

JOHN WESLEY POWELL.

BY MRS. M. D. LINCOLN (BESSIE BEECH).

[CONTINUED.]

III. THE PROFESSOR.

THE establishment of peace left the soldier without an occupation. He had willingly followed a life of toil and danger, when great national issues were at stake, but he could not be a soldier in time of peace. He therefore speedily sought some new occupation. After considering many different plans, he was prevailed upon to accept a nomination for the office of County Clerk of Du Page County, Illinois.

A few days later he received a letter from the President of the Illinois Wesleyan University, at Bloomington, offering him the professorship of geology in that institution. This he accepted at once, although the salary was but \$1,000 per annum, while that of the County Clerk was worth from \$5,000 to \$6,000. This university had previously given him the degree of A. B. and then of A. M., but the offer of the professorship was entirely unexpected. He left for Bloomington at once and entered upon his new duties.

The institution was more prosperous than had been supposed, and his salary, even for the first year, was better than had been promised. For three years he there led the quiet life of a professor of geology.

It was agreed when he accepted the position that a part of his time should be devoted to field geology and natural history, and that the greater part of his duties should be the organisation and building up of a museum.

During his life as a soldier, Major Powell did not forget the pursuits in which he had previously been so deeply interested, and often while in camp he applied himself to the study of natural history. During the more quiet pursuits of camp life, he found op-

portunities for studying the botany of the country in which he was sojourning. While in Kentucky and Tennessee, he made large collections of land and fresh-water shells. But the study in which he most interested himself was geology; and it was his custom to carry in his camp chest the geological reports of a district through which he travelled. There is now in the State Museum, at Normal, Illinois, a fine collection of fossils from Vicksburg and the region round about which he made while encamped in that region the winter after the fall of the city. In the same manner he made large collections of fossils in Tennessee, especially around Nashville, in the region made classic by Troost and Safford. Altogether, his notes on geology and natural history made during the war are quite voluminous.

On entering upon his duties at the Illinois Wesleyan University, his entire energies were directed to the development of methods of instruction in his favorite field of learning. It was his theory that the study of science should include much more than the textbook literature of the subject; that the student must be made familiar with the phenomena of nature; that the principles of any branch of natural science should be constructed by the pupil himself from observed facts; and that the function of the teacher should be chiefly that of guide. With this end in view, his time was largely devoted to the creation of a museum and the organisation of laboratories for instruction. In mineralogy his pupils were led to study the minerals themselves, and thus to become familiar with their characteristics; and many of them became skilful in blow-pipe analysis. His students in botany were at once introduced to the world of plants, and became collectors, and assisted him greatly in the gathering of plants for a fine herbarium. In zoölogy his pupils were taken to the woods and fields, and became collectors of mammals, birds, reptiles, fishes, and insects, and by the study of natural objects were trained in comparative anatomy.

He seems at this time to have found great difficulty in teaching geology, because it was almost impossible to introduce the students immediately into the presence of the facts, and he deeply lamented that they were so greatly dependent upon text-books. To correct this evil, even to a limited extent, he organised field excursions, and, as far as possible, adopted object-studies of rocks and fossils.

In this manner the days and years of professional life were passed, training students by research in field and laboratory and by courses of lectures; and it may be well understood that his classes rapidly increased in size, and that he gathered about him

a large number of young men who, inspired with his own enthusiasm, became earnest and successful scholars.

At the same time, the Professor took an earnest affirmative part in the public discussions of the importance of enlarging and perfecting the general college curriculum by the introduction of more science studies,—a question then fairly begun and not yet ended. In public lectures and addresses throughout the State, he did much toward creating a sentiment in favor of the opinions so earnestly embraced by himself.

During this time he was still secretary of the Illinois Natural History Society. This society was located in the hall of the Normal University at Normal, a suburb of Bloomington, and in that institution he delivered a course of lectures on geology. At the request of the officers of the institution, in the winter of 1866–1867, he went to Springfield and secured from the legislature a small endowment for the museum of the Normal University. On his return he was elected to the curatorship, with the understanding that he should be called upon to deliver a course of lectures on geology during each winter.

During the next spring, Professor Powell organised an expedition, from the members of the graduating class in the Wesleyan University and students in the Normal University, for the purpose of crossing the Great Plains and visiting the mountain regions of Colorado to make collections and studies in natural history and geology. This excursion was one of the earliest of its kind in this country, and inaugurated a practice of the highest value to science, for it has now come to be recognised that field-study is a necessary part of a course of instruction in any branch of natural science.

Early in May the Professor organised his party, on the Missouri River near Council Bluffs. It was composed of sixteen students and himself, and was outfitted with two waggons and the necessary teams, and also with a number of riding animals. The equipment for natural history collection was very thorough, especially for the collection of vertebrate animals, insects, and plants, and to each member of the party was assigned a specified share in the work for which the expedition was organised.

The journey across the plains was slowly made, the party occupying itself from day to day in the collection of natural history materials found along the route. Some were chasing wild animals, some capturing butterflies in nets, some gathering plants to be pressed; and the Professor himself, while directing all of these operations, was also engaged in making geological examinations

and collecting fossils. It was a busy merry party, and at night the camp was made hilarious with song and story.

At that time the Pacific railroads were not built, and in the wilderness of plains lurked Indian tribes, for which the party had to keep up a constant watch. As they moved by day, outriders guarded their little trail, and at night guards were established. Sometimes they camped on the same ground with other travellers pushing westward,—“pilgrims,” as they were called in those times,—and common guards were established over large camps. For much of the distance they travelled in sight of the Platte River, a broad stream of shallow, muddy water, on the banks of which, at rare intervals, cottonwood groves were seen. At last, in crossing the Bijou Basin, about fifty miles from Denver, the party came in sight of the Rocky Mountains, and were filled with enthusiasm as the highland to which they were destined came into view. Ten days later the whole party were engaged in crossing the Rampart Range, as it is now called, sixty miles south of Denver, taking with them their waggons and animals, by a route explored by themselves. The college boys were teamsters, cooks, and laborers, as well as students, and with good cheer and great skill they climbed the mountain range, opening their way through forests with the axe, and sometimes finding it necessary to take waggons to pieces in order to get them up the rocks.

But days of great labor, endured with the utmost good-will brought them into Bergen's Park, on the western side of the divide. This is a long valley, with a mountain range on either side, enclosed at the north by a group of lofty crags known as Devil's Head, and at the south by Pike's Peak.

In Bergen's Park they camped for nearly a month, and made a great variety of natural history collections. Thence the party moved to the foot of Pike's Peak, which they essayed to climb. At that time there was no Signal Service station at the summit, and no trail led up its steep sides as at present. The Professor explored a route up the north side. The ascent was at that time one of much adventure, and required great labor; but at last, about three o'clock one afternoon, the whole party reached the summit. Nobody in the party had ever before been above the timber line much less on a mountain's summit, among perpetual snows, and unfortunately, having had little experience, the descent was commenced too late in the afternoon; night came on with terrible cold, and in the darkness they had to make their way down rocks and over steep places, until they could reach the timber line. At last

this was accomplished, when a great fire was built and they camped for the remainder of the night, with no other shelter than rocks and logs, and preserved from perishing with cold by the huge fires which they built.

Mrs. Powell, the Professor's wife, was one of the party, and she spent eight happy summers in this way, enlivening the monotony of the life as only a woman's presence can. For six months at one time she never saw a white woman; and "she could ride all day on horse-back like a veteran," says the Major. Her dress on such occasions consisted of a plain water-proof cloth reaching to the top of stout boots, and an English felt hat with a blue or green veil completed a costume intended and adapted to service. They dwelt in tents or under shelving rocks; and the mess-kettle held savory "stews" that were eaten with appetites not too refined for even "squash sauce" on one occasion, without anything but salt to season it!

It took the party some six weeks to pass over ground that the screeching trains now fly over—on wings of steam, in three days.

But these latter-day travellers do not become acquainted with every grand or lovely spot; they do not study the "topography," the "geology," the "fauna," and the "ornithology" as did our explorers on horse-back, or by canoe. They sometimes saw Indians with birds and flowers of species unknown to modern scientists, and they then enjoyed all the joys of discovery.

The Major's policy towards the Indians was always conciliatory. He generally explained as best he could the object of his party, and they eventually smoked a pipe of peace, exchanged presents and dwelt together ever after on friendly terms.

Mrs. Powell is the first white woman known to have crossed Pike's Peak.

The next day they returned to their camp at the foot of the mountains. Altogether, three days had been filled with the ascent and descent of Pike's Peak, probably by a route never before and never since taken.

From Pike's Peak the party went round to South Park, and although it was midsummer, two days of the trip were through a blinding snow. They camped in South Park for two or three weeks, and from the rendezvous which was established many of the mountain regions round about were climbed. One of the most noteworthy excursions was the ascent of Mount Lincoln, a peak 14,297 feet above the level of the sea.

From South Park they went to Denver, where the party was

broken up, and a number of the young students returned to their homes in the East. But Professor Powell, with his wife and two or three young men and a couple of hardy mountaineers, went from Denver over into Middle Park, where another month was spent in exploring the mountains around that beautiful valley. One of the most interesting expeditions made from Middle Park was around the head of Grand Lake and up into the high Sierras to the east, in the region of Long's Peak, and from thence around Mount Sumner, on the divide between Middle and North Park. On this trip the Professor made some very interesting collections of bear, elk, wolverine, and other animals; but finally the snows came on and they were driven out of the mountains.

In going from Middle Park back to Denver, they had to cross the range once more, at Berthod's Pass, during the latter part of November, after the snows had accumulated several feet in depth.

On arriving at Denver the results of the expedition were gathered, to be shipped to the East, embracing the skins and skeletons of many mammals, and a collection of many hundreds of birds, many reptiles and fishes, and many bottles and boxes of insects, and especially a large collection of plants. The party had also gathered a great store of fossils, minerals, and volcanic rocks; all of which were taken East to enrich the museums at Normal, at Bloomington, and other institutions.

Professor Powell spent the winter of 1867-1868 in the arrangement and study of his collections and in lecturing. In the spring a new expedition was organised, designed primarily to enrich the museum at Normal, of which he was now in charge; but other institutions gave him assistance. A small grant was made by the Illinois State Agricultural College, but the most important assistance secured was the aid of the Smithsonian Institution, which furnished him the apparatus and outfit necessary for natural history collections and instruments required for geographical reconnaissance. Through the influence of General Grant, Congress authorised the Commissary General of the Army to furnish Professor Powell and his assistants with rations wherever they might call for them at military posts in the far West.

With all of these additions to his equipment, the Professor again organised a party, chiefly of students, for a natural history expedition into western Colorado, with the design of ultimately exploring the canyons of the Colorado. Early in the summer of 1868 with this newly organised party of naturalists he established a rendezvous camp in Middle Park, Colorado. To the party here he

added a number of hardy mountaineers who were expert trappers and travellers. For more than three months our naturalists were pursuing their studies and engaged in making collections in various departments through the region round about. At one time, Professor Powell, with a part of his men, crossed the Colorado or Front Range and ascended Long's Peak, which was thus climbed for the first time. During the whole period he was himself chiefly occupied with studies at high altitudes, and he traversed the entire Colorado Range from Long's Peak to the South Platte. While engaged in this part of the work they usually camped at the timber line, and the days were spent among the crags and peaks of the great Colorado Range. In this manner the study of the general structure of the mountains was made. Thence he went to Mount Lincoln and studied the great mountain masses at the head of Blue River, thence southward he passed to the Gore Mountains. In this region a longer delay was made and the whole system of mountains carefully explored.

The Gore Mountains are a group of wonderfully picturesque crags and peaks, and previous to this time had been entirely unexplored. The account of them published by the Professor greatly attracted the attention of travellers, and later his name was given to the highest peak of the group by the people of Colorado.

During the two summers of study the mountains extending about Middle Park, and the whole country within, had thus been carefully studied so that the general geology of the district was now well known by the Professor, and large collections of minerals, fossils, and rocks had been made. The naturalists of the party had also collected rich stores of plants and animals, and at the close of the season they found themselves well rewarded. The material thus gathered was sent to Denver and thence shipped east to the museum at Normal, from which it was to be distributed to the several institutions contributing to the expense of the expedition.

But Professor Powell did not return to the East himself. With a part of his scientific corps and a number of mountaineers he crossed the mountains to the westward of Middle Park and went down to the valley of the White River, where he established winter quarters. Here three small log houses were built on the margin of a great cottonwood grove not far from the banks of the river. Just before the train reached this camping-ground, the Professor with two men were riding in advance when two grizzly bears were seen. These were killed and besides obtaining two good robes for cold weather, sufficient oil was secured to light their cabins during the

long nights of the following winter. From the Inter's camp as a base all the region round about was explored.

It had been previously arranged that early in the winter some members of the party should leave, so in December while the main party remained behind at winter quarters he went with these persons who were to return to the East and with three or four hunters northwestward to where the Union Pacific railroad now crosses Green River. The whole journey was through a region at that time unknown and without roads and trails. When within about fifty miles of Green River they encountered a severe snow-storm and went into camp at the foot of Aspen mountain until the storm had subsided. This is a wild and desolate region and of great interest to scientific travellers, and the mountain was the center of a district of country which subsequently became the theater of an elaborate geologic study by the Professor, the results of which were published in his report on the Uintah mountains. On the third day the storm subsided, and the party toiling through deep snows soon found its way to Green River Station.

Professor Powell having parted with his friends who were coming east, loaded his pack animals with supplies at Green River to return to winter camp. His route back was down the valley of the Green to the Uintah mountains, thence eastward to what has since been called Brown's Park. From this beautiful valley in the heart of the mountains he explored the upper canyons of Green River and a large part of another canyon lying farther south, then passed eastward exploring the Yampa River where it canyons through the Uintah mountains, and from the Yampa river he passed southward to winter camp on White River, arriving there on New Year's day. During the late winter months the canyons of White River were explored and excursions were made far up and down Green River especially for the purpose of studying canyon geography. During the previous summer the Professor had explored the canyons of the Grand River where it passes through and out of Middle Park, having constructed small boats for this purpose. He had also made a careful study of some of the canyons of the Blue River. All of these examinations were made for the purpose of determining the best methods of exploring the canyons of the Colorado.

The winter spent on the White River was one of great interest to the Professor and his party, which again included Mrs. Powell. The entire winter was one of great activity in making explorations and collections. During the greater part of the time the Ute In-

dians were encamped in the same valley, and the Professor spent the long winter evenings in studying the Ute language and collecting the myths and noting the habits and customs of these interesting Indians, in which work Mrs. Powell took great interest. The presence of the Indians added greatly to the entertainment of the party, for all winter long they were engaged in festivities, and often at night were found performing their weird ceremonies of magic,—their “medicine rites.” The hunters of the party abundantly supplied the camp with game; at one time they brought down twenty-three deer from a mountain about twenty miles from camp.

This valley, now known as Powell’s Valley, is a beautiful stretch of meadow glade, about ten miles long and from one to two miles broad, inclosed by mountains and steep cliffs on every side. Here the horses and mules, about twenty in number, roamed through the winter, but were brought up to the camp every night by a herdsman, and from their number the animals necessary for next day’s ride were caught each night.

During this winter, as during the previous summer, extensive scientific collections were made.

Late in March winter camp was broken up, and through deep snow, with great toil, the party found their way over the mountains into Brown’s Park, in the heart of the Uintah Mountains. From Brown’s Park they went to Fort Bridger. Arriving at Fort Bridger, new operations were to be inaugurated, for the Professor had determined to explore the canyons of the Colorado. He at once shipped all his collections to the East, and leaving his party encamped on Green River, with Mrs. Powell he went to Chicago, for the purpose of constructing boats to be used in the exploration of the Green and Colorado Rivers. It had been his plan to construct boats in the field, and for that purpose he had brought with him the necessary tools; but at that time a great rivalry had sprung up between the two great railroads, the Union Pacific, starting from Omaha and building westward, and the Central Pacific, starting in California and coming eastward. This rivalry resulted in the building of the transcontinental railroad with much rapidity, and already a track had been started as far westward as the Green River, and the Professor determined to take advantage of this fact and to have his boats built in Chicago, where the work could be more skilfully done, and have them shipped out by rail.

Having thus decided to enter upon extensive explorations, Powell’s life as a college professor ended.

[TO BE CONTINUED.]