Various means were used to rouse her, without effect. Ammonia was cautiously applied to the nostrils; she was spoken to in a loud voice and roughly shaken, but “still she slept.”

My first object was to remove any of the poison that might yet remain in the bowel; and for this purpose I ordered a large enema of thin gruel. After this had been administered, I had preparations made for using the cold water. A large tub was placed on the floor near the side of the bed, and the patient being placed crosswise on the latter, with the head and shoulders projecting, and supported by an assistant, I commenced pouring a steady stream upon the back part of the head and neck. In a few minutes she opened her eyes, but reclosed them immediately. The face became gradually paler. In about five minutes she made an attempt to articulate, and pointed towards her mouth. Some water was put into her mouth, but she could not swallow it.

The use of the cold affusion was now suspended, as the patient appeared to be cold and shivering. She was placed in bed and lightly covered. In the course of ten or fifteen minutes her skin became hot, the face was flushed, and she again fell into a profound sleep. Once more the cold water was employed, and soon she again became conscious. A piece of ice was now placed in her mouth, and appeared to afford her much relief, although she could not articulate with sufficient distinctness to be understood.

The enema was now returned without any admixture of feces, but containing a considerable quantity of the belladonna, as was made evident both by the color and odor of the discharge.

The patient, although drowsy for some hours, recovered without the use of any other remedy.

Her vision remained dim and confused about three weeks.
—*Amer. Journal Med. Sciences, July, 1859.*

The Physiological Action of Anæsthetics. Before the N. Y. Pathological Society. By Prof. DALTON.

Of course, Mr. President, I have very little experience with regard to the effects of these two agents upon the human subject, although, I had the pleasure of witnessing the first operation in which ether was used as an anæsthetic agent. In my own practice, if you may call it such, the patients have been principally animals. I presume, however, that there is very little difference in their mode of operation on animals and on men. When I commenced, I, of course, used ether; but as ether requires to be given in a very large bulk, I soon found it very inconvenient, and commenced using chloroform in its stead, and found it very much more pleasant for myself, because it was more easily administered to the animals, and I continued to use it for a certain time. Very soon, however, I found that the animals would occasionally die, which I attributed to some imperfection in the mode of administering the agent. I continued the practice, but still the accident referred to would occasionally occur. Not to take up too much time in details, the simple fact is, that, at the end of six months, from the time I commenced its administration, I abandoned it. Sometime afterward I again had occasion to use it; I gave it, but found that it was followed by the same results. Since that time I have given it up altogether, and instead of it I have used sulphuric ether. I think I may say, without exaggeration,

that I am thoroughly convinced that there is a radical difference in the danger following the administration of these two substances. I am sure that chloroform is more dangerous to animals, at least; whether it is so in man or not, I do not know.

In order to understand this subject thoroughly, it is necessary that we should endeavor to ascertain the manner in which death results in the fatal cases. Death sometimes follows without any evident or traceable cause. It may occur from ether or chloroform by a very careless administration, or from an impurity of the article, provided that the patient breathes nothing but the vapor of the ether or the chloroform. Now in these cases, death is not attributable to the ether or chloroform; it is simply due to the want of atmospheric air. If you give a man a grain of opium and then stop his mouth and nostrils, he will of course die; but certainly not from the opium, but from the want of atmospheric air. The same is true of the administration of ether or chloroform. Therefore the first thing to be attended to, when we wish to prevent a fatal issue from the administration of these substances, is to see that they are given mixed with a sufficient quantity of atmospheric air, and then one cause of death would be excluded.

Sometimes, however, even with all our precaution, we find the respiration and the heart stopping suddenly and the patient dead. It is an interesting question to know whether or not death is produced by the *stoppage of respiration* or of the heart. My own belief is, that in the case of chloroform, death is produced by paralysis of the heart. My reasons for this view are two-fold.

In the first place, if you moderately etherize or chloroformize an animal, carrying it carefully just up to the point of insensibility, and then open the walls of the chest as quickly as possible, the lungs will of course collapse, and respiration be at an end, but the heart will continue to beat for a considerable length of time. If, on the other hand, you etherize or chloroformize an animal until respiration is stopped, and then open the chest, you will find the heart still beating, but very feebly. I have several times performed the following experiment, namely: to etherize an animal moderately, but enough to deprive it of all sensibility, then immediately the chest was opened and the animal laid aside; another animal was then etherized until death was produced, and on immediately opening the chest the heart was found still, while in the first animal it was yet

beating. So far as this goes, it tends to show with a great deal of conclusiveness, that the fatal result is produced by a direct paralysis of the heart.

In experimenting thus with animals, I have had occasion to notice very frequently, when the anæsthetic is carried only to the stoppage of respiration, that the animals usually recover, and expect with confidence that respiration will begin again; but if, on noticing that the respiration is stopped, I find the heart itself still, I know that the animal is dead, although I have noticed, after the circulation is at an end, that it is sometimes re-established in a certain manner which is entirely characteristic, and being once seen, is very readily recognized. This is, however, entirely unavailing; the animal never recovers.

In my own experience, then, fatal results have followed both ether and chloroform. I have killed dogs and cats with ether and chloroform, but I am obliged to take a great deal of pains to produce this result with ether, whereas death often follows the use of chloroform, notwithstanding the best precautions. It has been said, that when death occurs from the administration of chloroform in the human subject, that it is attributable to giving it too rapidly or too abundantly; but while there are undoubtedly many cases in which injurious results follow from the non-admission of a sufficient amount of air, still I am of the opinion that the injurious or fatal results cannot be always attributed to that cause, for the reason that these accidents have occurred in the practice of our best and most careful surgeons, who invariably exhibit this remedy with the utmost caution, and yet, when everything appears to be going on well, the patient suddenly dies. So far, we know of no precaution which will prevent the occasional occurrence of this accident.

President: I would inquire of Dr. Dalton whether the effects of these agents are cumulative?

Dr. Dalton: I cannot say that they are. Anæsthetics taken in by the lungs enter the blood so very quickly that I should not think there would be any cumulative effect.

President: In some cases the patient seems to recover so as to speak, and yet in a few moments dies. Did you ever see anything of that kind in animals?

Dr. Dalton: The only thing that I have seen analogous to that, is the spasmodic respiration after the stoppage of the circulation, which led me to believe, when I first saw it, that the animal would recover. I now know, however, that

these efforts are entirely unavailing. When once the heart has ceased to pulsate, the animal is dead.

—◆—
Substitute for Anæsthesia.

The Boston Traveller publishes the following:

RUE DE LA CHAUSSEE D'ANTIN, PARIS, }
Monday, December 12th, 1859. }

I cannot let this steamship leave here and not acquaint you with one of the most extraordinary discoveries recently made. Monsieur Velpeau, the eminent surgeon, whose fame is wide as the world, made the strange communication. He stated that an honorable surgeon or physician (he vouched for the gentleman's character,) named Broca or Rocca, had made the following experiment: He had placed before the face of a person, between the person's eyes, and at a distance of fifteen or twenty *centimetres* (a *centimetre* is a French measure of length—0.393,708 inch in value) a rather brilliant object (*un objet un peu brillant.*) Make the person look fixedly at this object. In a few minutes the person will squint, and will soon fall into catalepsy and be spontaneously deprived of all sensibility.

In the experiments made, the insensibility of the patient was so great that the patient's head was alternately moved from one side to the other, and his whole person was moved. He had no recollection of any of them when he returned to his normal state.

This singular discovery made Mons. Rocca or Broca suspect that this state of insensibility might be as perfect as that obtained by anæsthetic agents. He determined to make experiments with it, and found that the state of insensibility produced, was as perfect as that obtained by the use of ether and chloroform.

Three experiments out of five attempts are reported as successful. In one of these cases a man underwent a surgical operation for an abscess, which required an important incision. The insensibility lasted ten or fifteen minutes after the operation. The patient was entirely unconscious of all that had taken place.

The experiments mentioned by Mons. Velpeau may be easily repeated by anybody. Their importance in point of economy and money and life is serious. Chloroform and ether are both costly articles, and their use is attended with danger. They have destroyed more than one life, and medical men are still unable to vaticinate in what states of

the body they may be used innocuously, and when they will extinguish life. Besides, their use in the lesser surgical operations, such as the extraction of teeth, is generally considered, out of the city of Boston, to be eminently injudicious. What a blessing this new discovery will prove, if time and experiment avouch all its present advantages.

Mons. Velpeau, in announcing the new discovery, said—“It is a strange phenomenon, so strange a phenomenon that I feel obliged to take some oratorical precautions in speaking of it to the Academy of Sciences. I feel obliged to draw assurance from the talents and honorable character of Mons. Broca, who has charged me with the duty of giving his discovery useful publicity, and at the same time of assuring his right to the discovery of this remarkable phenomenon.”

Mons. Velpeau, therefore, does not present the new system of anæsthesia for a panacea, but he says to medical men: “Use it, study it, experiment on it on useful occasions, and perhaps you may contribute to endow science with a new means of alleviating suffering humanity.”

SPIRIDION.

Sugar in Urine.

“Sugar in the urine,” writes M. Henry Musset, “does not necessarily imply the existence of diabetes. One may pass sugar with the urine, and yet enjoy perfect health. Dr. Blot has shown that sugar exists normally in the urine of all women during parturition, of nurses, and of a certain number of women during pregnancy. Dr. Leudet has shown in paraplegic patients that there is a constant relation between the appearance of the nervous cerebral accidents and the glycosuria. Dr. Itzigsohn relates a remarkable case of traumatic diabetes, occurring in a blacksmith who had received a blow on the top of the head. Dr. Todd has also given a case of diabetes which was observed in a woman after she had received a blow on the head. Prout observed sugar in the urine of dyspeptics and aged persons, and Dr. Goolden in children during dentition. Thus, then, there are numerous circumstances, physiological and pathological, which, directly or indirectly, concur in the formation of sugar in the economy. Can we now, with M. Mialhe, explain the presence of the sugar in the urine, by the greater or less alkalinity of the blood, which in the latter case cannot transform the glucose—the glucose then becom-

ing a foreign matter in the body, and so discharged by the kidneys? Or, with M. Bouchardat, shall we explain the glycosuria by supposing the presence of some peculiar principle, which has an action on starch like that of diastasis? Then, again, we have the explanation, resulting from discovery of the glycogenic function of the liver by M. Bernard, viz: that the function of this organ is impeded, and the sugar thrown into the general circulation. When, however, we consider, that in every body there are products which are returned by the lymphatics into the general circulation; that the transformation of starch goes on normally in the intestines; and that it is accomplished even in the mouth under the influence of the salivary diastasis; and if, moreover, we recollect—that glycosuria accompanies dentition, dyspepsia, certain cerebral disturbances, that it may be caused by irritation of the brain at the origin of the eighth pair of nerves; that it exists in pregnant and parturient women and nurses—are we not naturally brought to the conclusion, that diabetes is a neurosis troubling the harmony of the assimilating functions?"—*L'Union Méd.*

On the Existence of a Fibrinous Clot in the Heart in some cases of Croup. Letter from Mr. HENRY SMITH.

[From the Medical Times and Gazette.]

SIR—Some of your readers will perhaps recollect that a controversy took place, some two or three years ago, between Dr. Richardson and myself, on a question connected with the pathological appearances which were found in certain cases of croup in which tracheotomy had been performed. Dr. Richardson asserted that in some of these cases attended with peculiar symptoms, the cause of death was to be found in the existence of a fibrinous clot in the heart which was formed several hours prior to dissolution. He also stated that there was a wide divergence between the morbid signs in those cases where death was being brought about by obstruction to the breathing alone, and in those where the fatal event was ensuing from the presence of a clot in the heart.

Although at that time I had had a large experience in cases of tracheotomy for croup—and I am sorry to say a very fatal experience—I was by no means convinced that Dr. Richardson was correct in his views, although his statements and reasoning made a deep impression upon my mind.

At the meeting of the London Medical Society on Monday evening, Mr. Price brought forward a case where he had performed the operation for croup, and where the patient died. Dr. Richardson put the question to Mr. Price as to whether the heart had been examined after death, and then reiterated his views regarding the presence of fibrinous coagulum. In doing so, he referred to the difference of opinion which had existed between him and myself on this interesting question, and requested me to give to the Society the results of my observation since the period alluded to.

The President of the Society did not think fit to allow me to address any remarks respecting this question; and, therefore, I wish to state in your columns what I should have been glad to have stated to the Society, that further inquiry on this matter, and observation both on the living and the dead, have convinced me that Dr. Richardson's views deserve serious attention. As on the former occasion I considered them incorrect, and opposed them as well as I was able; so now, from a sense of justice towards that gentleman, I am glad to state my present conviction, that there are certain cases of croup in which the symptoms are more referrible to an embarrassed state of the heart than to a mere obstruction in the windpipe. These symptoms consist of great dyspnœa, pallid face and lips, cold extremities, and very feeble pulse; whereas, turgescence and lividity of the face, with blueness of the lips, accompanied with extreme dyspnœa, mark the insuperable obstruction in the trachea. In the former cases I am now disposed to agree with Dr. Richardson, that tracheotomy will not save life, as there is every probability that a coagulum has formed in the heart, whilst in the latter experience teaches that an artificial opening in the windpipe may save life.

It is not the mere reflection on Dr. Richardson's views that has brought about an alteration in my mind respecting this point; but a careful examination, both on the living and the dead, has led me to believe that that gentleman is in a measure, at least, correct; and in order to be brief, I will just mention the details of one of the last cases of croup, where I was able to make a post-mortem examination:

I was called to a child, aged 6, who was suffering severely from croup, and had been ill three days. The breathing was most laborious, the child making violent efforts to get air, and not moving the chest at all; the face was, however, very pale, and the lips were not blue. The pulse was extremely rapid and small. My opinion was sought regarding

tracheotomy; I did not think it a favorable case. The operation was not done; and the child died in an hour.

I opened the body with the express view of ascertaining whether there was a clot in the heart; for the child presented just those symptoms expressed by Dr. Richardson. Surely enough, on opening the heart, there was seen extending between the right auricle and ventricle a firm deposit, and there was another fibrinous clot at the commencement of the aorta. The lungs were healthy, but the larynx was lined with a thick deposit, which very much narrowed the cavity; a thinner membrane lined the trachea. Now, it struck me at once, that had tracheotomy been performed in this case, the existence of the coagulum in the heart would have prevented recovery had the obstruction in the windpipe been overcome; and I am now of opinion that some of the cases previously operated upon by myself, and presenting just the same symptoms as existed here, were instances where a fibrinous clot would have been found in the heart had it been looked for.

In another instance, where I was recently called to perform tracheotomy, the symptoms had come on within only a few hours. The child, aged 5, was lying in bed perfectly insensible, breathing with extreme labor; notwithstanding this, the pulse was pretty good, and the extremities not cold. I refused to perform the operation, and the child died in an hour and a half. On examination there was not any coagulum in the heart whatever; but the lumps were excessively congested, and the upper part of the larynx and trachea were lined with an organised cast.

Without venturing to go so far as Dr. Richardson has gone, I cannot help thinking that his views regarding the existence of a fibrinous clot in the heart in certain cases of croup demand serious attention; and, as I once strongly opposed them, I am now happy to admit that I am, in a measure at least, converted to his side.

I am, &c.,

HENRY SMITH.

Caroline-street, Bedford-square.

The Actual Cautery in Cancer.—M. Sedillot, of Strasbourg, strongly recommends the use of the actual cautery in the removing of epithelial cancers; removing as early as possible (under the chloroform) the healthy parts immediately surrounding the cancer.

Needles in the Stomach. Treatment by M. BOUCHUT.

A little girl, whose case attracted notice from its singularity, applied at Mr. Bouchut's consultation, for the extraction from the abdominal walls of a needle she had swallowed three months before.

Many instances of the kind are to be met with in scientific records. In the *Dictionnaire des sciences médicales*, we read of chlorotic patients who, impelled by an unaccountable fancy, swallowed as many as 1500 pins, and died in a state of atrophy, their muscles bristling with these foreign bodies like so many pin-cushions. Needles sometimes penetrate into the skin by the same mechanism, by which an ear of rye creeps upward through a sleeve in which it has been inserted. This is chiefly observed in cases of hysteria and chlorosis, in which the integument has more or less lost its power of sensation, and is unconscious of the penetration of the foreign body. In the little girl who suggests the present remarks, the needle had been inadvertently swallowed, and the interesting feature of the case was the occurrence of diarrhœa while the needle remained in her system, and its continuance, even subsequently to the removal of the implement, the cause of the intestinal relaxation being obscured by the occurrence and perseverance of the symptom. It is not unimportant here to inquire what connection, if any, existed between the presence of the needle and the production of diarrhœa.

We have stated that the diarrhœa had followed almost immediately upon the introduction of the needle into the digestive organs, that it assumed a chronic form, and that the child had lost flesh. Mr. Bouchut was consulted as soon as a minute inflammatory tumor appeared upon the abdominal wall, and a small incision allowed him to discern the foreign body, which he seized with a common forceps and easily removed. The wound healed rapidly, but the diarrhœa nevertheless persisted. This circumstance of course suggested the idea that the intestinal relaxation was not accidental, and might perhaps be connected with tuberculosis; as, however, the patient did not cough, as no mesenteric tubercles were discernible, the idea was abandoned, and in the supposition that the looseness of the bowels was due to a local cause only, it became necessary to inquire whether it was catarrhal or organic. A common catarrhal disease is not usually of so long duration, but the secretion, as may be observed in fluxes of all description, irritates the parts it comes in contact with, and gradually brings on

organic disease, thus giving rise to interminable chronic inflammations. In Mr. Bouchut's opinion, this explanation applied to the symptoms of the case under consideration.—*Championniere's Journal*.

Colica Pictorum. Treatment at La Charite. By M. TROUSSEAU.

A young man admitted into the ward with symptoms of painter's colic was cured in five days by the following treatment:

1st day. A decoction of cassia was prescribed, prepared as follows: bruise together legumes and seed of cassia 2 oz., boil in 40 oz. of water for a quarter of an hour, strain, and add one ounce of sulphate of magnesia, 3 grains of tartar-emetic, and one ounce of syrup of buckthorn. In the evening one grain of extract of belladonna was exhibited.

2d day. The painter's aperient enema was administered prepared with an infusion of 2 dr. of senna leaflets in 16 oz. of boiling water, to which was added one drachm of powdered jalap, one ounce of the electuary diaphænix and of syrup of buckthorn. In the evening the patient took 2 gr. of extract of belladonna. In the course of the night the bowels were relieved once.

3d day. A considerable amendment was observed. The following mixture was prescribed:

R.—Fol. sennæ,	1	5
Rhei contus,	1½	5
Boil for a quarter of an hour in aquæ,	5	5
Strain, add:		
Syrupi rhamni,	10	5
Sodæ sulphatis,	4	5

In the course of the evening the anodyne painter's enema with ol. juglandis 6½ oz., and vini gallici 10 oz. was administered. Also, a pill of 2 gr. of extract of belladonna.

From this hour the bowels acted freely, and the belladonna was continued alone. We should not omit to say that, in this case, Faraday's electricity was applied from the beginning, and had much diminished the pain, without, however, modifying in any principal way the disease.—*Champ. Journal*.

Formula in Mentagra.—As a local application, M. Richard employs the following solution, frequently applied, with good effect: Sulph. of zinc, 16; sulph. of copper, 5; water, 500; and laurel-water, 15 parts.—*Presse Med. Belge, No. 25.*

Urethritis and Vaginitis. Solutions of Chloride of Zinc.

The *Gazette des Hopitaux* published, some months since, the results of a series of experiments instituted by Professor Legouest, of the Hospital Val-de-Grace, on the value of chloride of zinc injections in the treatment of urethritis.

The use of chloride of zinc had been tried in 50 patients belonging to this physician's wards; of these cases of urethritis 21 were simple, 12 acute, 17 chronic. All these patients had injected, once every morning, a solution of chloride of zinc at 1-1000 for simple and acute urethritis, and at 1-500 for chronic and obstinate cases. Each patient had retained the liquid injected a space of time varying from three to five minutes. These experiments proved: that injections of chloride of zinc of the above mentioned strength, are not in general painful; that they rarely induce accidents; that they rapidly modify the discharge; that in the greater part of cases of acute urethritis they assuage inflammation and pain; finally, that they succeed less perfectly in simple and benignant discharges than in acute or chronic urethritis.

In this last category especially, injections of chloride of zinc yielded Mr. Legouest really remarkable results.

We waited, before we noticed Mr. Legouest's remarks, for further confirmative facts, when the *Bulletin de Therapeutique* informed us through one of its correspondents, Dr. Gaudriot, that this physician had recommended the medication alluded to twenty-five years since. Mr. Gaudriot has done better than moot a question of priority; he proves that solutions of chloride of zinc are not beneficial in urethral blennorrhagia only, but that they are likewise very efficacious in vaginitis. The following are Dr. Gaudriot's formulas for both these diseases:

SOLUTION FOR INJECTIONS.

℞.—Liq. zinei chloridi, 24 to 36 min.
 Aq. destillatæ, 3 5
 Shake and filter.

Two or three injections to be performed daily. The syringe to be used should be provided with a bulbous extremity, and a very small quantity of fluid should be employed, the disease in its incipient stage occupying the fossa navicularis.

FOR A VAGINAL SUPPOSITORY.

℞.—Liq. zinei chloridi, 5 min.
 Morphiæ sulphatis, ½ gr.

Thicken to a proper consistency with 2 dr. of the following :

R.—Mucilaginis acacie,	6 parts.
Sacchari pulveris,	5 “
Amyli,	3 “

Mix with care and mould a hollow suppository not more than one line in thickness. One suppository is inserted every day, and subsequently every alternate day.

On a Case of Acute Chorea treated successfully with Arsenic.

By DR. RONZIER JOLY. (Bulletin General de Therapeutique, October 15th, 1859.)

Dr. Ronzier Joly was induced to try the effect of arsenic in chorea, from seeing an article recommending that treatment by M. Aran. The case was that of a boy, twelve years old, who was bitten by a dog, and who was suffering also under acute rheumatism. The latter disease yielded to ordinary remedies, but when he was convalescent he began to stammer and to perform irregular movements with his body. The arms were continually in motion, and the legs were almost as actively employed. The movements of the heart were regular, but frequent; the pulse 90, and compressible. Soon afterwards the patient was seized with an attack of true epilepsy, which lasted for a quarter of an hour. Dr. Joly then prescribed a mixture consisting of arsenious acid and water, the doses to be taken in increasing quantities, beginning with $2\frac{1}{2}$ milligrammes of arsenious acid on the first day, $3\frac{3}{4}$ milligrammes on the second day, and 5 milligrammes on the third day. At this period a little improvement was observed in the agitated movements of the patient. On the fifth day the dose of arsenic was raised to 6 milligrammes, and on the eighth to 8 milligrammes; after which the dose was again diminished, and continued at the rate of 4 milligrammes a day. On the twenty-sixth day from the commencement of this treatment, the boy articulated words, swallowed liquids with facility, and put out his tongue naturally; the irregular movements had completely disappeared, and the gait was less vacillating, notwithstanding the extreme weakness of the lower limbs. The boy's mother perceived at this time that some favous crusts on the head were diminishing in size and extent. The arsenious acid was continued in the dose of 3 milligrammes a day for some time after the disappearance of the symptoms. About three months and a half from the first attack of chorea, the report states that all medicines had been sus-

pended for a long period, that there was no further sign of chorea, but there were a few rheumatic pains, and the favus had not altogether disappeared.

On the Treatment of Blennorrhagia by Vinum Colchici and Tincture of Opium. By Dr. EISENMANN, of Wurzburg. (Bulletin General de Therapeutique, May 15th, 1859.)

Dr. Eisenmann states that he once had occasion to prescribe a combination of vinum colchici and tincture of opium for an officer affected with rheumatic conjunctivitis, and a few days afterwards he was informed that the medicine had cured not only the ophthalmia, but also a blennorrhagia, of which no mention had been previously made. He was surprised at this result; but he resolved to profit by it, and to try the same treatment in other cases. He therefore prescribed the medicine for a girl affected with blennorrhagia, and was again surprised that a permanent cure was effected in a few days. Nothing was ordered externally, except frequent applications of tepid water. Subsequently, several cases of blennorrhagia in the male presented themselves, and were treated in the same manner. The dose employed was eighteen to twenty drops, three times a day, of a mixture consisting of twelve grammes of vinum colchici with two grammes of tincture of opium; milk was ordered as the principal article of food, and absolute rest was enjoined. All the cases of blennorrhagia thus treated were cured without exception in a few days, especially when the treatment could be adopted at the commencement of the affection, and none resisted longer than a week. The observations of Dr. Eisenmann have been confirmed by those of M. Collin, of Dresden, who treated ten cases of blennorrhagia with the greatest success by the mixture of vinum colchici and laudanum. The patients did not recover so rapidly as those treated by Dr. Eisenmann; but the latter physician attributes the difference to the probable inferiority of the drugs employed, and to the fact that the patients did not consult a medical man at a sufficiently early period.

The Purity of Glycerine may be tested by dropping into a glass of it a few drops of nitrate of silver. If, as is often the case, the glycerine contains any chlorides, there will immediately take place a cheesy precipitate.—*Bull. Ther.*

Normal Hypertrophy of the Heart during Pregnancy.—In our number for July last (p. 276) we gave a brief notice of the researches of M. Larcher on this subject, and shall now furnish a fuller account of them.

Mr. Larcher has had ample means of investigating this subject at the Paris, Maternité, for he has examined 130 pregnant women, the greater number of whom succumbed to puerperal fever—no lesion having preceded or given rise to the condition of the heart observed in them. The conclusion he comes to is, that the heart is normally in a state of hypertrophy during gestation. The walls of the left ventricle become increased by at least from a fourth to a third in thickness, its texture being also more firm and its colour more bright—the right ventricle and the auricles retaining their normal thickness. These observations, made by M. Larcher, date back some thirty years, and have been confirmed by subsequent ones, made with great exactitude, by M. Ducrest, upon 100 other women: but why this paper has been so long in being published no explanation is given.

Within certain limits this condition of things may co-exist with the maintenance of health; but it none the less may be taken to express a predisposition to congestions and hemorrhages. If, as the general rule, the hypertrophy gradually disappears after parturition, it may be otherwise in exceptional instances, especially where the recurrence of pregnancy has been frequent, and with short intervals. Is this not a cause of the varied lesions of the circulatory apparatus so commonly met with in women who have borne many children, either at two premature an epoch, at too brief intervals, or during an unfavourable condition of health? There is every reason, too, to believe that the bronchitis, which is so common during pregnancy, derives much of its character of persistency from this condition of the heart. Again, may we not attribute to this the greater danger of pneumonia when developed in pregnant women, and the frequency with which abortion then occurs? The various forms of hemorrhage met with in pregnancy, as epistaxis, hæmoptysis, metrorrhagia, and apoplexy, are likewise predisposed to by this hypertrophy, normal though it be. Although pregnancy may, in the majority of cases, suspend or render slower the progress of pulmonary consumption, the progress of this affection becomes accelerated after delivery, and the still hypertrophied heart increases the perturbation of the respiratory apparatus.—*Med. Times and Gaz.*, Dec. 3, 1859, from *Archives Generales*, tome xiii.

On the Employment of Tonics in the Treatment of Typhoid Fever. (Bulletin Général de Thérapeutique, June 30th, 1859.)

Very few physicians of the present day treat typhoid fever with tonics from its commencement to its termination. But it is undoubted that tonics are useful at certain periods, and that their use is often observed, from the very time of administration, to be followed by a diminution of very severe nervous symptoms. M. Monneret adopts a mixed treatment in typhoid fever, the following being a sketch of the plan he pursues. In the first place, an emetic is administered, and as soon as it has operated, a purgative of seidlitz water is given; then the patient is allowed to rest for two or three days if the bowels are opened; but if, on the contrary, the constipation returns, and there is distension of the abdomen, another purgative is ordered. If the distension increases and is accompanied with great want of power, M. Monneret employs ice internally and externally, with negus for drink. The poultices are composed of linseed-meal and fragments of ice; they are placed upon the abdomen and the ice slowly melts. In the second week, when signs of prostration appear, the tonic treatment is commenced, consisting in the employment of sulphate of quinine in the dose of fifty to sixty centigrammes in a draught, and wine is also administered. Besides these measures, broth is given two or three times a day, and this treatment is continued during the second and third week. Two cases are given in illustration of the successful results of this treatment.

Hereditariness of the Epilepsy induced in the Guinea-pig. By
M. BROWN-SEQUARD.

One of the most interesting facts among those discovered by M. Brown-Sequard, is the production of epilepsy in the mammalia, and especially the guinea-pig, as a consequence of certain lesions of the spinal cord. He has frequently repeated these experiments, and with the same results. At a recent meeting of the Biological Society, he related the results of the observations he had made during several years upon the young ones born of parents thus rendered epileptic. In some of these he has met with a very distinct epileptiform affection, with well characterized paroxysms, but differing somewhat from the epilepsy of the parents. In the latter, not only are there spontaneous paroxysms, but others may be induced at will, by irritating or pinching the skin

of the face; but in the pigs, which appear to derive their convulsive affection from their parents, paroxysms cannot be induced in this manner; while the form of those occurring spontaneously is not exactly the same. The animal is first seized with trembling, and then falling on its flank it agitates its limbs spasmodically. The young pigs thus affected have proceeded in about an equal number from epileptic mothers and fathers. Sometimes parents thus rendered epileptic by myelo-traumatism produce little ones, none of whom exhibit the affection, or while some do, others do not. M. Brown-Sequard has had under his observation a very large number of guinea-pigs, and while not denying the possibility of the fact, he has never seen a single animal present an analogous convulsive affection, unless it had previously undergone a lesion of the medulla, or was the offspring of a parent who had been rendered epileptic in this manner.—*Gazette Hebdomadaire*, No. 44.

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Treatment of Indolent Ulcers by Vapor of Iodine.

During the last three years nearly all the cases of indolent ulcers entered under our care to the U. S. Marine Hospital, have been treated by the vapor of iodine. The result is very satisfactory in nearly all cases; more so, by far, than that obtained by any other single method. Its advantages are conceived to be these:

1. Cleanliness and facility of application.
2. Rapidity of cicatrization.
3. Destruction of the odor of the ulcer. Iodine acts as a disinfectant, like chlorine.

The manner of using it is as follows:

1. Dress the ulcer with simple cerate, spread on lint.
2. Take from one to four grains of iodine, according to the size and degree of indolence of the ulcer, folded in several layers of lint, and place it on the ulcer, over the first layer.
3. Cover this with a piece of oiled silk and tin foil, which should be large enough to extend beyond the edges of the ulcer. This is to prevent rapid vaporization, and it should be secured by a roller.

The warmth of the member speedily vaporizes the iodine, and a sensation of warmth is perceived by the patient on the ulcerated surface. If applied in too large quantity, or too directly on the surface, the iodine acts as an escharotic. Care is therefore required in this respect.—*N. A. Med. Chir. Review*.

A New Treatment for Gout and Rheumatism.

In a report to the Academy of Medicine, M. Bouillaud describes the treatment proposed by Dr. Lecalve for gout and rheumatism, two diseases which that gentleman conceives to be nearly akin, and which should therefore be considered jointly.

The syrup and topical application in which Mr. Lecalve's treatment principally consists are prepared as follows. For the syrup:

℞.—Extr. spirit. aconitæ,	} aa. 8 gr.
— digitalis,	
— menth. pip. . . .	
Extr. aq. Periscariæ,	16 gr.
Aq. destill,	q. s.
Ut fiat solutio.	
Syrupi gummi acaciæ,	10 ʒ

For a syrup of which a tea-spoonful should be taken three times a day in a glass of gum and water.

For the topical application:

℞.—Tinct. hederæ,	} aa. 2½ ʒ
— scillæ,	
— menth. pip. . . .	
— belladonnæ,	2 ʒ

M.

A compress impregnated with this fluid should be applied to the seat of pain. -

Mr. Bouillaud, in reporting on Mr. Lecalve's communication, merely indicated, without expressing any approval, a method of empirical treatment proposed for diseases, one of which at least, rheumatism, is, in the opinion of the learned professor, essentially of inflammatory nature, and requires an energetic antiphlogistic treatment, for the purpose of averting cardiac complications.

Nævus.—Mr. George Browning states (*Med. Times and Gazette*, Nov. 19,) that he has lately employed collodion with marked success as an application for the cure of nævus. It is most applicable to nævi situate over bone, exerting in such cases a uniform pressure much more effectual and more readily applied than that produced by means of a disk of ivory, or other mechanical appliances, with plaster and bandage. He says he has never known it to fail when he has applied it himself, which he does daily, by means of a camel's-hair pencil.

On the Cicatrix-like Streaks on the Skin of the Abdomen, Breasts and Thighs of Women that are Pregnant or have Children.
By L. ELSBERG, M. D., of New York.

Opinions as to the time of appearance, frequency, and other peculiarities, and medico-legal importance of these streaks, are so unsettled and conflicting, that we gladly hail the excellent review of the subject by Crede, of Berlin, one of the editors of the "*Monatsschrift für Geburtskunde und Frauenkrankheiten*." We have prepared for our readers the following propositions which he has established: (*Monatsschr.*, &c., Nov., 1859, p. 323 et seq.)

1. The streaks on the abdomen more or less extensively exist in the great majority of pregnant females. They appear but very seldom, however, during the first half of pregnancy—frequently not until the last month, or the last but one.

2. Soon after delivery they change in appearance, becoming gradually less evident, unless the skin is made tense, but never entirely disappear.

3. In some cases they do not appear during pregnancy, and sometimes no trace of them can be found after repeated pregnancies.

4. Sometimes they appear for the first time at the second or third pregnancy, or else new streaks are added to the old.

5. They may make their appearance, also, without the existence of pregnancy—in consequence of diseases producing a rapid and considerable extension of the skin, (especially in dropsy, therefore.)

6. The quite similar streaks on the breasts, and the anterior surface of the thighs, occasionally, also, on other parts of the body, as the buttocks, calves of the legs, etc., merit the same attention as those on the abdomen.

Mixture for Dispelling Inebriety.—Several periodicals have stated that Dr. Beck, of Dantzic, had discovered in a mineral paste the true antidote of alcoholic inebriety. Mr. Chevallier, who mentions the circumstance in the *Journal de Chimie Medicale*, remarks that the real specific for intoxication is the acetate of ammonia, exhibited according to the formula of Mazuyer:

R.—Ammoniac acetatis,	-	-	2 to 2½ gr.
Aq. cum saccharo,	.	-	5 oz.

To be taken in one dose.

EDITORIAL AND MISCELLANEOUS.

TO AVOID SUTURES AND SHAVING THE HEAD IN WOUNDS OF THE SCALP.

By HENRY F. CAMPBELL.

Wounds of the Scalp generally heal readily and seldom gape—rarely requiring a suture. Most patients, however, are unwilling to take the advice to leave them undressed—nor would this course be altogether prudent, as the inflammation and tumefaction which sometimes follow these injuries, cause the edges to become everted and give rise to a troublesome, irritable wound. Often, too, the hæmorrhage will not cease till the edges are brought together. The usual method of dressing these wounds requires the shaving off of the hair for some distance around the wound, in order to apply the adhesive plaster. If the wound should be a long one, or if there should be many, a very disfiguring amount of the hair is required to be removed, and long after the wounds have been cured, these, often discreditable, patches of baldness remain, a source of great mortification to the patient. Sutures are inadmissible from their liability to produce troublesome inflammation. Could they be safely applied, the plasters and necessary previous shaving would be avoided.

The following plan of dressing, though not entirely new, has not, in our opinion, received the attention it deserves :

Having occasion recently to dress the head of an Irish drayman, who had received an extensive wound of the scalp from the kick of a horse—the wound being irregular and about two inches and a half in length, with everted edges and bleeding—some retentive means seemed necessary to keep the edges in apposition. We were about to shave the scalp on either side of the wound, in order to make a bare surface for the application of the plasters. In handling the matted hair in order to remove the blood, we found that the edges of the wound were separated or approximated according as the bordering hairs were drawn from or towards the median line. From this observation, the measure was adopted of *tying the strands of hair across the line of the wound, using them in the manner of sutures to effect approximation and retention of the edges.*

The plan worked admirably, giving no pain whatever to the patient. A pledget of lint with simple cerate was then placed over the wound as a compress, and the bandage applied as usual.

The above method is probably familiar to others, but as yet we have seen no record of it in recent works on Surgery. We regard it as a

useful and easy mode of dressing these wounds, and hence this brief report. Even when an elliptical piece has been removed in the extirpation of tumors, this plan will surpcede the necessity of shaving the scalp.

The only difficulty which presented itself in carrying out this plan was, that the wet hair was disposed to slip, and for a while, the knot became loose. This inconvenience can be avoided in many ways, as for instance, the requisite amount of the proper hairs may be selected from either side, and these may be folded in at the ends upon a piece of warm adhesive plaster, the length of the wound, and then wrapped on it in the form of a roll, after the manner of young ladies "doing up their hair in papers"—or little *clamps of split-shot* may be applied upon the strands of hair from the opposite sides.

CHLOROFORM VAPOR IN EAR-ACHE.—The use of oil and chloroform in ear-ache is familiar to many. A recent case treated by Dr. L. D. Ford, of this city, develops the use of chloroform vapor for this affection on a method which proved highly satisfactory. The patient, a child, suffered severely, and other remedies failing, Dr. Ford used the following extemporaneous expedient :

Taking a 2 oz. vial, a small opening was punched through the bottom, a little cotton-wool soaked with chloroform was then put into the vial. The mouth of the vial was now applied to the external meatus. The attendant then placing his lips to the punctured extremity of the vial, *blew the vapor into the external ear*. The relief was instantaneous, and the patient soon fell asleep, being cured by this single local application. We commend the above method as well worthy of trial in cases of this painful affection of childhood.

CLIMATE AND THE CONSUMPTIVE. By WM. H. DOUGHTY, M. D.—The above valuable communication is completed in our present number. Dr. Doughty's researches in these important relations have proved of much interest not only to members of the Medical Profession, but to all who have had the privilege of perusing the former numbers of his very full and laborious investigation—for who is not interested in the question, "How shall we select a Sanatorium for the Consumptive?" We hope still to receive the contributions of our valued correspondent—and here again ask that assistance, in contributions, from other members of the Profession, which their heretofore liberality, and the wide circulation of this Journal, as a medium of communication, give us the right to expect.

Dr. N. BOZEMAN.—We learn through a private letter, just as our last pages are going to press, that this distinguished gentleman and skillful operator, has removed from Montgomery to New Orleans. He has established a Hospital in New Orleans which will be principally devoted to the treatment of females, and such as require the various operations in Obstetric Surgery; and he is prepared to accommodate patients coming to him from a distance, in a far more comfortable and elegant manner than they could be at a hotel or private boarding-house. A WOMAN'S HOSPITAL in the South is certainly a most desirable institution, and we know of no one more suitable as its head than our friend Dr. Bozeman.

FORMULA FOR PREPARATION OF STRYCHNINE.—In the valuable communication published in our January issue, page 5, "Strychnine as a Remedial Agent. By J. McF. Gaston, M. D., of Columbia," there occurred, we regret to say, an inadvertent omission, which we now hasten to correct. The error will be found on page 7 of the January number. It will there be seen that the ingredients of Dr. Green's formula are given, while the proportions are omitted. The deficiency is supplied in the formula given below:

SOLUTION OF STRYCHNINE.

R̄.—Strychniæ.	grs. xij.
Acidi Acetici,	gtt. lx.
Alcohol,	f: 5j.
Aquæ font.,	f: 5xj.

Mix.

The above mixture is to be kept in the office. The dose is from 5 to 10 drops—and very rarely as much as 15 drops—three times a day.

THE AMERICAN MEDICAL ASSOCIATION.—We take pleasure in giving place to the following:

The American Medical Association will hold its Thirteenth Annual Meeting at New Haven, on the *First Tuesday of June*, 1860.

The Secretaries of local Societies, Colleges and Hospitals, are requested to forward the names of delegates, as soon as they are appointed.

to STEPHEN G. HUBBARD, M. D., Secretary,
New Haven, Connecticut.

Injection of Tincture of Aloes in Gleet.—M. Gamberini, of Bologna, states that in some cases in which other injections have failed, he has derived great advantage from injecting tincture of aloes 14 parts diluted with 120 parts of water.

Persulphate of Iron as a Hæmostatic.—Monsel, of France, first proposed the use of this excellent hæmostatic, and as its use is becoming more general, we give our readers his process for its preparation.

“Place in a porcelain capsule 100 grammes of distilled water, and 10 grammes of sulphuric acid, raise the mixture to the boiling point, and then add 50 grammes of protosulphate of iron. After complete solution of the latter, pour, in small quantities, into the boiling liquid 16 grammes of nitric acid at 35°. When the rapid discharge of orange-colored vapors has ceased, add, in portions, 50 grammes of the protosulphate of iron, the solution of which will produce again reddish flames, and will cause the excess of nitric acid to disappear. The volume of the liquid is then raised to 100 grammes, by the aid of distilled water, cooled and filtered.”

Monsel suggests that 100 grammes of this solution be treated with a few grammes of linseed oil, and that the mixture be shaken three or four times in twelve hours. There is thus obtained a perfectly neutral solution, having no nitrous odor, and susceptible of preservation for a very long time. The solution is limpid, of a very dark brownish red, inodorous, and with an extremely astringent, but non-caustic taste. It marks 45° of the *pese-sels*. When concentrated by boiling, it assumes the consistence of honey, and if, in that condition, it is spread in thin layers on plates of glass, and dried at a temperature of about 100° Fahrenheit, it can be obtained in redish-yellow scales, transparent, like those of the citrate and tartrate of iron.—*Jour. de Phar. et de Chin.*

Southern Students Leaving the Medical Schools of Philadelphia.—We have learned through the newspapers that over three hundred medical students from the Southern States, recently left Philadelphia in a body for Richmond, and other Southern cities.

If this movement is to be regarded as the result of political causes, it is to be regretted. If, on the contrary, it was the result of a returning sense of the mistake the young gentlemen committed in passing by the schools of their own States, especially for those of Pennsylvania, we cannot but commend their good judgment.

The medical schools of the Southern cities suffer nothing in comparison with any in this or foreign countries.

Their professors are learned and eloquent; the facilities for

clinical teaching are, in some of the large cities, ample. Why, then, should they not be supported by Southern students?

We do not in any way intend to disparage the advantages of Philadelphia as a seat of medical learning. Her character is too well established to require endorsement or fear depreciation; but we have long believed that a more equal distribution of students among such medical schools of the country as possess facilities for clinical instruction, instead of gathering five hundred on the seats of a single lecture-room, would be for the advantage of all concerned, and we hope that hereafter the medical students of the West will not be behind those of the South in their attachment to the institutions of their own particular sections—institutions which, if they are not already fully equal to any others, only require the patronage to which they are legitimately entitled to render them so.—*Chicago Medical Journal*.

Preparations of Larch Bark in Pulmonary Hemorrhage.—In our number for July, 1858 (p. 201,) we noticed favourable results obtained by Drs. Moore, Kennedy, Carmichael, &c., from the use of the larch bark. Dr. Owen Daly states (*Medical Times and Gazette*, Nov. 12, 1859) that he has used with equal success this article. He prescribed it first for an out-patient at the Hull General Infirmary, suffering from pulmonary hemorrhage, for whom he had, without the slightest benefit, prescribed all the usual styptics: he resolved to prescribe the tincture of bark. The patient was a female, aged 32, a widow in an advanced stage of consumption. She complained of great difficulty in breathing, of oppression at her chest, and of a constant cough, attended with expectoration of blood. The tincture of larch was ordered in twenty-drop doses every third hour in a little water; the relief was immediate; at the end of a week the hæmoptysis was entirely arrested; and her other symptoms were so much mitigated that she soon ceased to attend at the infirmary.

The styptic properties of the larch bark had, in this case, so far exceeded my expectations that I thought it deserving of a more extended trial, and up to the present time, I have prescribed it in fifteen cases of pulmonary hemorrhage. The cases have not been selected—some have been cases of active and severe hæmoptysis, others of a passive and more chronic character. I have also employed it in one very severe case of epistaxis, and in a case of chronic cystitis, and with the exception of this latter case, in every instance with the most satisfactory results.

Glucosuria in Marsh Fevers.—M. Burdel thus concludes a memoir upon this subject:—1. A true diabetes exists in marsh fevers. 2. It is only ephemeral, *i. e.*, being the evidence of the disturbed state of the economy, it appears, persists, and disappears with the fever. 3. It is the expression of the special disturbance of the equilibrium prevailing between the cerebro-spinal and sympathetic nervous systems. 4. M. Claude Bernard's explanation is confirmed by these facts. 5. The more violent the paroxysm, and the more intense the shivering, the greater is the amount of sugar. 6. On the other hand, the greater the number of paroxysms which have taken place, and the more these have lost their force—when, in fact, the cachexy has become established, the less is the quantity of sugar.—*Union Med.*, No. 139.

The Influence of Cohabitation in the Transmission of Phthisis.—M. Brouchon concludes an interesting memoir upon this subject with the following propositions: 1. Pulmonary phthisis may become communicated in the course of time from individual to individual under the influence of cohabitation, and the consequent intimate relations—a proposition equally supported by reasoning, and by facts. 2. The transmission is usually operated from the older to the younger subject. 3. In the great majority of cases it takes place from the man to the woman. 4. It is to be feared in proportion as the subject exposed to it manifests a pre-disposition to the disease. 5. The influences which contribute to the result are identity of hygienic conditions, frequent absorption of morbid exhalations from the diseased subject, and fecundation by the latter.—*Revue Medicale*, 1859, tome ii., p. 88.

A Spanish Cure for Nymphomania.—A young woman of high position having terminated a brilliant education at a convent in Saragossa, was seized, after romance reading, with nymphomania. M. Ester, the physician, believing that acting upon the imagination of the patient was the only effectual mode of cure, had her suddenly and without explanation conveyed to the Venereal Hospital. She was there brought into the presence of a woman covered with syphilitic ulcers, and in the most deplorable state; and the sufferings, regrets, and imprecations she listened to produced so vivid an impression upon the girl, that she at once returned to chaste ideas. She has since married, had children, and remained a model of grace and virtue.—*Ibid.*, p. 429.

Digitaline in Puerperal Fever. By Dr. SERRE.—In one of the late sessions of the Academie de Medecine of Paris, Dr. Serre communicated an elaborate treatise on the treatment of child-bed fever, in which he extols the efficacy of digitaline in this affection. He administered one granule of the preparation "digitaline," manufactured by Homolle and Quevenne, every four, five, or six hours. He reports nine cases treated in this manner, in eight of which the remedy acted very favorably, although the disease had made already considerable progress in some of them. The principal effect of it consists in diminution of the frequency of the pulse and of respiration, and a simultaneous amelioration of all the other symptoms. The efficacy of digitaline is, according to his statement, superior to that of quinine, which has been recently recommended, and produces a similar effect.—*Gazette des Hopit.*, 1859, 50.

Tannin Crayons in Affections of the Uterus.—M. Becquerel finds these of great service in affections of the cervix uteri, being advantageous substitutes for intra-uterine injections. They are formed of tannin 4, and gum tragacanth 1 part, mixed up with crumb of bread. They are about one-sixth of an inch in diameter, and an inch long, and are passed, by means of a forceps and speculum, through the os uteri into the cavity of the uterus, in which they are kept by means of charpie, moistened with a concentrated solution of tannin. The crayon softens and dissolves; and at the end of twelve hours the charpie is withdrawn by means of a thread attached to it. A new crayon is introduced every third or fourth day, and after a month's treatment the fungosities of the mucous membrane gradually disappear, and hæmorrhage ceases.—*Bulletin de Therap.*, t. lvii., p. 365.

Application in Tumors of the Breast of a Doubtful Nature.—Benign tumors of the breast so far simulate cancer sometimes that even experienced surgeons advise their extirpation. M. Chahrelly has recently published several cases of this description in the Bordeaux *Journal de Medecine*, in which a complete cure has been effected by applications of the following powder continued uninterruptedly during several months: Powdered starch, 250 parts; powdered iodine, $\frac{1}{2}$ to 1 part; chlorhydrate of morphia, $\frac{1}{2}$ a part. Mix. The powder is to be applied upon a layer of wadding, which is to be kept *in situ* by a suspensory bandage.—*Bulletin de Therapeutique*, tome lvii., p. 412.

Alum Lozenges in Affections of the Throat.—M. Argenti, of Venice, proposes, as a substitute for alum gargles in affections of the throat, lozenges formed of alum, sugar, and tragacanth, mixed up with diluted laurel-water, so as to form lozenges, each containing a suitable dose of alum. The mass is to be well manipulated, and, after division, to be put on a sheet of paper and dried by a gentle heat. The lozenges keep well, and form an agreeable medicament, which, by aid of the saliva, becomes effectually applied to the parts. A pharmacien of Paris has for some time past prepared chlorate of potass in the same manner.—*Bulletin de Therap.*, tome lvii., p. 413.

A New Idea.—Dr. Foussagrives, amongst other conclusions concerning tartar emetic, has arrived at this one: That in large doses it generally arrests the acute accidents of tuberculous softening in the lungs, and maintains or brings back the consumption to that condition in which mineral waters and fish oils are so successfully used. The existence of signs of softening of the stomach (what is this disease, and what are its signs?) constitutes the only contra-indication to the use of the tartar emetic.—*Bull. Ther.*

Prof. Cruveilhier's Purgative Mixture.—Narbonne honey, 30 grammes; syrup of buckthorn, 30 grammes; powdered senna leaves, 4 grammes; powdered jalap, 4 grammes; powdered scammony, 1 gramme; powdered squills, 40 centigrammes; powdered calomel, 40 centigrammes; powdered digitalis, 40 centigrammes. Divide the mixture into four parts, and take the four doses in eight days—one every other day. Used in albuminuria.—*Repertoire de Pharm.*

Chloride of Sodium as an External Resolvent.—M. Anceion affirms that chloride of sodium employed externally, whether in powder, or incorporated with lard or linseed oil, forms a most admirable resolvent of indurated lymphatic glands. Frictions made with a pomade composed of it will induce an eruption resembling variola, which proves of great use in pulmonary phthisis and in chronic affections of the alimentary canal.—*L'Union Med.*, No. 132.

In 1813, DeQuincey increased the quantity and frequency of his doses of opium so much, that he took 320 grs. daily. Prodigious as this quantity is, it is only half what Coleridge was in the habit of taking.