

Part 7
Denison (C.)

THE
INFLUENCE
OF THE
CLIMATE OF COLORADO
ON THE
NERVOUS SYSTEM.

BY
CHARLES DENISON, M.D.,
DENVER, COLORADO.

REPRINTED FROM THE "ARCHIVES OF ELECTROLOGY AND NEUROLOGY" FOR NOVEMBER, 1874.

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THE ARCHIVES
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A JOURNAL
OF
ELECTRO-THERAPEUTICS AND NERVOUS DISEASES.

EDITED BY
GEORGE M. BEARD, A.M., M.D.

THIS JOURNAL IS NOW THOROUGHLY AND PERMANENTLY ESTABLISHED.

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The second number of the first volume, for November, 1874, is now ready, with the following

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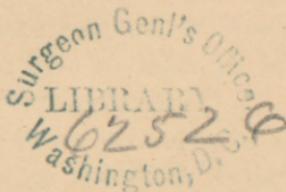
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TO THE EDITOR OF THE ARCHIVES OF ELECTROLOGY AND NEUROLOGY : In attempting to comply with your request, only lately received, I must explain that the field of investigation you propose for me is so new, and also, from a seeming conflict of data, so difficult, that the time to which I am limited is too short, even had I nothing else to engage my attention.

Besides, I confess to an ignorance of the subtle forces to be considered, which, perhaps, ought to preclude my attempting such an article as you desire for your estimable journal.

You have elsewhere very pertinently asked, "Shall we wait until our knowledge becomes absolute before we reveal it? Does it not rather become those of us who are seeking truth, as often as may be, to take account of stock of our discoveries? Is it not well now and then to take an inventory of our ignorance, and see how little we know?"*

As I would answer these questions in the affirmative, I will gladly try to contribute the *little* I can in answer to your queries, hoping at a later date to furnish the profession, and a

* "Atmospheric Electricity and Ozone." Popular Science Monthly, Feb. 1, 1874.

large class of their patients (consumptives), more valuable information of this climate and its *peculiar adaptation* to the needs of special classes of invalids.

GENERAL NATURE OF THE CLIMATE OF COLORADO.

Colorado covers such a large and various area, including an unexplored region to the west, the Rocky Mountain range, about a hundred miles wide, running through the centre, and the broad plains to the east, that we wish to be understood as referring in this paper to a belt of land, say thirty miles wide, lying north and south, along the eastern base of the Rocky Mountains, and including the foot-hills, unless some other locality is specified.

This region is interesting, for much of it can be irrigated (which is almost a universal necessity out here) by the streams which flow down the mountain cañons. It is here the bulk of Colorado's population is, and may be expected to be.

This belt of land is about 6000 feet above sea-level at the north, a little more than 5000 at Denver, 8000 on the Divide, thirty miles south of Denver, and some less than 5000 at Pueblo, in the valley of the Arkansas river, over a hundred miles south of Denver, from which point the elevation gradually increases to 6000 feet at Trinidad.

Opening into this belt of land are rugged cañons, the only passes to parks and points of interest in the mountains.

These parks are extensive elevated plains, surrounded by lofty mountains, and interspersed with hills of no small dimensions for a less mountainous country.

The southernmost is the San Louis Park, which includes an extensive valley of the Rio Grande, at an average elevation of about 7500 feet, in which is the new town of Del Norte. The next to the north of this is South Park, with an average elevation of 9000 feet, in the west of which, beautifully nestled under the mountains, is the little town of Fairplay and several mining towns. Still farther to the north-west is a collection of valleys called Middle Park, the streams of which are tributary to the Colorado, which finds its way to the Pacific.

The average elevation of this "Park" is 8500 feet.

In one of these valleys are some hot sulphur springs, which are of a temperature of from 110 to 116 degrees, and I judge

will prove beneficial in eradicating constitutional taints of blood. North and east of this are North and Estes Parks, of nearly as great altitude, the latter noted for its rugged scenery.

The average elevation of the whole territory is about 6500 feet. The Rocky Mountain range, the backbone of the American continent, reaches its highest elevation in Central Colorado, the passes over it, both to the north and south of us, being lower and less difficult; while in this part of the territory they have an elevation of 11,000 to 13,000 feet, the peaks reaching from 13,500 to over 14,000 feet above sea-level.

The climate of these mountain regions compares unfavorably with that of the plains to the east during the colder portion of the year; while in summer, the cooler and bracing atmosphere of the mountains is a grateful relief to those who are enervated by the continuous warmth of the plains.

The soil of the plains along these mountain-slopes is a dry, sandy loam, the washings for centuries from the mountainous regions beyond. It is chiefly of an alkaline nature, and sometimes the deposit of alkali is considerable, affecting vegetation and drinking-water. The products of the soil, especially the cereals, are remarkable for their richness. The wheat of Colorado is unsurpassed.

The plains are covered with a short, fine, prairie grass, which cures as it grows. On this cattle feed all the year round and seem to thrive. There are no trees except on the banks of streams, on the Divide, or those cultivated by irrigation. The pine forests on the Divide are in pleasant contrast with the apparent barrenness of most of the region east of the mountains. In the mountains timber is abundant, especially yellow pine and spruce, which grow between the altitudes of eight and eleven thousand feet.

There are four remarkable features of this climate which distinguish it from the eastern part of the United States, and make it a most desirable change for certain classes of invalids. These are its altitude, with the increased amount of atmospheric electricity and ozone due to the same, a large proportion of clear days, a small relative humidity of atmosphere, and a small annual rainfall. The wind does not blow here as much as one would expect in such a light, airy region. Usually

before a storm, however, the mountain breezes swing down upon us in playful gusts, and at times the commotion is quite general, constituting a *wind*, or, more properly, a *dust* storm, which may last from one to five hours. There have been four of these ("right smart" ones, the Westerners would say) during the past year.

It is generally understood that a rise of about 300 feet in altitude gives one degree colder temperature. Did this rule hold strictly here, this climate would be colder than it is. Among other causes of a considerable difference (in our favor for the colder portions of the year) is chiefly to be mentioned our inland location, and the protection of the mountains on the west.

The average temperature of this immediate vicinity is about the same *as* that of New-York city, Southern Pennsylvania, Central Ohio, Indiana, and Illinois; but it does not seem so cold, because of the dryness of the air, the small amount of snow, and the usually sunny days. The nights, when people are indoors, are generally cold in winter, and during the rest of the year much cooler than the days. This diurnal variation, which is here about 15 degrees between the temperature at 2 P.M. and that at 7 A.M. or 9 P.M., increases with the altitude; as in this rarefied atmosphere the intensity of the sun's rays increases with each decided elevation, while the capacity of the air to retain the heat thus imparted proportionately decreases. So that, on the tops of our highest mountains, as a Signal Service observer on Pike's Peak informed me, the heat of the sun at midday is "almost scorching," while the thermometer after sundown is in the neighborhood of zero.

This climate, then, is only "the most equable of the Western Hemisphere" when compared with others of *the same altitude*. Let those who think an equable temperature is the all-important element of a healthy atmosphere, stay near the sea, where the air at night can hold fast its heat as well as its moisture. To such, the results of the experiment made by the owners of the Mammoth Cave in Kentucky will prove useful. In the *equable temperature* of this dungeon they imagined was the panacea for the unfortunate consumptive, and the reputation of that *health-resort* would become world-renowned.

I shall never forget the dismal aspect of those cold stone

houses, erected down in that abyss of darkness. Here, in this *extremely equable* climate, I was informed over a dozen unfortunate consumptives were domiciled. Of course they all suffered for it. One died in the cave, and four more within four weeks after they were brought out. It is strange how similarly foolish thousands of invalids (or their advisers) are throughout our land, who house themselves in dungeons of man's construction, pining away to consumptives' graves, when there is plenty of invigorating air and life-giving sunshine "lying around loose," if they will only go where it is.

The sunshine of this inland region is one of its greatest boons for the consumptive, too little appreciated by many who seek health among us.

No less important, especially to those whose respiratory organs are at fault, is altitude, which is here a happy medium for the majority of such patients, while the same may be easily varied to any desired elevation.

A most important element of a healthy climate is the relative humidity of its atmosphere. Indeed, from a somewhat extended study of the subject, my conviction is strengthened that this element is the most essential ingredient of the *consumptive's home*, since from a low ratio of humidity a large proportion of sunny days and a ~~large~~ ^{small} amount of rainfall can be inferred; for had there been much rain or cloudy weather, the air would have been near "saturation," and the *relative humidity*, which is the percentage of saturation, would have been affected thereby.

In this connection, I must object to the extravagant statement some have made, that "the atmosphere is entirely free from humidity." We are not *quite* so badly off as that.

Such a report would not seem so ridiculous coming from south-western Arizona; but here, if the hydrometer ever indicates zero, *i.e.*, if there is not enough evaporation in the air to affect it, it is only occasionally for two or three hours in the warmest and most enervating part of the day.

Below is a weather report for the past year, which has been kindly prepared for me by P. J. Huneke, U. S. Signal Officer, stationed at Denver.

	Maximum temperature.	Minimum temperature.	Average daily temperature.	Average daily humidity, per cent.	Total rainfall or snowfall, reduced to water.	Prevailing direction of wind.	Clear days, <i>i. e.</i> , number of days on which sunshine prevailed throughout.
1873, October.....	86°.0	1°	45°.2	51	0.73	S.	22
“ November....	71°.0	1°	40°.6	43	0.16	“	20
“ December....	59°.0	5°	22°.4	59	0.53	“	21
1874, January.....	62°.0	7°	31°.5	51	0.84	“	16
“ February.....	52°.0	9°	25°.1	61	0.53	“	18
“ March.....	62°.0	12°	36°.0	60	0.49	N. E.	19
“ April.....	83°.0	14°	43°.1	54	1.70	S.	17
“ May.....	92°.0	29°	62°.0	42	2.43	“	19
“ June.....	98°.5	40°	70°.0	41	1.21	“	20
“ July.....	102°.0	51°	76°.1	42	3.35	“	18
“ August.....	96°.5	51°	73°.0	44	0.68	“	18
“ September...	92°.0	34°.6	59°.0	44	1.34	“	22
Monthly average..	79°.6	17°.55	48°.7	49.3	1.17	S.	19½

This very accurate table speaks for itself. I will only add, that during September there were thirteen days in which not a cloud was seen in the sky. There are no regular dews, night-dampness, nor fogs in this climate, which fact greatly strengthens its claim as an excellent one for *out-door life*. This I consider is its pre-eminence.

THE IMMEDIATE EFFECTS OF THIS CLIMATE ON THE NERVOUS SYSTEM.

So various and complicated with organic disease are the nervous symptoms and idiosyncrasies of those who seek health in this resort, that the immediate influence of the climate on simply “nervous patients” can not be very positively stated. Much, however, may be inferred from the average experience of new-comers. This, of course, depends on the elevation first gained.

Suppose we take that of this vicinity, between five and six thousand feet above sea-level, and ask, How would a dose of this atmosphere affect the inhabitants of your city? Let us compound the prescription.

Our air is about a fifth lighter than yours. Your pressure to the square inch is 15 lbs.; ours about 12 lbs. Your nitrogen, at sea-level, weighs 414 grs. to the cubic foot of air, and ours 331 grs. at 5900 feet above sea-level. Say that oxygen here

bears the same relation to nitrogen as with you (if our future experiments corroborate the analyses of our air made by Prof. Mallett, of the School of Mines at Golden, a small difference in our favor will be shown, *i.e.*, a little larger proportion of oxygen to nitrogen), then we are under the necessity of breathing one fifth more air here than you do, to get the same amount of oxygen. But this is not all. Scientists agree that the proportion of electricity in the atmosphere increases with altitude. Dr. Jarvis, of Portland, Ct., suspects it stands relatively to oxygen in something like an inverse ratio. However this may be, we shall most gladly receive any positive knowledge about this and that other poorly understood element of our atmosphere, "ozone," scientists or our government will furnish us. Any way, we must add one fifth more atmospheric electricity, on account of the increased amount of air to be breathed; and then there is the *excess* ("positive electricity") which prevails in these dry regions. We ought, perhaps, to make some allowance for that. We must now attach some importance to that *something* in our atmosphere, call it ozone if you will, which is especially stimulating to the heart, brain, and nerves, on a bracing, cool morning, which, I fancy, in winter is irritant to mucous membranes, and perhaps will account for much of the catarrh our army surgeons have remarked as prevailing in cold weather at great elevations. Then lessen your relative humidity by about one third, and increase your proportion of sunny days by about the same amount, and you have our atmosphere at the base of the Rocky Mountains.

Now let every body in your city commence to breathe this atmospheric stimulant, and would you not expect a various as well as a remarkable effect?

You would conceive that the atmospheric pressure, lessened by one fifth, would ease the imperative necessity to breathe a fifth more air to get a requisite of oxygen. You would expect this great change to call upon the heart for increased action. Respirations would be first faster and then fuller. The nervous system, alike stimulated, would sympathize in this general activity, unless a bewildered or dreamy state of mind should ensue, as is sometimes the case. With all this quickening of

the processes of life, the calling of the blood into new parts, and the active capillary circulation resulting from the lessened atmospheric pressure, waste and repair of tissue would be both quickened and made more complete. The appetite and digestion would respond to this new call, and a fresher, quicker life be inaugurated. Then, with the electric influences combined, there would be an exhilaration akin to intoxication. Such, indeed, is often the first effect of this stimulating atmosphere. As a friend queerly expressed it, when we were out riding on a bracing and sunny December morning, "This light air makes me feel just as religion does a young convert." But all are not alike happily affected. While asthmatics rejoice in a liberty to breathe freely again, and incipient consumptives delight to expand their lungs with a soft and bracing air which gives them hope of a renewal of their tenure of life, the sudden change would prove too great for not a few. Among these are to be mentioned, those having any organic disease of the heart; those having advanced phthisis, after the stage of softening, or when the patient is deprived of more than a fourth of his breathing capacity; and patients with pulmonary lesions who are of a decided hemorrhagic diathesis.

These classes are mentioned here because the accompanying nervous symptoms are usually aggravated by decided and sudden change in elevation. For many, not enumerated above, a gradual rise should be recommended.

The most marked effect of this climate on the nervous system is the relief from asthma, which, I conceive, often takes place immediately through the mechanical influence of the lessened atmospheric pressure on the respiratory apparatus.

I think this is due to the mechanical effect of altitude, because, though this dry inland air, containing little vegetable matter, may have much to do with it, yet there seems to be a certain elevation for each individual sufferer where he experiences marked relief from his distress. To the majority it is on the plains, while some first experience relief two to four thousand feet higher, in the mountains, and where there is more moisture and vegetation quite as abundant, the growth of forests being much more so. To illustrate, a young lady came to Denver, last summer, who had had asthma since she was two years old,

but did not get relief here. Her parents thought to try the mountains, and on the way to Idaho her dyspnoea disappeared. During the several weeks she remained there, she was free from her trouble. On returning to this city, however, the old disease came back, and she suffered here as before. More instances might be given in illustration, especially of those who, having obtained relief here, undertake to return East only to get asthma again at the Missouri River.

Another immediate effect of the altitude in a few newcomers may be a slight congestive headache, on account of the increased rapidity of the circulation; though headaches generally are not so frequent here as in the East, especially "sick headaches." By these temporary headaches the mountain fever is not meant, though they are sometimes improperly so called. The true mountain fever is a later effect, and not so frequently met with. It is a continued fever, unless aborted in the beginning, having regular stages, but slow in its progress. There are chills and remissions, and generally associated with it some hepatic congestion. The headache and shock to the nervous system are sometimes considerable, though the prognosis is very much more favorable than in the typhoid of the East.

Generally speaking, I do not think the influence of this climate on nervous patients is salutary, unless their symptoms are associated with other dyscrasia which such a climate would benefit.

Those to whom an electrified atmosphere would be useful, who would be helped by the use of the positive electrode in the East, might look for benefit here; but nervous symptoms alone, due to an abnormal irritability, or over-excitation of any set of nerves, generally might be expected to be aggravated in this electric air. The case is different when those symptoms are dependent on some malnutrition which the change to this invigorating climate will rectify. A marked change in elevation, as from the East to this country, has generally a salutary influence on that class of over-worked brains which, in the intensity of political, professional, and business life, is quite numerous nowadays.

Especially does this appear to me the case where, from too

severe mental activity, the circular fibres of vessels within the cranium seem to have been overtaxed, and in consequence a passive congestion ensues. In these the influence of a lessened atmospheric pressure, *gradually increased*, is in such marked contrast with the effect of a much greater atmospheric pressure, as shown in the congestion of cerebrospinal tissue, quite evident in the "caisson disease," that relief might be confidently expected. In this improvement, the lessened tension on the cerebral circulation is, of course, greatly aided by new scenes, out-door life, and absence as well as distance from harassing cares. From what has been written of the stimulating or electric nature of this atmosphere, it would be apparent in what manner some sensitive organizations might be influenced by this, for them, too stimulating atmosphere, among whom neuralgias and congestive headaches would prevail. I have in mind half a dozen ladies living in town, whose nervous systems were well balanced before coming to this country, who have here occasionally suffered with ill-defined neuralgia, mental distress, nervous headaches, etc.

THE PERMANENT EFFECTS.

The permanent effects of this climate on the nerves are usually salutary. With the exceptions already stated, no unusual abnormal conditions of the nervous system are to be noted in the average of those who have become acclimated; for then the influence of elevation is not very apparent.

As might be expected, with the generally quickened processes of life, the nervous system is in harmony.

Diseases generally are more prone to assume an acute character. The action of remedial agents is also more marked, and the physician really has much less to do with his patients, among the same number of people, than in a denser atmosphere. (Not an extra lucrative field for doctors.)

In this connection it is to be mentioned that the injurious effects on the brain and nervous system of alcoholic stimulation are sooner felt, and with more intensity, than on the seacoast. Quite a marked effect, too, is on the sexual passions.

Though the first comers in this far West, who, when crossing the plains, drank the alkaline water, and worked off their

surplus vitality in their active out-door life, thought differently, it is concluded (especially among those who live luxuriously in the city) that this passion is generally stronger than where most of our people formerly lived. The remarkable number of little children, and the financial prosperity of prostitution in this young city, would seem to have some bearing on this statement.

Quite generally, I believe, females are more affected by these climatic influences than males.

Uterine disorders are not infrequent, especially at greater elevations, where menorrhagia and abortions are apt to occur.

A peculiar result, probably of the dryness of this atmosphere, is some falling out of the hair, which is quite generally complained of; too generally, at least, to be ascribed to any personal idiosyncrasy.

In this quickened life which pervades every part of the human system, the demand to supply the waste of tissue would seem to be increased, and so it is. Generally speaking, people who live here enjoy a continuous good appetite; especially is this the case among hard workers, who thus are able to keep up their accustomed vigor of body or mind. Mountaineers, and excursionists who are much in the mountains, acquire the habit of naturally conserving their forces on account of the thinness of the air, and instinctively move slowly, while an ability for continuous motion has seemed to be greatly due to the large amount of food consumed. This increase of appetite, together with the greater activity of the respiratory apparatus necessitated in climbing among the mountains, accounts for much of the benefit to the general health obtained by those who journey mountainward in the summer. If the nerves are easily tried in this country, they are as easily refreshed; for nowhere is sleep so sound and restful.

This is greatly insured by the usually cool nights, and the freedom with which windows may be kept open, which is more essential in an atmosphere so thin as ours. Consumptives and convalescents from debilitating diseases are generally able here to get the tranquil sleep which is so essential for restoration to health.

As to the capacity for muscular toil in the ordinary daily

routine of business life, not much difference is noticed between the lowlands and our highlands, because, I suppose, the intervals of rest are fully equal to the needs of the system.

Until the lungs become sufficiently expanded, and one is used to this light air, walking may be somewhat difficult, but afterward it is rendered quite as easy and more invigorating than at a less altitude, except, as before intimated, one naturally graduates his speed to the capacity of his respiration.

But for continued muscular exertion, I can not think the capacity here is as great as it would be in a denser atmosphere. It is said that horses can not be made to trot quite as fast here as in the East. A better illustration of this opinion, however, was presented to me last July. I was called up at night to see a professional walker, whom I found utterly prostrated, having symptoms of threatened congestion of the brain. He was trying to walk sixty-four consecutive hours without food, and though they fed him beef-tea "on the sly," and much of his walking was a fraud (he never paid his doctor's bill), he completely gave out the fifty-fifth hour. It is my opinion that, with the aid of his faithful friends, he could have made a better speculation of it "down East."

How is the capacity for "cerebral" toil affected by this climate? This is a more difficult, and, I consider it at least, an open question. Opinions differ so much, and you know it is rather hard to get us to acknowledge we are not as smart mentally as we used to be. Besides, the solution of the question is greatly influenced by the fact that so many of us came here for considerations of health, in nearly all of whom an improvement in the mental capacity would be expected with the restoration of health.

I thought to settle this question by the opinions of the clerical profession, and therefore called on ten of the principal clergymen in Denver, and wrote to four in the mountain towns, propounding the following questions :

- 1st. Former residence, and time they had lived in Colorado?
- 2d. Does their capacity for mental toil differ from what it was before coming here?
- 3d. Is concentration of mind as easy here as near the sea?
- 4th. Any nervous symptoms they could attribute to this climate?

The result of this investigation may be summed up as follows, though it should be noted that the inquiry was quite new to all. Three had noticed, especially at first, that the results of their mental efforts in the same time were less satisfactory to themselves than formerly. Four could accomplish more mental work here in the same length of time, one of whom had lived in Mobile, Ala., and thinks the difference is markedly in favor of this country, this climate being more like New-England in this respect.

Five thought their minds were more active here than where they formerly lived. Three, to make a fine distinction, thought, *ceteris paribus*, concentration of mind would be a little easier in a denser atmosphere. Four thought they were more nervous here, two of whom were somewhat troubled with sleeplessness during their early sojourn in Colorado.

Two noticed their wives were more nervous (prone to headaches and neuralgias) than in the East.

With these exceptions, the answers to the questions indicated that the capacity for mental toil was unchanged; concentration of mind was as easy here as near the sea; and they could not attribute any nervous symptoms to climatic causes.

Appended is a synopsis of four answers received from mountain towns which are two to four thousand feet higher than Denver.

Rev. Francis Byrne, Nevada.—Former residence, Mississippi; Boston, thirteen years; West-Indies, twenty; Rocky Mountains, seven; capacity for mental toil much better than in debilitating climate of the West-Indies; concentration of mind easier here than in Boston or West-Indies; has no peculiar symptoms of nervousness attributable to this climate; noticed that “females suffer from nervous debility, owing, in a great measure, to home confinement and domestic duties;” health, during residence in Colorado, always excellent, so is always prepared for any official duty.

Rev. D. E. Finks, Fairplay.—Former residence, New-York State; lived here fifteen months; capacity for mental toil not materially changed; health good, and so can do more mental work here; concentration of mind unchanged; no nervous symptoms.

Rev. H. B. Gage, Central City.—Former residence, Ohio; lived in Colorado four years; here “mainly on account of health;” noticed no difference in ability for mental application, except “am more often nervous;” exercise, if at all violent, causes increased respiration and pulsation, and consequently a lassitude incompatible with mental toil.

Rev. Albert Miles, Caribou.—Been in this country two and a half years; came here “most dead” with chronic pneumonia; right lung half hepatized; has improved all the time; can accomplish more mental as well as physical work than before coming to Colorado.

I called on Prof. Chalfaut, Principal of the Denver Academy. He has been here two years; was failing in health East; “lung trouble;” friends thought he would not get through the winter; has considered himself well since coming; vigor of mind good, and can accomplish more mental work than East; the children in his school are remarkably well developed physically and mentally. They are capable of as much mental work as are children near the sea, but “more restless under restraint.”

Now, as to this question of the relative capacity for cerebral toil, the improvement of health accounts for much increased mental vigor. (Most of our residents look well, and of ruddy complexion.) I prefer to express my opinion as follows: With the same good health, I think I could do difficult and protracted mental work easier in a denser atmosphere. I do not expect to see very profound logical treatises emanate from much greater elevations than this. Please consider the above statement an apology for any imperfections in this communication.

In closing, the following question suggests itself: What will be the influence of this stimulating (more than “tonic”) climate on the average longevity of permanent residents?

Although the processes of life are more rapid here, they may also be said to be more perfect, and consequently the destructive tendencies of the over-civilization of our age are more surely counteracted. Therefore, while the average lifetime of our people would be increased, we might expect to meet fewer persons here who had passed the Biblical limit of “three score years and ten.”

DENVER, October 9, 1873.

GLEANINGS FROM OTHER JOURNALS :

Dr. Väter on General Electrization and Central Galvanization, etc., etc.—Reviews of Hitzig, Lincoln, Buzzard, Clymer, etc.

The next number, for May, 1875, will contain an article on *Hysterical Symptoms in Organic Nervous Affections*; a case of *Stricture of the Oesophagus treated by Electricity*; a paper on *Hallucinations*, and one on *Muscular Reactions in Paralysis*; Remarks on the Psychological Lessons of the Beecher Case; the Phenomena of Trance, etc., etc.

The ablest living authorities in the various branches of Electrology and Neurology in America and Europe are already engaged to contribute to this Journal.

The first number, for May, 1874, contains sixteen original articles, by Althaus, of London; Benedikt, of Vienna; Tripier, of Paris, and a number of well-known writers in America.

Books for review, and manuscripts, may be sent to the editor,

GEO. M. BEARD, M.D.,

53 WEST 33d STREET, NEW-YORK.

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107 East 28th Street, New-York.

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