

PREHISTORIC CAVE-DWELLINGS.

of a range of pre-
ahead and threw

single break appeared, which as we drew nearer developed into a wide, level-bottomed cañon, into which the Indian guide, beckoning me to follow, plunged at a gallop. Shortly he pulled up, and, pointing to an object a mile farther on, uttered the single word "Kintail"—the Navajo equivalent for ancient ruin.

Our cañon soon opened at right angles into a wider one, disclosing beautiful vistas to the right and left, comparable to nothing upon which our eyes had been accustomed to look. We saw a valley a dozen miles long by half a mile in width, hemmed in by gray sandstone walls, precipitous for a hundred feet from the bottom, then retreating in long, even terraces, whose flat crests were fringed or specked in black by the piñons. The floor was carpeted in yellow—a waving lake of sunflowers; not the seedy monsters of the East and the South, but smaller, more brilliant, and far more beautiful growths. A herd of Indian ponies, startled by our advent, bounded away down the cañon—the only living things in sight besides ourselves.

We halted upon the brink of an arroyo which wound through the middle of the main cañon at a point just opposite the ruin to which the guide had called my attention. The pile resembled a huge brick-kiln, its fires out and its row of blackened fire-holes at the bottom left open.

I slipped from my saddle, and, abandoning my pony to the care of the Indian, dropped down the bank of the arroyo. Pausing a moment on the side of the little brooklet at the bottom to take an unrefreshing drink of its muddy, tepid water, I climbed the other bank and confronted, close at hand, a most remarkable structure of immense extent and undoubted antiquity. Having crossed the debris of a fallen wall, I passed through a wide plaza and entered a weed-grown court, on three sides of which stood black walls of masonry of great thickness. Through their queer, low doorways, hardly more than a yard from top to bottom, and little windows, was revealed room beyond room, and stories one, two, three above me. An hour later the gathering darkness, and the noises of the approaching pack-train, recalled me from the past, and having stumbled back across the arroyo, I joined in the work of establishing camp at the point where the Indian had remained.

Few more interesting archæological curiosities exist upon the hemisphere, and none within the borders of the republic, than those of Chaco Cañon, New Mexico. To what remote periods "in the morning of time" they owe their origin and their destruction none will

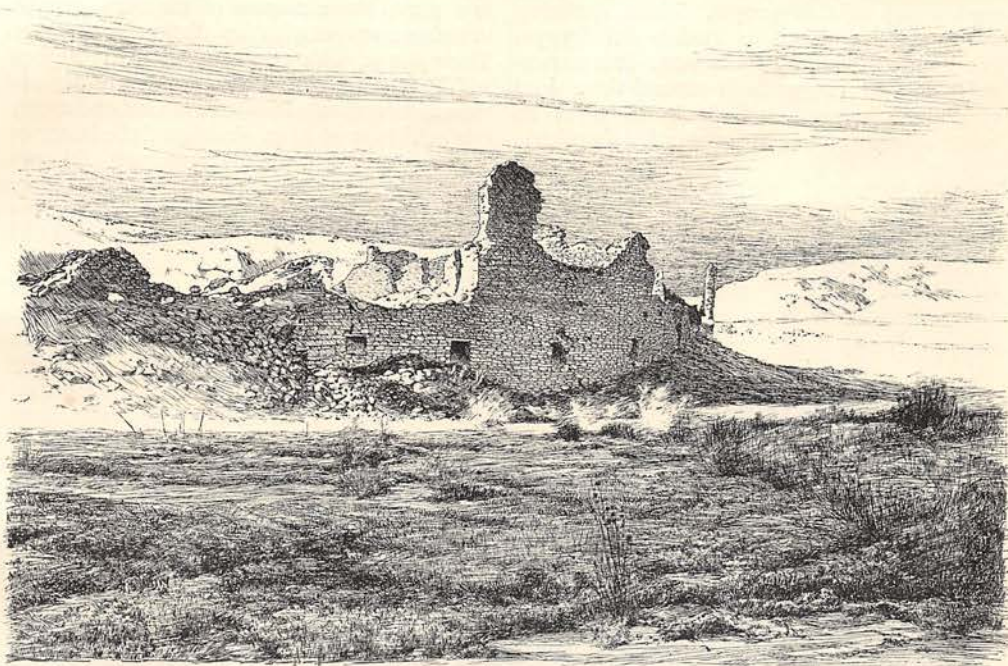
ever know. What may have been the purposes of many of their marked peculiarities; what the numbers and characteristics of their builders; what the relationship, if any, between their inhabitants and the other families of the great race of early community dwellers, are queries which may be answered in part when the investigator shall go with pick and shovel to uncover the buried rooms, and lay bare that which has remained concealed since the death or departure of the ancients. The existence of these ruins has long been known, but they have rarely been visited by white men. There are thirteen groups—castles in appearance, but towns and villages in fact, twelve of which are situated within ten miles of the mouth of the cañon.

Many visits were made to some of the piles, and on each occasion some feature which had at first refused to yield up its secret proved more tractable upon being brought into comparison with kindred features of neighboring ruins. The masonry of the Chacoans is admira-

ble, considering their limited resources. They faced their walls with small, roughly squared stones smoothly laid in clay, and filled the spaces between with rubble, embedding large logs both vertically and horizontally in the masses to give them additional strength. Often the building material was carefully assorted so that each layer of stones might be of uniform thickness throughout, and the alternation

of thick with several layers of thin stones gave a surprisingly attractive appearance to their best work. Looking beyond the minutiae of construction, however, the work of the ancients is found to be less praiseworthy; and evidences appear on every hand that they had not emerged from the estate of barbarism to a full comprehension of the mysteries of true curves, straight lines, and right angles. They began their structures with definite and symmetrical plans in mind, but in matters of alignment and direction they often fell far short of their evident purpose.

The largest and most central mass in the cañon is Pueblo Bonito. Its walls inclose an area of about three and one-third acres. Its master architect planned a half-moon structure in outline, evidently intending to divide up a portion of the interior by a series of concentric semicircles and radiating cross walls to form the living apartments. It had more than two hundred rooms upon a single level, and being four, perhaps five, stories in height, contained



PUEBLO CHACO CAÑON. I.

not less than eight hundred rooms in all. Its population probably averaged two individuals to a room. Those who are familiar with the habits of the village Indians of the present day, recalling the fact that three or four generations, sometimes to the number of a dozen individuals, are found living in a single apartment, will think my estimate too low; but the rooms of Bonito are smaller than those of the in-

ble, considering their limited resources. They faced their walls with small, roughly squared stones smoothly laid in clay, and filled the spaces between with rubble, embedding large logs both vertically and horizontally in the masses to give them additional strength. Often the building material was carefully assorted so that each layer of stones might be of uniform thickness throughout, and the alternation

habited pueblos, and I deem it unsafe to estimate their population upon the same basis.

The architect of Bonito was a bungler. One of his two outer angles is acute, the other obtuse. At one point his intended semicircle is flattened by reason of the proximity of the cliff, and at another it is afflicted with a dropsical bulge. The diameter of his half-moon—the front of the structure—is at variance by thirty degrees with the line of the arroyo in its front and that of the cliffs behind. The diametral line is broken in its middle by reason of a miscalculation of one or two degrees, and the break was utilized as a main entrance. The inner concentric curves, springing at right angles from the diametral wall, attempted to follow the line of the outer semicircle, but got bewildered in the maze of cross walls and shot off at odd angles to premature absorption in their neighboring walls.

Bonito, though the largest and doubtless in its day the most important of the Chaco ruins, is not the best preserved, nor in its construction the best fitted to illustrate the highest capabilities of this people. These qualities, in my opinion, attach to Pueblo del Arroyo, two hundred and fifty paces west. It is rectangular in plan, being built around three sides of a parallelogram, and doubtless owes its better alignment to its comparative simplicity.

It contained eighty-four lower rooms or cells, and probably had twice as many more in its upper stories.

The most remarkable outline is that of Peñasca Blanca, the second pueblo in point of size, and the westernmost ruin of the group. It stands upon the tongue of a mesa seventy feet above the bottom of the cañon, and in a military sense commands its mouth. The plan of the main portion of this ruin exhibits six concentric curves, four of which describe one hundred degrees of the circle, while the two innermost are extended to complete circles,—or rather ellipses,—thus inclosing the plaza. Its walls inclose an area of about one hundred and ten thousand square feet. It probably had three hundred apartments, and it may have been the home of a thousand individuals.

The principal mesa had an area of about fifteen square miles. From its highest point the land slopes gently away in all directions, the incline towards the south ending abruptly at the distance of one mile in the descent into the cañon. At this commanding point there stand in a group three masses of masonry, notable in themselves yet with few distinctive features. Their site is, with one exception, the highest within fifty miles, and commands a northward view of desert table-land, cañon, cliff, and mountain which must have gladdened the hearts of

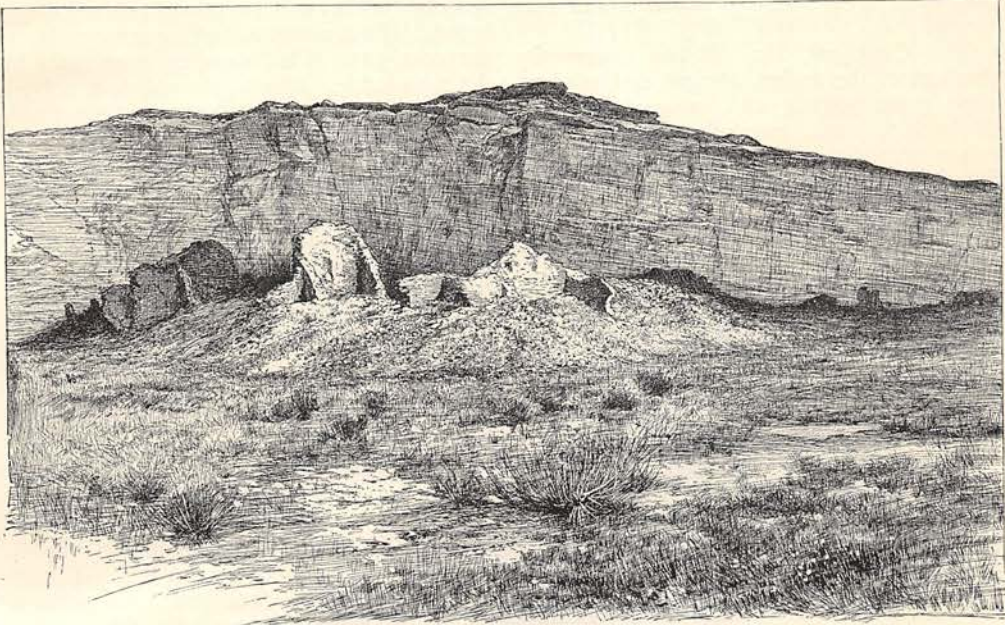
the ancients, as it did ours, to look upon. The largest ruin of this group is now little more than a rubbish heap, yet a few yards of standing wall here and there prove it to have been built with the same careful attention to detail exhibited in those already described. It had ninety lower apartments. One of the remaining structures is in a still more advanced stage of decay, while the third is, oddly enough, the best preserved ruin in all the Chaco region. It had only forty rooms in its lower level. From the distance of a few rods its appearance was that of a large modern brick mansion lately destroyed by fire.



PUEBLO CHACO CAÑON. II.

Little lapses from rectitude are noticeable here and there, but, as a whole, its angles present fewer eccentricities, and its interior walls more uniformly reach their destinations, than do those of its huge neighbor. Its rooms are generally larger, and its appearance indicates a somewhat later date of construction.

Many rooms in the various ruins remain intact, though choked with rubbish, and by examination of them something may be learned of the simple internal economy of the ancient homes. Their entrances and intercommunicating apertures were commonly not more than three feet from top to bottom. Some



PUEBLO CHACO CAÑON. III.

were placed low down, necessitating the use of hands and knees to effect an entrance, while others required a leap over a threshold two or three feet high. In the latter cross-bars were placed at the top, which the passer might grasp to assist himself over the obstruction. Little windows or ventilators, ten and twelve inches square, opened near the tops of the rooms. Interiors were plastered over with mud laid on as smoothly as could be done by modern workmen with their trowels. Recesses great and small extending into the thick walls served the purposes of cupboards and store places. Floors were made of small, straight withes—more rarely of split slabs—laid contiguously across heavy log sleepers and covered with a thick carpeting of soft bark. In one place we found the spaces between the sleepers—fourteen inches wide—filled with thin stones, so firmly wedged into their places that they remained, being plastered over with mud, as the ceiling of the room below, and without other support than their own weight and pressure. So near did the Chacoans come to the discovery of the arch, using herein its essential principles; yet for the lintels to doorways, passages, and windows—places where the arch would best have served their purposes—they used short poles, which in the majority of cases have been broken down by the superincumbent masses of masonry.

Neither fireplaces nor flues are to be found, and it is probable that fires were never built in the living apartments. Their smoke would

have smothered the dwellers above, except where the ceilings were like the one I have described, of small stones plastered with clay; and in such cases life below would have been made intolerable. Cooking was probably done in the open plaza, or in specially constructed apartments, as is to some extent the case among the Moquis to-day. For warmth the ancients doubtless wrapped their rabbit-skin robes about them and snuggled together within their little cells, shutting out the blasts of winter by walling up superfluous doors and windows. Apertures so walled are found in all the ruins.

The mountainous weight of these great piles had no more solid foundation than the surface of the alluvium. Although the thickness of the walls at their bases—usually more than three feet—was sufficient to give them a measure of stability, yet the architect in nearly every instance made the outer row of rooms much narrower and shorter than the others, so that the two outermost walls might with their strong connecting walls the better support each other. In every ruin it is the outermost wall which has suffered greatest from the ravages of time, while its neighbor, braced upon both sides by the cross walls, is usually the best preserved. The double wall was evidently regarded by the ancients as a single and essential feature of their architecture, and they extended it even to lines which were designed merely to complete the inclosure of their plazas. In these cases the two walls were connected and braced by masonry at short intervals, and the cells

thus formed were utilized as living and store rooms.

The Chacoans, like all the community dwellers of the region, ancient and modern, were great potters, and immense mounds of broken ware, tastefully ornamented in colors according to barbaric standards, are found in the neighborhood of all the larger

its freight of clay with the grip of a chemical solution, and was unfit for drinking or for culinary purposes, even if left standing over night in the mess kettle. Ellison, the muleteer, solved the question temporarily by putting into practice a device learned from the Mexicans. Having gathered a shovelful of prickly pears, he burned off their spines, crushed them, and put them into a kettle of water. After half an hour of vigorous stirring the clay took a curdled appearance and sank to the bottom. A day or two later we luckily found a rock pocket in the cliffs, containing several barrellfuls of clear rain water, and we quenched our thirst for the first time in many days without a suspicion of mud, prickly pears, or wrigglers.

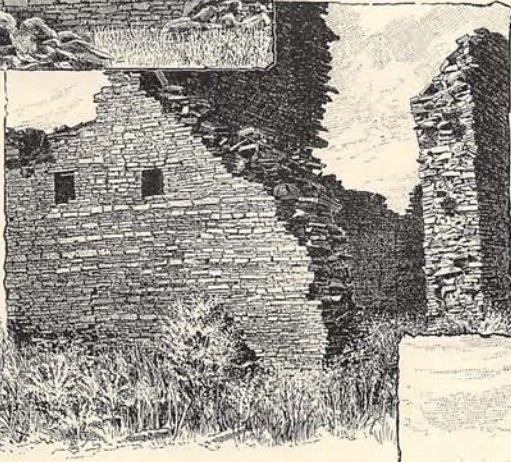
I dwell upon the water question for a purpose. It must have been one of absorbing interest to the ancients; for although the climatic conditions of the region were then more favorable to the support of human life, yet there doubtless were seasons when the Chaco, for months perhaps at a time, ceased to flow.

I have said that in all the ruins there are tanks. The smallest ruin in the cañon stands not more than thirty feet from the



ruins—the accumulation and breakage of generations.

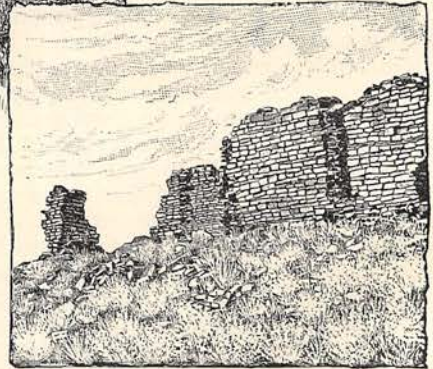
The most curious and mysterious features of the ruins are circular tanks of masonry varying in diameter from fifteen to



DETAILS OF WALL STRUCTURE.

more than sixty feet. Bonito had a dozen of them, and the very smallest ruin had one. They were built with an especial view to resisting pressure from within, the spaces about them being filled with broken stone and clay, and their walls being sometimes supported extensively by radiating braces of masonry. They had no entrances or apertures of any kind other than their open tops. What purpose did they serve?

The water question early became one of anxious consideration with our party, notwithstanding the fact that the little Rio Chaco ran within fifty feet of our tents. The stream was an evasive brooklet whose comings and goings were an interesting mystery. We had no rain until the day before our departure, yet I often noticed that the volume of water increased four or five fold between sunrise and nine or ten o'clock, while it would disappear entirely before night. The stream, though free from alkali, held



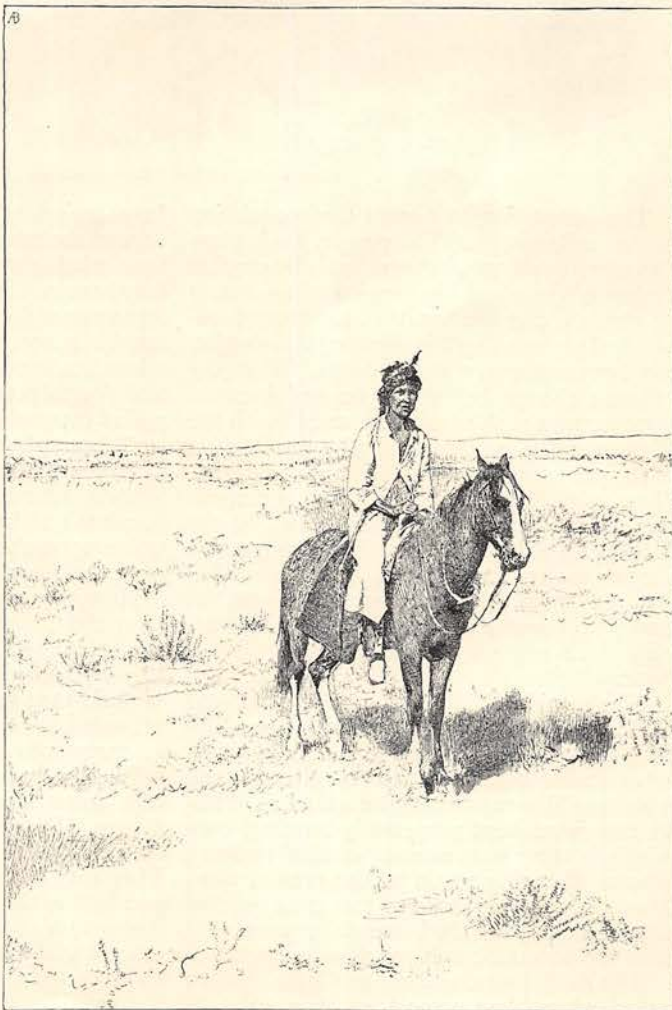
face of the cliff, and consists of a single circular tank, surrounded by a parallelogram of double walls. Here the tank is the chief feature of the structure, and the outer walls, with the cells formed by their connecting braces of masonry, are incidents in the plan for securing strength. The cells in this case have no entrances or ventilating apertures, and moreover are solidly filled in with rubble and dirt. The tank is twenty-eight and a half feet in diameter. The cliff overhead is gullied just above this structure

by rain water, which here makes its way over the crest into the cañon. Nothing could have been easier than to place troughs beneath and convey a portion of the treasure into the tank. Manifestly this structure was a reservoir. One mile distant is found another ruin bearing similar relations to the cliff, and consisting of three circular tanks inclosed within a parallelogram one hundred and thirty by seventy-three feet. The cells in this structure were utilized as living-rooms, though they were evidently mere incidents in the plan for securing strength to the tanks. The bottoms of the tanks in both these structures are considerably higher than the floor of the cañon, and their contents might easily be drawn off by siphons to the plain below, but the suggestion credits the ancients with a greater knowledge of hydraulics than they probably possessed.

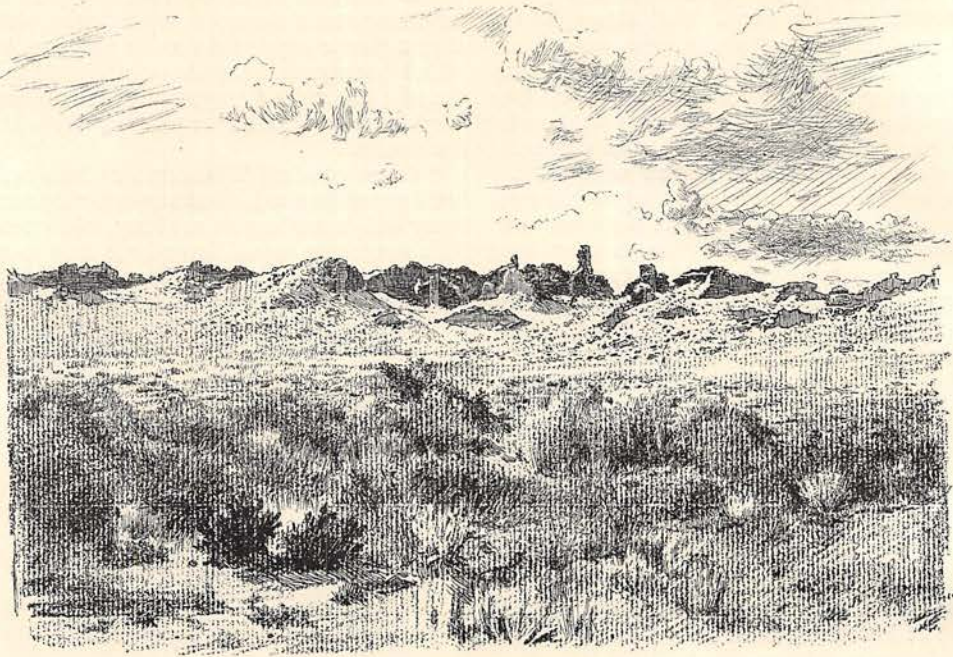
In applying the water-tank theory to the larger ruins one meets with difficulties, but they do not seem insurmountable. Bonito and at least three other of the larger pueblos are near enough to the cliff to warrant the supposition that water was conveyed from the crest to their tanks in troughs. With regard to Pueblo del Arroyo, which is several hundred feet from the cliff, and to those ruins which stand upon the mesa tops, the problem is still more difficult. Perhaps the water which fell upon their broad roofs was conveyed to their tanks. Possibly so patient a people as this carried water from the lower level, as the Moquis do to-day up a steep seven times greater; but unlike the Moquis, they carried supplies in time of plenty to fill their tanks against the time of drought. Possibly again they filled their tanks when only the water of the stream was to be obtained, and that was too muddy for use; long standing in the tanks would doubtless clarify it sufficiently for cooking purposes and for drinking, which, if one may judge by the habits of living pueblo Indians, were the only uses made of

water. Series of earthworks are found in the neighborhood of the more elevated ruins which at first glance suggest defensive purposes, but which were probably made to catch and hold the rain water falling upon the summits until it could be carried in jars to the tanks within the pueblos.

"You would find," said one for whose opinion I entertain the highest respect, "that masonry laid in mud would not long hold water." This suggestion would have been fatal to my theory, and I should have abandoned it, had I not found in another locality a tank upon the inner surface of which there remained portions of a lining similar in substance to the pottery of the ancients. It had evidently been laid on with trowels and baked, and to a certain degree glazed, by building fires within the tank.



AWAITING AN INVITATION TO DINNER.



THE PLAZA, PUEBLO PEÑASCA BLANCA.

The temptation to pursue the speculation further is irresistible. The people, having settled down in villages, improvidently began that system of denuding their region of its forests to which is due the fact that for many thousands of square miles this once populous region has been rendered a sterile desert. When the climatic change began prayers and incantations for rain such as are performed by all the Western tribes, and especially by the Pueblos of the present time, were resorted to, and what place so quick to suggest itself for the purpose as the empty tank where it was desired the blessing should fall? As the change progressed the pagan rites became more frequent, and before the hegira of the degenerate remnant the tank had become a recognized place of worship and a necessary adjunct of the religious system.

The Spanish invaders under Coronado found the Zuñis, the Moquis, and their kind worshipping and holding council in places of somewhat similar construction to these tanks, and which could be entered only from the top. Within fires were kept perpetually burning, from which fact they were named "estufas" (stoves), a name that they retain to the present time. It was erroneously assumed that their peculiar form was adopted the better to preserve the fires for economic and religious purposes.

The Zuñis know nothing of Chaco. When asked where they came from they point to the northeast, which includes the entire San

Juan region, of which Chaco is a part; but beyond the most nebulous of myths and traditions relating to their migration and its causes they have nothing to tell. The late Mr. James Stevenson of the National Bureau of Ethnology, and his accomplished wife, who made themselves familiar with the Zuñi language and the traditions of the fathers of the tribe, thought the period covered by their more or less authentic traditions to be not less than a thousand years, during which time the Zuñis had always lived in their present neighborhood. These people translate and imitate the symbolical ornamentation upon the Chaco pottery, though their work is in some respects inferior to the old.

Here, then, we find a tribe, perhaps descended from the Chacoans, whose religion, so far as can be judged by its symbolism, is identical; whose tenacious memories preserve the story of their race for probably a thousand years; yet who have not even a name for the greatest metropolis ever known by their ancestors.

We found no human remains in Chaco except some fragments of skulls in Peñasca Blanca. They lay among the rubbish of a fallen outer wall as if they had rolled from within. They may have been the relics of some who perished in the last tragedy, the sacking and destruction of the place, and probably had no other burial than that afforded by the fallen walls of their home.

Our life of eight days in the cañon, though devoted to the study of the ruins, never be-

came monotonous. To speculate, as we sat around the mess-cloth or the camp-fire, upon the manner of men who built so well yet so stupidly; who advanced so far in masonry yet so lagged in architecture and engineering; who made fine pottery, as millions of fragments attested, yet in carpentry used only implements of stone; who built strong fortresses at commanding points, yet for still more elaborate structures chose sites over which an enemy might sit and stone them to death at leisure—to speculate was our diversion. When engaged with tape-line and compass there were toppling walls to be avoided and cavernous openings to be crossed. The latter offered access to many hidden ruins, at risk of living burial or of death from the bite of poisonous creatures. Of these there were tarantulas, centipedes, and rattlesnakes. But poisonous creatures were not the only inhabitants of the ruins. Thousands of pretty swifts darted like sunbeams over the old stones; horned toads, ugly but harmless, were more

had discovered the day before “up two, tree pair stair.” We galloped a dozen miles eastward and reached the head of the cañon, whence, having mounted a sand-bar which stretched across the way, we saw, two or three miles farther on, the “kintail” of our search. I suffered the Indian to go on alone, while I waited to enjoy the rare beauty of the scene and to conjure back the beings who had had the good taste to select such a charming site and the sense and skill to build so enduringly. The pile was lordly even in its ruin, bearing a strong resemblance to some of the ancient feudal castles of Europe. Standing upon the crest of a long, gentle swell, it overlooked a dozen square miles of rolling country, which seemed even now to be white and yellow to the harvest. Behind the structure there stretched for miles what appeared in the distance to be an orchard of wide-spreading trees; and in front there wound the course of a pretty brook.

From Chaco Cañon, New Mexico, the site of the grandest of the ruined pueblo



LANDSCAPE IN CAÑON DE CHELLY.

rarely seen; rabbits scurried from shelter to shelter; ravens, blacker, glossier, and far larger than I ever saw elsewhere, hopped and croaked and flopped away before the intruder; and coyotes, aroused from their midday naps, skulked to other hiding-places in the cliffs.

One morning I started, under the guidance of Manuelito, to visit a ruin which he said he

tures, to Cañon de Chelly, Arizona, the ancient home of the most flourishing community of cave-dwellers, was a week's journey, not including a short stay at the Navajo agency for repairs and supplies. The southernmost entrance to Cañon de Chelly lies forty-five miles north of Fort Defiance, the agency of the Navajos. The way for the most part runs

through a magnificent pine park—a feature of the highest and most exposed of Western forest plateaus. It is a fine country to look upon, its trees being the tallest and most shapely of their species, while the sward beneath is entirely free from the undergrowths which are common to Eastern woodlands; but it lacks water.

The neighborhood of the cañon is first made known by an ominous crack in the general level a few hundred feet to the right, and the trail swerves a little to the left as if to avoid its dangerous proximity. A mile farther on

sula. When we had crossed the isthmus we halted to await the train, guiding it by voice and gesture as it came in sight above, for the bare rock of the shelf retained but faint traces of the trail, and a mistake might have had a fatal ending. From our standpoint the stream which winds through the cañon was for the first time visible—a silver thread more than a thousand feet below. Despite the distance and the threatening path before us, the discovery was reassuring, for that gradual revelation of the depth as experienced in our sidling approach



RUINED CAVE VILLAGE, CAÑON DE CHELLY.

the trail turns sharply to the right along the foot of a low rock wall, and, gently descending, approaches the brink of the chasm, which has here attained three hundred feet in width and shows the ragged jaws of the Inferno. Narrower grows the rock-shelf and nearer comes the edge of the widening abyss as we proceed, crowded by the wall more and more to the right; and now another yawning gash opens directly in front.

At this point Navajo Charley, our new guide, turned, and, almost doubling upon the path we had traveled, led the way down an incline of forty feet to a narrow rock isthmus which afforded a passage to the top of a bold penin-

had raised fears that the gorge was bottomless—that the globe had cracked asunder.

The further descent was not dangerous, judging it from a frontiersman's standpoint, but I remember entertaining a wish that my pony had a few prehensile members, and that human knees and shins were less susceptible to impressions of cañon scenery. The train was again far behind, and I was wondering how the heavily laden mules could pass around and between obstructions which left hardly room for ourselves, when noises began to reach us which were not comforting. The caves and fissures of the opposite wall uttered oaths; the cañon to the right and left waxed emphatic and blasphemous.



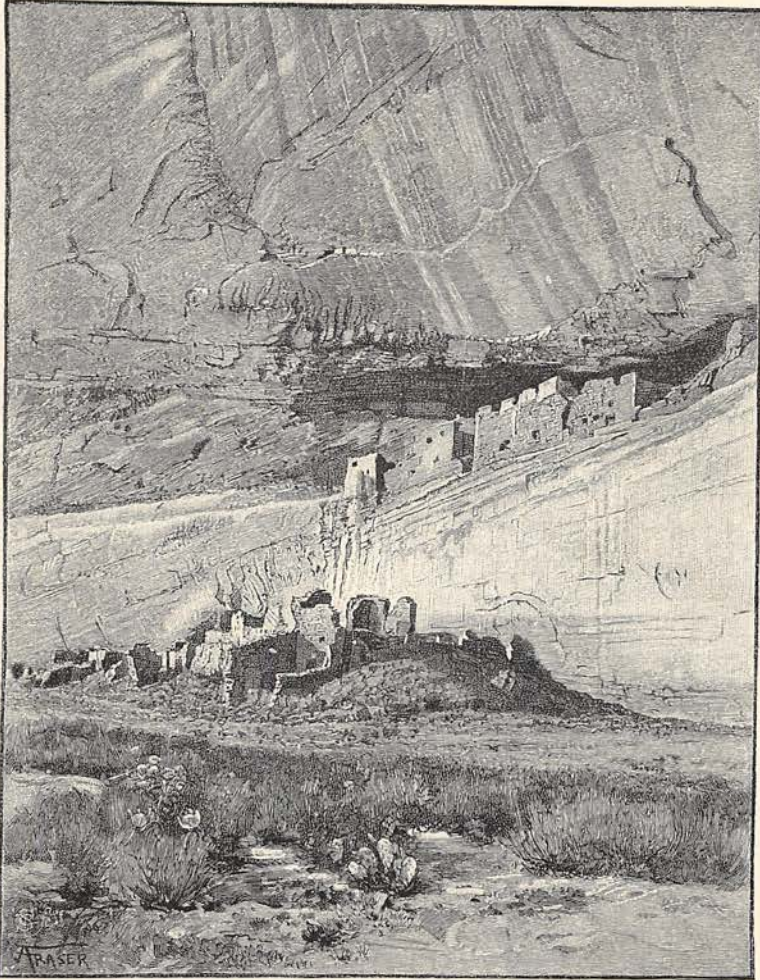
A CLIFF VILLAGE, MONUMENTAL CAÑON.

mous; even the streak of blue overhead grew profane. The tones were Ellison's, who was five hundred feet behind and as far above us. Then Hogan was heard heaping blessings upon the head of Old Bones, our leading pack animal, for wishing to roll down the side of the mountain regardless of all before her. A shrill outcry, followed by the crashing and bumping of a great boulder as it tumbled to the bottom, brought us to a halt. During the silence which followed I tried to find out what had happened, but without success. When the caves and fissures resumed their cursings Charley and I passed on. The guide had friends in the cañon, and when we had reached the bottom he galloped on alone, feeling confident, I presume, that his charge might be trusted not to wander from a path which was hemmed in by walls a thousand feet high.

First impressions on coming into the near presence of vertical or overhanging altitudes like these are disappointing. Emotions correspondingly deeper than those excited by rock forms a hundred feet in height have been expected but are not experienced. The true estimate of the grand surroundings is a thing of

growth. Ordinary standards of comparison are lost. Distances, sizes, heights, appear to alter with every change in point of view. Yonder wall seems but a few hundred yards away, yet that speck creeping along its base is a man on horseback, and those other specks, crawling like insects over its talus, are sheep and goats. Look up towards the zenith and the crest of the near precipice fringed with tiny bushes intervenes. Move to a safer distance and look again; the mountain still overhangs you. Move again and again and that impending top of creation follows and threatens you. Then when the brain becomes dizzy, when the eyes ache from their unaccustomed directions, when the muscles of the neck refuse longer to hold the head in a position to look upward, a conviction finds lodgment that the surface of the earth is far away.

The sounds of the cañon are almost as bewildering as its sights. That rushing, awful "swish" is not a tornado, nor yet an avalanche, but the flight of a flock of little jays from side to side of the pocket on the left. That music does not proceed from a crevice half way up the face of the opposite wall, but is the noise of a Navajo singing as he rides



THE WHITE HOUSE, CAÑON DE CHELLEY.

down the cañon, perhaps three miles away. That ear-piercing, blood-curdling combination of rumble and screech is not the blast of a dozen river steamboats in unison, but the voice of Calamity Jane, who has reached the bottom last of the train and is calling to her fellow-mules just coming into sight around the corner.

We selected for our first camping-place a V-shaped pocket upon the west side of the cañon, having an area of about an acre. Opposite its mouth stand the Captains—twin monumental rocks from which the monumental cañon takes its name. The taller is seven hundred and forty-two feet from base to summit and only seventy-five feet in width at any point. It was hard to believe that Washington Monument if placed beside this tapering shaft would reach but two-thirds of the way to its top; but the rock was dwarfed by the stupendous walls about it.

Cañon de Chelly (a senseless corruption of

the Indian name, Ségy) and its two principal branches, Monumental Cañon and Cañon del Muerto, have an aggregate length of more than forty miles. They vary in width from two hundred to three thousand feet, and their walls, which are precipitous throughout, are from eight hundred to fourteen hundred feet in height. Through all the branches there run streams of clear water uniting in the main cañon to form the little Rio del Chelly, which loses itself in the sands of the northern desert soon after it leaves the shelter of its native rocks. The soil of the cañon, though light, is fertile, and under the tillage of a more intelligent race would bear rich crops. Peaches, watermelons, and cantaloups, all of excellent quality, were abundant during our visit, but Navajo prices would impoverish a Wall street king. Corn, too, was abundant, but it was overripe for our use. The place is the summer home of a considerable community of In-

dians, and a favorite resort in the corn and fruit season for the western half of the entire tribe. Though not comparable in grandeur to the Grand Cañon or the Yosemite, it is nevertheless one of the most beautiful of Western cañons; and when the Navajo nation shall have fulfilled its destiny, be it extinction, civilization, or removal, this will become one of the show places of a marvelous plateau region. The September climate of the cañon is enchanting. No storms are to be looked for, because the rainy season is over. The midday sun is likely to be oppressive, but there is always the cool shade of the overhanging rocks for shelter, while the mornings and evenings are balmy and springlike. The nights upon the plateau above are frigid, and heavy frost forms upon one's blankets, but down in this gorge the mountains which have absorbed the heat of the day give it back at night.

Our first day's exploration was towards the head of the main cañon. The guide said that all the larger ruins were in the other direction; but recalling our experience in Chaco, we determined to examine the outlying groups first as a sort of preparatory course of study. We had an impression that we could begin at one end of the cañon and examine all the groups — one hundred and thirteen in number — *seriatim* as we traveled northward, an impression which did not outlast the day of its birth.

To the observer riding along the trail the ruins look not larger than dovecotes, and they have the property of seeming no nearer after one has climbed up two or three hundred feet towards them. One readily undertakes the ascent persuading himself that it is an easy task to mount the sloping talus, but, the jaunt accomplished, there is a sense of having had exercise enough for a day.

In the innumerable windings of the cañon there are found usually upon the concave side huge weatherings — places from which

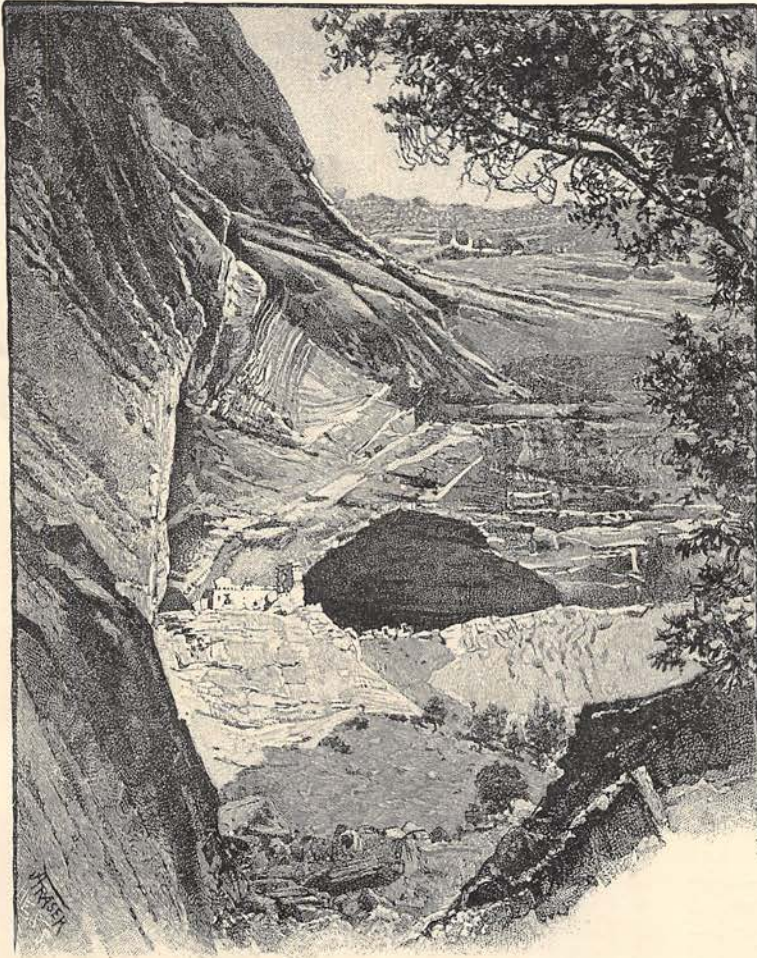
masses of the bedded strata have fallen, leaving shallow caves with sloping bottoms and high overarching tops. The detritus at the feet of the cliffs often affords means of access at some point to these retreats, and in such the ancients usually built their homes. Many groups are wholly inaccessible to moderns, later detrition having left wide intervening spaces of the smooth vertical rock. In some cases after climbing mountains of detritus the adventurer finds it necessary to pass long distances along narrow shelves of rock, whence a fall would result in quick destruction; or to climb over the smooth talus by means of footholes of the size and shape of shallow tea-cups. Other ruins are accessible only by rope climbing, a lasso having first been thrown over a projecting pole or knob; and still others can be gained only by "shinning" up notched log ladders, some of which remain in place from the ancient days.

The cave-dwellers built rubble walls and plastered them over smoothly, outside and in, with mud. With the exception of two or three groups, the work displays nothing worthy of



SOUTH SIDE OF CAÑON DEL MUERTO.

consideration in respect to architectural design, the structures usually conforming closely to the sinuosities of the rock which always formed their rear wall. Their masonry is in no sense comparable to that of the builders of the great Chaco pueblos, but is very much like that of the living Pueblo Indians. Two



MUMMY CAVE AND VILLAGE, CAÑON DEL MUERTO, ARIZONA.

groups only are found upon the cañon bottom, and one I am sure (probably both) dates from much earlier times than those in the caves. In one of them a small section of the banded wall, the exact counterpart of those found in Chaco, remains.

The cave villages are found sometimes only thirty feet from the level, sometimes eight hundred feet. The reason why such sites were selected does not fully appear; doubtless protection and defense were controlling motives, but whether from floods to which the cañon is subject in winter and spring, from outside foes, or from one another, nothing remains to tell. Certainly the motive was a strong one, for the undertaking contemplated not only the carriage of building materials upon human shoulders up the steeps in the beginning, but thereafter and perpetually food, fuel, and water. The conclusion so often and so easily reached, that these were places of refuge from

the raiding attacks of the more powerful nomadic races or of enemies among their own kin, while perhaps the best that offers, does not wholly meet the requirements of the case; for, unlike the Chaco structures, these groups, with half a dozen exceptions, had no water-tanks, and their occupants would have been at the mercy of any who were strong enough to drive them to their caves. So far as appearances go they seem to have been, not the places of occasional retreat, but the regular, permanent abiding-places of their builders. They may have been storehouses and the winter homes of a race which in summer dwelt in temporary structures upon the cañon bottom. The water question would of course have been one easy of solution during the period of deep snows and floods. If this be the answer to the riddle it may be said that the ancients were wiser than their successors the Navajos; for the latter, to the last man, woman, and child, leave the

cañon walls at the season when shelter would seem to be most desirable, and spend the winter upon the bleak plateau above.

The traces of fires are found in the ruins, and the smearings of prehistoric gravies and soups are occasionally discoverable. Rock paintings abound. Hundreds of the shapes of human hands—the autographs perhaps of the dwellers—are found adorning the now inaccessible roofs of some of the caves. They were formed by thrusting the hand into the liquid coloring matter and slapping it with fingers extended upon the rock. Symbols are frequent: the dragon-fly, the rainbow, the sun—objects of reverence to the living Pueblos. Few animals were pictured; the elk, the antelope, the red deer, and the coyote being most numerous represented. Fowls of an unrecognizable species, and occasionally represented with one or more superfluous legs, are found. As works of art these paintings rarely rise above the rudest of school-boy drawings; but sometimes rather elaborate scenes were attempted. The most remarkable I studied for an hour with the glass, seated three hundred feet below, but could make little of its meaning. It was probably a battle scene, but it might have been a dance or a sacrifice. A row of thirteen black forms were pictured as marching elbow to elbow, and below them was a second row of seven similar but headless forms. Two forms in yellow, the larger leading the smaller by the hand, were represented as running away from the advancing rows, while a gigantic figure in black standing upon the head of a yellow bull-frog was shown in the act of hurling javelins at the approaching army. The cave dwellings were ruins before the Spanish invasion; otherwise this might be supposed to represent that event. If it be taken to be a battle scene, as it appears, the query suggests itself, What earlier race than the Spaniards ever fought in platoons? A great many other human forms are pictured upon this rock, but their relationship to those described could not be determined.

Unless I have greatly mistaken the purpose of certain queer little contrivances of masonry, some of the members of the smaller communities—boarders probably—had for their bedrooms cells like elongated ovens stuck upon outlying ledges too narrow for other use, into which they went feet foremost. To reach them they scaled escarpments over which a rabbit, unless the most foolhardy of his kind, could not be driven or tempted. There were little nests of this kind for children also. A civilized father would as lief hang his child out of a fifth-story window to sleep.

The most remarkable group of ruins for situation is found in a narrow pocket or branch of Monumental Cañon two or three miles

south of the Captains. It is about seven hundred feet above the bottom of the cañon, which is here very narrow; and I shall despair of conveying any adequate idea of its situation and surroundings without permission to make use of a far-fetched illustration. Cleave the auditorium of a large theater midway between the entrance and the footlights and insert the part which does not contain the footlights into the upper half of a thousand-foot precipice. Remove the galleries, but in their place let there be a series of narrow ledges at the back of the concavity with zigzag connecting ledges between the lower and the upper ones. Raise the roof a hundred feet and knock out the floor entirely. You will then have spoiled your theater, but you will have made a fair model of the site of this village. Place two cheese-boxes and half a dozen tea-chests upon the uppermost ledge and you will have a model of the village itself as it appeared to us from the top of the slope two hundred feet below. There were structures on the lower ledge also, but they were of a humbler character than those above, though doubtless also once occupied as dwellings.

The finest group of ruins in these cañons,—though not the largest,—and probably the best specimen of the handiwork of the cave-dwellers in existence, is known as the White House. Its site is a cave whose floor lies about thirty feet above the bottom of the cañon, and is accessible only by rope climbing up the vertical face of a perfectly smooth precipice. The first line of structures have their fronts flush with the precipice, their position, together with their little loophole windows and irregularly castellated tops, suggesting that they were designed as the outer line of a strong fortress. Rising above this line are seen the walls of an inner and smaller structure, which, being painted white, forms a conspicuous and attractive feature in a most remarkable landscape. Above, nine hundred feet of smooth bellying rock so overhangs the place that a plumb-line from its crest would pass about seventy feet in front of the outermost wall of the old village. The cave has a lateral reach of ninety-four feet and a depth of forty feet. The ruin is called by the Navajos something which signifies “the abode of many captains.” Without doubt it was the home of authority and comparative wealth. It is the only painted cave-dwelling of which I have any knowledge. Its walls are well preserved, and those of the inner buildings bear evidence in their rude ornamentation of the superior taste of its dwellers. Dados with borders of saw-teeth and rows of dots all in yellow paint adorn the rooms, the alignment of which is better and the plastering smoother than usual. There are seventeen rooms in this cave.

Upon the cañon bottom just below the White House there stands a ruined pueblo much larger, and apparently of much earlier date, than the cave ruin.

The largest group of ruins in this vicinity, and probably the largest of its class — cave-dwellings of masonry — in the world, is that discovered by Stevenson a year before my visit. It is found near the head of Cañon del Muerto, and is known as Mummy Cave, from the fact that its discoverer found near it an undisturbed cyst from which he removed a well-preserved mummy. The southern wall of the cañon here retreats, forming a wide, shallow bay, around which, at the height of about two hundred feet from the bottom, there extends a sloping shelf which was terraced by the ancients to make the foundation of their village. The crest of the precipice extends far enough to cover the entire group, which was probably the home of more than a thousand individuals. The terrace and all that stood upon it has fallen away, and now forms part of an immense mass of debris which makes the cave more easily accessible than formerly. Only those walls remain which were founded upon the solid rock at the back of the cave, and many of these show little more than the foundation lines.

The evidence of an aristocracy or controlling class is here very striking. The cave is shaped like two unequal crescents joined end to end, and the apartments, or rather cells, of the two portions are small and of irregular form, following the conformation of the rock. At the point of junction, however, covering almost entirely the narrower shelf, there stands a rectangular tower three stories in height, the rooms of which, as well as those in its immediate neighborhood, are larger and the walls and floors much better in construction than those upon either side. The tower commands the village, as feudal towns were commanded by the castles of their lords.

This village contained several tanks, or "estufas," circular in form, and with walls of unusual strength, which were probably designed to hold a supply of water. It is impossible to discover how the ancients managed to fill them, but the water marks down the face of the precipice, above the village, suggested a way in which it may have been done. Conduits, or even ropes, stretched from the crest above to the tanks would have served the purpose in the rainy season. One of these structures, and that nearest to the tower, is unique both in form and ornamentation. It has a large rectangular recess at one side, while narrow ledges surround its interior, broken at two opposite points into steps, as if for descent from the river to the bottom. The inner coating of this apartment is of common clay, and was appar-

ently put on by the later occupants of the village. Where this has peeled off a highly ornamental earlier coating of the interior is disclosed. It was frescoed in geometrical figures of brownish-red, white, and yellow, and the workmanship is such as would not be discreditable to modern artisans. The purpose of this apartment cannot be determined with certainty. Perhaps — nay, probably — it marks the last stage of development which began with the water tank and ended in the place of worship. The modern pueblos have nothing like it.

The Navajos have occupied this region for centuries, and in fact know no other home, although their dimmest tradition hints at a migration ages ago from the far north. They apply the term "Eua-suz-y" — the enemy — both to the ruins and to their builders; but its pertinency cannot be discovered, since their traditions do not tell of wars with the ancients. On the contrary, they account for the departure of the latter by superhuman agencies. The devil, say the Navajos, carried them away, and in his flight took the roofs of the houses with him — hence their roofless condition.

Late in the afternoon, before breaking camp No. 1, Ellison and I went out half a mile from camp to look again at a group we had barely glanced at as we entered the cañon. We found it inaccessible, but while studying it with the glass from the opposite side of the cañon we accidentally discovered another and smaller group which we thought could be reached. It required nearly half an hour of hard climbing to bring us to the spot. The structure proved to be a small one, having only two apartments; but one of them was sealed, showing not so much as the smallest peep-hole. Here was a mystery which we determined to solve at once. All the other ruins, we reasoned, had been subjected to the prying curiosity of the Navajos for centuries; but this had escaped because the savages possessed no glasses, such as by a fortunate accident had revealed its existence to us. That we were on the eve of interesting discoveries we could not doubt. I seized a stone, and attacking the mud cement of the wall soon effected a small hole, and then John relieved me and enlarged the hole to the size of his head. Dank odors, as of decaying mummies and long-entombed mysteries, seemed to come out. We thrust in lighted straw, but it went out as if put into water. John enlarged the hole somewhat and cautiously thrust in his head. He waited until his eyes had adjusted themselves to the gloom, and then said in tones which sounded sepulchral to me: "I see pottery with water in it." *Mirabile*

dictu! Had not pottery with water in it been found in the tombs of ancient Egypt? I pulled him away and thrust my own head into the place. It seemed an hour before I could make out anything, but then I saw just below me a circle with a shining interior. A minute later I had traced a shape, as of a portly human body, lying upon its back, and the circle was upon its chest. There too was a round thing, as its skull, lying near its neck. Then I slowly reached in my hand. "Look out for snakes," cried Ellison, and I drew back as if I already felt their sting. Again I reached in — touched the circle; it moved; my fingers closed upon it and slowly brought it out. "Great Scott, John Ellison! Have I come two thousand miles and turned grave robber for this?" I held in my hand a wooden shell with a fine wire bottom—a common sieve such as every New England kitchen was furnished with in my youth. Had the Eua-suz-y come to this, and did they bury their kitchen ware with their *fat* men? I reached in again and pinched the "corpse." It proved to be a bag of corn. I felt for the "skull," but it rolled away, and in so doing disclosed a curious bottle-neck. I had now become more accustomed to the gloom, and could

make out a variety of articles — hames, chains, hoes, and small ware. Enlarging the hole, I entered and made further discoveries. There were two pieces of ancient Indian pottery, and the round thing with the bottle-neck was a Pah-ute water-bottle of straw and varnish.

John came in and we soberly discussed the matter, reaching the conclusion that these were the hidden relics of some dire tragedy. Some early emigrant traveling with his family and property in a wagon had wandered hither, been murdered, and the evidence of the crime thus concealed. The theory did not quite meet the facts, for how account for the Indian pottery and the water jar? But we had done our best in its construction. The pottery and the bottle were at least curious. *As ugly as anything in the National Museum at Washington,* and I determined to carry them away as such. A week later a villainous-looking Navajo and his wife rode into camp a dozen miles distant and demanded pay for their property. We had robbed not the dead Eua-suz-y, but the living Navajos, the place having been the "safe deposit" of an Indian family who wished to be absent from their home for a time.

F. T. Bickford.

IN DARK NEW ENGLAND DAYS.



THE last of the neighbors was going home; officious Mrs. Peter Downs had lingered late and sought for additional housework with which to prolong her stay. She had talked incessantly, and buzzed like

a busy bee as she helped to put away the best crockery after the funeral supper, while the sisters Betsey and Hannah Knowles grew every moment more forbidding and unwilling to speak. They lighted a solitary small oil lamp at last as if for Sunday evening idleness, and put it on the side table in the kitchen.

"We ain't intending to make a late evening of it," announced Betsey, the elder, standing before Mrs. Downs in an expectant, final way, making an irresistible opportunity for saying good-night. "I'm sure we're more than obleeged to ye,—ain't we, Hannah?—but I don't feel 's if we ought to keep ye longer. We ain't going to do no more to-night, but set down a spell and kind of collect ourselves, and then make for bed."

Susan Downs offered one more plea. "I'd

stop all night with ye an' welcome; 't is gettin' late—an' dark," she added plaintively; but the sisters shook their heads quickly, and Hannah said that they might as well get used to staying alone, since they would have to do it first or last. In spite of herself Mrs. Downs was obliged to put on her funeral best bonnet and shawl and start on her homeward way.

"Close-mouthed old maids!" she grumbled as the door shut behind her all too soon and denied her the light of the lamp along the foot-path. Suddenly there was a bright ray from the window, as if some one had pushed back the curtain and stood with the lamp close to the sash. "That's Hannah," said the retreating guest. "She 'd told me somethin' about things, I know, if it had n't 'a' been for Betsey. Catch me workin' myself to pieces again for 'em." But, however grudgingly this was said, Mrs. Downs's conscience told her that the industry of the past two days had been somewhat selfish on her part; she had hoped that in the excitement of this unexpected funeral season she might for once be taken into the sisters' confidence. More than this, she knew that they were certain of her motive, and had