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"In the beginning there arose the source of golden light." Rig Veda, Primeval Hindu, B. C. 1500. CH. X. 102.

"It is thus by an alternate waking and rest that the immutable Being causes to revive and die eternally all existing creatures, active and inert." Laws of Manu, Archaic Hindu.

THE location of this observatory is unique in many respects. It stands on a peak whose apex was cut off abruptly to secure a flat surface for the building. This central summit is in a vast amphitheatre, formed of colossal peaks round about, some on a level with the observatory and others 1200 feet above. On either side are yawning canyons. Rubio on the east, 670 feet deep, descends precipitously from the walls of the observatory; while Los Flores' Gorge makes rapid descent to a depth of 1250 feet on the west. A chain of old Sierra Madre's range is bent and coiled in mighty links enclosing both canyons, the central, or Echo Mountain, and observatory peak, and extends from the southeast round through the east and north, through northwest, and rapidly declines to the west, where the range dwindles into the Verdugo hills overlooking that paradise of oranges, apricots and grapes, the famous La Canada Valley. Still beyond and nearer the sea, eight rows of hills, ranging from north to south, are visible. These are the Tejunga hills and Simi and Santa Monica ranges of low mountains. Speech is impotent to portray the glories of the sunsets from the vernal equinox to the summer solstice and return to the equinox of autumn. The angles made by these ranges with the ecliptic, are such that the declining sun pours its radiant floods between,

Professor Edgar L. Larkin.

Mt. Lowe Observatory.

lighting up the gloomy and solitary canyons with supernal colors. For dust from waste places on the hills, and from Mojave's desert areas, comes in contact with watery molecules thrust over by the breakers of the Pacific in their dashings against Simi's granite bulwarks, and these absorb and quench some of the waves of light, allowing others to illuminate summits, valleys, canyons and domes with hues and tints, all blending into one stupendous panorama of surpassing loveliness and beauty. So remarkable is this scene that iron railings are placed on the canyon's edge, for travelers from all parts of the earth, who come to behold the sun as it sinks into the sea. It is Sunset Point, Los Flores Canyon. But it is to the mighty and serrated contour of cliffs and peaks on the east that scientific interest is attached. So transparent is the air that minute stars are seen at the absolute instant of rising. Thus the writer never saw a star at the moment of its advent above the horizon, until coming to this enchanted place. Not sorcerer of Egypt or Eleusis ever conjured up a more magnificent spectacle, or weird influence, nor impression more fascinating to mind and sense, than the marvelous display of rising celestial bodies. The great nebula in Orion issues out of a smooth wind and sand-worn rock, and so clear is the air that five stars in the trapezium have been seen standing on stone, while the light of the great nebula suffers but little diminution. Since the telescope reverses all objects, rising stars seem to be going downward toward the earth, and language cannot describe the wonders of the rising—falling—Pleiades, for this glittering host of 1300 stars, as seen in the Lowe telescope, seem to be pouring into old Rubio's cavernous depths. And the unutterable glories of the Galaxy—how see them in a life time or how recount their splendors—for illimitable hosts of stars pour in floods into the chasm and this Niagara of stellar diamonds, rubies and sapphires, flows with stately motion into the insatiable recesses below. The edge of Saturn's ring cuts its way up and out

of a rocky cliff, and Jupiter at times sends up a tiny moon before it appears; but last night it escaped from a tangle of manzanita bushes far on the mountain's height. The star Castor is seen double between the leaves and branches of a shrub, while the nebula of Andromeda is always enmeshed in a wilderness of low-growing chaparral. Altogether this clear-cut mountain horizon is so beautiful when piled up with stellar gems, and so impressive that description fails and words lose their power.

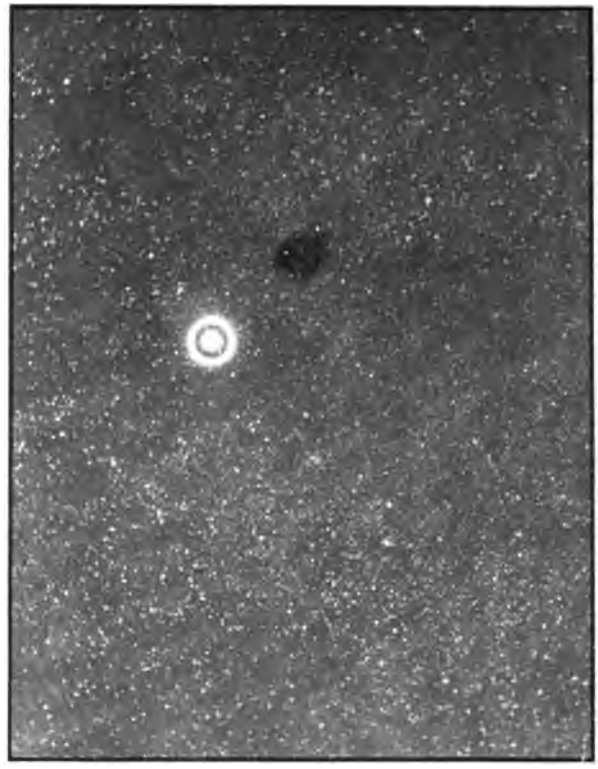
The Sidereal Structure Without the Telescope.

Many more stars can be seen here without optical aid than from low plains. The observatory is above more than half of the dust layer that encloses the entire earth as an envelope. It is no trouble to see the sixth magnitude stars. The stars burn and blaze with a brilliancy unknown to observers below. Saggittarius and Scorpio hang up their sidereal sheets like a drapery of cloth of pearl over the waves of the Pacific. The Milky Way is whiter than as seen from observatories in Illinois and the East, and the sky blacker. The colors of the stars are on display with greatly increased splendor, and contrast is more pronounced than elsewhere. But all glories pale and faint before that awful and sublime object as seen in the great Lowe telescope,

The Stellar Floor.

The majestic pavement of the universe is surely visible from this observatory. It is the background or foundation of the sidereal structure. It is either made up of countless millions of inconceivably distant stars, or a solid external envelope of nebulous matter. It is beyond the Milky Way, and wider. It is not visible in all parts of the sky, but areas far removed from the Galaxy are filled with it. The general structure of nature is surrounded or clothed with a fabric of pearl; but the delicate texture is rent and torn in thousands of places. The appalling blackness of space appears in these ragged openings. Cosmical rifts, cracks and seams are seen here in great numbers. Special observation has been made of Scorpio and Saggittarius. Over one hundred rents and jagged openings in the white stellar floor have been seen in these two constellations. Some are clear-cut and small, others large, diffuse, with torn and twisted edges, and these

Mt. Lowe railroad and circular bridge above the Observatory.



Australian photograph of the Milky Way taken at Sydney Observatory. The dark spot above and to the right is an opening in the universe, showing the blackness of infinite space beyond.

are not jet black within. A film seems to be stretched in front. It is doubtful if the white floor is entirely absent even at the Galactic poles. When taking charge of this observatory, the first thought was a mistake had been made concerning the winding sheet of the visible universe; so nothing was published for one year, to test the seeing in all kinds of weather and conditions of air. It was surmised that the white shimmer and sheen in the distant background of the cosmical sphere, was due to the well-known action of dust causing diffusion of light in the earth's atmosphere. Many tests were made on this point, with the result that the cosmic floor was seen in certain localities, on the same nights, when black space was seen between stars in adjacent and also in distant regions. So it is said that the primordial substructure of the universe is on display here. It is doubtful if long time graphs will show this pavement as well as the eye, for the stars in the fore-

Spectroscope.

Spectrum of Chi Draconis (with iron and hydrogen.)

ground will store their light in excess in front of the distant wall. If the azoic rocks of stars or nebula really exists below and beyond all, then the sidereal edifice is far more magnificent and larger than hitherto thought possible. That is, that portion of the structure visible in telescopes, or on plates, is merely cut out of an original universal nebula. The primordial gaseous or ultra-gaseous mass has simply met with a local disturbance constituting the stellar agglomeration as it now appears. This is but reverting back to the ideas of our Aryan ancestors before they issued forth from the uplands of Central Asia to fill the earth. For they believed in successive universes or condensations of matter, each universe being a mere episode in continuity, a transitory and local period of turbulence and unrest. For Poe called life a fever. A modern physicist might say, a universe is a vortex or eddy that has slightly agitated a little isolated area or place in a placid and restful ocean of primordial matter in its final or corpuscular state.

Starless Fields.

If the stellar pavement is impressive, what shall be said of those appalling caverns in which no star is seen, nor any nebulous gleam of light. After looking for a long time at the inconceivable multitude of fine stars, finer than any sand, or as fine as the granules of silver bromide on graphic plates, the telescope sweeps into view a space black as ink. The effect on the mind is always startling and overpowering to brain and thought. It is difficult to account for these openings in the structure of stars, for there must be a long empty tubular space extending from the place of the earth, even to the floor of stars. At all events, they are black. Here long exposure of sensitive plates might store light enough to make visible impress, and long-time graphs should be made of central portions of the blackest starless areas. Here is a list of several spaces in the starry pavement:

Phosphorescing Areas of the Cosmical Floor.

Right Ascensions		Declinations		Right Ascensions		Declinations	
H.	M.	Deg.	Min.	H.	M.	Deg.	Min
2	50	9	20	22		38	40
3	20	58	30	21	45	45	30
2	30	S 18	50	21		S 26	
23	55	56					

Next to the last in the table is notable, for the floor and a starless area are seen in the same field of view, both clear-cut and distinct. The edges of the pavement are smooth, like the rim of a well cut in stone, while the second in the catalogue has rough and distorted boundaries of stars round about the cavern.

Starless Fields.

Right Ascensions.		Declinations.		Right Ascensions.		Declinations.	
H.	M.	Deg.	Min.	H.	M.	Deg.	Min.
16	50	S 22	20	18	10	S 20	
17	25	S 26	35	18	10	S 18	25
18		S 18	50	18	13	S 18	1
18	3	S 4		5	42	S 8	20

These positions are for the centers of the dark areas. A very large black space is in Scorpio, above the bifurcation

Spectrum of Gamma Andromedae (with iron and hydrogen.)

of the Milky Way. It is doubtful if any of these places are absolutely black; they seem so to the eye through contrast probably. There is light in all that part of space cut out by the universe. How futile it is to attempt to make drawings or cuts of the shape of the cosmical edifice. Its plan is still unknown. It is well enough, perhaps, to make specifications of the Galaxy and adjacent stars, yet all these are tentative so far. The foundation lower than the Milky Way—the original granite of stars or corpuscles—must be studied and graphed for a century to give an idea of the plan of nature. And then after all, the problem may appear to be beyond the reach of man. At all events, much attention should be given to this wondrous and original cosmical nebulosity. A new spectographic outfit has been received at the observatory—but the dark room is not completed at this writing. And when it is finished, it is not to be expected by any one that startling discoveries will be made here, surpassing those of Campbell at Lick, Ritchey at Yerkes, Vogel at Potsdam, or Huggins in England. Nearly all the larger nebulae visible here are complex —those with clear-cut boundaries in Eastern telescopes, show filaments and streamers in the Lowe instrument. The Andromeda nebula displays intricate convolutions, and looks like those shown in recent graphs—having the supposed appearance of a rudimentary solar system.

The trifid nebula presents an infinity of detail not seen in the Eastern observatories, likewise the Omega nebula, while nearly the entire constellation of Orion is simply enshrouded in nebulous sheen, the great central nebula showing a wealth of outlying wisps, streamers and spray. The dark opening is not dark, for faint light is always seen here. It seems dark by contrast only. There are two filaments extending across the opening at nearly right angles to its length. It is remarkable to have an ocean horizon on the south, for stars rise, cut out small arcs and set in the waves, all within a few minutes in the distant south. The giant sun Canopus thrusts its fiery darts through the mists of the sea, and then vanishes behind the walls of Catalina Island. In coming here from Illinois, Lat. 41 degrees, 13 minutes, to Lat. 34 deg. 17 m., a zone of stars, 7 degrees wide, was lifted up, all new. It has been explored with interest. Not the least among its glories is the wondrous Omega Centauri cluster, where 8,000 fine stars are piled in heaps in a small area. It is impossible for one to form any conception of the unspeakable splendors of the Milky Way without seeing it in the great glass, and then it is still impossible. The Galactic hosts are splashed and strewn in spray, in spirals, and are tumbled in confusion on a carpet of jet black velvet; or cosmical hail of pearls and diamonds on blackened wastes of space, or piled in heaps, raked into windrows and rolled into banks and bulwarks, all flashing and blazing with supernal colors. These, together with clusters and nebulae, conspire to form a scene surpassing all that mortal eye can ever hope to behold. And beyond all is the primordial base, the cosmic floor. A typical area of the stellar pavement is between the trifid nebula in Saggittarius and nebula No. 6523, Dreyer's N. G. C. The masonry is complete, with no more room for starry sand.

Accompanying this article is a graph of a portion of the Milky Way in the southern constellation, the Centaur, invisible from these latitudes. The ring around the star Beta Centauri is a diffraction ring due to the action of the lenses on light and not actually around the star. The minute specks on the graph are all suns like our own, and the spectroscope shows that they are all composed of the same modes of matter whence our sun and earth are made. One of the chief discoveries of all ages was the fact that all that part of the universe within range of the most powerful telespectrographs is made of the same matter—the sideral structure is a unit. The black cavernous opening shown to the right and above the star is most awe inspiring, and like these seen in great numbers in the fine telescope in this observatory. The object glass is 16 inches in diameter, and the focal length is 22 feet. It was made by Alvan Clark, Sr., with his own venerable hands. It is simply perfect. The writer had the good

fortune to be with Mr. Clark, half a day, in his famous workshop in Cambridgeport, Mass., when he was making the flint lens, and every particular of lens making was explained and shown by this remarkable man. Little did the writer think that he would ever be putting it to active use on the summit of a mountain in that fairy-land—California. This occurred in 1879.

Modern Astronomy and Astrophysics.

The new astronomy is quite unlike the old. The introduction of the spectroscope changed all, and then came the sensitive plate and made another change. The early astronomy contented itself with finding every mathematical law of the solar system and of the external sidereal structure; of finding the mass, volume and density of the sun, planets and satellites, and of a few stars, and continued the work of the practical astronomers, in the computation of the moon's place, for time, and the making of Ephemeeides for use in observatory and by sailors, and a vast amount of valuable and necessary work. But now comes the astrophysicist and tells what the stars are made of; writes their history through the eons of the past, and forecasts their future. The capital discovery—stellar evolution—was made by the science of astrophysics. All stars whatever are incandescent suns. They grow from primordial nebulae through infancy, youth, middle life to old age and death. They are now seen in every direction in space, in every possible phase of evolution. Leaves in a forest, from bud to "sear and yellow leaf," do not pass so many and varied changes as do the glowing suns. The spectroscope detects every condition, reveals relative ages of suns, and then that marvelous thing, the graphic plate, catches the fleeting changes, and records them for use for future astronomers. Nature cannot lift a hand anywhere in space within the reach of modern instruments without being instantly graphed. Her most secret laboratories and labyrinths are being explored hourly. A plate is exposed every hour of the year somewhere on earth. For if the stars are setting at some observatory they are rising or passing the meridian at others. That imperturbable eye—the bromide plate—is always gazing at the stars or sun. Thus, for 1901, graphs were secured of the sun on 361 days.

Astonishing discoveries are now being made, and the great bundle of magazines, monographs, reports of observatories, technical papers, treatises and circulars by the dozen, received almost daily present a most impressive display of the present intense activity of the human mind. Since history began there has not been seen incessant labor wrought. And no labor ever performed by the human frame is more arduous and exacting than that hourly engaged in by a working astrophysicist. A trained astronomer is a machine of precision, with every phase of bodily life, every faculty of mind, everything in his being, an abject slave to indomitable will. And that will is immovably set and bent on finding the secrets of the vast cosmical building round about.

Results.

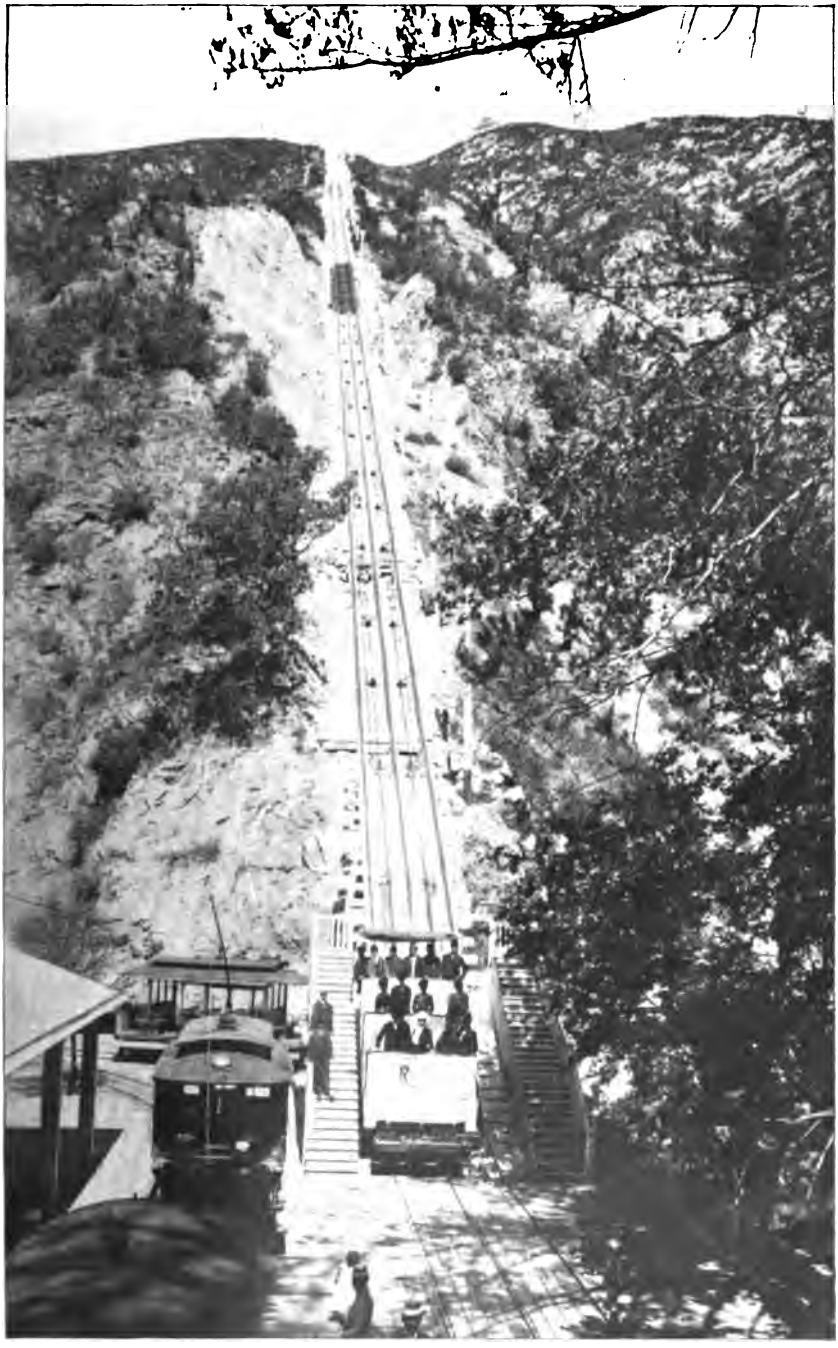
The universe is now known to be a growth. Evolution is seen to set in with the faintest possible rare masses of gaseous nebulae. They condense into smaller and brighter objects. Condensation continues for countless ages, and each becomes a sun. Heat ever escapes, each sun passes its zenith of glory and dies. If a dead sun happens to be drawn into an orbit around a living one, the body so drawn in becomes a planet, and may become inhabited, and undoubtedly will if water appears. Finally both planet and sun expire, and the lifeless planet will still make circuit around its frigid sun and count off useless years—unless there is a resisting medium in space. If so, the revolving world will wind down a spiral and riochet on the surface of the central sun, the impacts liberating heat again.

The only hope of reanimation of dead suns and ruined worlds is by wholesale collisions where these bodies by the billion rush to a common center and generate heat enough to dissipate all back to the original corpuscular state again. Countless suns are now seen to be dying from loss of heat, and from motion seen in some notable stars, it is coming to be realized that the quantity of matter now stored in dead worlds is greatly in excess

of that in the living. The whole sidereal edifice has been graphed on more than 25,000 plates, in pursuance of the act of the Congress of Astronomers in Paris in 1887. Many of the stellar images on these have been counted under microscopes. If all have the same average, the total number of stars appearing will fall between 100,000,000 and 125,000,000. But assign to each of these any mass within bounds of reason, then by the laws of gravity and motion, it can be shown that they contain only a minute fraction of the entire quantity of existing matter. Hence dark worlds are immensely more numerous than those that are active, giving out heat and light. So that those now shining are mere funereal tapers, lighting up the cheerless and melancholy pathways of ancient suns and forsaken worlds. That part of nature within reach of the best telescopes is of inconceivable antiquity and magnitude. The first and amazing fact encountered by astronomers is that of the interminable space round about. For the nearest neighboring sun to ours is 25 million million miles away, and others are a hundred, yea, a thousand times more distant. In the evolution of suns, so far as science can now see, heat was the first to appear in condensing matter, unless indeed electricity, or "cold" light preceded it. Primordial absolute zero, beside which frozen hydrogen and solid blocks of air appear warm, preceded activity. At all events light succeeds heat. Moisture appeared late in evolution. Then tardy life came upon cool worlds, and that evanescent transitory and ephemeral, ultimate and final refinement of matter—mind—was the last to appear in the midst of the tremendous cosmic scene. It cannot exist long, for such worlds as the earth are habitable for an hour or a day only, compared with the duration of a structural universe of matter. So mind and life will be the first to vanish. Absolute zero of temperature is the normal condition of matter and space. For when primordial matter was so attenuated that a volume of it of the size of the earth only contained enough to weigh 127 pounds, it did not retain heat. So heat, light, life and mind appear to be mere episodes in cosmic fluctuations and surging of matter. Astrophysic has shown the earth's place in nature. The dust, of which easily 1,000,000 particles are lying on the page of the Overland Monthly, are each as large in proportion to the thickness and area of the magazine, or of the cubical space of the room in which the reader may be, as is the earth to that portion of space included within the envelope of stars at the extreme limit of vision in the 40-inch telescope. These stars are of the seventeenth magnitude, and from photometric observations it is almost certain that they are at least so far distant that light traveling with the known speed of 186,000 miles per second, requires 15,000 years to come hither. This makes the sphere of suns visible in the Lick and Yerkes glasses, 30,000 light years in diameter. The particles of dust, 1,000,000 to the page, are too large. So now, astrophysics has demonstrated its extreme value, for man for the first time on earth knows the earth's place and his own.

The Inclined Railway.

Neither Suphis, the monarch builder of Egypt, nor Rameses II., did a greater work than the inclined railway up Echo Mountain. Engineers and railroad contractors from all parts of the world pronounce it to be a model of high-class engineering. Its length is 3,000 feet and vertical ascent of 1325 feet, with grades of 45, 48, 55 and 62 per cent. Two white chariots balance on one endless steel wire cable, the car Rubio being down, and Echo invisible at the top, to the left of Hotel Chalet in the cut. There are three rails with two cars which pass automatically half way up at the switch, which is shown. The great motors are at the top, and are actuated by electricity, brought from the Santa Ana river 90 miles away. The current comes to Pasadena on three wires at a pressure of 33,000 volts, with 50 cycles. Here it is stepped to 2,200 volts and sent to the power house on Echo Mountain, where its potential is again lowered to the usual railway pressure, and made direct by a general electric company 20 ampere induction motor. In case this circuit should fail, there are dynamos at the foot of the incline in the building to the left, turned by two Pelton wheels, run by water from



Echo Mountain inclined railway.

a reservoir near the observatory, 1,500 feet above. The pressure is terrific, and the struggle of the water to escape its narrow prison, the half-inch nozzle, the hissing and trembling and throbbing of the pent-up force, are impressive. The escaping water has more the appearance of a solid rod of metal than a thin liquid, and would instantly take the life of a man if it struck squarely over the lungs.

The white chariots, Echo and Rubio, making ascent in eight minutes, lift the startled tourist from the gloom lowering in the canyon below to a stupendous transformation scene above. If, as often happens in the rainy season, clouds extend from the depths of the canyon to half the height of the incline—then language—spoken or written—or brush or pencil of artist are impotent to portray the marvelous change that awaits the traveler. Unrivaled splendors burst upon the startled eyes; and not the sumptuous transformation of scene-painters, nor wand of magician, nor witchery of optical illusion, nor spell of enchantress, can equal it.

Under the great tree to the right, at the foot of the incline, is the mouth of Rubio Canyon hewn in primeval porphyritic rock. It is a rift or gorge in the mountains formed on that auspicious day when good Dame Nature lifted up old Sierra Madre's range, through the bottom of an ancient sea. It extends to a depth of 1,000 feet under the hotel, and continues in sinuous course to the observatory where its depth is 670 feet. This canyon is wild, and within its jaws nature at first frightens, and threatens to hurl chaotic rocks upon the explorer, and then pleases, dispels fear and woos with ferns, flowers and trailing vines—with cool streams and miniature whirlpools, until one arrives by winding stairs to the foot of Rubio falls, 100 feet in height. The peaks to the east of the observatory are rightly named Echo Mountains. They repeat all that is spoken to them, and if one stands in the right place he hears seven echoes. The colossal walls met with a surprise last spring. The great singer, Calve, came and sang and poured forth her wealth of song. The startled rocks were taken all unawares, and at first, were abashed. For nameless centuries they had not heard sound save that of hoarse notes of raging elemental war. Their chagrin and discomfiture remained for a moment only, when they relaxed their stony throats, and answering, gave back all the marvelous tones.

The great circular bridge far above the observatory on the road to Mount Lowe is also a marvel of engineering. The view from Lowe Observatory is one of beauty and magnificence. The land area visible is 900 square miles. In every direction the land is arranged in squares and parallelograms, planted to oranges, lemons, apricots, olives, prunes, peaches, figs, nectarines, almonds, grapes, and walnuts. Kaleidoscopic changes of color succeed in the flowers and leaves throughout the year. The green is perpetual. The entire valley is a scene of intense activity from Christmas to May, gathering, packing and shipping oranges and lemons. In summer the apricot harvest is a sight to behold, and in autumn it is difficult to secure workers to gather the tons of grapes. The writer dare not attempt to describe the climate. One must live here to form any conception of its loveliness. The extensive ocean front is being transformed into a continuous summer resort for miles, as fast as money and men can build cottages, bath houses, wharves, walks and everything else, like Atlantic City, Long Branch, and all other Eastern beaches. Cloud effects on Mt. Lowe in the rainy period are a never ending source of wonder. Thus one may be reading near a window in bright sunshine. Suddenly the printed page grows dim, a cloud has condensed in space round the building and against the window pane. Sunsets have been attempted by artists, and also by able writers, who handle words as one would sticks and stones, but both find their powers begin to fail and wane. When the entire land and sea are covered with clouds, say from 100 to 1000 feet below the observatory, the top layer is simply indescribable in its supernal glory. It is then the sun is supreme in its inconceivable majesty and splendor, for the earth is invisible. And again, it is no occasion for surprise that our own great ancestors—the Aryans—worshiped

Cloud effects above Mt. Lowe.

the solar globe.

A most appalling electric storm raged here during four hours on the night of June 10, 1902. No rain fell. It was a remarkable conflict of lightning and riven peaks. Terrific flashes of chain lightning burst forth from inky clouds at the rate of two per minute during the four eventful hours. The thunders of Gettysburg and Chicamauga roared and crashed round the frightened summits and bellowed to the lowest canyon's depths. The awful turbulence of Mont Pelee was repeated, perhaps as far as electricity could imitate that upheaval. Lightning was seen to strike peaks many times. One bolt fell close to the observatory, and one struck the Chalet Hotel. The vast cloud masses came from the northeast. After bombarding the mountain for three hours, the entire mass moved southwest and became depressed perhaps a thousand feet. This had the effect of making the center of the storm appear to be on a level with the observatory, with the astonishing experience of beholding the top and side of a terrible battle of electricity. The sinister monster—the widening cloud—spread over Pasadena and Los Angeles. The explosions of electricity were almost continuous with each streak of lightning vertical. It seemed that both cities were doomed to certain destruction. This display, awful in its grandeur, kept up for one hour, then moved away, and hurled its furious rage upon the sea and rushed towards that bulwark, the mountain island of Catalina. No damage was sustained by either city, while a slight but welcome rain fell.

November Meteors.

The literature of the world recounts the glories of the shower of meteors as seen at Niagara Falls on November 13, 1833. But whatever splendors were beheld there, they could not be more magnificent than the impressive display on this silent and solitary peak from midnight to dawn on November 15, 1901. It was a fire of shot and shell, from one to five per minute—a celestial battle—entirely without sound. This intense silence made the scene one of the utmost sublimity, and the effect on one's mind cannot be conveyed to another. Swords, scimaters and flashing spears were thrust against a hundred lightning-scarred and sand-sculptured summits. Vast bombs, aimed at peaks, burst into glittering fragments, only to be succeeded by others, some aimed, so it seemed, directly at the white dome of the observatory. Others shot with terrific speed into the wilderness of electric lights in the slumbering city below, and still others hurled them-

selves into the sea, or sought to throw down the battlements of Santa Monica mountains in the distant west, or disrupt the walls of Catalina in the south. Of course, these effects were due to perspective, not one being, doubtless, within fifty miles of the earth. The wondrous apparition was on display until the advancing splendors of the sun came on and put out the light of all lesser glories. During this memorable shower, 661 meteors of all sizes were counted. The writer was alone in the majestic solitude, and therefore saw at the most only one-fourth of the entire fall. Referring again to the impressive silence, it is well to say that it makes powerful impress on the mind. At the midnight hour, the stillness is so profound, that by a slight excess of mental imagery, one might think he heard sound issuing forth from the axis of the earth in its turning. Nature sets up opposition everywhere and it is a study to see the rivalry between the humming birds and bees for honey on the mountain slopes, laden with their burdens of flowers. So, to geologists, biologists, entomologists, botanists, mineralogists, microscopists, metereologists, naturalists, lovers of nature in her most splendid forms and modes, students of the sea, growers of fruit, engineers, electricians, railroad builders, mountain climbers, explorers, spectroscopists, photographers, artists and astronomers, it is said, come to this wondrous place—Echo Mountain. For :

"To him who in the love of nature holds
Communion with her various forms,
She speaks a various language."

But she speaks not in more tongues than here; strange dialects of nature—speech seem to come up from the canyons, and new words of wisdom from the mountain walls. Nature teaches in the midnight hour, and repeats her lesson until solar glories appear in the East. Runic writings, Egyptian glyphs and Cuneiform script are everywhere impressed on plants, in the canyon's abyss, on the mountain sides, in the vale below, and amid the labyrinths of space between the stars above. And had Bret Harte, that lover of nature in all her varying moods, whether lowly or magnificent—California modes—which he made his own; had that poet of nature, who sang of her splendors amid "the pines by the sea," or "in the valley below," or beheld some nature-glory "across the distant unfathomable reach," stood here at sunset point on the canyon's brink, to see a day die; had Bret Harte been here on this summit in fairyland when lightning flashed, or meteors shot across the midnight sky, or had he listened to the voices of nature in the night, issuing forth from gaping canyons or granite walls, had he been here, he would have found words to convey impress of the amazing scenes to other and waiting minds. For did he not bring pre-historic time to the present when he sang of a cone from one of the gigantic trees of Mariposa, a "Brown foundling of the Western wood, Babe of primeval wilderness.

Long on my table hast thou stood
As though ten centuries were not
Imprisoned in thy shining case."

And this—rivaling Burns—in the poem "Hearts Ease:"

"By scattered rocks and turbid waters shifting,
By furrowed glade and dell,
To feverish men thy calm, sweet face uplifting,
Thou stayest them to tell
The delicate thought that cannot find expression,
For ruder speech too fair,
That, like petals, trembles in possession,
And scatters in the air.
The miner pauses in his rugged labor,
And leaning on his spade,
Laughingly calls unto his comrad-neighbor
To see thy charms displayed."

LOWE OBSERVATORY.

Echo Mountain, Cal., August 1902.