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A table of contents for *The Churchman* can be found here:

https://biblicalstudies.org.uk/articles_churchman_os.php

of them might have sought and obtained preferment elsewhere. Some of them, like Canon Jellett, actually refused it. If the Irish Church is to hold her own, it will be due, under Providence, to the courage and constancy of these faithful few. The story is familiar to us of the Roman leader who, returning from a lost battle, was met by his countrymen, not with reproaches for a catastrophe which he had been powerless to prevent, but with gratitude because he had not despaired of the future of his country, and was still at her disposal. Surely less justice ought not be meted out to men who, through evil report and good report, have tried to do their duty. To their unwearying and unselfish exertions Ireland owes it that she still retains energy and utility in her Church after a succession of blows as unavoidable as they were unprecedented.

MIDLETON.

## ART. II.—THE MOUNTAIN RANGES OF CALIFORNIA.

MOST of us can remember how, in our early school-room days, we were taught to generalize the great mountain ranges of Western America under the comprehensive name of "The Cordilleras"—the name given by the Spanish settlers to describe the many chains of mountains which trend north and south from Patagonia to British America, forming the sinews of the vast continent. In South America, these mountain cords were defined as Cordilleras of the Andes, that grand simple range usurping the supremacy beyond all question. But the Cordilleras of North America comprise a great number of ranges, intricate as the cordage of a ship.

Nearest to the shores of the Pacific lies the Coast Range, which is composed of a multitude of subordinate ranges, most of which bear the name of some Christian saint, bestowed on them by the early Spanish-Mexican settlers. This region is described as a sea with "innumerable waves of mountains, and wavelets of spurs." It is a comparatively low range, its highest points not exceeding 8,000 feet; while those near San Francisco are only about half that height. Mount Hamilton, the highest point visible from San Francisco, is 4,440 feet high. The charm of the range consists chiefly in the beauty of its slopes and fertile valleys, and of their rich vegetation, including the magnificent forests of redwood cedar, the *sequoia sempervirens*, which belongs exclusively to the Coast Range, and which, in the majestic beauty of its stately growth well-nigh rivals that of its mighty brother the *sequoia gigantea*, which

is found only in the Sierra Nevada. The southern part of the Coast Range offers special attractions to such as seek a pleasant region in which to make a home. Its park-like slopes are dotted with splendid evergreen oaks, its soil is productive, and its climate delightful. It has no winter, six months of delightful spring are followed by a long summer of unvarying brilliancy; but the blazing sun is tempered by sweet sea breezes, not always, however, free from fog. In summer the land becomes burnt up and yellow, but in the spring its fresh beauty is unsurpassable. The northern part of the range is less favoured. In winter, snow generally lies for some days, and occasionally for weeks. Part of the range is a dreary waste—a wilderness of ridges all so densely covered with chaparral, that even sportsmen shrink from attempting to penetrate it. I may mention that chaparral is the name given in California to dense brushwood made up of low shrubs, such as the scrub oak, with its cruel thorns, and the still more dreaded poison oak (*Rhus toxicodendron*), which is the upas-tree of the region. It is a scraggy little shrub, rather resembling a holly than an oak. Woe betide the rash hand which is tempted to pluck its rosy young leaves. A drop of its innocent-looking milky sap, or a scratch from a prickly old leaf, may produce most painful sores and boils; indeed some people are utterly prostrated by merely inhaling the air too close to it. It is needless to say that the thickets where it abounds are not inviting! We must, however, in justice allow that, in the hands of the physician, it becomes a good friend, its leaves being used in medicine, in cases of paralysis and chronic rheumatism.

The next "cord" is the mighty Snowy Range. It is separated from the Coast Range by the Great Valley, *i.e.* the Sacramento and San Joaquin Valleys, which run north and south for a distance of about 500 miles. But at either end the two ranges meet, and blend in a perfect labyrinth of ridges, and form innumerable deep valleys and ravines, most bewildering to the explorer.

The Sierras are, as it were, strands in the mightiest of the Cordilleras. The name applies to the western belt (about eighty miles wide) of a vast wilderness of mountain chains, built up in intricate ridges, on the great plateau, a thousand miles in width, which forms the water-shed of the continent. The Sierras trend north and south through the States of Washington, Oregon, California, and Mexico. The great plateau includes Oregon, Idaho, Nevada, Utah, and Arizona. The parallel mountain chain, on the eastern edge of the plateau, is known as the Rocky Mountains. It is a belt 700 miles in width, and trends through the States of Montana,

Idaho, Wyoming, Colorado, and New Mexico. As compared with the Sierra Nevada, the Rocky Mountains lose much of their dignity from the fact that they rise from a base 6,000 feet above the sea-level, and this high pedestal is reached by an almost imperceptible ascent, the prairie sloping gently upwards, all the way from the Mississippi—a distance of 600 miles. So, although the mountain summits do rise to 12,000 and 14,000 feet, half their apparent height is lost, as it were buried, in this deep deposit. The Sierras, on the other hand, are within a hundred miles of the sea-board, and rise at a far more abrupt gradient, thereby gaining vastly in apparent height. But if the Rocky Mountain summits fail to impress a full sense of their true height, there is one respect in which they stand pre-eminent—namely in the stupendous canyons which seam them in every direction—gigantic, ghastly chasms, the existence of which is attributed to the ceaseless rushing of mountain torrents, wearing for themselves ever-deepening channels. These gruesome gorges wind about apparently in the very bowels of the earth, and the bold explorer who tries to follow the course of the waters, looks up two perpendicular rock-walls, several thousand feet in height, to a narrow strip of sky, far, far overhead, well knowing how hopeless would be any attempt to reach the upper earth. Fearful and thrilling have been the adventures of prospectors who, in their determination to find the mountain's hidden treasures of gold and silver, have dared to face every danger that could be combined—hostile Indians, hostile Nature, and most appalling hardships.

Undoubtedly the thirst for gold has done good service to geographical research in the vast barren tracts of mountainous country. In themselves most uninviting, they offer such possibilities of mineral wealth as induce a large number of adventurous men (to whom danger and hardships are as second nature) to undertake the most perilous journeys, in order to explore the inhospitable, desert, and hungry regions of these western wilds. These men have traversed every mountain and valley, and have examined the soil of every creek and gully, and the sand of every river in the most inaccessible regions; and there are few who could not, if they chose, tell of hair's-breadth adventures and deeds of daring. Some have been left sole survivors of their party, escaping from wild Indians to find themselves lost in awful canyons and chasms, from which escape seemed impossible, and where starvation stared them in the face.

Yet by some means or other, and by the exercise of almost superhuman endurance, they have found their way back to the haunts of white men, and have added their hardly-earned

knowledge to that of a multitude of other explorers; and so little by little the nature of the country has come to be pretty well defined.

Probably the greatest chasm in the known world is the Grand Canyon of the Colorado River (the Rio Colorado Grande), which is a gorge upwards of 200 miles in length, and of tremendous depth. Throughout this distance, its vertical crags measure from *one* to *upwards of six thousand feet in depth!* Think of it! The highest mountain in Scotland measures 4,418 feet—the height of Niagara is 145 feet—and here is a narrow tortuous pass, where the river has eaten its way to a depth of 6,200 feet, between vertical granite crags. Throughout this canyon there is no cascade, and though the river descends 16,000 feet within a very short distance, forming rushing rapids, it is nevertheless possible to descend it by a raft, and this has actually been done in defiance of the most appalling dangers and hardships. It is such a perilous adventure as to be deemed worthy of note, even in the Great West, where every prospector carries his life in his hand, and to whom danger is the seasoning of daily life, which without it would appear positively monotonous.

No river in the world, I suppose, passes through scenery so extraordinary as does the Colorado River, in its journey of 2,000 miles, from its birthplace in the Rocky Mountains, till, traversing the burning plains of New Mexico, it ends its course in the Gulf of California. Its early career is uneventful. In its youth it bears a maiden name, and, as the Green River, wends its way joyously through the upper forests. Then it reaches that ghastly country known as the "*mauvaises terres*" of Utah and Arizona, a vast region (extending also into Nevada and Wyoming) which, by the ceaseless action of water, has been carved into an intricate labyrinth of deep gloomy canyons. For a distance of *one thousand miles*, the river winds its tortuous course through these stupendous gorges, receiving the waters of many tributary streams, each rushing along similar deeply-hewn channels.

In all the range of fiction, no adventures can be devised more terrible than those which have actually befallen gold-seekers and hunters who, from any cause, have strayed into this dreary and awesome region. It was first discovered by two bold explorers, by name Strobe and White, who being attacked by Indians, took refuge in the canyons. Preferring to face unknown dangers to certain death at the hands of the enemy, they managed to collect enough timber to construct a rude raft, and determined to attempt the descent. Once embarked on that awful journey, there was no returning—they must endure to the bitter end. On the fourth day, the raft

was upset; Strobe was drowned, and the little store of provisions and ammunition was lost. White contrived to right the raft, and for ten days the rushing waters bore him down the frightful chasm, seeing only the perpendicular cliffs on either side, and the strip of sky far overhead, never knowing from hour to hour, but that at the next winding of the canyon the stream might overleap some mighty precipice, and so end his long anguish. During those awful ten days of famine, a few leaves and seed-pods, clutched from the bushes on the rocks, were his only food. At length he reached a wretched settlement of half-bred Mexicans, who, deeming his escape miraculous, fed him, and eventually he reached the homes of white men, who looked on him (as well they might) as on one returned from the grave. The life thus wonderfully saved was, however, sacrificed a few months later, when he fell into the hands of his old Indian foes.

The story of White's adventure was confirmed by various trappers and prospectors, who from time to time ventured some little way into this mysterious rock-labyrinth, and it was determined to attempt a Government survey of the region. Accordingly, in 1869, a party commanded by Major J. W. Powell started on this most interesting, but dangerous expedition. Warned by the fate of a party who attempted to explore the country in 1855, and who, with the exception of two men (Ashley and another), all perished miserably, the Government party started with all possible precautions. Four light Chicago-built boats were provisioned for six months, and, with infinite difficulty, were transported 1,500 miles across the desert. On reaching their starting-point they were lowered into the awful ravines, from which it was, to say the least, problematic whether all would emerge alive. The dangers, great enough in reality, had been magnified by rumour. It was reported, with every semblance of probability, that the river formed terrible whirlpools; that it flowed underground for hundreds of miles, and emerged, only to fall in mighty cataracts and appalling rapids. Even the friendly Indians entreated the explorers not to attempt so rash an enterprise, assuring them that none who embarked on that stream would escape alive. But, in the face of all such counsel, the expedition started, and for upwards of three months the party travelled, one may almost say, in the bowels of the earth—at least in her deepest furrows—through canyons where the cliffs rise sheer from the water to a height of three-quarters of a mile! They found, as was only natural, that imagination had exaggerated the horrors of the situation, and that it was possible to follow the rock-girt course of the Colorado through all its wanderings. Not without danger, of course. In many

places the boats had to be carried. One was totally wrecked, and its cargo lost, and the others came to partial grief, entailing the loss of valuable instruments and almost more precious provisions. Though no subterranean passage was discovered, nor any actual waterfall, there were, nevertheless, such dangerous rapids as to necessitate frequent troublesome portage, and altogether the expedition had its full share of adventure.

The ground was found to vary considerably. In some places the rock is so vivid in colour—red and orange—that the canyons were distinguished as the Red Canyon and the Flaming Gorge. Some are mere fissures of tremendous depth, while in other places, where the water has carved its way more freely, they are broad, here and there expanding into a fertile oasis, where green turf and lovely groves are enclosed by stupendous crags, miniature Yōsemités, which to these travellers appeared to be indeed visions of Paradise.

I do not hear of any canyons of this description in the Sierra Nevada, a term which is generally applied to the whole range extending from the Tejon Pass in Southern California, to Mount Shasta in the north—a distance of about 550 miles. Some geologists, however, do not admit the use of the term farther north than Lassen's Peak, which is a grand volcanic snow-capped mountain, beyond which a great volcanic plateau stretches to the north.

On this grand base is built up Mount Shasta, which is the Californian counterpart of Fuji-yama, the Holy Mountain of Japan, and, like it, is a perfect volcanic peak, standing alone in its colossal might, and sweeping upwards from the plain in unbroken lines of faultless beauty, to a height of 14,444 feet. There are few days in the year when this glorious mountain is to be seen without its snowy robes, or at least a snow crown. Hence the name by which it is known to the Indians—the White Pure Mountain. As a volcano it has long lain dormant, but there are boiling sulphurous springs within a few feet of the summit crater, while jets of steam and sulphur fumes rise from many a fissure, and have proved the salvation of rash mountaineers who have been storm-stayed and benighted on the freezing summit. Below these symptoms of hidden fire, and the cone of loose volcanic ash, lie ice-fields and still moving glaciers.

Three distinct glaciers are accessible, from one of which, on the eastern slope of the mountain, flows a stream known as Mud Creek, which shortly disappears in the earth; and though the thirsty traveller is tantalized by the murmur of snow-fed waters gurgling beneath and between the loose rocks, he may

march right round the cone, a circuit of 100 miles, without finding a spring or crossing a stream.

Whether that glacier stream really deserves such a name as Mud Creek, I cannot fathom; but in its next appearance it bursts from the ground in a great volume of water, clear as crystal and cold as ice, and rushes seaward, at the rate of twenty miles an hour, between the rocky walls of a deep canyon. In this second stage of its existence it is known as the McLeod River, or sometimes, far more poetically, the McCloud,[1] a worthy name for the stream, which, like its godmother, is a true

> "Daughter of earth and water,
> And nursling of the skies."

It is a stream abounding in trout and salmon, the former sometimes weighing as much as three pounds. A red-spotted trout, known as "Dolly Varden," which is found only in glacial streams, is also abundant, and runs from one to twelve pounds. Sportsmen speak of this region as a most happy hunting-ground. Deer are abundant, so are elk and antelope, also cinnamon, brown, and black bears, but no grizzlies. The absence of the latter does not appear to be a matter of deep regret, as they are ugly customers. Mountain quail and Californian grouse abound; and to the north of Mount Shasta, in Oregon, mountain-sheep are found, and an occasional puma, or Californian lion; also wild-cat and lynx. These mountain-sheep[2] are described as most graceful, active creatures, about double the size of an average domestic sheep, and clothed in a great-coat of straight, glossy, dark-grey hair, covering the under-coating of soft fleecy white wool. In general form they resemble strongly-built, stately deer, having only the head and horns of a sheep. Both the ewe and the ram have horns, the former of modest dimensions, the latter very large and handsome, increasing in size to the age of eight years. A good head may measure two and a half feet across the horns, each of which might measure three feet, following the grand simple curve, and about sixteen inches in circumference at the base.

These "big-horns," as they are called, are brave, fearless creatures, wonderfully agile and sure-footed. They contrive to scale the smoothest glacier-polished granite domes (where an experienced cragsman can scarcely make his way), by means of a series of little stiff skips; they never miss their footing, never slip or slide, nature having furnished them with a soft springy pad, acting in some measure like the sucker-foot which enables flies to walk on glass.

[1] Child of a Cloud.

[2] Caprovis Canadensis.

Thus provided, the mountain-sheep roam in glad freedom among inaccessible crags, where the frozen snow lies chill on the high wind-spent ranges, from 10,000 to 13,000 feet above the sea-level. And here the mountain-lambs begin their hardy lives, in grim cradles of rock and snow, far above the eyries of the mountain-eagles. The mother-ewe selects a spot somewhat sheltered from the chilling winds, but commanding such an outlook as to guard against possible surprise, and here she scrapes herself a bed of crumbling granite, and gives birth to her lamb, who soon grows strong and fearless, and lives a joyous life in the high pastures, starred with daisies and blue gentians.

Sheep-stalking in these regions is apparently its own reward —a pleasure quite apart from the mere bloodthirsty or covetous instinct of shooting a creature because it is rare, or wild, or beautiful. But whether animate or inanimate nature be the attraction, everyone who has visited that district speaks of it with rapture as a region of beauty and delight. The mountain rises from a magnificent belt of forest, which clothes its slopes to a height of about 10,000 feet, where it meets the snow-line. Travellers ascending the mountain spend at least one night camping in the upper forest. They say that the view from the summit is magnificent, taking in a radius of nearly 500 miles—a circle including the whole of Northern California, from the Coast Range to the Sierras, and also a considerable part of Oregon.

The region abounds in mineral springs, differing chiefly in their degrees of unsavouriness. Some are strongly effervescent, and contain iron, salts, and soda. People who are not intent on climbing the mountain to obtain a widely-extended view, generally prefer the autumn, when the atmosphere is invariably clouded by smoke of burning grass or forest.

Mount Shasta forms a grand junction for the Sierras and the Coast Range, which there combine and merge in one great ridge, known as the Cascade Range, which trends northward through Oregon and Washington, gradually losing level till it sinks into comparatively low spurs. It is a purely igneous region, and, from Mount Shasta right up to Pugin Sound, a series of great volcanic cones tower many thousand feet above the basaltic beds from which they spring. In short, this crest of the Sierras was a vast volcanic chain, of whose former activity proof still remains in the immense area covered with lava, an area which geologists estimate at 20,000 square miles. Now the volcanic forces are dormant, and the existence of a number of hot springs, and an occasional earthquake, alone survive to tell of the slumbering fires. The most violent earthquake shock of recent years occurred in 1872, when the

dwellers in Yōsemité Valley declare that even the mighty crag El Capitan rocked like a cradle.

The largest amount of volcanic material is found to the north, where it covers the whole of the range, forming one vast plateau, crowned with many cones, with clearly defined craters. Professor Whitney, the State geologist, recommends the summit of either Mount Hoffmann or Mount Dana, which are both in the neighbourhood of the Yōsemité, as excellent points whence to obtain a good view of the almost inaccessible volcanic region lying between the Tuolumne River and the Sonora trail, where great lava beds, in some places 700 feet thick, rest on the granite, at an elevation of 3,000 feet above the valley, the dark lava-flow showing conspicuously in contrast with the dazzlingly white granitic masses.

One of the most remarkable mountains in that district has been named Tower Peak. It rises in steps like a series of truncated pyramids piled one above the other, forming one of the grandest mountain masses in California. Mount Dana itself is a mass of slate, part of which lies in bands of bright green and reddish brown, forming a mass of rich colour, pleasant to the eye which has been wearied by the continuous panorama of cold grey or white granite. This belt of metamorphic rock extends a long way to the north, giving a rounded outline to the summits (some of which are upwards of 13,000 feet in height), in striking contrast with the jagged peaks which chiefly distinguish the granitic belt.

The latter gradually widens as it passes through Southern California, where it has a breadth of about forty miles. This is the highest part of the Sierras, some of its peaks being about 15,000 feet in height. Here lie the chief traces of the presence of the Frost King, in highly polished granite slabs, and the moraines deposited in all the valleys. On Mount Dana, also, the traces of ancient glaciers are distinctly visible, at a height of 12,000 feet and in the gap south of the summit there is evidence of a mass of ice, fully 800 feet thick, having lodged for many a long year—a chilling guest! While each gorge and canyon had its own special ice-stream, a giant glacier appears to have passed by Mount Dana and filled the great Tuolumne Valley to a depth of fully 1,000 feet, that is to say, 500 feet higher than the pass which lies below the Tuolumne River and the Tenaya Lake.

By this pass, the ice-lake overflowed into the Tenaya Valley, where the ridges are so worn and polished by its action that they afford slippery footing, and men and horses slide pitifully as they pick their way over the broad, smooth slabs of rounded granite. At the head of Lake Tenaya there is a conical knob of granite 800 feet high, so smoothly polished by glaciers,

that not a blade of grass finds a crevice in which to nestle.

While the overflow thus left its mark for all time in the Tenaya, the great glacier passed on its slow, silent way down the Tuolumne Valley—an ice-river, 1,000 feet deep, and a mile and a half in width. Everywhere the rocks bear witness to its passage. They are grooved and scratched and scored by the grinding of the gravel and the rocks crushed beneath that ponderous weight, while at the other parts, long parallel lines of *débris* lie just where the melting of their ice-carriage left them.

Professor Whitney says that this region of the Upper Tuolumne is one of the finest in the State for the study of traces of the ancient glacial system of the Sierra Nevada. He tells how at that part of the valley called Grand Canyon, the whole surface of the rocks for a distance of about eighteen miles is all glacier-polished. Just at the head of the canyon he found an isolated granite knob, rising to a height of about 800 feet above the river, beautifully polished to its very summit, and on climbing this he obtained a wonderful view of the valley. Below him lay outspread smooth glittering surfaces of granite, telling of a far-distant past, while above the steep pine-clad slopes lay the great dazzling snow-fields, crowned by the Unicorn Peak and a multitude of nameless spires. Farther up the valley he had found a granite belt worn into many knobs, some of them about 100 feet in height, and separated by great grooves and channels worn by ice. But in general, he was chiefly struck by seeing how little effect the ice has had in shaping the land. The rough-hewing has been the work of fire, and other agents, while frost has done its part chiefly in rounding and polishing the pre-existing forms. Descending the Tuolumne Canyon till he reached the beautiful Hetch-Hetchy Valley (which is almost the counterpart of Yōsemité, though on a smaller scale), he there found clear proof that the great glacier had passed through it, the rocks being all ice-grooved to a height of 800 feet above the river, while a moraine was observed fully 400 feet higher.

This has a special interest from the fact that in the Great Yōsemité Valley no trace of such glacial action has been found. Apparently the magnificent amphitheatre of high mountains which formed the cradle of the Tuolumne Glacier favoured the formation of so vast a body of ice that it descended far below the line of perpetual snow ere it melted away. On the other hand, the plateau whence springs the Merced River did not allow of the formation of a glacier sufficiently massive to reach the Yōsemité Valley, so that its course could only be traced to the Little Yōsemité, above the

Nevada Falls, and to the spurs at the head of the valley. There it seems to have melted away, and only the quaintly poised blocks, perched on the rounded granite slabs, tell of the chill ice-river that flowed thus far, and perished.

Wonderful is the fascination experienced by those who, making their temporary camp-house in some green oasis in this vast wilderness, can thence climb to some high point overlooking the distant ranges, and try to picture the scene in remotest ages, when the Fire-King was forging these mighty ribs of the earth, or when the Frost-Giants held it frozen in their icy grasp.

While I was living at Yōsemité, a party of young men returned from a most successful camping expedition in the High Sierras. They had been absent about three weeks, having taken with them pack-mules to carry the very rudest of mountain-tents, blankets, cooking-pot and kettle, and as many stores as could be compressed into a very small compass. The Sierras supplied them with abundance of ice-cold water, and they were able occasionally to replenish the larder by a lucky shot. I think they bagged two deer and a bear, and found that steaks of the latter, grilled on a camp-fire, were not to be despised by hungry men. They returned jubilant, having enjoyed every hour of their mountaineering, and having acquired a sun-browned look of perfect health, very different to their pale complexion when they arrived from the Eastern States. The condition of their clothes, all tattered and torn, and especially of their once strong boots, spoke volumes for the hard work they had undergone in climbing and scrambling. Yet they said they had had no hardships to speak of, and had enjoyed uninterrupted fine weather. They camped some nights in grassy valleys, beside limpid streams, and at other times in magnificent coniferous forests, at a height of about 7,000 feet above the sea. They found that a few carefully-laid young boughs of the red fir make a couch as fragrant and as springy as any weary man need desire; and then the stillness of the Great Sierras and the solemn gloom of the forest, canopied by the wondrously blue starlit heavens, had an indescribable charm.

One of these gentlemen, who has travelled a good deal in the Swiss Alps, says there is no comparison between them and these Californian Alps in point of picturesque beauty, they are of such different types. The former are by far the most attractive. Their ice-fields and snows give them a character which is wholly lacking in the Sierras, where glaciers proper have long ceased to exist, though they have left abundant traces of their work in the mighty rocks, polished till they

glisten in the light, and the great moraines, all strewn with the boulders and gravel deposited by the ice-rivers.

Then these valleys, beautiful though they be, are sunk so deep between precipitous gorges as to produce little effect in a general view from any high point, and the vast ranges of cold grey granite, only relieved by the sombre green of pine-forests, become somewhat monotonous, however grand. Truth to say, the Sierras are seen rather at a disadvantage, from the very circumstance which renders travelling in them so delightful, namely, the unvarying fine weather of the summer months. All mountain scenery owes so much of its glory to the gloom which is only born of stormy skies—and here even a passing thunder-storm is a rare event during the glorious summer months.

These gentlemen started from the Yōsemité Valley by a zigzag trail which leads to the summit of the Great Falls, thus reaching an upper world about 7,000 feet above the sea-level. There they struck an Indian track, which brought them to Porcupine Flat, a grassy plateau, where they camped for the night, and next day ascended Mount Hoffmann, a bare mass of granite, towering upwards of 10,000 feet above the sea, and terminating in a mighty precipice. It is the crowning-point of a range dividing the streams which feed the Yōsemité from those which flow to the Tenaya. The former spring from a group of small lakes which lie just at the foot of the mountain.

The ascent of Mount Hoffmann was an easy matter, and the view from the summit was very striking, owing to the number of ridges and peaks visible from thence, especially the beautiful group known as the Merced, because the River of Mercy has its sources among these cold mountains. Descending from Mount Hoffmann, the camping party very soon made their way to beautiful Lake Tenaya, a quiet mountain tarn about a mile in length. They found delightful night-quarters beneath a group of pines at the head of the lake, and there made as cheery a camp as heart could desire. From here they looked across a valley glittering with beautiful little lakes, each surrounded by quaint granite pyramids and spires, to a very wonderful square-cut granite mass, apparently measuring about 1,000 feet in every direction, and crowned at one end by a cluster of pinnacles towering several hundred feet higher. This is very appropriately named the Cathedral Peak, and, as seen from Lake Tenaya, the likeness to a grand Gothic cathedral is most remarkable.

Still following the trail by which the Indians annually travel to Mono Lake, the travellers next found themselves in the Tuolumne Meadows, which are watered by a clear sparkling

river. They lie in a most picturesque valley, fully 9,000 feet above the sea, and surrounded by peaks and ranges of from 12,000 to 13,000 feet in height. On the north side, about forty feet above the river, there are some chalybeate waters, called the Soda Springs, rather pleasant to drink. Near these they pitched their little tents, and indulged in soda-water to any amount. Their next object was to reach the summit of Mount Dana, upwards of 13,000 feet. This also was accomplished without difficulty. The mountain is a mass of reddish-brown slate, not difficult of ascent, and the climbers were rewarded by a magnificent view. On the one side, 7,000 feet below them, and at a distance of six miles, lay the Great Mono Lake —the Dead Sea of California, the waters of which are so strongly charged with mineral salts, that no living thing can there exist, except the larvæ of a small fly, which contrives to thrive and multiply to a very unpleasant extent. Beyond this lake lies the barren, desolate wilderness of snow-clad ranges and naked granite peaks which compose the region known as the Great Basin—a tract so dry and sterile that it has offered small temptation to encroaching white men. So here many Indians, original owners of fertile lands to the south, have been driven to work out hard problems of existence in the hungry desert. In the opposite direction lies Mount Lyell, which disputes supremacy with Mount Dana, the former claiming to have upreared his crest ten feet higher than the latter.[1] Mount Lyell is crowned by a sharp granite pinnacle which towers from a crest of eternal snow, and its base presents vast faces of precipice. The high snow-fields thereabouts bristle with hundreds of jagged granite peaks and rock needles, averaging 12,000 feet.

Beyond Mount Lyell lies a magnificent peak which has been named Mount Ritter; and a little farther on the same mighty ridge bristles with majestic pinnacles of glittering white granite, known as the Minarets. All these peaks and minarets are considered inaccessible, which I should think was the sole reason which could possibly inspire anyone with a wish to climb them.

The travellers did not seek a nearer acquaintance with the Lyell and Merced groups, though somewhat tempted by hearing that that district is accounted one of the wildest and grandest in the Sierras; but their chief anxiety was to visit a beautiful valley of the same character as the Yōsemité, called the Hetch-Hetchy Valley. It has only recently been discovered, having been one of the sanctuaries of the Pah-Ute

[1] The height of Mount Dana is said to be 13,227 feet; that of Mount Lyell is 13,217 feet.

Indians, who reckon on always finding there an abundant acorn harvest. This valley is quite easy of access from the lower end, a cattle-trail having been made the whole way from Big Oak Flat. From the upper end it is a difficult, but very beautiful, expedition, and this was naturally the route preferred by the young men, to whom a little extra climbing was no objection.

So from Mount Dana they returned to their former camping-ground at Soda Springs, and thence started on a twenty miles' march down the Tuolumne Canyon—a deep and narrow gorge, through which the river rushes between precipitous granite cliffs over a bed of glacier-polished rocks, making a rapid descent, without any great falls, but forming a succession of most beautiful shelving rapids and foaming cascades. There are two perpendicular falls which, in any other country, would be accounted worth travelling far to see, one of them being upwards of 200 feet in height (no trifle when the river is full, and pours its flood of melted snow in a grand cataract); but here these low falls are scarcely considered worth noticing.

Of course no quadruped could attempt such a scramble as this expedition involved, over rocks so smooth and polished as to make walking disagreeable and rather dangerous, so the pack-mules were led round by a trail which strikes off at Lake Tenaya, and enters the Tuolumne Valley at a beautiful point known as the White Cascades, where the river falls rapidly in sheets of dazzling foam. A little farther down the canyon they found a lovely little meadow, "Green pastures beside still waters;" for the river here runs level for about a mile, and lies in quiet reaches, as if resting after its feverish turmoil. Here they camped for the night, greatly to the satisfaction of the mules, who revelled in the abundance of all good things. As they could not possibly be taken farther, they had the privilege of remaining in these pleasant pastures till the return of their masters, who, carrying with them only necessary food, dispensed with such superfluities as even blankets, and proceeded on their scramble down the canyon.

It varies greatly in width, being in some places simply a gorge hemmed in by almost vertical cliffs upwards of 100 feet in depth, seeming to touch the sky on either side, while the river rushes on in a succession of lovely cascades and rapids, similar to those which they had passed on the previous day.

At other points the canyon widens and forms a green valley, where pines and firs have found shelter and grow in stately beauty. But in the narrower gorges there is not a vestige of soil, only the smooth shining slabs of granite, polished and scratched by the great glacier which once filled the valley to

the depth of 800 or 1,000 feet, up to which height its markings are clearly visible on the cliffs.

At length they reached the exquisite Hetch-Hetchy Valley, where a beautiful stream flows through rich green meadows enclosed by vertical granite cliffs about 2,000 feet deep. This green oasis is about three miles in length, by half a mile in breadth. It receives the waters of falling streams as beautiful, though not of so vast a height, as Yōsemité, to which, after their three weeks' absence, the explorers returned, to console us with the assurance that in all their wanderings they had seen nothing to compare with the loveliness of the green valley where we had made our summer home, among the thickets of fragrant wild azaleas.

C. F. GORDON CUMMING.

## ART. III.—THE GRACE OF GIVING.

### GIVING TO GOD, ITS TRUE MOTIVE AND MEASURE.

IN one sense it is impossible to give anything to God which is not already His, for He is the possessor as well as the Creator of all; but it is one of the laws of Divine government that He permits His purposes of goodness, mercy, and truth for the human race to be accomplished by the intervention of human means. Of course He can—and sometimes does—dispense with these means, but, as a general rule, He is pleased to use them; and it is here that our power of giving to God comes in. Acting in accordance with this law, it is plain that we can, if we desire to do so, help to enlarge the scope of these means, and in a human sense render them as efficient as possible. This we can do either directly, by engaging in the work ourselves; or indirectly, by gifts of money, time, labour, or influence. But it can scarcely be expected that anyone will, in this sense, give to the furtherance of these purposes of Divine goodness who has not himself in some way felt his indebtedness to God, and experienced, in a measure at least, the constraining power of His love; for it is in this way alone that the responsive feeling within is evoked, and it will be in direct proportion to the strength of this feeling that we shall give and work for His glory. The important question therefore which we have to consider is this, How is it possible to kindle, preserve, and increase the spirit of Divine love in our hearts? And the answer to such a question is surely not far to seek. If it be true that love begets love, then it follows that the realised