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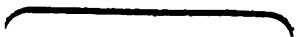
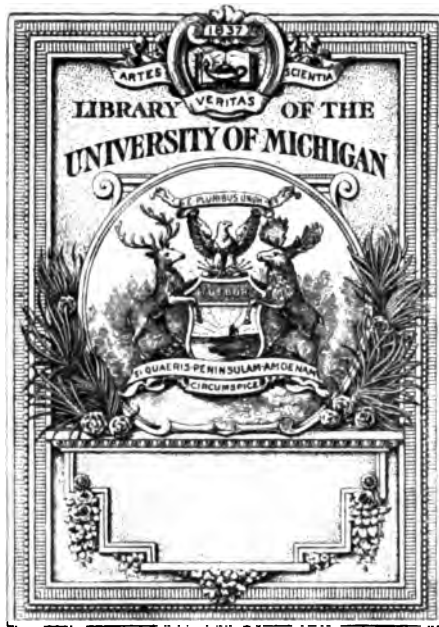
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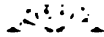
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VOLUME XXI.

JANUARY--NOVEMBER, 1899.

♦♦ —

REV. STEPHEN D. PEET, Ph. D., EDITOR.



CHICAGO
175 WABASH AVENUE.
1899.



THE
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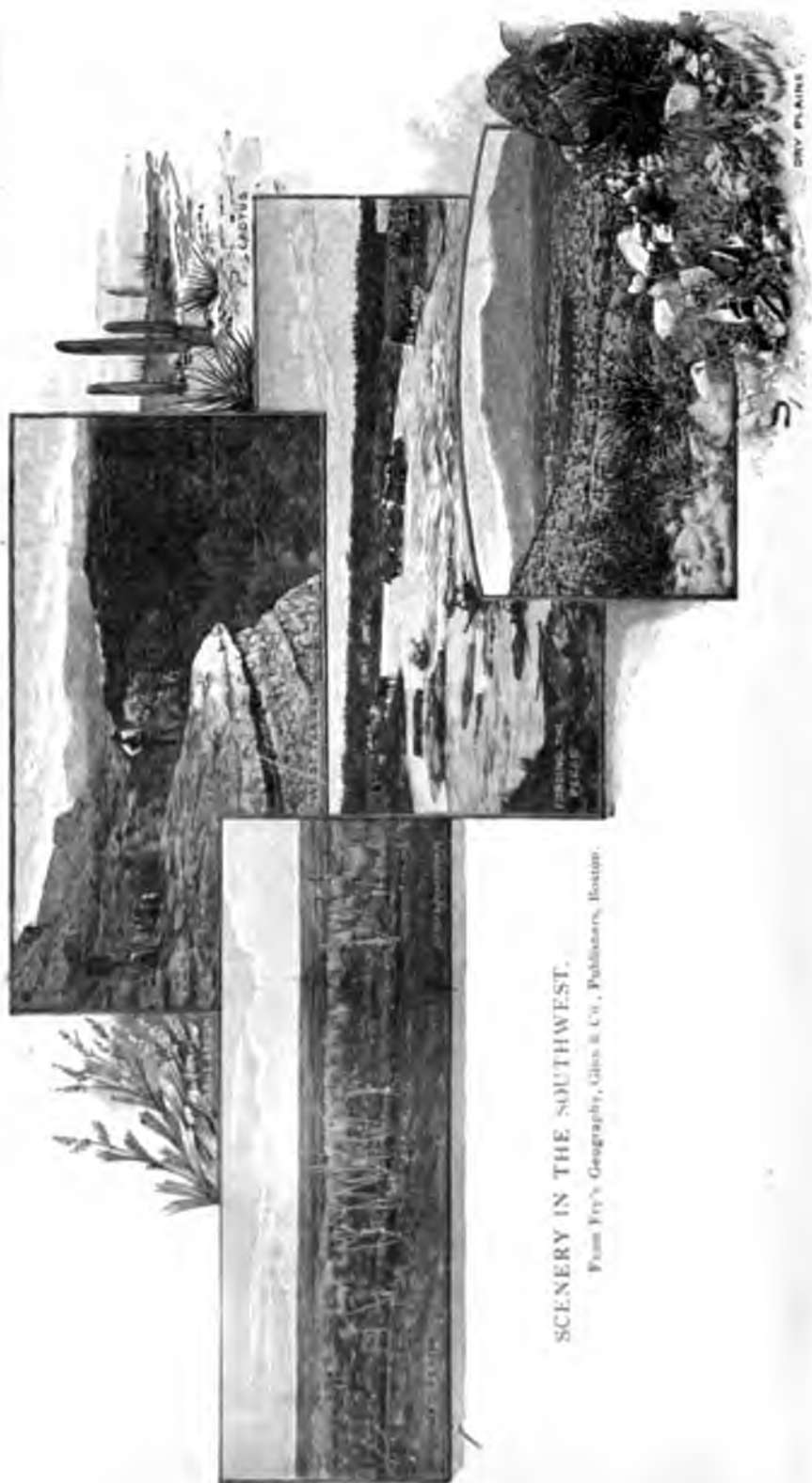
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SCENERY IN THE SOUTHWEST.

From Fry's Geography, Atlas & Co., Publishers, Boston.

THE
American Antiquarian.

VOL. XXI.

JANUARY AND FEBRUARY, 1899

NO. 1

THE TRAVELS OF A BUDDHIST PILGRIM.

A. D. 399-414.

BY HERBERT H. GOWEN.

Were the Geographical Societies of the present day to decide to make their awards retrospective, there is certainly no name which would rise from the far past with so strong a claim to recognition, or so little to fear from an "advocatus diaboli" as Kung of Wa-yang, better known by his monastic name of Fa-hien.

Just 1,500 years ago this intrepid traveler and scholar set out on his journey, and fifteen years elapsed before it was brought to its completion. Neither lust of money, nor lust of sport, nor the desire to make or break a record impelled him on his way. He went as a simple Buddhist monk to collect documents to turn light on the introduction of his religion into China. This, the prime object of his mission, he fulfilled, and his adventures by the way are told so modestly so simply, and with so many almost modern touches that the narrative of his experiences is one whose general human interest far overpasses the limits of China, or Asia, or the Oriental world.

He does not dwell much on the difficulties of the way, terrible as they must have been, including the fear of demons as well as the more material obstacles anticipated by modern explorers. The journey over the Desert of Gobi the river of sand—is dismissed in half-a-dozen lines, and once, in his description of Mt. Gurupada, he says: "On this hill hazels grow luxuriantly; and there are many lions, tigers and wolves, so that people should not travel incautiously." Graphically, indeed, does he describe his shipwreck in the voyage from Ceylon homeward, but the one mention of himself strengthening his heart in Kwan Yin the Buddhist goddess of mercy, and committing himself to the "Communion of Saints"—the church of the land of Han—only makes us marvel at and love his simple faith.

If the modern traveler, completing the circuit of the globe

with Puck-like celerity in the course of a few days, or the modern reader imagining the present century unique in its explorers as in other things, will take in hand the quaint book of travels, of which Professor Legge has given us an admirable English version, he will have as his reward some very pleasant hours; and a considerably enlarged bump of veneration for the much abused Celestial, and his physical, moral, and spiritual capacity.

Kung was born in the course of the 4th century of our era, in the department of Ping-yang in North China, not very far from Chang'an where the famous Nestorian monument was discovered in 1625, A.D. Being sent as a child to a monastery to be cured of an illness, he refused, when he got well, to return home. His father died when he was ten years old, but he still declined to go back to the widowed mother, and determined to become a monk. At his mother's death he showed that his love for her had been very real all along, but he went back after her burial to his monastery to become a Srāmanera for the rest of his life.

An incident related of him at this time exhibits in a striking manner the personal courage for which he was afterwards distinguished, and anticipates also the moral of Browning's well known poem "Date and Dabitur." While he and some fellow disciples were engaged in cutting rice, they were attacked by a band of hungry thieves. Fa-hien alone stood his ground and addressed the robbers thus: "If you must have the grain, take what you please. But, sirs, it was your former neglect of charity which brought you to your present state of destitution, and now, again, you wish to rob others. I am afraid that in the coming ages you will have still greater poverty and distress. I am sorry for you before hand." The thieves, we are told, retired, admiring his courage and wisdom.

After completing his novitiate and taking full Buddhistic orders, Fa-hien started out on his ever memorable journey in search of copies of the Vinaya-pitaka.

The undertaking was beset by dangers, the unknown even more numerous than the known, the way was strange, the people strange, the language strange. Indeed, the sole tie which bound him to the people among whom his fifteen years exploration was spent was the tie of religion, and it is no slight tribute to the reality (at that time) of Buddhism as a religious (and not merely philosophical) system, that for those fifteen years he seems to have been treated, foreigner as he was, with respect, consideration and kindness.

Let us briefly follow the route which he and his four companions took, pausing here and there to mark some of the interesting things he has to tell us.

Leaving Chang'an he proceeds directly westward, crossing the Hoang-ho and stopping for the summer retreat in the then

kingdom of "the western Tsin." This annual retreat was one of the most ancient institutions of Buddhism, and a very useful one. In India it was the rainy season which was thus spent, but the Chinese Buddhists naturally observed instead the hot summer season. The time was spent in study and devotional exercises, and ought to have borne good fruit in the general character of the monastic order. But the time of retreat—four months—was longer than would suit modern ideas. Nowadays the clergy are fortunate if they get a week's retreat in the course of a year. However, the Oriental generally takes life as though the years of Methuselah were before him.

They had a second summer retreat further west before they passed the Great Wall, and then, with the little band considerably augmented, they came to the great desert of Gobi. Fa-hien gives a graphic description of the "river of sand," infested as he believed by evil demons as well as by hot winds. "Travellers" he says, "who encounter them perish all to a man. There is not a bird to be seen in the air above, nor an animal on the ground below. Though you look all round most earnestly to find where you can cross, you know not where to make your choice, the only mark and indication being the dry bones of the dead."

Seventeen days' journey (during which they must have traveled twenty-five miles a day) across the desert brought them at last to the kingdom of Shan-shen,—near L. Lob—and they were delighted to find in the kingdom no less than 4,000 monks, and a king professing the Law. So, in all the kingdoms through which they passed they found even the common people keeping the rules, and in spite of the peculiar "barbarous speech" they felt a real bond of fellowship between the people they encountered and themselves.

At a place called Woo-e they stayed two months, and perhaps outstayed their welcome, for we find their hosts accused of forgetting the duties of propriety and righteousness, and treating strangers in a niggardly manner.

Then, while some turned back disheartened by this rebuff, Fa-hien and the others journeyed to the southwest through an uninhabited country, in which we can well believe that their difficulties in crossing the rivers and gorges were almost insurmountable. However, in another month they arrived at the important city of Khoten, where there were "several myriads" of monks, and where the pilgrims were struck by the liking of the inhabitants for religious music, a trait of the Khoteners mentioned by other travelers since Fa-hien. The stay here must have compensated them for all their past labours, since the monasteries containing in some instances 3,000 monks—seem to have been very comfortably provided for visitors. We might almost imagine Fa-hien describing a visit to the Grande Chartreuse. The monks come to their meals at the sound of a bell, they enter the refectory with demeanour of reverent

gravity, perfect silence is maintained during meals, and all orders are given by signs of the hand.

After staying to see a grand procession of images, the pilgrims left Khoten and came in twenty-five days to another important city, possibly Yarkand, where the king was a strenuous supporter of the Law. Thence, crossing the "Onion Mts.," they came to Yu-hwuy where they kept their third retreat.

Next, crossing the Indus, they came to a large city, probably identical with Skardo, where they were fortunate enough to participate in a great quinquennial assembly of monks from all quarters. It was a great spring festival, first instituted, it is believed, by King Asoka as an ecclesiastical conference. It must have been a gay scene, with silken streamers, and canopies, water-lilies in gold and silver, and the streets covered with mats and crowded with moving masses of people.

Here for the first time relics of the Buddha begin to appear, a stone spittoon and a tooth which had belonged to him being among the particular treasures of the monks.

It is instructive to note that the travelers here actually condescend to notice the natural productions of the country, or rather to remark that the plants, trees, and fruits were all different from those of China, with the exception of the bamboo, pomegranate (guava?) and sugar cane.

After another month's journey westward, they completed the crossing of the Onion mountains and entered northern India probably by the ancient kingdom of Darada, where Fa-hien's attention is attracted by a huge image of Maitreya Bodhisattva the Messiah of the Buddhists, now awaiting in heaven the proper time to commence on earth his dispensation of gracious kindness. Tradition said that the image had been made according to the pattern seen in the Tushita heaven by a holy Arhat, and on fast days it was said to emit an effulgent light. Not a bad parable this of the real fact that the light of the true Christ is only to be seen by us in proportion as we repress and get rid of self.

Following the course of the mountain range to the southwest they now had a perilous route before them. "When one approached the edge . . . his eyes became unsteady, and if he wished to go forward in the same direction there was no place on which he could place his foot, and beneath were the waters of the river Indus. In former times men had chiselled paths along the rocks, and distributed ladders on the face of them to the number altogether of 700, at the bottom of which there was a suspension bridge of ropes by which the river was crossed, its banks being there eighty paces apart."

The accuracy of our author is strikingly attested in the following quotation given by Beal and others from a modern traveler's description of the same place. "For upwards of a hundred miles," says Cunningham, "the Indus sweeps sullen and dark through a mighty gorge in the mountains, which for

wild sublimity is perhaps unequalled Between these points the Indus races from side to side of the gloomy chasm, foaming and chafing with ungovernable fury. Yet even in these inaccessible places has daring and ingenious man triumphed over opposing nature. The yawning abyss is spanned by frail rope bridges, and the narrow ledges of rocks are connected by ladders to form a giddy pathway overhanging the seething caldron below."

In this neighborhood, it is interesting to note that, in answer to the queries of the monks, Fa-hien affirmed that the religion of Buddha had been introduced into China in the reign of Emperor Meng. (A. D. 58-75). That emperor had his famous dream of the universal savior born in the west in A. D. 61, and his ambassadors sent to discover the new-born monarch, penetrated as far as the kingdom Gondophares in northern India, and took back with them the first written life of the Buddha. It is a point which must always provoke considerable interest in christian minds that independent christian tradition has made the Apostle Thomas a resident at the court of Gondophares at this very time, and it is of course possible that the ambassadors of Mengti took back with them a distorted version of his preaching. This theory, if tenable, would serve to explain more than one remarkable coincidence in the lives of Buddha and Jesus.

Arrived in India, Fa-hien found himself in the midst of holy sites and wonder-working relics of his great Master. In one place was the footprint which was long or short according to the ideas of the beholder, a relic with the same moral as the statue of Christ which was said always to be just a little taller than those who measured themselves against it. At another spot was the place where Buddha converted the wicked dragon, an achievement paralleled in the life of St. Anthony. Everywhere there were traditions of the Master's self-sacrifice in various lives that he had lived on earth. Here he had ransomed a dove from a hawk with his own flesh; here he had given his eyes for a man; here his head for another man; here his body to feed a starving tigress. No shrines of Medieval Catholicism were ever so richly dight as these sacred topes, at which kings, ministers, and people vied with one another in the costliness of their offerings,

The monks of this part of the country had evidently had some painful experience to guide them in their hospitalities, for we find they had made a very wholesome rule by which traveling pilgrims would be freely entertained for three days, after which time they must find quarters for themselves.

In a short time they came to the kingdom of Parushapura, the modern Peshawur, where among other holy objects they found the wonderful alms-bowl of Buddha which had resisted the efforts of eight elephants to move it when a thievish prince tried to take it away. One singularly beautiful quality

is recorded of it, which reminds us of the immortal comment made by Christ on the widow's mite. "When poor people," says Fa-hien, "turn into it a few flowers, it becomes immediately full, while some very rich people, wishing to make offerings of many flowers might not stop till they had thrown in hundreds, thousand and myriads of bushels, and yet would not be able to fill it."

When men offer flowers to God they cannot have wholly false notions of the Supreme Beauty, and with such an almsguage as the bowl of Buddha, their religion cannot have been altogether external and formal. Everywhere offerings of flowers seem to have been in request, and in connection with one place was the legend that there the Bodhisattva had purchased with money five stalks of flowers to present to the Buddha. It is an edifying contrast to that which exists in the churches of continental Europe, particularly Italy, where no abundance of flowers seems to prevent the altars being disfigured with abominable imitations, laden with the dust of weeks or months.

Other relics can hardly have been so conducive to "pure religion and undefiled," as for example, the tooth and flat bone of the skull of Buddha, and when some even claimed to possess his shadow, they had certainly strayed far from the substance of his teaching.

Near these sacred sites one of Fa hien's comrades fell ill and died, and the rest staying behind with him our pilgrim went forward on his way alone.

Two however seem to have overtaken and rejoined him, for in crossing the Little Snowy mountains, probably the Saifeid Koh, on the way to the Kohat pass, another of the pilgrims died. Fa hien was almost overwhelmed with this disaster, and stroking the corpse cried out piteously, "Our plan has failed: it is fate," but soon recovering his courage he succeeded in crossing the mountains, and spent the summer retreat in the kingdom of Lo e, or Afghanistan.

After this, the two again crossed the Indus and entered the region of the Punjab. The monks here received the foreigners with great sympathy, though looking upon them somewhat condescendingly as striking examples of the power of Buddhism to gather in even men of a "borderland."

The pilgrims themselves must have realized the wonderful prestige of their religion in the land of its birth. As they advanced southeast the monks could be counted by myriads, the kings were devoted adherents and most obsequious to the religious orders, taking off their crowns before them and supplying them with food from their own hands.

Going still south their wonder was increased at the prosperity and happiness of the people at what was called "the Middle Kingdom;" a wonder which we may share, especially when we learn the nature of their political and social institu-

tions. It must have been a very paradise for the vegetarian, the prohibitionist, or the disciple of Henry George. The people had not to attend to magistrates or their rules, those only who cultivated the royal land had to pay a portion of the gain in taxes. The king governed without decapitation or any form of corporal punishment. Criminals were simply fined. All the king's officers and attendants had salaries (!). None of the people killed any living creature. No intoxicating liquor was known. There were no butchers' shops or liquor saloons in the land. Moreover, the priests had their temples well endowed with fields, houses, gardens, and orchards, and the records of the grants were inscribed on metal plates and handed down from king to king.

From this realized utopia Fa-hien journeyed on along the course of the Ganges to Sankasya, where he recalled many of the legends of Buddha, notably the story of Buddha's gracious treatment of the woman Utpala. When the kings and their ministers came to meet Gautama, she said, "I am but a woman; how shall I succeed in being the first to see him?" And Buddha by his power transformed her into the appearance of the king of kings so that she did reverence to him before all the rest. There is a touch here of the high position accorded to woman by christianity. Indeed, in more than one legend of Gautama we are reminded of the intercourse of Jesus with the woman of Galilee. As Christ allowed them to follow and minister to him, so Gautama allowed the women of India to embrace the Law. As Christ cast seven devils out of Mary Magdalene, so Buddha rescued the courtesan Ambapâli for a life of virtue, after she had suffered in many hells. And as the women were permitted to see Christ first after His Resurrection, so Utpala was allowed to worship him before all the kings.

Many other holy places were inspected in this part of the country, but we must forbear the mention of them now, or our journey will take as long as that of Fa-hien.

Crossing the Ganges and passing the city near which the Buddha's toothpick had taken root in the ground and grown up to a height of seven cubits, to be, like Aaron's rod that budded, a continual vindication of the Master's authority, they went on to the city of Sravasti, the monks of which place welcomed Fa-hien as the first monk who had ever come from the land of Han. "Strange," said they, with a sigh, "that men of a border country should be able to come here in search of our Law!" We seem here to be in a more modern world. We hear of hundreds of blind beggars getting their living by crowding the steps of the Vihâra, much as they do still round the steps of the cathedral at Hongkong, as their European confreres do before the churches of Rome and Naples. There were, too, ninety-six different religious sects, all erroneous, but recognizing this and the future world, and each having a multi-

tude of followers. One point is even rather more than modern, in that we have not yet arrived at the erection of free wayside houses of charity with rooms, couches, food, and drink for travelers and monks. The entertainment in these inns was gratuitous, but a limit was placed upon the length of time guests might stop.

In felicitating ourselves upon the splendid philanthropy of the 19th century we are often tempted to forget that, just as there were kings before Agamemnon, so there were works of mercy before Europe and America were full grown. Fa hien tells us in another place that in the Indian cities special houses were founded for dispensing charity and medicines. "All the poor and destitute in the country, orphans, widowers, and childless men, maimed people, and cripples, and all who are diseased, go to these houses, and are provided with every kind of help, and doctors examine their diseases. They get the food and medicines which their cases require, and are made to feel at ease; and when they are better they go away of themselves."

Buddhism, though not unmingled with painful egotism and self-consciousness, was distinctly a religion of humanity, and the revolt from the austerity of Brahmanism was of real service in the progress of mankind.

Not only did men fare well under this genial system, but even animals had their good time, for our pilgrim tells us again of a monk who, living for forty years in an apartment of stone, showed such gentleness of heart that he brought snakes and rats to stop together in the same room without doing each other any harm. As to what the poor snakes were allowed to feed on we are not informed.

But we must hurry onwards, only mentioning the most important points at which Fa hien broke his journey. Of course he stayed at Kapilavastu, the Bethlehem of Buddhism, and at Kusinagara, where Gautama died, and in connection with both these places we learn much of great interest. Thence to Vaisali and to Patna, full of the memories of King Asoka, the Constantine of the Eastern religion. He called together the great Synod of Buddhism, about 249 B. C., just as three centuries after Christ, Constantine convoked the Nicene Council. And just as Constantine gave to the church that fatal dowry, of which Dante sings, so Asoka gave the whole world three times over to the monks, on each occasion redeeming it at its full value. What that value was it would be exceedingly interesting to know!

After an excursion to Mt. Garuadi to see where the body of Kasyapa was preserved, Patna was visited, by way of Benares, and here the Chinese traveler stayed for three years seeking out and transcribing documents—a work as heroic in its way as his journeyings over the desert of Gobi and the Snowy mountains. We can well believe that this pre-Christian Tischendorff had no

reason to be idle during those three years, though he found the same rule in vogue with regard to the transcription of the Vinaya as prevailed in the early christian communities. Just as St. Augustine laid down the rule, *Symbolum nemo scribat at legi possit*, so Fa-hien found all the rules transmitted orally from master to master "without being committed to writing."

However, the list of documents copied is a sufficiently formidable one, without taking account of the Sanscrit studies which also occupied the time, so that when the monk went on to Tamlook alone he must have been well satisfied. He went alone, for his one companion was so enraptured with the literary wealth of Patna that, with a prayer on his lips that he might never again be born in a border land, he gave up forever the intention of returning to China. So the solitary pilgrim went on to Tamlook, at the mouth of the Hooghly, where he stayed two years writing out Sutras, and drawing pictures of images.

Then for the first time he took ship. Embarking in a large merchant vessel and arriving after fourteen days at Singhala or Ceylon, the "Kingdom of the Lion."

Ceylon, he tells us, had formerly been inhabited solely by spirits with whom the merchants carried on a thriving trade, displaying their wares with the price attached, and coming back to take up the money. However, in Fa-hien's day these mercenary ghosts had been displaced by a large population in the flesh who afforded another instance of the wide-spread sway of the Buddhistic faith. Here, although it is more than doubtful whether Gautama ever visited Ceylon, there was no lack of legendary material. There was, for instance, the footprint on Adam's peak, over five feet long and two and one-half feet wide, which the Hindus ascribe to Siva, the Mohammedans to Adam, and the Buddhists to Gautama. Of more genuine interest there was, what some has called the oldest historical tree in the world, the famous Bo tree planted more than 2,000 years ago from a slip of the original Bo tree at Buddha Gayâ.

In the midst of the description of all these strange relics come a genuine touch of that nature which makes the whole world akin. Let the incident be told in the words of the narrative: "Several years had now elapsed since Fa-hien had left the land of Han; the men with whom he had been in intercourse had all been of regions strange to him; his eyes had not rested on an old and familiar hill or river, plant or tree; his fellow travelers, moreover, had been separated from him, some by death, and others by flowing off in different directions; no face or shadow was now with him but his own, and a constant sadness was in his heart. Suddenly, one day, when by the side of this image of jade, he saw a merchant presenting as his offering a fan of white silk; and the tears of sorrow involuntarily filled his eyes and

fell down." The sight of such a familiar object availed more to overcome the pilgrim than the labors and journeys of years.

His sadness seems to have continued during his stay in the Lion Kingdom; and under this test his religion failed to afford him a present consolation. As the proclamation he quotes has it, Buddha has lived and died, "since that event, for 1497 years, the light of the world has gone out, and all living beings have had long-continued sadness." The passage affords an interesting point of comparison with the teaching of Him who said, "Your joy no man taketh from you;" "Lo! I am with you always even to the end of the world;" "I am He that liveth and was dead, and, behold, I am alive for evermore."

After two years spent in the study and transcription of various Sanscrit documents, Fa hien found a merchant ship proceeding eastwards, and took passage. There were about 200 passengers, and a smaller vessel was towed behind.

Of the voyage that ensued it may be said that, with the exception of the narrative of St Paul's shipwreck in the Acts, no more vivid description of peril by sea exists in ancient literature. We see the alarm of the merchants, when the larger vessel springs a leak, and their desire to escape in the smaller one; we see the connecting rope cut by the crew of the latter lest they themselves should be overwhelmed; we hear the night drum sounding on the deck, we see the bulky goods and rich bales of silk thrown overboard to lighten the vessel, we see Fa hien throwing overboard his pitcher and washing basin, and fearful lest the merchants should cast out his precious books and images, thinking with all his heart of the Goddess of Mercy, and committing his life to the church of the land of Han.

Here is a portion of his description, in which, it may be noted, by the way, there is no sign of any knowledge of the compass. "In this way the tempest continued day and night, till on the thirtieth day the ship was carried to the side of an island, where, on the ebbing of the tide, the place of the leak was discovered, and it was stopped, on which the voyage was resumed. On the sea herabouts there are many pirates, to meet with whom is speedy death. The great ocean spreads out, a boundless expanse. There is no knowing east or west, only by observing the sun, moon, and stars was it possible to go forward. If the weather were dark and rainy, the ship went as she was carried by the wind without any definite course. In the darkness of the night, only the great waves were to be seen, breaking one on another, and emitting a brightness like that of fire, with huge turtles and other monsters of the deep all about. The merchants were full of terror, not knowing where they were going. The sea was deep and bottomless, and there was no place where they could drop anchor and stop."

After ninety days of this sort of traveling they arrived at

Java, where Buddhism, says Fa-hien, was not worth speaking of. Here they stayed five months until another large vessel, also carrying over 200 passengers, took them up. Again they were unfortunate in the weather, and, sailors had the same superstitions then as now, they considered it was all through the presence of the monk on board that their misfortune had happened. They wished to put him ashore at first opportunity, but fortunately Fa-hien in this extremity found an influential friend who said, "If you land the shikshu, you must land me too, and if not, you must kill me." So the merchants forbore for awhile. But things did not mend. "The sailing masters looked at one another and made mistakes." Seventy days passed, and their supply of fresh water got very low. At last, changing their course, they came in twelve days to land not far from the present Tsing Chow, to the north of Nanking. Here Fa-hien was received with the honor he had well earned for himself, and though longing to set out for his beloved Changán he consented to stay for awhile at the capital, Nanking, exhibiting his documents and describing his adventures.

Let us honor his intrepidity and patience; let us not fear to put him in the same category with the undaunted Genoese whom we commemorated a year or two ago; and let us give the Buddhist monk credit for the faith and true religious principle which actuated and animated him in his journey of fifteen years through thirty countries.

He was a hero of splendid devotion to stern-faced duty. "When I look back," he says at the conclusion of his narrative, "on what I have gone through, my heart is involuntarily moved, and the perspiration flows forth. That I encountered danger and trod the most perilous places, without thinking of or sparing myself, was because I had a definite aim, and thought of nothing but to do my best in my simplicity and straightforwardness."

We may well, after 1500 years, echo the eulogy passed on him by one of his monkish biographers, and say, "This man is one of those who have seldom been seen from ancient times to the present. Since the Great Doctrine flowed on to the East there has been no one to be compared with Hien in his forgetfulness of self and search for the Law. Henceforth I know that the influence of sincerity finds no obstacle, however great, which it does not overcome, and that force of will does not fail to accomplish whatever service it undertakes."

THE ORIGINAL SIGNIFICANCE OF "MERRIMAC."

BY WM. WALLACE TOOKER.

The writer would not venture to differ with such an eminent authority on Indian linguistics, as Dr. A. S. Gatschet, if he was not absolutely certain that the derivation of the well known name Merrimac from the Algonquian term for the "cat-fish," or the "spotted mackerel," as suggested by Dr. Gatschet, in the October issue of the ANTIQUARIAN is in error, so far as it relates to the New England river.

It is susceptible of demonstration, that in the majority of cases it is almost useless to attempt the translation of these significant appellatives, unless we have the contemporary facts relating to such names. If no search has been made for this historic and linguistic material among the early records and elsewhere, and these aids are wanting, an etymology is almost sure to be evolved at variance with their true composition and application. Dr. Gatschet's suggested derivation of this prominent name reveals this liability only too distinct, and it is apparent he lacked the necessary data, the existence of which has been known to the writer for some time; without it he also might have fallen into the same error.

Beyond question, the river was once one of the most famous fishing-streams in New England; and in the early days its shores were frequented every spring by both the Indians and settlers for that purpose. In fact, many of the early writers refer to the two great fishing stations so frequented, called *Namaskog*, and *Panatucket*,—events which made Dr. Gatschet's suggestion seem probable.

The name *Merrimac*, however, like the names of the fishing stations, had its birth in the Massachusetts dialect, therefore we must look to the works of Rev. John Eliot, the so-called apostle of the Indians, for its origin and etymology. Eliot states that he was a frequent visitor to the river, for the purpose of christianizing the Indians, and that two of his prominent "praying towns" were located there, one above (*Panatucket**) and the other below (*Pawtucket*†) the great falls.

"In his brief Narrative of the Progress of the Gospel amongst the Indians of New England, in the year 1670." (Reprint Boston, 1868; also Pilling's Bibliography, p. 181.) he remarks: "*The seventh town Panatucket is the upper part of Merimac Falls; so called because of the noise the waters make*." It is evident from this almost unimpeachable statement, that the term originally designated the great falls at Lowell, Mass., and from that

* At the Upper stream.

† At the falls in the stream, or at the rapids.

circumstance the river took its name. The reasons given must be considered decisive, provided they can be substantiated from linguistic and other sources, without which we cannot be sure that even Eliot was right.

First, in order to show this satisfactorily, we shall be obliged to quote some fragments of history and deductions drawn therefrom, bearing on its true form. The charter of 1629, to the Governor and Company of the Massachusetts Bay, in New England, recites the bounds of the Plymouth Councils grant to Sir Henry Rosewell and others, (Records of Mass., Vol. I, p. 4) naming "a greate river there comonlie called *Monomack*, alias *Merrimack*, and a certaine other river there cuted Charles river, being in the bottome of a certaine bay there comonlie called *Massachusetts*, alias *Mattachusetts*, alias *Massachusetts bay*." Of the last three variations, Dr. J. Hammond Trumbull, in his letters on the name *Massachusetts*, (Proceedings Amer. Ant. Soc., October, 1867,) has shown that the first name was in correct form, and the others erroneous. He says: "Whence these aliases came it is not now easy to ascertain; the carelessness of one clerk, or the superabundant caution of another or the illegibility of the minutes from which the council's grant was drafted or the patent of 1629 engrossed, may well enough account for their introduction. The patent confirmed the bounds of the earlier grant [March, 1628] aliases and all." The foregoing remarks may apply equally as well in the present case, although Dr. Trumbull does not mention our subject. Some of the early forms are *Monemake* [Map 1631], *Monumack* [1654], *Monumach* alias *Merr.mach* [Josselyn's Voy., 1674]; *Monumack* [1721]; and there are others. This testimony from the archives fully warrants us in accepting MONOMACK or MONUMACH as representing more clearly the Indian utterances of the name; while MERRIMACK, containing the "r" sounds, which Eliot states were not pronounced by the Massachusetts Indians, became on account of ease of utterance, an accepted colloquialism among the colonists, without the slightest consideration for its true significance, and so perpetuated to the present day, as has been the case with all our adopted Indian names.

Second, as to its etymological derivation. Taking these early forms, together with Eliot's dictum, that the falls were "so called because of the noise which the waters make," it will be observed that the meaning must be hidden in its main stem *manum*, *monom* or *monum*; also bearing in mind that in the Massachusetts of John Eliot, the element *man*, *mon*, *mun* are sometimes used interchangeably even in the same verse as we shall presently exhibit. The only cluster word which he employs, containing this component, *manum*, Isaiah 17, 13, affords the best illustration for our purpose, viz: *Wntohitimoinash pish munumuhkcmæ ash onatuh manumuhkcmæ uk monatash nippeash*.

"The nations shall rush like the rushing of many waters." The two words above quoted *munum-uhk-em∞-ash*, and *manum uhk-em∞-uk*, the first has the inanimate plural termination in *-ash*; and the second, that of the third person singular in *-uk*. *Manum*, or *munum*, "noise, sounds," i. e., "a mysterious noise," is the only portion belonging to the main theme, the remainder belongs to the grammar; in other words, *uhk*, is an energizing particle inserted between the root and formative to denote continuous action,—*em∞*, is a formative of motion which Eliot employs in such words as *wus-em∞-og* "they flee;" (Isaiah 30:17), *∞s-em∞-moh* "his fugitives," (Isaiah 15:5). Hence we have the whole passage nearly literal "The nations (i. e., tribes, belongings, or totems they are of,) shall with noises continually flee like noise continually fleeing of his many waters."

In *MONUMACK* alias *MERRIMACK*, therefore, we have the form of a conditional verbal, denoting a place where the action of the verb is performed, i. e., "where there is a noise" or "a place of noises." Thus from his own linguistic labors are the words of Rev. John Eliot corroborated.

BEGINNING OF BABYLONIAN LITERATURE.

The date of the beginning of Babylonian literature is doubtful. Among the earlier fragments of writing to which a date may be assigned are the inscriptions of Sargani of Agadé (about 3800 B. C.). It is possible that some of the many series of tablets "standard works" belong also to that period. A nearer approach to a literary production than the short texts of Sargani of Agadé are the well known lunar omens referring to the reigns of Sargina or Sargon of Agadé (evidently the same as Sargani) and his son Naram-Sin, in which historical events are brought into connection with them. That 3800 B. C. is not the earliest possible date is proved by the discoveries of the American expedition at Niffer, some of the inscriptions found there going back to 3000 or 3500 B. C. [See Hilprecht: *The Babylonian Expedition of the University of Pennsylvania*, Part II, p. 41.]

THE SOCIAL AND DOMESTIC LIFE OF THE CLIFF-DWELLERS

BY STEPHEN D. PEET, PH. D.

The religious life of the Cliff Dwellers was the subject of the previous chapter. Their domestic life is next to engage our attention. This is very difficult to learn about, for there are no records to give us information, no traditions even to give us hints, and very few relics are left which can reveal to us their domestic life. All that we can do is to take the various structures which remain, examine carefully the relics which have been found within the cliff-dwellings, and compare the structures with those which are still occupied by the Pueblos farther south, and the relics found, with those in use, and make out from these a picture which shall fit into the framework which is left.

We have intimated that the survivors of the Cliff-Dwellers, or at least their descendants, may be found among the Pueblos, and the more we study the subject, the more thoroughly are we convinced that our conjecture is true; still there have been so many changes in the domestic life of the Pueblos since the advent of the white man—so much conformity to a modern style of life—that we are liable to be misled if we follow these guides too closely.

There are, to be sure, the same domestic utensils in use now as in prehistoric times; the same contrivances for grinding the meal, for baking the bread; the same shaped vessels for carrying water and holding grain; the same kind of looms for weaving garments and the same primitive spindles for twisting the cotton fibres. There are also the same fashions, or styles, of wearing the outside garment—as it is still the universal custom to place it over the right shoulder and leave the left arm bare—though the material of which the garment is now made differs entirely from that which was common before the advent of the white man. There is also the same style of arranging the hair, especially among the young women. The fashion still is, to make a large puff on either side of the head. There have been but few changes in the religious customs of the people, for the use of the prayer plumes at the dedication of houses and the celebration of the dances, the wearing of the same hideous masks in the dances, the girding of the loins with the same woven sashes, and decorating the body with the same symbolic colors, still continues. The greatest changes have occurred in the tools used in ordinary employments, for the introduction of domestic animals

has brought in the use of the rude solid wheeled cart, and has substituted the common plow for the prodding stick and other contrivances for loosening the soil. The introduction of fire arms, such as the rifle and shot gun, has done away with the bow and arrow, the spear with the stone head, the throwing stick and the war club. Great changes have occurred also in the manner of erecting the walls and fashioning the doors of the ordinary buildings, especially the style of decorating the inner walls of the rooms, as the symbols and ornaments which are so striking in the ruined houses of the Cliff-Dwellers are no longer found in the pueblos. The kivas, or sacred chambers, have also undergone a change. The circular shape has been abandoned, and the oblong, rectangular has been adopted. It is uncertain how long the "Snake Dance" has prevailed, but the snake symbol was evidently in use in prehistoric times, and it is probable that this and other religious customs which now prevail, have survived from prehistoric times, but have greatly changed.

If we bear in mind these changes, and are careful in noticing those things which are peculiar to the Pueblos, and which are not found among other tribes in America, it will be safe for us to take these as clues to the domestic and social life, and perhaps even the religious life, of the Cliff-Dwellers. We do not say that they all prevailed in those northern districts where the Cliff-Dwellers had their homes, but there are so many tools found among the cliff-dwellings, so many symbols inscribed upon the rocks, so many fragments of woven garments, so many strangely decorated pottery vessels, so many rudely fashioned implements of wood and stone which resemble those still in use among the Pueblos, that we are inclined to take them as the key which will unlock the mysteries which are still hidden away among the ruined cliff-dwellings of the north.

It seems strange that so much mystery should hang over dwellings which are so near those which are now inhabited. The valleys of the San Juan and its tributaries, the Rio de Chelly, the Dolores and the Rio Verde, have been often visited since they were first discovered by American travelers. Various expeditions have been fitted out to explore the ruins and gather relics, but many problems remain unsolved. There is the greatest contrast between the two regions; both are situated in the midst of the great plateau and form important parts of the air continent, which arises like a great mansard roof above the rest of the continent, but in one region we have continued sunshine and a scene which is enlivened by a happy and contented people. Here the voice and prattling of children can be heard, and laughter often rings out among the rooms of the many terraced buildings. Young and old cluster together upon the roofs; fathers and mothers and aged grand-parents mingle with youth and make each village lively with their presence. Every house

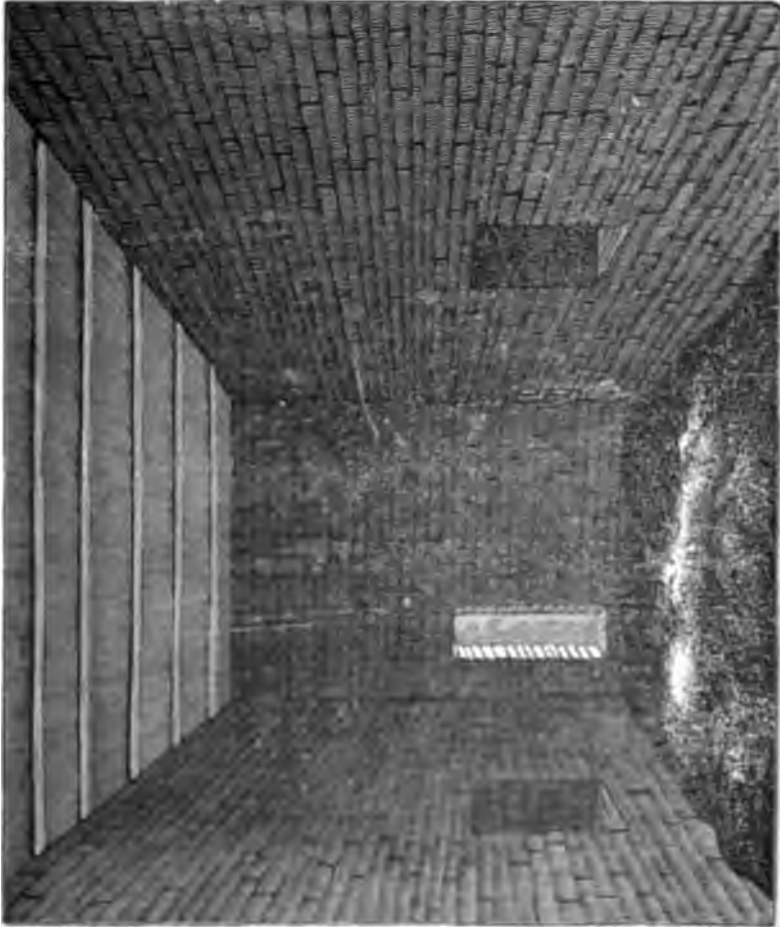


SICHUMOVI, ONE OF THE SEVEN TUSAYAN VILLAGES.



**COURT AT HANO--SHOWING TERRACED HOUSES AND OPENING
TO THE KIVA.**

The above cuts were kindly loaned us by Santa Fe R. R.



HOUSE INTERIOR AT TUPEDO BONITO IN CHACABAMBON.

is filled with a thriving life. In the regions not so very far away, there are deep canyons where the shadows constantly linger. In their midst are ancient and ruined buildings in which not a voice is heard. Silence everywhere prevails, solitude is supreme. Darkness even lingers in the sides of the rocks. The black-winged crow sends out its warning cry against every intruder into its dark domain. The rustle of the leaves of the quaking ash and the whispering of the fir trees make the solitude to be felt. Echoes of the past may be heard in these strange whisperings in the air.

The contrast could not be greater if we were to take the diving suit on board of some great war vessel and plunging over the side, go down into the depths of the ocean to examine the wrecks which lie buried deep below the waters, for there are wrecks in these deep valleys, and even the bodies of those who have perished in the great catastrophe which came upon the people. The framework is all there, but every sign of life is departed; desolation is manifest on every side. Loneliness is the sense which creeps in upon the soil. To trace the domestic life and social conditions of the people who once dwelt in these deserted houses, is a task which we have set before us. We shall use such evidence as we can find.

The works and relics of the cliff-dwellings are to be studied in this connection. We have already received their testimony in reference to the military life and religious habits of the people, and have found many things that were suggestive. It may be that the testimony will be as definite in reference to the social and domestic life.

I. We are to notice, *first*: That the architecture of the Cliff-Dwellers differs from any other on the face of the globe; though it is wonderfully correlated to the surroundings, and was well adapted to the life which the people led. The situation of the houses is particularly suggestive of the life which was led. The following is a description of a series of houses which were discovered by one of the last expeditions which entered that region. It was written by Mr. Louis W. Gunckel, who attended the expedition which was sent out by the *Illustrated American*; he, after traversing the upper part of the valley of the Rio San Juan as far as the McElmo and Hovenweep, went on farther west and explored the box canyons which line the sides of the streams which flow from the west eastward, and join the San Juan near the Hovenweep. These ruins have not been described before. They resemble the ruins of the Cliff-Dwellers on the Mesa Verde. They differ in some points—especially in the fact that there are so many ruined towers which have a modern look to them, and certain rock shelters which were probably used for shrines and places of religious assembly—yet the surroundings give the

idea that they were the last retreats of the mysterious people whom we call Cliff-Dwellers.

The following is Mr. Gunckel's description :

Monarch's Cave is situated in the beautiful Box Canyon near Butler's Wash, about nine miles from the San Juan. The canyon is about one-half mile in length and presents a great contrast to the monstrous and desolate mesa and valley outside. Instead of stunted sage and grease wood we find a luxurious growth of wide spread cottonwood trees, beautiful shrubbery, flowering plants, and fine clear water, which give to the picturesque canyon a park-like appearance. One cottonwood tree measured fifteen feet around the trunk.

At the west end, the highest sand-stone cliffs, curved in with graceful undulating lines which came close together at the front, their weathered surface forming a large cavern about 100 feet above the bottom of the canyon, underneath which is a striking series of cliff-houses, which from their prominent position we called Monarch's Cave. The cliff-house contained eleven rooms on the ground floor; one of which remains two stories in height. They are accessible on the north side, and there, by footholds cut by the builders in the rocky, sloping ledge. Judging from the large



MONARCH'S CAVE.

number of port holes in the ruin, it was built for a fortification. In one room alone we counted twenty-five port holes, pointing in all directions, up and down, so as to command the whole canyon below. The whole aspect of the cave is one of defense and protection.

Directly under the cliff houses, at the bottom of the canyon, is a large spring, measuring thirty feet across, and about five feet deep at the center. The water is clear and cool and would serve as an excellent supply at all times of the year, and the stream which flows from it irrigates the whole canyon to the east. At the back of the cave is a little spring where the water trickles down the rock, causing a thick growth of moss, ferns and creeping vines. This could be utilized in case of an attack, thus obviating the process of descending to the large cave below. The method of roofing buildings is illustrated in these ruins. Two heavy beams are laid across the top, parallel to each other for foundation to the roof. A layer, three inches thick, made of small sticks one inch in diameter, is laid crosswise, then a layer of a lobe mat three inches thick packed down securely, leaving the impress of fingers and hands in the mud.

The building on the north side is two stories high, the upper story is in a good state of preservation, though the floor has fallen through. The en-

trance into this room is by a small door from the cave side, which is reached by walking along a cedar log, laid across from the next dwelling, which served as a passage-way or bridge. Above this log a stone protrudes from the building, which served as a step from the log to the door above. A noticeable fact among the ruins is that several doors, neatly made, have been walled up as if a sudden attack was feared and greater defense was needed. In the north end the beams and rafters and small sticks for the roof, remain in a fine state of preservation, dry and hard. They were not smoky and greasy as in other pueblos.

One thing in this cave not found elsewhere, is that the walls in two or three rooms are composed of a mixture of adobe mud and small round stones and sand. They are, however, hard and serviceable and in a good state of preservation.

Five hundred feet to the north of the cave is a small round tower about six feet in diameter, which served as a watch tower, though rudely constructed and without plaster. About one-fourth of a mile east is a series of steps cut into the sand-stone ledge. By using these one is able to reach the top of the mesa, and it is impossible in any other way.

II. There are other features besides that of situation of the cliff-dwellings, which enable us to understand the domestic life and social status of the people. It is understood that the Cliff-Dwellers were the same people who built the pueblos which are in ruins in the vicinity, but for a long time they were compelled to take refuge in the sides of the cliff to escape from the attacks of their enemies, who invaded their houses, and were at last compelled to remove altogether from the region and make their homes with other tribes farther south. They were, even while dwelling in their lofty eyries, in that organized communistic state which required compact villages, or pueblos, for its truest scope, a state in which all departments of life and all the grades of society were blended together, though the domestic life seemed to be the most prominent feature. The military, religious, social and domestic life embodied themselves in different buildings which were crowded into the sides of the cliff, each one having its own province and use. It is to be noticed that the cliff-dwellings were divided into apartments* which differed from one another, not only in the situation but in shape and character, the use for which they were erected having impressed itself upon their very appearance. It is therefore by studying the various structures which are found in these cliff-villages that we shall learn about the domestic life of the people as we have already learned about their religious, their military, and their industrial life. It may be said that the Cliff-Dwellers lived in villages, each village being a repetition of every other and being made up of the same elements. The only variation was in the relative situation and in the adaptation to a particular location in which they were placed. The peculiarities of the villages consisted of the following:

(1) A row of houses were built on the front of a ledge close to its edge, the wall being a continuation of the precipice; thus

*The towers and "Loop-Hole Forts" were devoted to military purposes, the estufas and shrines to religious, the courts, balconies and roofs to social, the houses and store-houses to domestic, and the cists to funeral.

niches of the cliff at the rear of the houses, but sometimes in openings or ledges of the cliffs above or below, that were easily reached from the houses. (6) In connection with all cliff-villages there was a stairway of some kind. It either consisted of a series of handholds cut into the sides of the rocks to enable the people to climb up to the villages, or narrow places in the crevices of the rocks, which enabled the people to climb down to the villages, or a series of stone steps which went up the cliff part way and were supplemented by ladders or other contrivances. In a few cases villages were placed on inaccessible ledges, and were only reached by ropes which were suspended from beams which projected from the houses, and were climbed by the people who made their refuge in the rocks. (7) There was a spring connected with every village. This was either situated at the foot or side of the cliff and near the houses, and so furnished water to the people. There were near some of the villages reservoirs which were formed by building walls across low places in the rocks, keeping the water back from flowing into the canyon or stream below, which served as a supply of water in dry times. (8) The evidence is increasing that there were irrigating ditches in the valleys, and near the ditches cornfields and places where beans and squashes were raised. Beside these there were garden plats which were formed by making terraces in the sides of the cliff and depending upon the dampness in the rocks for moisture for the garden stuff. (9) There were near some of the villages shelter rocks and circular walls which were used for dances and feast grounds, and there were other places used for shrines, and near the shrines were many symbols. The religious beliefs of the people are seen inscribed upon the rocks. (10) There were inside of the houses various decorations and ornaments which show the taste of the people who dwelt in the villages. These were probably the work of the women, though there was a conventionality among them which suggest a religious symbolism—the same kind of symbolism that was contained in the decorated pottery. (11) There were also fireplaces inside of the rooms which suggest comfort even when the weather was cold and snow was upon the mountains and in the valleys. (12) There were contrivances by which the store houses were made inaccessible by stone doors with locks made from withes, which show that the right of private property was not always respected even here. Whole villages were sometimes protected by stone doors, which were set into the narrow passage-ways and barricaded from the inside. These stone doors made the villages secure but when they were placed in the doorways of the rooms they made them very dark, and we may conclude they were rarely used. (13) The most significant element was the doorway which was built in the shape of a T, the upper part being wider than the lower. The object of this was to allow the men or women who had

loaded themselves with bunches of cornstalks or with vessels of water and had climbed up the cliff, to enter the rooms without taking the load from their shoulders. The doors were not all built in this shape, yet there are enough of them to show that this feature of architecture had grown out of necessities, though it was retained in the pueblos long after the people had left the cliff dwellings, making it probable that at least some of the pueblos were erected subsequent to the cliff-dwellings.

Here, then, we have the alphabet by which we construct the story of the real life of the people. Every different structure



FIG. 1. A CLIFF DWELLING.

which is situated any where near a Cliff-Dweller's village may be said to furnish us a clew to the social conditions which existed. In some we read their military skill, in others we learn about their religious belief, in others we recognize their industrial pursuits, in others we learn about their domestic habits and ways, in still others, we learn about their amusements, their festivities and their joys.

The scenery which surrounded the villages needs only the presence of the people for us to read in it all the forms of life which prevailed in prehistoric times. The desire for defense was the first and chief motive which prevailed in every Cliff Dweller's village. This is seen in the situation of the vil-

lage, and in the location of the houses. It is seen also in the presence of the towers and the loop-hole forts, and in the many projections which were taken against sudden assault, but afterward it was the home rather than the land which was defended, and the military skill was exercised to protect domestic life. The home was the chief thing.

Whatever may have been the condition of society before, it is evident that when enemies began to threaten the people, they were driven together into these cliff villages, and resorted to

them as communal houses for purposes of defense. The family may have been separate from the clan, and lived separately, but incursions by neighboring wild tribes, or by hostile neighbors, and constant annoyance, gradually compelled the removal of families and clans to villages which were more easily defended, and forced the aggregation of various related gentes into one group.

These cliff-villages were filled with bands of refugees who were in constant fear of the fierce and savage people who were continually invading their homes, and had driven them into these fastnesses in the rocks. It seems strange that the people under these circumstances could have retained any culture or refinement, or taste, or skill, and the wonder is that they did not degenerate into a race of savages as degraded and as rude as the people who hunted them. And yet, after all, there is such a contrast between the homes which they had left and the rude huts which were still occupied by the tribes which at last drove them from their fortresses, that we are compelled to say that they occupied a different social status and were much superior to them in every way, and especially in their domestic habits and home life.



PLASTERED PILLAR IN CLIFF PALACE.

III. We will proceed now to describe some of the evidences of taste and culture which may be found in the architecture of the Cliff-Dwellers. We call it culture, even if it was rude and barbaric, for the word is always to be taken in a comparative sense. The very fact that stone houses were used to shelter the people and that these houses had doors and windows, and floors, and roofs, is sufficient to prove their superiority. We do not need to compare these with our modern houses to prove that they were superior to the savages, for the

very fact that they had them, even in rude primitive forms, would show their superiority. Of course, it is not expected that a Cliff-Dweller would build arches into his houses, or that he would use the column as an architectural ornament, for there are not many modern houses that have these. There were not even piers or lintels in these houses, but in their place may be seen the rude masonry at the sides of the doors and the small poles or sticks above the doors. Still every explorer has noticed the skill and taste with which the walls were laid up, and the beauty which was given to them by the rows of stones which constituted the layers, and by the dressing of the stones so as to make the walls suited for the round towers or the square buildings, thus showing that these ancient houses were superior in these respects to the modern pueblos which are still standing.

There was one contrivance which has attracted the attention of several explorers. It consisted in the placing of a solid stone pillar underneath the floors of a room which constituted the second story of a house, and so made to support the room. The explanation is that as the Cliff Dwellers were stinted for space and needed an open court in the rear of the houses, they put a single pillar in one case and two pillars in another case, and so made them supports for the upper stories. The cut illustrates the pillar which was found by Mr. F. H. Chapin in the "Spruce Tree House." The following is his description:

The masonry of the building is all of very good order, the stones were laid in mortar, and the plaster is a rather good one, though, as the centuries have elapsed, it has peeled off in many places. At the north end of the ruins is a specimen of masonry that is to be seen in any other cliff house yet discovered. It is a partition stone pier, which supports the walls of an upper story. It is ten feet in diameter at the top, four feet high. Resting on it are spruce timbers which form a timber floor wall across the pier to the back of the room. Above the pier is a good specimen of a T shaped door, with horizontal and vertical bars.

Mr. Nordenskiöld noticed the same contrivance in "Spring House," a house which was inaccessible except by a rope which was fastened to a beam and extended down from the house to the side of the cliff below. He says:

Here two enormous upright pillars were erected to support an extensive ceiling. Its great height was necessary to give the air space behind the walls of the upper story a circulation of air. In part for the upper story with a floor of spruce timbers, and in part for the walls the builder erected the pillars.

The ornamentation of the walls is another evidence of the superiority of the Cliff Dwellers. All the explorers have spoken of this. Colonel Soper and Mr. Morgan speak of the rooms which were entirely of stone, but the arrangement of the stone in the walls is embellished with the poles which formed the columns above and the smooth floor below, as to make them attractive. Mr. W. H. Holmes and W. H. Jackson have also spoken of the wash of many colored plaster which was frequently applied to the rooms. Mr. F. H. Chapin has spoken of the peculiar decoration of the walls and has given

a photograph of a room in "Cliff Palace" and of another in "Spruce Tree House." He says:

Much care was used in finishing the walls, little holes were filled with small stones or chinked with fragments of decorated pottery and painted ware. Some of the walls were decorated with lines and broad bands similar to embellishments on the pottery. In "Cliff Palace," a broad band had been painted across the walls, and above it is a peculiar decoration which is shown in the illustration. The lines were similar to the embellishment on the pottery which we found. The walls of the "Spruce Tree House," were also decorated with lines similar to those described as existing in the "Cliff Palace." One of more interest, is the picture of two turkeys fighting.

Mr. Mendeliff also speaks of the decoration of the walls of the estufas found in the Cañon de Chelly. He says: "Some of the kivas have interior decorations consisting of bands with points. The band done in white is 18 inches below the bench and its top is broken at intervals with points. In the principal kivas in 'Mummy Cave' there is a painted band four or five inches wide, consisting of a meander done in red over a white background, arranged in squares. Examples almost identical with those shown here are found in the Mancos ruins. It is probable that they are of a ceremonial rather than of a decorative origin."



DECORATED WALL IN CLIFF PALACE.

The similarity of these decorations to those which are found upon the pottery of the most ancient kind, viz: that which is decorated in black and white, show that these cliff-dwellings were ancient, notwithstanding the fact that they appear so modern in their style and finish. It is universally admitted that there was a decline in the artistic taste and mechanical skill of the Cliff-Dwellers before they reached their final home in the pueblos, especially those of the Moquis and Zunis. While they are constructed in the same general style and are very massive, yet they lack the peculiar elements of

taste which were embodied in the walls and rooms of the buildings now in ruins.

IV. The number and arrangement of the rooms are to be studied in connection with the village and domestic life. The number varies according to locality, for some of the cliff-villages, such as the one called "Cliff Palace," has as many as one hundred rooms, others, of which Monarch's Cave is a specimen, have only ten or twelve. Still every cliff-village, whether large or small, had the same elements. As to the



THE OPENING IN MONARCH CAVE.

arrangement of the apartments, there was also a great variation. There were a few cliff-villages in which the apartments were separated from one another by a tower which stood in the centre, the dwellings being placed in the cove of the rocks on either side. The village called Mummy Cave, in Cañon de Chelly described by Mr. Mendeliff, has this peculiarity. There was an eastern and a western cove: fifty-five rooms in the eastern and twenty in the western, and on the intermediate ledge were seven rooms which were exceptionally large and were constructed, all of them two stories high, and one of them three stories, which gave it the appearance of a tower. The rooms in Casa Blanca, or "White House," were arranged in two separate clusters. One cluster

on the bottom land against the vertical cliff—the other on the ledge directly above, separated from the lower portion by some thirty five feet of vertical cliff. There is evidence that some of the houses of the lower settlement were four stories high, and in fact reached up to the ledge, making the structures practically continuous. The lower ruin comprised about sixty rooms, which were situated but a few feet from the bottom land and covered an area of about 50x150 feet. The upper part contained about twenty rooms, arranged about the principal one, which was situated in the centre of the cave, the exterior of it finished by a coat

of whitewash with a decorative band in yellow, hence the name Casa Blanca, "or White House." The walls of this room are two feet thick, twelve feet high in front, and seven feet high on the sides and inside. A small room at the eastern end of the cave was constructed partly of adobe and partly of stone, and it was probably only used for storage. In the western end of the cave there was another single room eleven feet high outside, the lower portion of stone, the upper part of adobe with buttresses* constructed of stone. Near the centre of the main room is a well finished doorway, which originally was a double notched or T shaped door, which in later periods was filled up so as to leave a rectangular door. In the southeast corner of the second room from the east there is an opening in the front wall which may have been a drain. This would imply that the rooms were not roofed, although the cliff above is probably 500 feet high and overhangs so that a perpendicular line would fall 70 feet beyond the foot of the cliff, and 15 feet beyond the outermost walls, still a driving storm of rain or snow would leave a considerable quantity of water in the front rooms, if not roofed, and some means would have to be provided to carry it off. In the fourth room from the east there are remains of a chimney like structure - the only one in the upper ruin.

Nordenskjold says: "In the 'Spruce Tree House' there was a division of the village into two parts, which were separated by an open passage-way which runs back through the whole ruin.† Each part contained an open space or court. There was a spring below 'Spruce Tree House.' Back of the court there were bird droppings of tame turkeys. A tower four stories high gave admirable evidence of the great skill of the builders, especially when we



CANYON DEL MUERTO.

*A buttress is an anomalous feature which Mr. Mendell says is difficult to believe of aboriginal conception; still buttresses are seen in many places.

†This shows that the village was divided into phratries.

not only built such houses, but they placed them high up in the sides of the cliff, carrying the food on which they were to subsist up the steep paths, and depositing it in the store-houses which were built in the niches of the rocks. The cut given here-
with shows a house, two stories high, which was placed on a ledge 1,000 feet above the valley. It looks like a modern house, for it is furnished with floors, windows, doors, and rectangular rooms which are plastered and whitewashed. Just outside of the rooms was a reservoir or tank designed to contain water, which was reached by climbing down the sides of the house by the aid of pegs in the walls, while in front of the house were buttresses which supported a balcony or front porch. This resem-



RUINED CLIFF-HOUSE IN THE MANCOS CANYON.*

bles the houses which are now in ruins but which formerly stood in the valley of the Chaco many miles to the south, but with this essential difference, that there were only three rooms in this house, while in the house on the Chaco, there were some three hundred; yet the rooms in the small



RUINED HOUSE IN CHACO CANYON.

house were finished in the same style and had the same appearance as those in the great house. (2) The stairways which led to cliff-dwellings are especially worthy of notice. There are stairways to the modern pueblos of the Tusayans and Zunis which are not as well made as these. Some have imagined that the style of building houses with stair-

ways and stone buttresses, and drains, is proof that the cliff-dwellings were built after the advent of the white man; but

*This Cliff House was situated nearly 1,000 feet above the valley and was discovered by Mr. Jackson; the room represented in the other cut was an apartment in one of the pueblos which Colonel Simpson discovered in the Chaco canyon. The solitary house is suggestive of the scattered condition into which the ancient Pueblo tribes were thrown by the constant attack of their enemies, and yet the finish of these walls and apartments show the advanced condition of the people in the prehistoric times.

here are the ruins of buildings, one of which was erected high up in the cliff on the Mancos and the other in the valley of the Chaco,* which have doorways, plastered walls, buttresses, windows, and double stories, and even "cornices" resembling those in modern houses, and we conclude that if any buildings were erected in prehistoric times these must have been. They



INDIAN CORN CARRIER.†

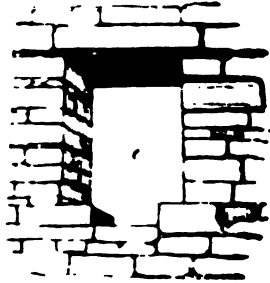
show the conveniences to which the people were accustomed,—even carrying the material to the cliffs and with infinite pains perpetuating them in the houses built there. (3). Another contrivance which illustrates the domestic life was the balcony. There were balconies in nearly all of the cliff-houses. They projected out in front above the first story and below the doors of the second

story and overlooked the valleys, and were probably used as the platforms and roofs were, as the loitering places where the housewives spent much of their time. In some cases the balconies formed outside passage-ways between the rooms of the upper stories, as may be seen in the "Balcony House." (4) The arrangement of the doors and windows was another convenience which shows much skill and forethought. There were not only doors which gave access to the different rooms and from the rooms to the courts, but there were windows which gave a view of the scenery outside, thus making the home attractive as well as safe. This was the case even in the cave dwellings.

Mr. W. H. Jackson in speaking of Echo cave, which is situated twelve miles below Montezuma, says:

Window-like apertures afforded communication between the rooms and through the second story. There was also one window in each lower room about twelve inches square looking out toward the open country.

These windows, doors, balconies and roofs gave extensive views of the valleys, and the fact that they



T SHAPED DOOR.

*A room in the latter had the walls plastered, but was finished with thick and thin at regular intervals. The plaster in the corners of the ceiling and the floor gave it a very neat appearance. There was a window on either side of this room, and a door at one end. The plate illustrates this manner of finishing the room.

†These illustrations of which has been a gift to me by the National Museum and the other by the Santa Fe R. R. illustrate the manner of carrying the corn on the shoulder, supported by a band around the head, and the adaptation of the Indians to receive them. Many woven bands have been discovered among the cliff-dwellings. The custom of weaving the bands and of carrying the corn in this way still obtains, both among the Navajos and the Zuni.

were so common, shows that the Cliff-Dwellers were lovers of scenery and enjoyed looking out upon it. (5) There were contrivances for weaving, cooking, and making pottery which show their industry and skill. Mr. Jackson describes some of these. He says of Echo Cave:

In the central room of the main building we found a circular basin-like depression, thirty inches across and ten inches deep, that had served as a fireplace, being still filled with the ashes and cinders of aboriginal fires, the surrounding walls being blackened with smoke and soot. This room was undoubtedly the kitchen of the house. Some of the smaller rooms seem to have been used for the same purpose, the fires having been made in a corner against the back wall, the smoke escaping overhead. The masonry displayed in the construction of the walls is very creditable; a symmetrical curve is preserved throughout the whole line and every portion is perfectly plumb. The sub-divisions are at right-angles to the front. In the rear was an open space eleven feet wide and nine deep, which probably served as a "work-shop." Four holes were drilled into the smooth rock floor, about six feet equidistantly apart, each from six to ten inches deep, and five inches in diameter, as perfectly round as though drilled by machinery. We can reasonably assume that these people were familiar with the art of weaving, and that it was here they worked at the loom, the drilled holes supporting the posts. In this open space are a number of grooves worn into the rock in various places, caused by the artificers of the little town in sharpening and polishing their stone implements.*



WOMEN WEAVING.

(6) The fireplaces are to be noticed. One kind of a fireplace is described by Mr. Jackson, and a cut is given of it; another kind is described by Mr. F. H. Chapin. It consists in placing a stone fender across one corner of the room. This shows that the people provided for their own comfort during the cold weather and lived comparatively secure, even amidst the cliffs.



FIREPLACE.

(7) The pottery and pottery-kilns which have been described, also show their artistic taste and skill. Pottery vessels have been discovered in many houses.

Furnaces used for firing pottery have been found in the cliff-dwellings on the Rio Mancos and on the Rio Verde. One, having walls standing to the height of fifteen or twenty feet and perfectly preserved, was found by Dr. Mearns at Oak Creek.

*See Hayden's Geographical Survey of the Territories Washington, D. C.; 1876, page 32.



HOUSE INTERIOR OF THE ZUNIS

From Grand Canyon of the Colorado, Fred S. V. Co. Inc., Publishers.

Powell, Mrs. James Stevenson. She made an extensive visit to Zuni and says:

Their extreme exclusiveness has preserved to the Zunians their strong individuality, and kept their language pure. According to Major Powell's classification, their speech forms one of the four linguistic stocks to which may be traced all the Pueblo dialects of the southwest. In all the large area which was once thickly dotted with settlements, only thirty-one remain, and these are scattered hundreds of miles apart from Taos, in northern New Mexico, to Isleta, in western Texas. Among these remnants of great native tribes, the Zunians may claim perhaps the highest position, whether we regard simply their agricultural and pastoral pursuits, or consider their whole social and political organization.

The town of Zuni is built in the most curious style. It resembles a great bee hive, with the houses piled one upon another in a succession of terraces, the roof of one forming the floor or yard of the next above, and so on, until in some cases five tiers of dwellings are successively erected though no one of them is over two stories high. These structures are of stone and 'adobe.' They are clustered around two plazas, or open squares, with several streets and three covered ways through the town. The upper houses of Zuni are reached by ladders from the outside. The lower tiers



GRINDING MEAL

have doors on the ground part, while the entrances to the others are from the terraces. There is a second entrance, through hatchways in the roof, and thence by ladders down into the rooms below. In times of threatened attack the ladders were either drawn up or the rungs were removed, and the lower doors were securely fastened. One of the many ingenious ways these people use for securing their entrances to their dwellings. The houses have small windows, which were originally covered, and is still employed to so an extent that the light is perfectly shut out, and secure it whenever practicable at night. A window of average capacity has four or five rooms, though in some there are as many as eight. Some of the larger apartments are paved with flagging, but the floors are usually plastered with clay, like the walls, and they are kept in constant repair by the women, who mix a redish brown earth with water to the proper consistency, and then spreading it by the hand, laying it on in semi-circles. It dries smooth and even, and is smoothed by working this plaster the squaw keeps her hand flattened with water, which is applied with all the dexterity with which a woman can handle her parkies clothes. The women appear to delight in this work, while they consider their special prerogative, and would feel that their rights were infringed upon were man to do it. In building the men lay the stone foundations, and set in place the huge logs that serve as beams to support the roof, the spaces between these

rafters being filled with willow brush; though some of the wealthier Zunians use instead shingles made by the carpenters of the village. The women then finish the structure. The ceilings of all the older houses are low; but Zuni architecture has improved and the modern style gives plenty of room, with doors through which one may pass without stooping. The inner walls are usually whitened. For this purpose a kind of white clay is dissolved in boiling water and applied by hand. A glove of undressed goat skin is worn, the hand being dipped in the hot liquid and passed repeatedly over the wall.

In Zuni, as elsewhere, riches and official position confer importance upon possessors. The wealthier class live in the lower houses, those of moderate means next above, while the poorer families have to be content with the uppermost stories. Naturally nobody will climb into the garret who has the means of securing more convenient apartments, under the huge system of "French Flats," which is the way of living in Zuni.

The Alcalde, or lieutenant-governor, furnishes an exception to the general rule, as his official duties require him to occupy the highest house of all, from the top of which he announces each morning to the people the orders of the governor, and makes such other proclamations as may be required of him.

Each family has one room, generally the largest in the house, where they eat, work and sleep together. In this room the wardrobe of the family hangs upon a log suspended beneath the rafters. Only the more valued robes, such as those worn in the dance, being wrapped and carefully stored away in another apartment. Work of all kinds goes on in this larger room, including the cooking, which is done in a fireplace on the long side, made by a projection at right angles with the wall, with a mantel-piece on which rests the base of the chimney. Another fireplace in another place is from six to eight feet in width, and above this is a ledge shaped chimney like a Chinese awning. A highly-polished slab, fifteen or twenty inches in size, is raised a foot above the hearth. Coals are heaped beneath this slab,



MAKING BREAD.

and upon it the Waiavi is baked. This delicious kind of bread is made of meal ground finely and spread in a thin batter upon the stone with the naked hand. It is as thin as a wafer, and these crisp, gauzy sheets when cooked are piled in layers and then folded or rolled. Light bread, which is made only at feast times, is baked in adobe ovens outside of the houses. When not in use for this purpose they make convenient kennels for the dogs, and playhouses for the children. Neatness is not one of the characteristics of the Zunians. In the late autumn and winter the women do little else than make bread; often in fanciful shapes for the feasts and dances which continually occur. A sweet drink, not at all intoxicating, is made from the sprouted wheat. The men use tobacco, procured from white traders, in the form of cigarettes from corn-husks; but this is a luxury in which the women do not indulge. The Pueblo mills are among the most interesting things about the town. These mills, which are fastened to the floor a few feet from the wall, are rectangular in shape, and divided into a number of compartments, each about twenty inches wide and deep, the whole series ranging from five to ten feet in length according to the number of divisions. The walls are made of sand stone. In each compartment a flat grinding stone is firmly set, inclining at an angle of forty-five degrees. These slabs are of different degrees of smoothness graduated successively from coarse to fine. The squaws, who alone work at the mills, kneel before them and bend over them as a laundress does over the wash-tub, folding in their hands long stones of volcanic lava,

which they rub up and down the slanting slabs, stopping at intervals to place the grain between the stones. As the grinding proceeds the grist is passed from one compartment to the next until, in passing through the series, it becomes of the desired fineness. This tedious and laborious method has been practiced without improvement from time immemorial, and in some of the arts the Zunians have actually retrograded.

The Spanish account is earlier and better, and we shall therefore close with quoting from Mendoza, who says:

Most of the houses are reached from the flat roof, using their ladders to go to the streets. The stories are mostly half as high again as a man, except the first one which is low and little more than a man's height. One ladder is used to communicate with ten or twelve houses together. They make use of the low ones and live in the highest ones; in the lowest ones of all they have loop-holes made sideways as in the fortresses of Spain. The Indians say that when the people are attacked they station themselves in their houses and fight from there. When they go to war they carry shields and wear leather jackets which are made of cow's hide colored, and they fight with arrows and with a sort of stone maul, and with some other weapons made of sticks. They eat human flesh and keep those whom they capture in war as slaves. In their houses they keep hairy animals (*vicuñas*?) like the large Spanish hounds, which they shear, and they make long colored wigs from the hair, which they wear, and they also put the same stuff in the cloth which they make. The men are of small stature, the women are light colored and of good appearance and they wear chemises which reach down to their feet; they wear their hair on each side, done up in a sort of twist, which leaves their ears outside, in which hang many turquoises as well as on their neck and arms. The clothing of the men is a cloak, and over this the skin of a cow; they wear caps on their heads, in summer they wear shoes made of painted or colored skin, and high buskins in winter. They cultivate the ground the same way as in New Spain. They carry things on their heads as in Mexico. The men weave cloth and spin cotton, they have salt from the marshy lake which is two days from Cibola. The Indians have their dances and songs with some flutes, which have holes on which to put the fingers, they make much noise, they sing in aison with those who play, and those who sing clap their hands in our fashion. They say that five or six play together, and that some of the flutes are better than others. . . . The food which they eat in this country is corn, of which they have a great abundance, and beans and venison which they probably eat, although they say that they do not, because we found many skins of deer and hares and rabbits. They make the best corn cakes I have ever seen anywhere, and this is what everybody ordinarily eats. They have the very best arrangement and machinery for grinding that was ever seen. One of these Indian women here will grind as much as four of the Mexicans. . . . I send you a cow skin, some turquoises, and two earrings of the same, and fifteen of the Indian combs, and some plates decorated with these turquoises, and two baskets made of wicker, of which the Indians have a large supply. I also send two rolls such as the women usually wear on their heads when they bring water from the spring the same way they do in Spain. These Indian women, with one of these rolls on her head, will carry a jar of water up a ladder without touching it with her hands. And, lastly, I send you samples of the weapons with which the natives fight, a shield, a hammer, and a bow and some arrows, among which there are two with bone points, the like of which have never been seen.

MAKUTU OR MAORI WITCHCRAFT.

BY ELSDON BEST.

Prior to the arrival of Europeans in these southern seas, the Maori of New Zealand was living in a state of society that certainly appears to have suited him well but which would be unbearable to Occidental races. Our fathers found this branch of the far-reaching Polynesian race living under the shadow of the innumerable laws of *tapu*, laws which controlled every daily action of the people and which, however rigorous, doubtless served a good purpose in checking the strong passions of this most war-like race. Yet another subject which ever possessed the native mind and had a great effect on his actions, was that of *aitua* or evil omens. Their belief in omens was so great that it appears most ridiculous to us, and their mental powers, though singularly powerful, were ever weighted by the incubus of superstition. A strange people in a strange land, their system of *karikia* (invocations or incantations) was most intricate and elaborate, their birth and death customs were singular and undoubtedly ancient beyond computation, the rites and ceremonies pertaining to war, hunting and other matters, were innumerable and remarkably interesting. We will now look at a few examples of the beliefs, rites and customs of the ancient Maori, as explained by the old men of the Tuhoe tribe, who yet retain much information anent the days of yore, when the neolithic Maori was as yet unaware of the existence of the pale hued Pakeha.

MAKUTU OR WITCHCRAFT.

This was a most serious item to the Maori, and indeed it still exists among all the tribes. Their minds were ever saturated with superstition and many of the *tohunga* (priests), and others, were objects of special dread on account of their powers to bewitch and thus cause death.

The most efficacious way in which to slay a person by witchcraft was to take the *HAU* of such person. The *HAU* is the very essence of life, it is an essence or ichor, non-vissible, intangible as ordinary matter, although it can be conveyed by the hand, in fact it is the life of the person, the body is merely an abode for the *HAU*, and should the latter be taken by witchcraft the body perishes at once or at least very shortly. It is distinct from the *wairua*, which is the actual body. It is the *wairua* which leaves the body (when a person dreams) and goes wandering afield. A Maori will say, "I went to the Reinga (hades—the spirit land)—last night, etc." that is he dreamed, his *wairua* went to Reinga. At death the *wairua* leaves the

body and descends to the Reinga or underworld, or in some cases it may remain in this world as a *kehua* or *whakahaehae* (ghost), whose pride and pleasure it is to scare travelers by night and utter strange sounds around houses whose inmates fear these ghostly visitations. The *hau* is also distinct from the *mauri* of a person, which is the spark or breath of life, or as one authority describes it, "the physical life principle, the *hau* being the intellectual spirit." If I startle a man, he will exclaim, "*E tama! ka oho-mauriahau i a koe,*" i. e., you made the breath of life leap up within me. The human *mauri* must not be confounded with the *mauri* of a forest or a canoe, this latter being a talisman to protect such forest or canoe from designing enemies.

It will thus be seen that man is possessed of three different and distinct essences or spirits, according to the Maori, besides his earthly body. In this regard he went one better than the ancient Egyptian who had but two such spirits, the *ka*, which much resembled the Maori *wairua* and a still more subtle essence which at death went to the gods and was judged by Osiris.

It was the "hau" which was acted upon in the matter of witchcraft. Any priest or person possessed of this power could destroy life in any other person, could he but obtain a portion of the hair, clothing, or spittle of such person. This object, having been in contact with the body of the doomed man, was used as a medium over which the incantations to destroy life were repeated; such incantations would destroy the "hau," after which the body naturally perished. This medium taken was termed a "hohona" ("ohonga" among other tribes) and was not the real "hau" of a person, but the "ahua" (semblance) of the "hau."

Having become possessed of such a medium the priest then fashions of loose earth a figure of human form, in which figure he makes a small hole. Here the 'hohona' is deposited and by his potent incantations the priest causes the 'wairua' of the doomed person to enter this hole in which it is destroyed by another 'karakia' termed 'kopani'. The spirit as it enters the hole (rua-iti) may be invisible or it may be in the form of a fly (ugaro).

Should I have lost a pig by theft I at once go to the Tohunga who, by repeating a certain spell, will cause the 'wairua' of the thief to come and stand before him, but it will be visible to him only. He will then say, "There is the thief, it is such a person." I then go and obtain some article such as the cord by which he led the pig away and this cord will serve as a destroying medium at the 'rua-iti' of the Tohunga. He will hold one end of the cord in his hand and allow the other to hang down into the hole in the dummy figure. He then repeats a spell to cause the 'wairua' of the thief to descend the cord into the pit of death.

It must be borne in mind that every such spell to cause

death has its counter-spell, and should I become aware that some person was attempting my life by means of the deadly 'rua-iti,' I at once contrive to obtain possession of some article belonging to the man who I know is bewitching me,—his 'kawe' or swag straps, or his picket rope or a portion thereof. This object I then smear with blood obtained from an incision in my left side or left shoulder, after which I kindle a fire and burn it, repeating at the same time the appropriate 'karakia' to nullify or ward off the spell of my enemy. This being a sacred ceremony I am necessarily 'tapu' while performing the same and must therefore obtain the services of a 'ruwahine' to take the 'tapu' off, i. e., to 'whakanou' or make common my person, clothing, etc. The 'ruwahine' employed to take the 'tapu' off a person, or war party, or house, is an elderly woman either childless or past the age of child-bearing. A single potato or 'kumara' (sweet potato) is roasted at the sacred fire and eaten by the 'ruwahine' and the appropriate 'karakia' being repeated, the 'tapu' is lifted and the person or house is 'noa' (common or free of 'tapu'). Another way in which to take the 'tapu' off is to place the aforesaid 'kumara' beneath the threshold of my house and get the 'ruwahine' (wise woman, sacred or 'tapu' during ceremony) to step over that threshold, which is the most sacred part of a house.

Another mode of 'makutu' is by the sacred fire known as the 'ahi-whakaene.' This fire is kindled by the 'tohunga makutu' (wizard priest) as he repeats the 'korakia' known as 'hika ahi' (fire generating). He then recites his spell to slay his adversary, or should he merely wish to reform some person from evil courses, he will repeat the 'ka-mahunu,' a spell that will cause the culprit to be utterly ashamed of his sins and desirous of leading a better life.

Or should a man, while traversing some trail, encounter a lizard (a fearful omen), he will first kill it and then get a 'ruwahine' to step over it, to avert the evil omen. But as he knows full well that the lizard has been sent by some enemy to work him grievous harm, he proceeds to cut the hapless reptile into divers pieces over which the priest performs the 'whakautu-utu' ceremony, to cause the evil fate to recoil upon the sender of the lizard. Taking up one of the pieces of the lizard he repeats, "To such and such 'hapu' (sub-tribe)," and reciting a spell, casts the piece into the 'ahi-whakaene.' This is repeated until all the pieces are in the fire, a different sub-tribe being mentioned each time, after which a lock of hair is cut from the head of the man who encountered the lizard, which hair is also cast into the sacred fire. 'Heoi!' Yet a little while and the horrors of the 'ahi-whakaene, will descend upon those who sought to slay a distant foe by means of the fear-some lizard which represents death and ever chilleth the soul of man.

The 'Wero-ugeregere' is an incantation which causes the

person against whom it is directed to be assailed by the 'ugere-ugere,' a loathsome disease resembling leprosy, and which formerly existed among the Taupo tribes.

Other forms of 'makutu,' such as the 'ahi-matiti,' caused a person to become mentally deranged and to go about clutching at the air and committing other foolish actions.

If a man possesses a good reliable 'atua' (familiar spirit, god), it will not fail to warn him should any one be working him an injury by 'makutu.' Or his 'wairua' will discover the fact, as it wanders forth while the body sleeps, and so return and warn him. Thus it is dangerous to suddenly awaken a sleeping person, for his 'wairua' may be out rambling around the world. Still it is a nimble spirit that 'wairua' and when the sleeping body awakens the 'wairua' is back at once. At such a time the sleeper awakens with a start that is 'oho mauri' the startling of the breath of life within the body, the return of the 'wairua' to its earthly body- it is back in an instant.

The 'rua-iti' and other works of 'makutu' are always conducted in the evening or at dawn when it is desired to bring the 'wairua' of a person before the magician, for the reason that the spirit only leaves the body at night, during the daytime the person is naturally presumed to be awake and therefore his 'wairua' is safe within his body.

When a person arises from a seat he leaves a certain amount of his 'hau' adhering to the seat. He will therefore, as he rises, reach back his left hand and scoop up this 'hau' lest it be taken by some wizard to work him bodily harm. In like manner as a person walks he leaves the 'manea' or 'hau' of his footsteps adhering to his tracks. This also can be taken by a wizard and used as a means of slaying the witless traveler. Thus in traveling through a hostile country it is advisable to walk in the water as much as possible, inasmuch as a person's 'manea' does not adhere to water.

The 'Mataka'i' is an incantation to slay a person while he is in the act of eating. Should you meet a wizard (tohunga makutu) in your travels, and should you be carrying food, do not give such food to the wizard or he will use it as 'ohonga' and so take your 'hau' and destroy you.

Such are some of the methods of destroying man by witchcraft, but as remarked, such spells can be warded off if the afflicted person possesses the requisite knowledge, and if his 'karakia' have sufficient 'mana' (power). One method of averting the 'makutu' is by tying strips of 'harakeke' (phormium tenare) around the limbs and body and then reciting a certain 'karakia' known as the 'mataparu'.

But the most effective way to prevent the spells of sorcerers from having any harmful effect is to ensure the safety of the 'hau' by means of protecting its 'ahua, or semblance. This is a case of hair splitting in the "Black Art" with a vengeance, in-

asmuch as the semblance or essence of the 'hau' must necessarily be the semblance (ahua) of an intangible spirit, i. e., the essence of an essence. This points to a high plane of metaphysical reasoning, seldom, I fancy, met with in a neolithic people, but a subject all too long to enter on here.

The 'ahurewa' is an emblem of the gods ('atua'). It is simply a carved peg stuck in the ground at the village 'tuahu' or sacred place. This 'ahurewa' is a 'toronga atua,' i. e., a medium of divination. Now the 'ahua' or semblance of a man's 'hau' may be taken by the priest and conveyed to the 'ahurewa' where it is 'planted' in the 'ahurewa,' absorbed by that useful article. It is of course the 'karakia' of the priest which causes this 'ahua' to enter the 'ahurewa,' and once established there the person whose 'hau' it represents is safe from all attacks of witchcraft. The 'hau' cannot now be effected by 'makutu' for the reason that its essence is protected.

Such are some of the leading items anent witchcraft as practiced and believed in by the ancient Maori of New Zealand, but it would require many pages to thoroughly describe the innumerable customs, ceremonies and beliefs connected with Polynesian Makutu, which in its palmy days rose to the level of a fine art.

ANIMAL FORMS IN ANCIENT PERUVIAN ART.

BY HARLAN I. SMITH

Animal and plant forms are largely represented in the art of the various peoples who have inhabited the Pacific coast of America. In the north only animal forms are found, but in Mexico and in South America plant forms occur as well.

The pre-Columbian peoples of Peru represented life forms of a wide range of species and in various materials. Besides this, there is a variety in the method of expression, extending from portrait and realistic representations to extremely conventionalized forms.

Without attempting to make an exhaustive study of this problem, it is interesting to note a few of the various animal species represented, to call attention to the method of expression and to the material employed for each.

The objects showing animal forms in ancient Peruvian art, are mainly obtained from graves or in the body bundle itself. The northern coast region seems to be especially rich in the number and variety of these forms, although examples are plentiful farther south and in the lofty dry interior.

The method of execution is more or less influenced by the material employed. For instance, the weave of cloth gives geometric effect and thus necessarily conventionalizes animal

forms, possibly suggesting their conventionalization in material which does not compel it.

Among realistic representations are human portraits, well executed in pottery in the form of jars; the monkey modeled in pottery; the llama carved from stone, executed in copper and gold, modeled in pottery, modeled in pottery and painted and painted on pottery; the puma modeled in pottery, modeled in pottery and painted, in relief on pottery and painted on pottery; the



PORTRAIT POTTERY

seal modeled in pottery; the bird cut out of sheet silver, carved in shell, bone and wood, modeled in pottery, modeled in pottery and painted, in relief on pottery and manikined with cotton; the owl modeled in pottery; the parrot modeled in pottery; the crane in relief on pottery; the frog modeled in pottery, and modeled in pottery and painted; the serpent cut from sheet gold, carved in wood, modeled in pottery, modeled in pottery and



MAN MODELED IN POTTERY



PUMA MODELED IN POTTERY.

painted and painted on pottery, the fish cut out of sheet silver, modeled in pottery, modeled in pottery and painted, in relief on pottery and painted on pottery, the fly executed in bronze and painted on pottery; the beetle painted on pottery; the lobster carved from shell and modeled in pottery, the crab in relief on

pottery and stamped on cloth; the scollop modeled in pottery and the conch modeled in pottery.

Among conventional representations are the human figure woven in tapestry and painted on cloth; the monkey woven in tapestry; the llama executed in copper and painted on pottery; the puma cut out of sheet gold; the bird painted on pottery, woven in tapestry and stamped on cloth and the serpent painted on cloth.

The species represented are thus seen to include, man, the monkey, the llama, the puma, the seal, the bird, the owl, the parrot, the crane, the frog, the serpent, the fish, the fly, the beetle, the lobster, the scollop and the conch.

On the other hand these forms are represented carved from stone, executed in gold, cut from sheet gold, cut from sheet silver, executed in bronze, carved in shell, carved in bone, carved in wood, modeled in pottery, modeled in pottery and painted, in relief on pottery, painted on pottery, manikined with cotton, woven in tapestry, painted on cloth and stamped on cloth. Many are represented in a realistic manner and not a few are conventionalized occasionally.

THE LONG ISLAND TABLET.

The article by Dr. W. W. Tooker in the November number of this magazine should have had the tablet which is given herewith, but it was unfortunately left out. These researches into the early historic and prehistoric symbols of the Algonquians are very valuable. They carry us back to the border line and help us to discriminate between the relics and symbols which were introduced by the white man and those which were purely aboriginal. This particular relic seems to have been aboriginal. It is a conventional figure of a "vanquished foe," i. e., a headless human figure, so often occurring in aboriginal pictographs. Sir William Johnson says of the Iroquois: "They delineate bodies without heads to express scalps." The "vanquished foe" is engraven on both sides of the tablet, and sixteen tally marks on its edges probably indicates the number vanquished.





THE GREAT WALL OF CHINA

EDITORIAL.

THE MONGOLS IN RUSSIA, CHINA, THIBET,
AND SOUTHEASTERN EUROPE.

The countries of northern Europe and northern Asia are engaging attention at the present time. There is an ancient history connected with them all, and several books have been published, one of them a re-publication of the old and well known work by M. de Huc,* two others by Charles Morris,† author of *Half Hours with the Best American Authors*, and *King Arthur and Knights of the Round Table*.

These books treat of the condition of these countries in modern times, but they go back to the earliest period and so are very useful to ethnologists and archaeologists, and especially to those who are studying the relation of America to the Asiatic continent in prehistoric and ancient historic times. They show the contrast between Malays and Mongolians, and Mongolians and Slavs, and reveal the time when the fierce Mongols crowded down between Europe and Asia, overrunning the Greek empire and threatened destruction to the Romans. They show that by a reflex wave Buddhism was spread over China, Mongolia and Japan, affecting their architecture and entire religious system, and how, afterward, the Roman Catholics introduced their religion and gave to the Buddhists their order of monks and the office of the Grand Lama, though they themselves were soon expelled. They show how the travels of Marco Polo and Sir John Maundeville created great interest in the land of Cathay, and led Columbus to make his voyage to the westward. They show also how early Russia commenced its trade on the borders of China, and how the regions of independent Tartary have been traversed by embassies and travelers from time to time.

All of these countries, including Thibet, were settled by the Mongolians, who were descendants of the old Scythians of whom Herodotos speaks. They may be called the "ground race" of history, though there was a prehistoric "ground race" which dwelt in the same region, concerning which very little

* *Travels in Tartary, Thibet and China*, during the years of 1841, 5, 6, by M. de Huc; translated from the French by W. Hazlitt. Open Court Publishing Co., Chicago.

† *Historical Tales; The Romance of Reality: Japan, China also Russia*, by Charles Morris. J. P. Lippincott & Co., [1888] Publishers.

is known, though they are called Euro-Asiatics. Mongolia is described by Mr. Morris "as a vast and mighty plain, spreading thousands of miles to the north and south, to the east and west; in the north a land of forests, in the south and east a region of treeless levels. Here stretches the black land whose deep dark soil is fit for endless harvest. Here are the arable steppes, a vast fertile prairie land, and here again the barren steppes, fit only for wandering herds and the tents of nomad shepherds. It is there the land of Russia appears to us when the mist of prehistoric times first began to lift. We are told that these broad levels were formerly inhabited by a people called the Cymmerians who were driven out by the Scythians. Some believe that they were the ancestors of the Cymri, the Celts of the west.

"The Scythians, who thus came into history like a cloud of war, made the god of war their chief deity. The temples



MONGOLIAN ENCAMPMENT.

which they built to this deity were of the simplest, being great heaps of fagots, which were added to every year as they rotted away under the rains. Into the top of the heap was thrust an ancient iron sword as the emblem of the god.

"To prove their prowess in war they cut off the heads of the slain and carried them to the king. Like the Indians of the west, they scalped their enemies.

"The Scythians and Celts occupied the south of Russia, and there came into contact with the Greek trading colonies north of the Black sea and gained from them some little veneer of civilization."

The Mongolians, however, in the north of Asia have remained about as they were in the earliest times. They are still very much like the Indians of North America. They live in conical tents resembling the wigwams and are constantly changing their abodes. They are nomads and follow their herds from place to place.

M. de Huc gives a view of the Mongolians and their country as it was in 1844. He says: "Tartary has an aspect altogether peculiar to itself. There is nothing in the world that resembles a Tartar landscape. There are no towns, no edifices, no arts, no industry, no cultivation, no forests. Everywhere it is prairie; sometimes interrupted by immense lakes, by majestic rivers, by rugged and imposing mountains some-



SLEIGHING IN RUSSIA.

Courtesy of J. P. Lippincott & Co.

times spreading out into vast limitless plains. There in these verdant solitudes, the bounds of which seem lost in the remote horizon, you might imagine yourself gently rocking in the calm waves of some broad ocean. You sometimes come upon scenes more animated than these. You see rising in all directions tents of various dimensions looking like balloons newly inflated. Men, mounted on fiery horses and armed with long poles,

gallop abreast, guiding to the best pasture great herds of cattle, which undulate in the distance all around like waves of the sea. All of a sudden, these pictures so full of animation, disappear, and you see nothing of that which of late was so full of life. Men, tents, herds, all have vanished in the twinkling of an eye. You merely see in the desert heaps of embers, half extinguished fires, and a few bones, of which birds of prey are disputing the possession."

The same impression is formed from the cuts which are used in both books. In the book by M. de Huc we have the rude tents of the Tartars and a view of the inside with the furniture and equipments, which remind us of the tents of the aborigines of America, as there are bows and arrows and primitive wooden vessels, and the ever recurring sofa which



INTERIOR OF MONGOLIAN TENT.

resembles that in the Haidah tents. In the book by Mr. Morris, we have the Russian sledge, traversing the treeless plains in winter, and the hunter with his hounds crossing the tract. Everything is bleak and barren. There are other scenes than these, for there are Lamaseries in China and Tibet which M. de Huc describes, and even ancient trading places where Russians congregated at times, as well as the ancient wall, all of which exhibit the signs of civilization.

The history of China, as well as that of Russia, is closely connected with these nomad tribes. China, on three sides, is abundantly defended from invasion—the ocean on the east, and mountains and desert on the south and west. Its only vulnerable quarter is in the north where it joins to the vast region of the steppes, where from time immemorial has dwelt a race of hardy wanderers. We first hear of Tartar raids upon China in the reign of the Emperor Muh Wang in the 10th

century B. C. As time went on the tribes combined and fell in greater numbers upon the southern realm. Against these foes the Great Wall was built, and ages of warfare passed before the armies of China succeeded in subduing and making tributary the people of the steppes."

The Great Wall of China was built to defend the frontier against the Tartars. This occurred in the year 314 A. D. "A prodigious number of laborers were employed upon it, and the



INTERIOR OF BUDDHIST TEMPLE.

work on this gigantic enterprise continued for ten years. The Great Wall extends from the westernmost point of Kan Sen to the Blue Sea.

"Mr. Barrow who, in 1793, accompanied Lord Macartney to China, as historiographer to the British Embassy, made this calculation: he supposed that there were in England and Scotland 1,800,000 houses, and estimating the masonry work of each to be 2,000 cubic feet, he propounded that the aggregate did not contain as much material as the Great Wall of China, which, in his opinion, was enough for the construction of a wall to go twice around the world." M. de Hue says "We have crossed it at fifteen different points, and on several occasions have traveled for whole days parallel with it, and never once losing sight of it; and often, instead of the great double turreted rampart that exists toward Peking, we have found a mere low wall of brickwork or even earthwork. In some

places, indeed, we have found this famous barrier reduced to its simplest expression, and composed mostly of flint-stones roughly piled up.

"It is indeed obvious that Tsin-Chi-Hoang-Ti, in the execution of this great undertaking, would fortify with especial care the vicinity of the capital, as being the point to which the Tartar hordes would first direct their aggressive steps."

The Great Wall was built in vain against vast hordes, who, under the name of Scythians, Huns and Tartars, were constantly crowding southward. They were diverted for a time and crowded down upon Parthia and the Caspian Sea, even upon India as early as the days of Alexander the Great. They



THE GREAT WALL OF CHINA.

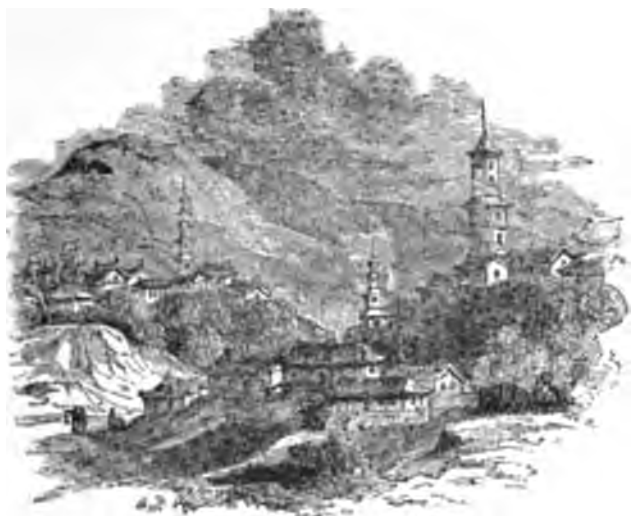
moved westward and invaded the Roman Empire under the name of the Huns about 500 A. D.

The most fertile and largest a desert, was the swarming place of the nomadic hordes. From these broad levels in the part of the northern land, the nomadic men rode over Europe and Asia, with the Huns, Goths, Turks and the desolating Mongols. In the nomadic life, the warriors, they live on horse back, the great nomadic hordes, to which, their military discipline, they are always, in motion, to defend, no home to them, they do not go to have it. The home is a camp, when the army of nomadic, their weapons are weapons, a war, in the days of the nomadic, sometimes they burst from a nomadic, to the nomadic, to the nomadic, overwhelmed the nomadic, to the nomadic, to the nomadic, the invaders swept from the nomadic, to the nomadic, to the nomadic, before them, and leaving a desert, a land, to them. They swam the Don, the

Volga and the other great rivers on their horses, or crossed them on the ice. Leathern boats brought over their wagons and artillery. They spread from Livonia to the Black Sea, poured into the kingdoms of the west, and would have overrun all Europe but for the vigorous resistance of the knight-hood of Germany."

They next, under the name of Turks, crowded down between the two continents, took possession of the Holy Sepulchre, and as Mohammedans, still hold the key to the interior of Russia and the far east.

The Tartar invasion of Asia was followed in the 13th century by the dreadful outbreak of the Mongol-Tartars under the great conqueror Genghis Khan, or Kublai Kahn, the Mon-



MONGOLIAN ARCHITECTURE.

gol Emperor of China, who sent envoys to Japan. This great movement of the Mongolian Tartars affected even modern Europe. The Roman church was so moved that the Pope sent ambassadors to the northern frontier of Persia with the hope of checking their course.

These northern regions of Europe and Asia were the swarming places of a rude population resembling the American aborigines, and had it not been for the barriers of the Himalaya mountains on one side and the Altai range on the other, they would have covered all Europe and all Asia with their own barbarism, and made even a wider gulf between the ancient and modern history than that which now exists.

In the mean time four journeys or embassies opened the doors into this great interior of Mongolia, one of which was so early and obscure that it is scarcely known even to the historians. The journey of Fa-Hien, the journey of Marco Polo, the

journey of the embassy from the Pope, and that of M. de Huc, reveal the condition of China and Mongolia during all that period in which the Buddhistic faith became so prominent, and in which efforts were made to convert the Mongolians to christianity.

We shall see later on that the discovery of America is linked with the journey of Marco Polo in the 13th century and with the awakening of mind which even affected the Arabs and the Turks, as well as the Europeans, but did not occur until after the Reformation and the rise of Protestantism. It was between the time of the erection of the wall and the time of the invasion of Europe by the Turks, that the journey of Fa-hien, the Buddhist priest took place. He was the first to reach the great Thibetan range where the Grand Lama has held sway for so many years. He traversed about the same territory which M. de Huc did 1500 years afterward, but his mission was to visit the Buddhist priests, while that of the French missionary was to convert the priests and bring the Grand Lama into allegiance to the Pope of Rome if possible. The growth of Buddhism through China and independent Tartary occurred during these years. Nestorian missionaries had visited western China about the time that Fa-hien reached Thibet, and established there a branch of the Nestorian church, and left there the earliest trace of christianity in this remote interior.

The Greek church, which is really older than the Roman, spread to the east and became the established church of Russia about 900 A. D. Mohammedanism had spread over Syria, Turkey, and even into India, and has proved like a wall, separating the east from the west, and perhaps perpetuating the differences between them. The Turks are Mongols and have the same Mongolian spirit of defiance, but they remain as a wedge between Europe and Asia and still hold the Sepulchre of Christ in their grasp. The differences between the nations are not owing altogether to time descent, but to the religions which have been adopted. These religions are strangely correlated to the racial peculiarities and national history.

Buddhism prevails in China and Thibet, Mohammedanism in Turkey, the Greek church in Russia, the Latin church in Italy, Spain, France, and South America, Protestantism in Germany, England, Scandinavia, and North America. There was an attempt to introduce the Latin church into China, and papal missionaries were sent in large numbers. The experience was the same as that which has been manifest in the Phillipines and Spain, but there was a revolt and the missionaries were driven out from China, though Mongolia continued to be occupied more or less by missionaries of the Roman church. It was in order to visit the missions that M. Gabet and M. de Huc were deputed, and made their journey to the capital of Thibet.

These three books open the door which gives to us a view

of the middle kingdom, as well as the great Mongolian deserts on one side and the high range of Thibet on the other, and prepare the way for a better understanding of the history of Russia, China, Turkey and all those kingdoms which are contending for the dominion of the vast regions which lie beyond the mountains and away from the sea board. This history is very important at the present time, for by it we may understand the great problems before the world. From the two journeys, of Fa-hien and of M. de Huc, we learn that the conditions of the



LAMASERY OF TCHO-GORTAN.

Mongolians had not essentially changed for thousands of years. The only change that had come upon them was that the Buddhist religion had taken the place of the worship of the scimeter and the god of war. The Grand Lama was then as he is now, supreme in his mountain domain, though it was with a hope and expectation that he might become a convert and perhaps a vicar of the Pope, that M. de Huc made his way to this distant point of Tusang. He met with great difficulties and hardships but escaped the ill treatment which some recent travelers have suffered at the hands of this exclusive people. There are certain views brought out by the cuts in the first volume of the *Travelers*

in Tartary and Thibet which are somewhat interesting. The city of Tolon Noor was then an emporium for Russian merchandise. "Its population is immense and its commerce enormous. Russian merchandise is brought here in large quantities by the way of Kiakta. The Tartars bring incessant herds of camel^s, oxen and horses, and carry back in exchange tobacco, linen, and tea. This constant arrival and departure of strangers communicates to the city an animated and varied aspect."

We learn from other cuts* the style of architecture introduced by the Buddhists.

There is a view of the Grand Lamasery and of a Buddhist temple situated at the westernmost point where the Chinese exercised sway over the Mongolians, and another view of the Lamasery at Tchogortan and the home of Buddhist monks and hermits. The following is the description: "Its aspect is tolerably picturesque, especially in summer. The habitations of the Lamas, constructed at the foot of the mountain that terminates in a peak, are shaded by ancient trees, the great branches of which afford a retreat to infinite kites and crows. Some feet below these cottages runs an abundant stream, interrupted by various dams which the Lamas have constructed for the purpose of turning their tchukor, or fraying mills. In the depths of the valley, and on the adjacent hills, you see the black tents of the Si Fan, and a few herds of goats and long haired cattle. The rocky and rugged mountain which backs the Lamasery, serves as an abode for five contemplative monks, who, like the eagles, have selected as the site of their eyries the most elevated and most inaccessible points. Some have hollowed out their retreat in the living rock; others dwell in wooden cells, stuck against the mountain like enormous swallows' nests, a few pieces of wood, driven into the rock, form the staircase by which they ascend or descend. One of these Buddhist hermits, indeed, who has entirely renounced the world, has voluntarily deprived himself of these means of communicating with his fellows, a bag tied to a long string serves as the medium for conveying to him the alms of the Lamas and shepherds."

Two or three journeys have recently been taken by adventurous travelers to reach the deep interior and penetrate the dominion of the Grand Lama, who reigns supreme in Thibet, and strange experiences were met

The world can well afford to let this people rest unmolested in their mountain home, until the struggle between the great world-disputing races shall have ceased, and Mongolian, Aryan, Malayan, Semitic religions, institutions and systems have become blended into one.

*The illustrations are taken from the *Illustrations of the Far East*, published by Geo. C. Chicago.

ACCESSIONS TO THE FIELD MUSEUM.

A new hall has just been opened to the Department of Anthropology in the Field Columbian Museum which is entirely devoted to the Hopi (Pueblo) Indians of Arizona. It is probably the best collection of the kind in the world, for it gives nearly all the articles which are necessary to illustrate the life and industries of this particular tribe. The collections in the National Museum are larger and illustrate the broader field, but even those do not so thoroughly represent this one locality.

The articles, within the hall, are arranged in seventeen different cases and are nearly complete collections of objects of industrial art as well as those of a ceremonial and domestic character. One of these cases contains about two hundred objects in pottery; among them are coiled black and white, and red and cream colored vessels; some of them containing very rare and singular symbols which were peculiar to the ancient Pueblos, but the significance of which is not yet understood. In another case are stone objects, such as axes, mauls, hammers, pestles, rubbing-stones, knives, scrapers, spears, and little stone mountain lions. Two or three of the axes are worthy of special notice. One of them is arranged for 'double' hafting; two others are ground to a sharp edge. A large number of basket-trays made by the modern Hopi and Oraibi Indians surmount these cases. Two, side by side, represent the ancient and the modern pottery and are very instructive on this account. Other cases are devoted to clothing still in use: blankets, sashes, and kilts used in ceremonies, also domestic implements, cooking utensils, spindles, drills, hair-pins and bird snares, all of them showing signs of use and very suggestive of the domestic life and mechanical skill of the people. The contrivances are rude compared with the products, for the blankets, sashes and kilts are remarkably well woven to have come from such looms. Three cases are filled with Katsina dolls,—the largest collection in existence. There are about one hundred and fifty dolls with labels attached which show the symbols. There are about thirty masks of more than usual antiquity.

The symbols contained in the woven garments are very suggestive. In them we find the crooked serpent with the usual 'frog's foot' and 'double bars,' also the 'stepped' figures which are so common throughout the Pueblo territory, and especially among the Tusayans. There are other articles which have not been put in place, which will be described in the next number, and perhaps some of the symbols will be represented by cuts. Especial interest centers in the life casts and groups of effigies which represent the features and forms of the Hopi in their surroundings. One of the groups represents the interior of a Pueblo apartment. Here there is the usual furniture of the mill or grinding trough, fire place, walls, and

gallop abreast, guiding to the best pasture great herds of cattle, which undulate in the distance all around like waves of the sea. All of a sudden, these pictures so full of animation, disappear, and you see nothing of that which of late was so full of life. Men, tents, herds, all have vanished in the twinkling of an eye. You merely see in the desert heaps of embers, half extinguished fires, and a few bones, of which birds of prey are disputing the possession."

The same impression is formed from the cuts which are used in both books. In the book by M. de Huc we have the rude tents of the Tartars and a view of the inside with the furniture and equipments, which remind us of the tents of the aborigines of America, as there are bows and arrows and primitive wooden vessels, and the ever recurring sofa which



INTERIOR OF MONGOLIAN TENT.

resembles that in the Hadah tents. In the book by Mr. Morris, we have the Russian sledge, traversing the treeless plains in winter, and the hunter with his hounds crossing the tract. Everything is bleak and barren. There are other scenes than these, for there are Lamaseries in China and Tibet which M. de Huc describes, and even ancient trading places where Russians congregated at times, as well as the ancient wall, all of which exhibit the signs of civilization.

The history of China, as well as that of Russia, is closely connected with these nomad tribes. China, on three sides, is abundantly defended from invasion—the ocean on the east, and mountains and desert on the south and west. Its only vulnerable quarter is in the north where it joins to the vast region of the steppes, where from time immemorial has dwelt a race of hardy wanderers. We first hear of Tartar raids upon China in the reign of the Emperor Muh Wang in the 10th

century B. C. As time went on the tribes combined and fell in greater numbers upon the southern realm. Against these foes the Great Wall was built, and ages of warfare passed before the armies of China succeeded in subduing and making tributary the people of the steppes."

The Great Wall of China was built to defend the frontier against the Tartars. This occurred in the year 314 A. D. "A prodigious number of laborers were employed upon it, and the



INTERIOR OF BUDDHIST TEMPLE.

work on this gigantic enterprise continued for ten years. The Great Wall extends from the westernmost point of Kan Sen to the Blue Sea.

"Mr. Barrow who, in 1793, accompanied Lord Macartney to China, as historiographer to the British Embassy, made this calculation he supposed that there were in England and Scotland 1,800,000 houses, and estimating the masonry work of each to be 2,000 cubic feet, he propounded that the aggregate did not contain as much material as the Great Wall of China, which, in his opinion, was enough for the construction of a wall to go twice around the world." M. de Hue says "We have crossed it at fifteen different points, and on several occasions have traveled for whole days parallel with it, and never once losing sight of it; and often, instead of the great double turreted rampart that exists toward Peking, we have found a mere low wall of brickwork or even earthwork. In some

tributions. After giving some excellent reasons for such a statement, he added that a main cause of its popularity was the immense human interest of its work. When we open a tomb and find in it the objects of everyday life, the ornaments, the personal possessions, which were in use thousands of years ago and are still in almost the same condition as when they left the hands of their owners—this it was that touched us with that human sympathy that makes the whole world kin. He well said that "the clearing of the temple of Deir el-Bahari will ever be regarded as a work reflecting conspicuous honor upon the Egypt Exploration Fund."

Mr Herbert A. Grueber, the honorary treasurer, submitted a very interesting report. The total receipts for the year ending July 31st were £5,006, but of this large sum were the legacy of £1,000 by Mr. Cooper, £203 profits on the extraordinary sales of the "Logia," and £62 in dividends. This would make the subscriptions and sales of regular volumes to equal £3,651. The total expenditures amounted to £3,698; of which £2,914 are for the Fund, £139 for its Archaeological Survey, and £615 for its Græco-Roman branch. Of the actual subscriptions, not including the publications, from English and American subscribers of £1,939 for the Fund only, £1,073 are from the English and £863 from American subscribers—the latter divided as follows: from Boston £435, Chicago £148, New York £128, Philadelphia £150—shillings and pence omitted. But, be it remembered, the office at Boston is the *national office*. It is impossible for me to compute the total sums separately or even collectively, from the United States for the reason that the report lumps together the American and English subscriptions for both the Archaeological Survey and the Græco-Roman Branch, and for the sales of books. What the total amounts from each of our local societies are I do not know; I only know that over £1,000 net in toto have gone through the Boston, or American office, to London.

Encouraging as the report of Mr. Grueber is, it is clear that our simple subscription lists and book sales in ordinary years, cannot *per se*, support our work, which is now wider and more valuable than ever before. From all over our Land and Great Britain, representing about 120,000,000 of people there should now be raised, with comparative ease, a yearly sum of \$25,000. We are pledged to publish three volumes and an Archaeological Report each year. No other learned body in the world sends to each subscriber of but five dollars for the cause, so rich and interesting a literary return. The honorary officials, i. e., their services—in my case, an enormous draft of time and attention to the work—will not an educated public more generally support our cause.

THE PROGRAM OF THE FUND this winter is full of hope and prospective hard labor. Professor Petrie will renew his researches in the Denderah district, as arranged by Mr. Macé. The Archaeological survey department will send Mr. Davies to copy material from Old Empire tombs. The Græco-Roman branch again seeks for papyrus in the Fayum through the new towns, Ghentia and Hunt. And Messrs. Carter and Sillé are to be taken and hope to complete the work of restoration and transcription of the papyrus at the temple of Queen Hathor. Besides these four parties, the "Professor Petrie's Research Account," a kind of traveling notebook, is started, and other expeditions to the dark ages of Egyptian history are being planned, with the hope of revelations of its kings and peoples.

In addition to the second volume of Egypt, announced above, there will be issued Vol. IV of the Survey of the Temple of Deir el-Bahari-Hathor's Temple, and the illustrated Archaeological Report for 1887. Every public library in America should have these books.

THE FUND OF EXPLORATION has this year, *Inter alia*, a branch and its corresponding national office for the United States at Boston. There is a corps of literary secretaries for America, and it is desirable to increase the force. The writer as the official representative of the Fund in America will be glad to correspond with ladies and gentlemen interested and serious in Egyptian antiquities, and to represent their sections

of the country and appear as such in our circulars and the Annual Report. Address him at 525 Beacon Street, Boston. Now that valuable antiquities are being distributed among our museums, it is important to state that such distribution is absolutely *pro rata* of the subscriptions, of which an exact list *with each address* is sent to London from the American office. Local secretaries, however, could be of material service in presenting the claims of any particular museum in which they are interested.

ARCHAEOLOGICAL NOTES.

ANCIENT KINGS DISCOVERED. The remarkable characters of ancient history, such as Julius Cæsar, Pharaoh and Menes the first king of Egypt, "do not sleep easily in their graves." Several years ago the mummy of Pharaoh, with those of several other kings, were exhumed from the secret tombs in the mountains where they had been hidden. In the last twelve months the remains of Menes and an inscribed emblem or signet, enabling the archaeologist to identify them, have been discovered near the same mountains, and now the ashes which covered the funeral pile of Julius Cæsar have been found near the column which was erected to his honor.

OLDER THAN THE PYRAMIDS. The skeletons of kings of Egypt which are totally unknown, but who preceded Menes, have been brought to light, and their style of art has been studied by the Egyptologists. This style is very different to that which prevailed in Egypt during historic times, but is very similar to that which appeared in Babylonia under the Accadian dynasties. This remarkable find was made by a company of explorers who went in merely as a speculation and so was purely accidental, the value of which was made known by the Egyptologists, Petrie and others. Unfortunately, for it raised the price so rapidly that very few could purchase. It consists of a large number of skeletons buried in the midst of circular deposits of pottery vessels and tablets engraved with animals and symbols which resemble those on the earlier seals of Babylon. A description of them has been written by the French archaeologist, M. de Morgan, and a letter from him to his brother in New York has been published by the New York Numismatics Society, with engravings.* These have been loaned to us and we shall use them in the next number. It is very remarkable that the civilization which existed in Egypt before the time of Menes, should have so resembled that which existed in Accadia, but it only confirms the tradition given by Rawlinson and others that the Cushite race migrated along the coast of Arabia to Egypt at a very early date. The relics which have been discovered in Egypt illustrate this, for they are very different from those which appeared in the dynasties which followed Menes. We have then a civilization which preceded the pyramids of Egypt and which spread from Babylonia to Egypt at a date so ancient that the times of Abraham seem to be modern. The Cuneiform writing was known then and a style of art was common which consisted of the representation of animal figures which had a mythical significance. The Book of Genesis, written by Moses, was a modern book compared with the tablets which have been exhumed. The higher critics are all out of time on their calculations.

*See also an article by De Morgan in Popular Science Monthly for December, 1878, p. 313.

BOOK REVIEWS.

THE PHILIPPINE ISLANDS AND THEIR PEOPLE.—A Record of Personal Observation and Experience, with a short Summary of the more important Facts in the History of the Archipelago. By Dean C. Worcester, Assistant Professor of Zoology University of Michigan. The Macmillan Company, New York, 1898.

This book is very timely, for great interest is taken in the Philippine Islands at present. The author, who is now a professor of zoology at the University of Michigan, went there with Dr. Steere, two other gentlemen and a full blooded Philippine native, and spent eleven months in 1887-88, but made a second extended visit in 1890. He spent his time in making a study of the birds and natural history of the islands. This sumptuous volume contains an account of the two expeditions and the author's experiences in gaining access to the interior, passing his goods through the custom house and his various adventures, with a description of the different classes of people. The book contains scarcely anything of the natural history of the islands, but gives an excellent idea of the difficulties of the climate and the dangers that arise from the diverse population.

Changes have occurred and perhaps it is safer to travel in the islands now than then but probably similar experiences would befall any traveler from this country. The Spanish are not in the ascendancy and cannot make as much trouble through red tape and inaction to those who are entering the ports, but there is the same climate, the same population, and about the same condition of society now as there was ten years ago. Primitive plowing, with one ox instead of two, paths instead of roads, streams with no bridges, baggage borne on men's backs, the water buffalo instead of the horse or the railroad car, the typhoon which uproots trees and unrolls houses, malaria which "is deadly" a climate which is not altogether "lovely," digestive troubles which require constant dieting and make fruit a necessity instead of a luxury, and require the people to feed upon rice rather than upon meats, the mortality which is already threatening our soldiers seriously, and other peculiarities make the islands to be dreaded rather than regarded as a paradise.

There is no partisan parti-colored view brought out in the volume, but an unbiased and plain statement of facts. There is another side to the picture. The "Moro" houses built above the water and thatched remind us of the lake dwellings. The skin of the huge python, twenty-two feet and six inches long, and which weighed 375 pounds, reminds of an maul which are still more ancient. A typical "Tagbanua" house is built up on bamboo stilts and surrounded by tropical vegetation. The dances which are attended with music on drums, bamboo flutes, new sharps and banjos; cock fights which are the national amusement as much as are bull-fights in Spain, fully armed Moros with shields and spears are novelties which can be seen only in these islands. The watch towers have already been spoken of. It seems very strange when buildings which resemble ancient lake dwellings, and men and women who are as primitive as the people of the paleolithic age should be so closely associated with modern palatial residences and people who are dressed in the latest style, that canoes and boats which resemble those which have been dug out of the peat bogs of Europe should be floating in the water near the magnificent steamers and men of war.

The population seems to be distributed according to race descent the Moros in the central portion, the Tagbanua, a Pacific people, along the northern coast, the Battaks in the northern mountain regions, the Filipinos near the coast, and the Spaniards, Chinese and Americans in the cities. In

Manila civilization appears. There are two lines of street cars, and canals radiate in different directions. The Chinese serve as barbers, carpenters, tanners, cobblers and tinsmiths, and retain their national costumes. Old Manila, built in 1590, is surrounded by walls and moats, eight city gates and eight draw-bridges, which remind us of Europe in feudal times. Three stages of civilization, and nearly all nationalities are represented on this island. The cuts and plates in the book bring out these various points. By them we are carried back to the primitive days of Polynesia and the early stages of society. One cut represents a group of Mangyans and their house. The Spanish home of Senor Montenegro has an air of elegance which is in strong contrast with the picture of the natives. A Philippine saw mill with men furnishing the power after the old style, takes us back half way to barbarism. In fact one may go up and down the scale with about every page of the book, and it in the book, it is more likely to be the case in the islands.

There are many things agreeable, others very disagreeable, but American civilization seems bound to spread, and it is well that we have so elegant a book to tell us about the new field.

The Macmillan Company have put the volume into elegant shape and there will no doubt be a large demand for it.

THE MAKING OF PENNSYLVANIA.--An Analysis of the Elements of the Population and the Formative Influences that Created one of the Greatest of the American States. By Sidney George Fisher, author of "Pennsylvania: Colony and Commonwealth." J. P. Lippincott Company, Philadelphia, 1896.

The making of Pennsylvania seems to have been like the making of a mosaic on a very difficult background. The fragments went together fairly well until the last piece was put in place, and the problem was, how to adjust this piece without displacing others.

There were different nationalities represented at the very beginning, such as Dutch, Swedes, English, Quakers, Germans, Scotch, Irish and Connecticut Yankees, the most of whom, except the latter, settled quietly, carrying their peculiarities with them and choosing such places as were suited to their taste. "The Dutchman builds trading posts and lies in his ship, off shore, to collect the furs. The gentle Swede settles on the soft, rich meadow lands, and his cattle wax fat and his barns are full of hay. The Frenchman enters the forest, sympathizes with the inhabitants and turns half savage to please them. As soon as the Englishman came he attacked the forest with his ax; and that simple instrument with the rifle is the natural coat of arms of America, for all of British blood who were frontiersmen." These, with the Germans and Scotch-Irish, formed the first settlers, the last nationality having furnished some of the most prominent men, such as Governors Curtin, Geary, Johnston, Pollock and Pattison, and three chief justices, McKean, Gibson and Black. Grant, Jackson, Greely, Blaine and the immortal Lincoln were from this stock, though they were not Pennsylvanians.

The religious differences seemed to correspond with the nationalities. The Scotch-Irish were Presbyterians; many of the Germans were Moravians, others were Lutherans and Quakers, though the Quakers originated in England. The same movement of thought which produced the Quakers in England, sent a wave of quietism over Europe which resembled that of the Quakers, still the Pennsylvania Quaker was formal and stiff like the Puritan. He was close and abstemious, but despised learning, poetry and music, while the Puritan was devoted to learning and literature. The Mennonites, Tunkers and Baptists were also Germans. Many of the French were Huguenots, some were Catholics. Besides these, there were many other sects, Separatists, United Brethren, Labadists, and those of no religion, "Atheists, Deists and Naturalists." It is said by some that Pennsylvania lacks unity on account of the diversity of its scenery, and the

barriers produced by physical geography. There were, however, unseen barriers which kept the people apart at the very beginning. The Moravians, who settled at Bethlehem not far from Philadelphia, have been more prominent than any other sect, because of their origin and history, though they were not as numerous as the Lutherans or Quakers.

The most remarkable events and the most tragic scenes occurred in connection with the settlement of the people from Connecticut in Wyoming Valley. The history of this struggle is well known, but is reviewed thoroughly in this book. The writer evidently sympathizes with the Pennsylvania side, but he gives the history very clearly. The book is written in an interesting style, is fascinating and should be read by all.

BOOKS RECEIVED.

Life in Early Britain—Being an Account of the Early Inhabitants of this Island and the Memorials which They have left behind Them. By Bertram C. A. Windle, D. Sc., M. D., M. A. Trinity College, Dublin, F. S. A. (London and Ireland), Dean of the Medical Faculty and Professor of Anatomy, Mason College, Birmingham. With Maps, Plans and Illustrations. G. P. Putnam's Sons, New York. D. Nutt, London, 1897.

Aboriginal Chipped Stone Implements of New York, prepared by Wm. M. Beauchamp, S. I. D. Bulletin of New York State Museum, Vol. 1, No. 10, Albany; price 25 cents. Also, *Chipped Stone Articles used by the New York Aborigines before and during European occupation*, Prepared by Wm. M. Beauchamp, S. I. D. Bulletin of N. Y. State Museum, Vol. 1, No. 18, Albany University. Price 25 cents.

The Religion of Ethyl and A. 1911. By Morris Jastrow, Jr., Ph. D., Leipzig, Professor of Semitic Languages in University of Pennsylvania. Ginn & Co., publishers, Boston.

Historical Pilgrimages in New England. By Edwin M. Bacon. Silver, Burdett & Co., New York, Boston, Chicago.

Christianity in the World. Lectures delivered in India and Japan by John Henry Barrows, D. D., President of the World's First Parliament of Religions, and Haskell Lecturer on Comparative Religion in the University of Chicago. A. C. McClurg & Co., Chicago, 1897.

A Record of Study in Prehistoric Archaeology in Language. By Daniel G. Brinton, A. M., M. D., Ph. D., Sc. D., Professor of American Archaeology and Linguistics in the University of Pennsylvania. Printed for private distribution. Media, Pa., 1897.

The Linguists of the Great Lakes and the St. Lawrence. By Daniel G. Brinton. Reprinted Nov. 17, 1897, from proceedings of the Am. Philos. Society, Vol. XXXVII.

Folk Lore of the Great Lakes. Collected by James Deans, edited by Oscar Lovell Triggs. Archives of the International Folk-lore Association. Vol. II. Chicago, 1897.



JONES ADDRESSING THE INDIANS IN COUNCIL.
From Parkman's "Jesuit," Little, Brown & Co.

Boston

THE
American Antiquarian

VOL. XXI.

MARCH AND APRIL, 1899.

NO. 2.

BRITISH STONE CIRCLES.

BY A. L. LEWIS, F. C. A.,

Treasurer of the Anthropological Institute of Great Britain and Ireland.

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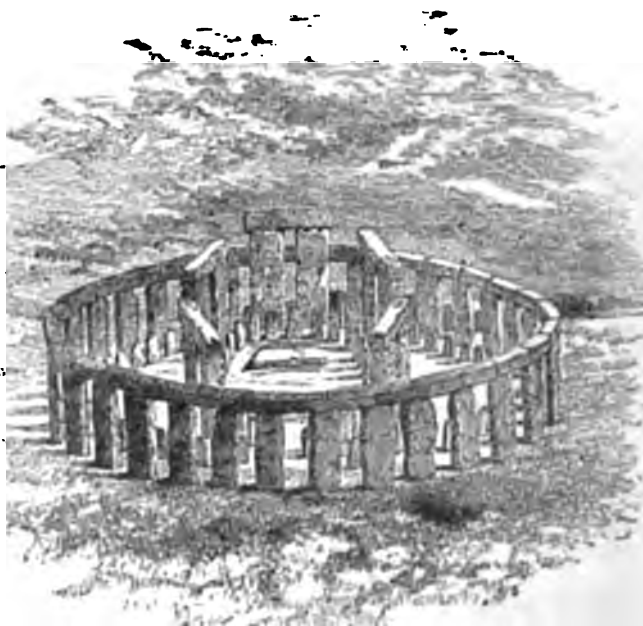
There are certain antiquities which, though not absolutely confined to Great Britain, are more numerous there than in any other part of the world, and are of greater size and importance there than in all the rest of the world, so far as it has been archæologically explored. These are the circles of stones, of which Stonehenge is better known, especially to Americans, than any other.

These circles may be divided into three classes: 1. Hut circles, or continuous circular walls, seldom more than three feet high, and generally formed of blocks as thick and broad as they are long, which are the lower parts of prehistoric dwellings; these vary in diameter from ten to thirty feet, the larger ones having often had central supports for the roof in addition to the circular walls. 2. Small circles of rather thin flat stones set on edge, which have been placed round the bases of sepulchral tumuli, either close to them as retaining walls, or as fences or ornaments at a little distance from them. 3. Circles of separate upright stones, which are generally much larger than the circles of the first and second classes, for their diameters vary from 60 to 380 feet, while the great circle of Abury was at least 1,100 feet in diameter. The stones of which circles of this kind are composed also vary in size, from pillars less than three feet high and a foot or so in width and thickness, to monoliths twenty feet high, six feet wide and three feet thick, like the largest at Stonehenge; or masses fifteen feet high and broad, and six feet thick, like some of those which still remain at Abury. Some of the stones of these circles are more or less rudely shaped, but most of them show no sign of working.

The present article will be confined to the consideration of circles of the third class, and of their possible objects, with regard to which archæologists are by no means agreed, for, while circles

of the first class have clearly formed parts of dwellings, and those of the second class are unanimously admitted to have formed parts of tombs, there are points about those of the third class which are differently interpreted by different writers, and regarded as purely accidental and meaningless by others.

Of all circles, large or small, the best known and most numerously visited is Stonehenge (eight miles from Salisbury). The outer circle at Stonehenge is 97 feet in diameter inside, and, when (if ever) complete, consisted of thirty stones, each about thirteen feet high, the tops of which were connected by stones laid across the spaces between them, which stones were kept in



STONEHENGE RE-ERECTED

place by projections on the tops of the upright stones which fitted into holes made in the horizontal stones. Within this circle was another of small upright stones, which, if ever complete, numbered about forty-four. Within these again were five groups of three stones each, two upright supporting one horizontal, the latter being kept in place by tenons and mortises cut in the solid stone, like those of the outer circle; these five groups of triaditions were arranged in the form of a horseshoe, the highest being to the southwest, with two lower ones on each side, and an opening nearly forty feet wide between them to the northeast. Inside this horseshoe of triaditions was another, consisting of nine-

teen upright stones, from 10 to 12½ feet high (the highest being in front of the highest trilithon), with an opening to the northeast coinciding with that of the horseshoe of trilithons. Within these, and in front of the great central trilithon, was a flat stone, more than 16 feet long and 2½ wide, which is usually called the "altar stone." A trench and low bank surround the circle at a distance of about 100 feet; an avenue, marked out by earthen banks, leads from the trench in a northeasterly direction, and at a distance of 96 feet along this avenue is a large upright stone, with a pointed, but unworked top, known as the "Friar's Heel," which is in such a position that anyone standing on the "altar stone" on the morning of midsummer day may see the sun rise just over the top of the "Friar's Heel." Some say that this stone has no connection with the circle, but marks probably an isolated burial; but, if the stone were not there at all, the arrangement of



FRIAR'S HEEL AND TRILITHONS AT STONEHENGE.

the circles and of the avenue would still point unmistakably in the direction of the midsummer sunrise.

Though I have omitted many details which have caused much discussion among archæologists and others, I have described Stonehenge at considerable length, because it is unique as regards the cap stones connecting the upright stones, and in some other particulars; and because it combines characteristics of different localities in a way no other circle does, and gives a key to the object of other and, as I think, older ones, for my impression is that Geoffrey of Monmouth's statement that Stonehenge was set up as a memorial of some British nobles treacherously murdered by the Saxons, is very likely to be correct. If so, it was probably erected in its present form on the site of an older circle, by Britons, who, though Christians themselves, had some knowledge of the rites and ceremonies of pagan times and adopted this form of memorial to show their connection with the pre Roman inhabitants, and it may in that case have been the only solar temple in which the sun was never adored.

If the "Friar's Heel" at Stonehenge were really set up to mark the midsummer sunrising point, there should, it would seem, be some indication of the same point in other circles, and it is to this that I have directed particular attention, with the following results:

Single stones are to be found, or are known to have existed, to the northeast of the following circles: The Rollrich, near Chipping Norton in Oxfordshire; "Mitchell's Fold," Shropshire; Winterbourne, Wiltshire; Winterbourne, Dorsetshire; Scorhill on Dartmoor, and Dance Maen, near Penzance, Cornwall. At Abury in Wiltshire, and Arbor Lowe in Derbyshire, the circles were surrounded by high banks which shut out the horizon from the view of those inside them, and at both places a shrine, technically called a "cove," consisting of 3 stones forming 3 sides of a square, \square the open side of which faced northeast, stood in the centre. At Stanton Drew, near Bristol, there is a group of three circles and some other stones which are arranged in lines with each other, and apparently at carefully proportioned distances, some of which may have a symbolical meaning; in one of these lines a circle occupies the position to the northeast of the principal circle, which is elsewhere occupied by a single stone. A "cove" similar to that at Abury stands near these circles.

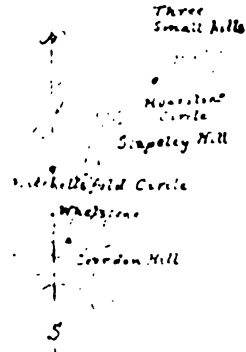
Near Penmaenmawr in North Wales there are two fallen stones northeast of a circle, but being in a valley they would not be of much use as indicators of the sun-rising point. However they direct the eye to a group of three hills beyond. At Mitchell's Fold in Shropshire there is, or was, also a stone in a northeasterly direction, but the sun rising point is occupied by a high hill, beyond which, in the same line, and at an equal distance, is another circle, called the "Hoarstone," or Marshpool Circle, beyond which, again, is a group of three low hills. The observation of these facts led me to think that in hilly countries the circle builders had (very wisely) placed their circles in such a position that some prominent hill top should fulfil the function of indication, which on level ground was discharged by a single stone. I am very inclined to think that the order of precedence may have been the reverse, and that the hill may have been the first to be made use of, the single stone being set up where a hill was not available. Be this as it may, hills take the place of stones to the northeast of circles not only in Wales and Shropshire, as already stated, but at Fernworthy on Dartmoor, at Stannon, at Leaze, at the Trippet Stones and Strippie Stones, and at Boskednan, all in Cornwall. In Cumberland again, there is another variation, instead of the stone or hill being to the northeast of the circle, the circle is to the northeast of the stone or hill, but the line of orientation remains the same—southwest to northeast. Thus, at "Long Meg" and her "Daughters," the single stone called "Long Meg" is southwest of the circle formed by the

other stones (the "Daughters"*); while at Swinside the most prominent hill near—Black Combe—is southwest from the circle, and a group of three smaller hills is northeast from it.

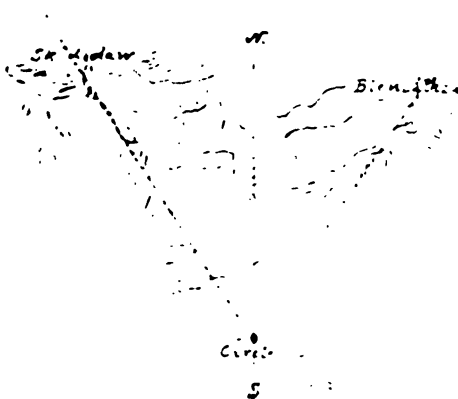
The circles in which I have not found some reference to the northeast are very few, and even in the cases where nothing is to be found now, there may have been an outlying stone which has been removed or destroyed.

In speaking of the northeast, I must not, however, be taken to mean that particular point of the compass, but any point between north and east from the centre of the circle. In many cases the point is that of the midsummer sunrise, but in others it may have been that of the Beltane or 1st of May sunrise, or the sunrise on some other date. Sometimes it is too far north to refer to the sunrise, but in that case it may have been the point of the first appearance of the dawn. There is a precedent for this in an Egyptian bas-relief on which a king is represented as

adoring the Zodiacal light immediately preceding the sunrise.† In other cases, however, the object of adoration or observation



CIRCLES IN SHROPSHIRE.†



CIRCLE NEAR KESWICK, CUMBERLAND§

may have been the pole-star of the period, or some other star. The observations of Sir J. Norman Lockyer on the orientation of the temples of Egypt, and of Mr. Penrose on the orientation of the temples of Greece; I may add, those of Mr. Swan on the ruins of Mashonaland, furnish ample ground for adopting this view.

Another interesting point is the use which is made of triple-

* There were, however, some circles now destroyed in the northeast. E. E. Ing Meg circle † With hill midway between in the same line as Enal's Heel in Shropshire ‡ Proc. Soc. Bib. Arch., Vol. XV, pp. 284 and 285 § See also Job III, 9, for a reference to the stars of the twilight preceding the dawn † And its position in reference to the two most prominent mountains near it

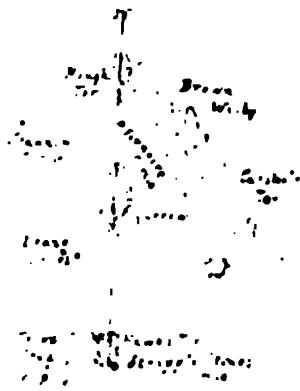
summits, or groups of three hills. At Mount Murray in the Isle of Man there is a small circle, on the north of which is an avenue winding round from its entrance on the northeast of the circle to its junction with the circle on the northwest. At its entrance, this avenue is formed of two banks of earth, four or

five feet high, faced with stones at intervals; of these, that on the left on entering has one stone at the end of it, while that on the right has three stones at the end of it. This rule seems to have been followed in placing the circles with regard to the hills, the point to be faced being north or northwest. At the circle near Keswick in Cumberland the entrance is due north; on the left the lofty single summit of Skiddaw rises 34° west of north; on the right the equally lofty summit of Blencathra, which



CIRCLE AT SWINSIDE, CUMBERLAND.*

has the appearance of a triple peak, is $34-5^{\circ}$ east of north. At the Swinside circle in the same county the single top of Black Combe is on the southwest, and a group of three lower hills to the northeast. At Penmaenmawr, and at the Hoarstone in Shropshire there are, as at Swinside, groups of three hills to the northeast of the circles. This would seem to indicate that the right hand and the northeast were associated in the minds of the circle builders. At the Stannon circle on Bodmin Moor in Cornwall, Rough Tor† indicates a sunrising point north of east, while three out of the five points of Brown Willy‡ creep up due east, over an intervening ridge, in a very remarkable manner. At Abury a shrine of three stones occupied the middle of the



CIRCLES ON BODMIN MOOR.‡

* The highest point of the hills is to the north, and the entrance to the northeast.

† The two highest points of the hills.

‡ Showing positions of three points of the hills to the north.

northern circle, while a single stone stood in the centre of the southern circle.

This symbolism, as it may be called, of three and one is suggestive of a trinity in unity, which, however, would not be Christian, but phallic; the life-giving influence of the sun pouring into a circle from the point of a single menhir might also be held to bear a phallic signification by those who wished it to do so.

The relation of the circles to the hills, the examples of which are too numerous and striking to be accidental, might be also suggestive of mountain worship, were it not that mountains are in fact associated with sun worship. Thus, in Egyptian theology, we have the "mount of glory," where the sun rises and is saluted by the powers of the east.*

The American explorers in Assos have remarked upon the positions of the Lesbian Olympus (due south) and of Mount Ida (northeast) from the temple there, † and there are many references in the Old Testament to hills and mountains as more or less holy, and others which clearly point to their connection with the earlier solar religion of Canaan. ‡

The orientation of the Euphratean Pyramid Temples appears to be upon the same lines and, perhaps, to explain in some measure the orientation of the British circles. The corners of these temples face the cardinal points; the northeastern face is called in Akkadian, "the cardinal point of the mountains," and in Assyrian, "the rising"; but the southeastern face is called in Akkadian, "the funereal point," which accords with the conclusion I have drawn from the British monuments, namely, that the line S.W.—N.E. is indicative of summer and of worship and renewed life, while the line N.W.—S.E. is devoted to winter and death § Many of the Asiatic races (particularly in the north), however, regard the north as the region of night and of demons; and, when facing the rising sun, regard the right hand, or south, as propitious, and the left hand, or north, as the reverse. There are, thus, two rather contradictory lines of thought in connection with orientation; one coming from northern Asia, and the other from Egypt, Arabia, Chaldea, etc., so that it either can be clearly identified in the scheme of any ancient monument some progress may be made towards tracing the origin of those by whom that structure was erected.

* See P. Lejage-Renoir (President), in *Proc. Soc. Bib. Arch.*, Vol. XVIII, p. 2, Vol. XIX, p. 143.

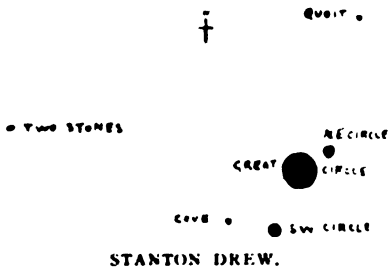
† *Century*, October, 1877. I might give many extracts from the Reports of the Smithsonian Institute bearing upon sun worship, circular stones, and ancient American structures, which have many very suggestive characteristics, but it is hardly necessary that I should do this for American readers. They can look them out for themselves.

‡ *I Sam.*, Chap. IX, v. 13. *Chap. X*, v. 5. *Psalms* LXVIII, v. 16. CXXI, v. 1. *Jeremiah*, Chap. XVII, v. 2; III, v. 23. *II Kings*, Chap. XVI, v. 4. *Hosea*, Chap. IV, v. 11.

§ Robt. Brown, Jr., F.S.A., in *Proc. Soc. Bib. Arch.* (1877), Vol. XVI, p. 277.

Major Conder, *Altars, Hieroglyphs and Hittite Inscriptions*, London: Longmans, Green & Co., *Journ. Anthropol. Inst.*, Vol. XXV, p. 111.

The circles at Stanton Drew, near Bristol, also show evidence of much careful planning. The diameters of the three circles are in the proportions of 5, $7\frac{1}{2}$ and 19; the distance from the centre of the great circle to an outlying stone, called the Quoit, is five diameters of the great circle, or nineteen diameters of the north-eastern circle—the latter having the same diameter as the outer circle at Stonehenge; the distance from the centre of the south-western circle in a straight line through the centre of the great circle to the Quoit is seven diameters of the great circle; while the distance from the group of three stones, called the Cove, in a straight line through the centre of the great circle to that of the northeastern circle is twice seven diameters of the northeastern circle; there is, therefore, not only proportion, but method in the proportion. The parish church is near the Cove, and infringes on the line between



it and the circles, so it may have been placed there in accordance with the well known policy of the early Christians in Gaul and Britain. The distance from the centre of the great circle to two other outlying stones is nine diameters of the great circle; all these measurements are within an average working error of one-half of one per cent.

Diodorus Siculus quotes from Hecateus (whether of Abdera, who lived in the fourth century B. C., or of Miletus, who lived in the sixth century B. C., is uncertain) an account of an island of the Hyperboreans where Apollo (or the sun) had a stately grove and renowned temple of a round form, beautified with many rich gifts, and of which he says further " that in this island the moon seems near the earth; that certain eminences of a terrestrial form are seen in it; that the gods visit the island once in the course of nineteen years, in which period the stars complete their revolution, and that, for this reason, the Greeks distinguish the cycle of nineteen years by the name of the greater year." There is little doubt that the island referred to was Great Britain, and the temple has been thought to have been the great circle at Abury, but Stanton Drew, though much smaller, is far more accessible from the sea, and, therefore, more likely to have been known to casual visitors, and the embodiment of the number 19 in its measurements makes its identity with the temple of Hecateus very probable.

There is a fashion in archæology, as in other things, and it has of late years been the fashion for archæologists to declare that all the circles were burial places—outer railings of family

cemeteries—and that the outlying stones were a mere matter of accident; while a connection with the hills has not occurred to any of them. The fact that the outlying stones are arranged in certain lines, and at certain distances, shows that their position is no accident, but part of a scheme which indicates something more than burial, and, although interments of a casual nature have been found in some circles, yet there are many, including some of the largest, in which no grave has been found, and one such case fully established is enough to show that burial was no more the primary object of the circles than it is of our churches.

There is, however, one set of circles of which burial was apparently the chief object. These are round about Aberdeen, and are of a peculiar construction. They have a cist, covered by a tunulus, in the centre, the latter being faced by a circle of small stones close together, and surrounded at a distance of a few feet by an ordinary open circle of large, upright stones, the largest being usually to the south, and the others diminishing regularly to the north. The space between the two largest at the south is filled up by a large single stone, standing on its longest edge, which is locally called the altar-stone; this arrangement is not found, so far as I have been able to discover, anywhere, except in the country round Aberdeen, where however, there have been great numbers of these circles; the altar stone at Stonehenge, the counterpart of which is not found in any other English circle, is the nearest approach to it, but that is a flat stone, lying on the ground in front of the highest trilithon—not standing on edge between other stones.

Strangely enough, although burial was apparently the principal, if not the only object of these circles, it is with regard to them that we have the clearest evidence of a very old tradition of their being places where pagan rites were performed by pagan priests.

The English antiquary Aubrey has been charged with inventing the theory that the circles were temples—Druidic temples, but Dr. Garden, professor of theology at Aberdeen, wrote to Aubrey in 1722, describing some of these circles and saying: "The general tradition throughout this kingdom concerning this kind of monuments is that they were places of worship and sacrifice in heathen times," and an Aberdeenshire tradition which was old more than two hundred years ago, is not to be lightly set aside, for the country then, surrounded as it was by sea on two sides and by mountains populated by wild highlanders, who, as Dr. Garden says, "spoke Irish," on a third side, was in a condition in which old traditions might well be perpetuated for centuries. Having regard to their clearly primary sepulchral purpose of these Aberdeens stone circles, and to their usual direction to the north, as well as to their geographical position, it seems by no means unlikely that they may have been constructed under



STONEHENGE BY MOONLIGHT.

northern Asiatic influence; while those of southern Britain, with their northeasterly references, seem rather to have been erected under influences originating from some of the countries bordering on the Mediterranean, such references as they exhibit to the north being in all probability to some star, or stars, which indicated the approach of dawn, as is shown by Sir J. Norman Lockyer to have been the case with some of the Egyptian temples. Here, then, we possibly obtain a glimpse of one of the earliest of the many racial mixtures, the ultimate product of which has become the "free born Englishman."

I have said that large stone circles, although more numerous in Great Britain than in all the rest of the world, are not absolutely confined to that island. Some small circles of the class (No. 3) of which I have been mainly treating, are, perhaps, to be found in Ireland, but I have not seen them myself. There were, perhaps, a dozen more or less complete circles in Brittany, and the adjoining islands, which, according to information supplied to me by the late Admiral Tremlett, who was a frequent visitor to that part of the world, seem to have had a preponderance of references to the northeast, in the shape of outlying stones, alignments, etc. Of these, the most interesting are the two circles of Er Lanic, of which one-and-a-half, together with outlying stones to the northeast and southwest, are now beneath the waters of the Morbihan. Mr. Barrington Brown has described a circle in British Guiana, 30 feet in diameter, formed of rude stones two or three feet high and five to six feet apart. Circles are said also to exist in Peru and other parts of South and Central America. Rumors of circles in Morocco, Algeria, Australia and Persia have been circulated, but in the absence of trustworthy descriptions it is difficult to say anything about them. There are some small ones in Palestine, of which Colonel Conder says: "The circle is a sacred enclosure, outside which the Arab still stands with his face to the rising sun"; from Ezekiel, chapter viii., verse 16, this would seem to have been the proper position for a sun-worshipper. Colonel Forbes Leslie described a circle 27 feet in diameter, which consisted of 23 very small stones, the three largest being three feet high, fixed in the ground at the west, facing the east, while on the east was a stone set back.* These were in western India, on the table land above the ghauts in the Mahratta country; sacrifices of cocks were offered in these circles, and broken lamps were found which appeared to have been used during the ceremonies. Colonel Meadows Taylor described rocks in India surrounded by stone circles which were used by shepherds for sacrifices. Mr. Walhouse has, also, described a circle in the Nilgiri hills with a smaller circle to the east of it.

* The sun rises very little north of east in India.

SOME OF THE TABLETS OF MONTREAL.

BY REV. JOHN MACLEAN.

Montreal is rich in historic associations which have gathered around it since old Mount Royal was first visited in 1535 by Jacques Cartier. A few years ago the Numismatic and Antiquarian Society of Montreal erected tablets at various points in the city, to preserve for posterity a record of names, brave deeds and dashing exploits in the days of New France and during the early English regime. For three hundred years the site of the ancient town of Hochelaga was unknown, although it was a place of considerable importance when visited by Jacques Cartier in 1535, but it was accidentally discovered nearly in front of McGill College grounds on Sherbrooke street, toward Metcalf street, by men digging for foundations. A tablet on Guy street, near Sherbrooke street, reads as follows: "Site of a large Indian village, claimed to be the town of Hochelaga, visited by Jacques Cartier in 1535." On this site were found a skeleton in a sitting posture, broken pottery, pipes, and bones of animals used as food. A tablet on the City Hall, also, reads: "To Jacques Cartier, celebrated navigator of St. Malo, discovered Canada and named the St. Lawrence in 1534.

In 1611, Champlain, accompanied by an Indian and a Frenchman, visited the island of Montreal, and was so impressed with the site that he selected it for a city. Custom House Square was chosen as the first public square. A tablet on the old Custom House reads: "The first public square of Montreal, 1627. 'La Place du Marche,' granted by the seigneurs 1679." On the site of the present Custom House, Champlain sojourned in 1611, and having selected a site for the town, planted two gardens, surrounded by walls of clay. Thirty one years later, De Maisonneuve landed with the Governor De Montmagny, Father Vimont, a Jesuit, two women, and fifty five male colonists, thus laying the foundations of the city. Two tablets on the front of the Custom House record the facts: "This site was selected and named in 1611 La Place Royal, by Samuel de Champlain, the founder of Canada"; and, "Near this spot, on the 18th of May, 1642, landed the founders of Montreal, commanded by Paul de Chomedey, Sieur de Maisonneuve. Their first proceeding was a religious service." A picket fort mounted with cannon, where the inhabitants found shelter from the attacks of the Iroquois, stood on Commissioners street behind the thoroughfare in the rear of the Custom House, known as Port street, and was known sometimes as the Fort de Ville Marie. A tablet on the site reads: "Here was the first Fort of Ville Marie, first dwelling place of the founders of Ville Marie;

built 1643; demolished 1648; replaced by the house of Monsieur de Callieres, 1686." On Foundling street, marking the site of the residence of Governor de Callieres is a tablet, as follows: "Site of the chateau of Louis Hector de Callieres, Governor of Montreal, 1648; of New France, 1698-1703. He terminated the fourteen years' war with the Iroquois by treaty at Montreal 1701." The feudal lords of the city were the Gentlemen of the Seminary of Notre Dame, who erected the first Manor House, which stood in the small court of Frothingham and Workman, reached by an open passage from St. Paul street. The tablet upon the present warehouse reads: "Upon this foundation stood the first Manor House of Montreal, built 1661; burnt 1852; rebuilt 1853. It was the Seminary of St. Sulpice from 1661 to 1712. Residence of De Maisonneuve, Governor of Montreal, and of Pierre Raimbault, Civil and Criminal Lieut-General." Within the original fort was built the earliest church in Montreal, which was of bark, and this was replaced in 1655 by the first parish church, on the north corner of St. Sulpice and St. Paul streets, where a tablet marks the site.

The Seminary at Paris founded the black-faced Seminary of St. Sulpice, adjoining the Parish Church, in 1710, and in this building have been kept from the beginning the baptismal and other registers of the city. One of the tablets on its walls reads: "Here lived, in 1675, Daniel de Grisoulou, Sieur Dulhut, one of the explorers of the upper Mississippi; after whom the city of Duluth was named. Upon the face of the Imperial Building, Place d'Armes, are two tablets. One of which records the fact that the Imperial Building stands upon the second lot granted on the Island of Montreal, and the other reads: "Near this square, afterwards named La Place d'Armes, the founders of Ville Marie first encountered the Iroquois, whom they defeated. Chomedey de Maisonneuve killing the chief with his own hands, 30th March, 1644." A tablet on the Bank of Montreal reads: "The stone fortifications of Ville Marie extended from Dalhousie Square through this site to McGill street, thence south to Commissioners street, and along the latter to the before-mentioned square. Begun 1721 by Chaussegas de Lery; demolished 1817." Near the corner of Notre Dame and McGill streets was erected in 1685 a small wall of palisades, which was replaced by the western gate of the fortifications, and an inscription reads: "By this gate Amherst took possession, 8th September, 1760. General Hall, U. S. Army; 25 officers, 350 men, entered prisoners of war, 20th September, 1812." The Place des Jesuites was at the north end of Jacques Cartier Square, and this was the site of their monastery wherein Charlevoix, the historian, lodged, of whom an inscription says: "The Pere Charlevoix Charlevoix, historian, of La Nouvelle, France, 1725." A tablet on the Court House recalls the torturing by fire of four Iroquis prisoners in 1696, by the order of Governor Frontenac in

reprisal for the torturing of French prisoners by the Indians, and on this spot stood the town pillory of later days. On the east corner of Jacques Cartier Square is the old store of the Compagnie des Indes, which answered to the Hudson Bay Company during the French régime, and is now used as a saloon. The tablet reads: "The residence of the Hon. James McGill, founder of McGill University, 1744-1813." On the lower part of the square, near St. Paul street, is the site of the old Chateau de Vandreuil, the residence of the last French Governor of Canada. The Chateau de Ramezy, opposite the City Hall, has two tablets; one relating to its erection about 1705, and the other reads: "In 1775, this chateau was the headquarters of the American Brigadier-General Wooster, and here, in 1776, under General Benedict Arnold, the Commissioners of Congress, Benjamin Franklin, Samuel Chase and Charles Carroll, held council." In the council room of the chateau Franklin set up his printing press, and it was by him that Fleury Masplé, the first printer of Montreal, was brought from Philadelphia to found, in 1778, the "Gazette" as the first paper in Canada, which was published partly in French and partly in English.

The ancient wooden block house, erected as the French citadel, stood on Dalhousie Square at Quebec Gate, where the town walls ended, and when this was demolished the last part of the French fortifications was removed. A tablet reads: "This square occupies the site of La Citadille, built in 1685, replacing the mill erected by Maisonneuve and Daillehoust in 1660, Royal Battery 1713, levelled and presented to the city by Earl Dalhousie, Governor-General 1821. Near the east corner of Notre Dame street stood the Porte St. Martin (Quebec Gate). Ethan Allan entered it, a prisoner of war, 1775. This station replaced the French Arsenal, removed 1881, with the last portion of the fortification walls of 1721." Upon a quaint looking old church, reached by the gateway leading from Notre Dame street to the Convent of the Congregation at St. Lambert Hill, is a tablet, as follows: "Notre Dame de Victoire, built in memory of the destruction of the fleet of Sir Hovenden Walker, on the Isle aux Oeufs, 1711." On St. Helen street, near Notre Dame street, a tablet reads: "Here stood until 1810 the church and Monastery of the Recollet Fathers, 1667, in which the Anglicans from 1764 to 1780, and the Presbyterians from 1771 to 1792, worshipped." On the summit of Mount Royal a tablet records the visit of Jacques Cartier to it in 1535. On the wall of the Hotel Dieu de Ville Marie the tablet reads: "Hotel Dieu de Ville Marie, founded in 1644 by Jeanne Mance, transferred in 1891 to this land, given by Benoit and Gabriel Basset. Removal of the remains of Jeanne Mance and 178 nuns, 1891."

SOME COPPER IMPLEMENTS FROM THE MIDLAND DISTRICT, ONTARIO.

BY G. E. LAIDLAW.

Copper, as a rule, did not enter largely into the practical economy of the primitive inhabitants of this district.* Nevertheless, an occasional weapon or implement turns up; always, as yet, in isolated cases and not associated, or in connection with any remains of the village era.† So we are left in doubt as to who were the makers of the specimens recovered, whether they were manufactured here, or were intrusive as the results of barter, loot of war parties, or heirlooms.

The early French explorers and Jesuit missionaries, though mentioning in a brief way the acquaintance of various Canadian tribes with copper, and the existence of copper nuggets amongst them, make no mention of seeing copper manufactured into articles of use, though at a later date, 1765, Alexander Henry, in speaking of his visit to the Ontonagon River, south shore of Lake Superior, and in referring to the masses of virgin copper there, states of the Indians that "they were used to manufacture this metal into spoons and bracelets for themselves. In the perfect state in which they found it, they only had to beat it into shape." An art in all probability learned from the white man.

The Jesuits, Claude Allouez, and others refer to the nuggets of copper possessed by the Indians, and which descended from father to son, being treasured as household goods. These nuggets were probably "float," and occur over a large territory, as far east as Nova Scotia;‡ some being picked up here.§ The larger pieces would be difficult for the Indians to split up and manufacture with their primitive tools.

Though the variety of types of copper objects from this district, embrace all the principal types of implements and weapons used by the aborigines the individual number of specimens of types are small. Copper manufactured, as the Indians manufactured it, did not hold such an edge for workable purposes as some sorts of stone, though it could be more quickly, as a rule, ground to an edge; it is highly probable that one chief factor of their origination, was the pre-eminent one amongst the Indians, namely, "ceremonial" or "big medicine" taking part in their mystery-cult and used for display on state occasions, especially to awe visitors with the importance and wealth of their hosts. Admitting the above, still we must acknowledge that some of the specimens recovered of late

* Huron-Iroquois people

† Prior to 1615, Champlain's visit here

‡ Nova Scotia nuggets might result from local copper, and their copper relics from the shell heaps may be made from same

§ Mining experts state that copper, both natural and ore, occur a few miles north

years could be put to very practical uses, and when dull could be ground to an edge easier than a stone tool of the same dullness;* then, also, their edges were not liable to fracture or chipping. The old theory that existed up to some years ago, that "coppers" were tempered on their cutting edges is exploded, the fact being that the edges are harder and denser, resulting from being hammered more than the rest of the tool, and the tool being denser than the natural copper for the same reason, we can substitute "condensation" for tempering. The edges were sometimes finished off by grinding. Before me now is a double-edged knife, which plainly shows grinding on both sides of back and front edges. If the people who made these "coppers" became possessed, as it were, of the art of tempering with fire, it would not be long before they would find out how they could change shapes by hammering when hot, and from that to moulding is a short step; but all evidence up to date points out that the copper was treated as a stone. Several of the specimens figured here show that they were composed of a thin sheet of copper folded and hammered together until the desired shape was produced. In some cases the top or outside layer breaks off in scales, or blisters with accidental heat, as one specimen which was passed through a brisk fire shows, thus showing the laminated or "folding" process of construction; but in no case are there found on these specimens marks resulting from moulding, as referred to by Foster in "Prehistoric Races of the United States," pages 251-260, though some of the specimens show highly corrugated and corroded surfaces, whilst others are smooth with slight traces of hammer marks. It may be, however, that in isolated cases some implements were moulded by early white traders or half breeds, but, if such were the case, they must of necessity be few, and only done in case of need or experimentally, and would probably be knives, axes, spears or fish hooks. However, many coppers have been found under circumstances which may claim for them great antiquity.

Without going into a long dissertation on the ancient mines and miners of Lake Superior, and the occurrence of copper in other districts to the north of Lake Huron, it is sufficient to say that there is enough local copper occurring in this vicinity as "drift" or "float" nuggets to have supplied the aboriginal population with all the implements required. The copper implements found here have been principally knives and spear-heads, and a detailed description of them will probably be useful for reference and comparison.

No. 1 is a knife of the type figured by Whittlesey, page 26, "Ancient Mining Lake Superior," and also "Annual Report Mus. Am. Arch., 1850, Fig. 2, page 2. Total length, 6 7/10 inches; one, 2 1/2 inches; greatest width, 1 1/4 inch; thickness not greater than 3/16 inch; weight 3 1/2 ounces avoirdupois;

*The fact that the edges have been tempered some years in various parts

blade, slightly curved and a little bent to one side. The tine for insertion in handle has the extreme end bent over, a circumstance noted in another knife of similar nature from nearly the same locality; possibly it was turned down to hold the handle on fast. The fold marks correspond to what Whittlesey calls flaws produced by cold hammering. It was found fifty years or so ago, near the Huron trail on the south bank of the Falbot River, Balsoner P. O., Victoria County. Surface find.

The other knife referred to is triangular in cross-section of blade, having a slight ridge on one side of the blade, the same side bent, and is more massive. These knives I have designated "women's crooked knives."

Fig. 2 is a knife of a different shape. This one is figured on page 55 "Arch. Rep., Ont.," 1896-97. It has a straight-backed, pointed blade, with tine for insertion into a handle; total length, 8 1-10 inches; the tine being 2 1/4 inches; breadth, 1 3/8 inch; average thickness, 1/8 inch; weight, 2 5/8 ounces avoirdupois. It is double-edged, the edges being bevelled down with grinding. It is a much finer specimen than that figured by Whittlesey on page 23, "Ancient Mining." Locality, Bexley Twp., Victoria County. It was found on surface of rock, right of way, Trent Canal, in 1896. Accidentally blistered with bush fires. Of laminated or folded structure. Compare with Fig. 54a, page 256, Foster's "Prehistoric Races of United States," and Fig. 1, page 99, Short's "North Americans of Antiquity," minus the crook at the end of tine; also Fig. 2, plate II., "Rep. Mus. Am. Arch.," 1890.

Fig. 3 is a spear head, with a wide and rather thin blade; socketted, with a shoulder or transverse ridge in the socket to prevent the shaft from sliding through. Dimensions: Total length, 6 1/2 inches; socket, 2 1/4 inches; breadth, 1 5/8 inch, and 3-16 thick through the slight ridge which extends longitudinally down the back, or opposite side to the socket, which gives the blade a slight triangular cross-section. This specimen is figured on page 25, "Arch. Rep., Ont.," 1897-98, and of which Mr. Boyle says: "Not many finds of native copper relics have been made north of Lake Simcoe. What we call a spear, is from Bexley Twp., but it may have been a knife, the purpose of which it would serve very much better. When fresh from the smith's hands, this must have been a very beautiful object, the blade is quite thin (almost too much so for thrusting) and has been highly polished. The socket looks as if it had been shaped on a mandril." Locality, Bexley P. O., N. Victoria. Surface find in 1897; being ploughed up near an ancient village site. Weight, 3 1/4 ounces avoirdupois. Similar to types figured by Foster, page 265, and Fig. 15, page 21, "Ont. Arch. Rep.," 1892-93, which was found east of here; also, Fig. 1, plate III., "Rep. Mus. Am. Arch.," 1890. The surfaces are much granulated, due to oxidation, and the shoulders are almost right-angled.

Fig. 4. This is a smaller sort of a spear, being narrower, but of the same thickness as the preceding; it is much like a triangular bayonet in cross-section, and altogether a handsome little weapon. Total length, 5 inches, of which the socket is 2 $\frac{1}{2}$ inches; breadth, 1 $\frac{1}{2}$ inch; thickness, $\frac{3}{16}$ inch, the surface being much corrugated, and the shoulders rounded; socket unprovided with a transverse ridge, but formerly had a small tang at the proximal end, which turned inwards and answered the same purposes. The specimen is of very neat design and workmanship. Edges good and even, as in the preceding specimen, but shows no traces of grinding. Locality, Beaverton, Ontario. Surface find in 1897. Weight, 1 $\frac{1}{2}$ ounces avoirdupois. One of the same pattern, but longer, was found north-



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east of Toronto, and is figured page 37, "Ont. Arch. Rep." 1887. Compare with Fig. 3, page 27, "Shorts," "North American Antiquary."

Fig. 5. This is one of a type of implements that occurs in the Lake Superior District near the Portage Ship Canal, according to information furnished by E. E. Wyman, of Chicago, but which has very few representatives recorded to date from the Province of Ontario. Two of them are so nearly alike to each other that they may have been made by the same artificer, especially as both were obtained about sixty miles apart. Dimensions: Length measured along the chord of the curve, 11 inches, of which the tang is one inch; breadth at butt, 2 $\frac{1}{2}$ inches; at top, before it turns into the round point, one inch.

narrowest breadth of tang, $\frac{1}{2}$ inch; uniform thickness a shade less than $\frac{1}{8}$ inch, which dwindles to 1-16 inch at the top, and 1-40 inch at the edge; weight, $7\frac{1}{4}$ ounces avoirdupois. This particular artifact, like its mate from Midland City (see page 60, Fig. 145, "Fourth Arch. Rep., Ont."), "is remarkable, not for its size alone, but for its curve and its undulating or round-tooth edge" in the concave curve. The teeth number eleven, and are very distinct, with the exception of the two top ones, which are very faint; the thickness of the blade between the teeth is the same as the rest of the blade, showing that the teeth were drawn out with a punch, or a hammer having a small, round pene, from the original curved back, by hammering on one side solely, making depressions which correspond to the rounded projections, and leaving the other side of the teeth in the same plane as that side. As the specimen is in excellent condition and the surface free from corrosion, the hammer or punch marks on the teeth are plainly discernable, and the teeth being drawn out to an edge form one-fortieth to one-twentieth of an inch in thickness. Structure laminated, as observed by fold marks. This particular specimen differs from the Midland one which, by the way, was found in an ossuary containing no traces of European contact, and which was put at least 200 years old, in being two inches shorter, having a rounder point, a square tang, instead of a tine, and a more tapering blade. Locality, Bexley, at a point one mile north of Huron trail and two miles west from the Lake; was found under a pine stump, about six years ago, the stump being burnt the annular rings could not be counted.

It is difficult to comprehend how such unwieldy blades, with such small tangs, were fastened to handles.

It may be as well to quote Mr. Boyle, curator Ontario Archaeological Museum, on this particular class of implements:

In any event the tool is a most remarkable proof of aboriginal skill. To produce from a rough piece of copper by hammering this long, broad and uniformly thick blade, would test the skill of a white workman with a kit of tools at his command. But the desire to produce an improved cutting-edge, as in this case, makes it appear that the workman has merely attempted to imitate the natural or inevitable serrations consequent on flaking stones, especially those of a silicious nature, which were often used as files and saws. The cutting bar of a mowing machine is constructed on the same principle, and hay knives and large bread knives are sometimes made with an undulating edge like that of Fig. 145. It is needless to say that all our cutting tools have been evolved from the flaked flint of primeval man.

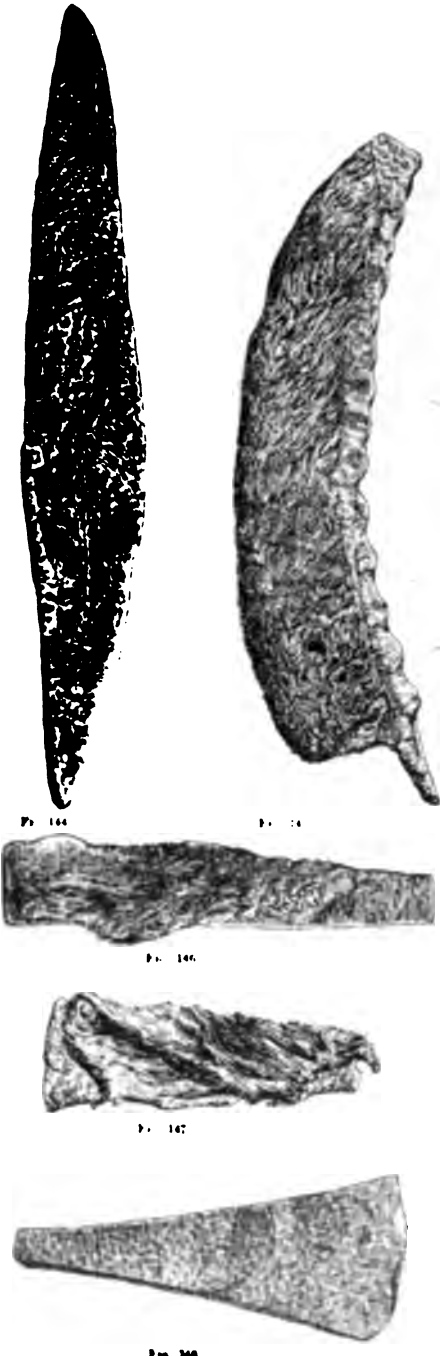
Fig. 6, is a type of implement which might be called a flesher, and can be described as a thin, slender blade; slightly semi-circular; terminating in two tines, which are recurved over the back at a lesser degree than a right angle, and which were probably driven into a handle of wood or horn three or four inches long, like a modern hash knife. This is an improved form of the semi-circular slate knife, and, no doubt, evolved

from it, being admirably adapted for fleshing and cutting skins à la Esquimaux. There is a somewhat similar implement of copper in the Ontario Archaeological Museum, but of decidedly more circular outline of blade, and minus recurved tines. Dimensions: Length of blade 3 3-5 inches; breadth, $\frac{3}{4}$ inch; thickness, 1-16 inch; length of tines, 1 2-5 inch, which are slightly thickened than the blade; points of tines 2 2-5 inches apart; weight, 5 1/2 ounce avoirdupois. Laminated structure; slightly corroded surfaces. Locality, Eldon Township, Victoria County; right of way Trent Canal; found 8 feet deep in undisturbed gravel; recent formation; 1898.

This type occurs in Wisconsin and Michigan; one found last summer at two Rivers, Wisconsin, bears the identical outline. Several, quite similar to it, are in the possession of Mr. Wyman, of Chicago. Michigan lake shore has probably furnished more of this type than inland.

Fig. 7. This is a mutilated specimen, and must have been unique when perfect. The portion presented is spatular and slightly turned up at the handle. The part that is missing (which was cut off) resembled a knife blade, but not very large. Dimensions. Width of spatula, $1\frac{1}{4}$ inch; thickness, 1-16 inch, and is beaten very even; length, $2\frac{1}{4}$ inches. The edges in some places are much corroded. Present length of shank, $2\frac{1}{2}$ x 3-16 inches thick; circular cross-section. The surface is smooth, and shows but few corrugations; by examining with a glass a few faint "folds" may be seen, showing it to be of laminated structure. Surface find, in 1896. Locality, a short distance east of preceding specimen. These two were in the immediate vicinity of the Huron trail. The mutilation of specimens is much to be deplored and condemned. Culin mentions a spoon as one of a number of specimens from east Wisconsin (see "Report Mus. Am. Arch.," page 16), which may be similar.

Fig. 8, though not coming from this particular section, but found in northwestern Ontario, is introduced here, as it resembles somewhat the long, double-bitted chisels that occur here occasionally. Dimensions. Length, 10 9-10 inches; width, $\frac{3}{4}$ inch in the middle, tapering to 9-16 inch at the bits, it is 7-16 inch thick at the middle, gradually and evenly diminishing to bits. weight, 18 1/2 ounces avoirdupois, oblong cross-section. This tool could be used either as a pick, as a double-bitted chisel, or as a spike. It is bruised at the bits and has a small piece knocked out of one corner. Unfortunately, it was accidentally mutilated by the laborer with his axe, in removing it from its matrix under a spruce tree, in constructing a road. Its surface is corrugated and shows laminated structure. It was found about twenty-five years ago. Locality, Kaministignia River, near Fort William, Algoma.



COPPER RELICS FROM ONTARIO.

[The copper tools described by Mr. G. F. Landry, as peculiar to Ontario, are now in the Museum of the Canadian Institute at Toronto, and besides them, several others: a drill, No. 141; chisel, No. 142; hand-saw, No. 143; and a lance-head, No. 144. The first group represents a series of relics from Wisconsin, Minnesota, &c. These are arranged on the Plate in different groups, according to locality. The first group represents a series of relics from Wisconsin, including three knives, Nos. 1, 2 and 3; a sectioned chisel, No. 4; two spear-heads, Nos. 5 and 6; a lance-head, No. 7; a drill, No. 8; and an arrow, No. 9. The second group represents two lance-heads, Nos. 1 and 2; a knife, No. 3; a sectioned chisel, No. 4; and an arrow, No. 5. All found on the St. Lawrence at a picturesque point near the head of the last rapid. They were found by Dr. T. Reynolds, deposited fourteen feet below the surface, in a soil composed of fine clay and sand. A score of skeletons were found arranged around them, their feet pointing to the spot where they were placed. Nos. 1 and 2 are spears and said to be a foot in length. Nos. 3 and 5 are copper knives engraved one-half size. No. 4 is ten inches long; it has a section the thickness of a hand. It may have been a chisel or gouge, or perhaps a spear. Ancient Monuments, p. 202.] The third group is composed of drills and awls given from western Ohio. Nos. 1, 2 and 3 are awls, and were found in Mead (City, near Chillicothe). No. 1 measures about eight inches in length. Nos. 4 and 5 were discovered in making excavations near Marietta, Ohio.—[Forrest's Notes.]

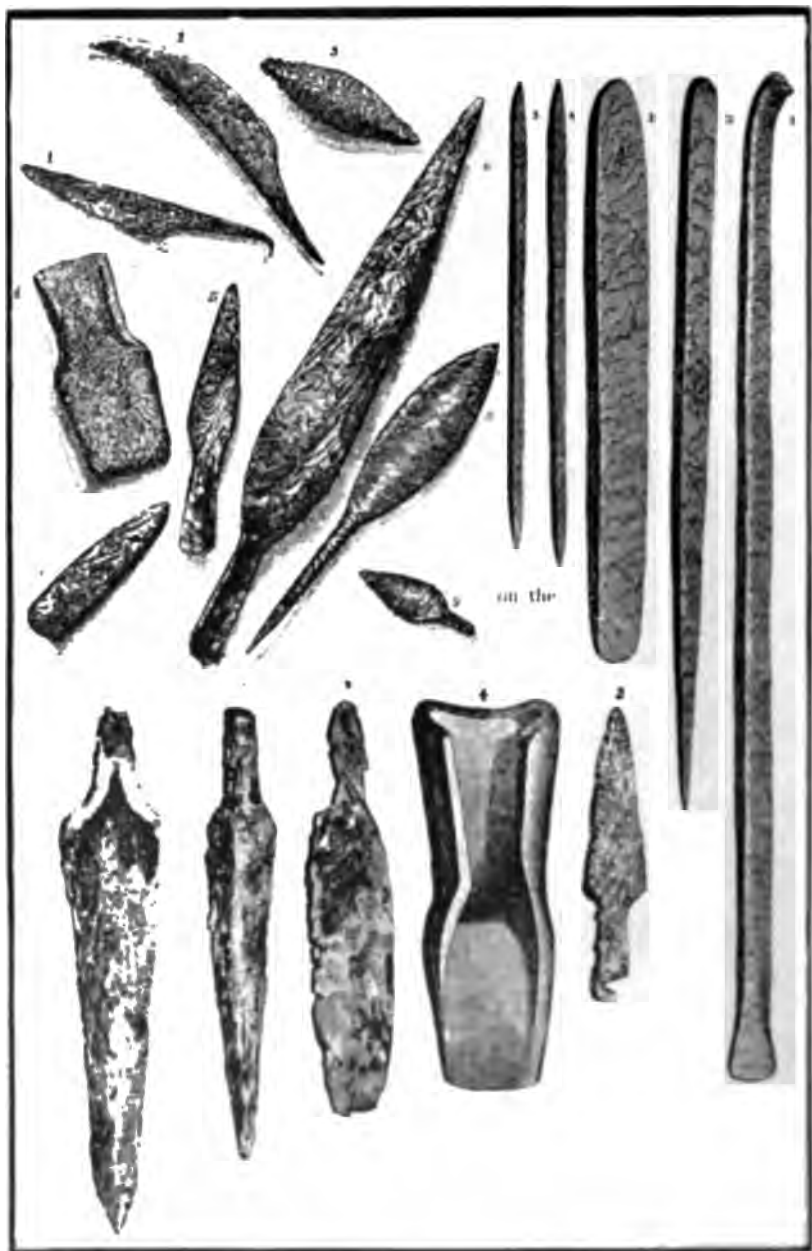


PLATE I. ARTIFACTS FROM THE GREAT LAKE REGION.

THE HAWAIIAN LANGUAGE AND INDO-EUROPEAN AFFINITIES.

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[A paper read before the Washington State Philological Association, May 23, 1908.]

When the discovery was made that the Indo-European languages (to use a term not then invented) were children of the same parent, a great service was rendered, not only to the science of comparative philology, but also, unconsciously, to humanity. It created a new feeling of brotherhood between Hindu, Greek and Anglo-Saxon, and made easier the breaking down of the barriers of caste.

Likewise, we can conceive, particularly at the present time, that, if the borders of the accepted doctrine can be so enlarged as to take in, with Hindu, Greek and Teuton, the scattered tribes of Polynesia, if it can be proved that one branch of the great Aryan family journeyed ever eastward to meet at last the relics of another branch which voyaged southward and eastward, it will be easier to-day to welcome as fellow citizens the dusky children of Hawaii recognized at last, not as aliens, but as long lost brethren of the same stock and blood.

That the recognition of the Aryan origin of Polynesian islanders makes slow progress, is no argument against it. Looking back at the older problem we marvel at the slowness which marks the discovery of the unity of the Indo-European tongues. The Jesuit fathers in India, Sir Wm. Jones, Henry Thomas Colebrooks and others had in their possession the facts on which the new doctrine was based, but refrained from drawing the legitimate inference. They had the key in their hands, but did not insert it in the lock.

And, perhaps, a generation hence it will be equally a source of wonder that so many scholars of to-day should have remained blind to the fact that the material now in our hands renders it imperative to class the Polynesian dialects among those tongues which have an Aryan origin. For a time, it appeared as though linguists were proceeding, step by step, in the right direction.

Humboldt clearly established the fact that there was a certain relationship between Malagasy, the East Indian and the Polynesian languages. Then came Bopp, with a foresight marvellous indeed, when we consider his limited acquaintance with Polynesian tongues, declaring that these are degraded forms of a once highly organized language, such as Sanscrit. Recognizing the affinity between the two outwardly so dissimilar, he came to the conclusion that Hawaiian (and kindred tongues)

were descended from the Sanscrit through the Malay, this latter being the corrupted child, the Polynesian being the still more corrupted grandchild.

A little later, M. Gaussin, with fuller knowledge of the Polynesian, declared for the primitive character of Hawaiian, seeing that it presented the features of a language not in its dotage, but really in its infancy. From this time little was done to reconcile conflicting theories, till in 1885 Abraham Fornander, a Swede by birth, Hawaiian by his years of residence and public service; a scholar, moreover, accomplished alike in Oriental and Polynesian philology, put forth his theory, which however much opposed by men like Whitney and Sayce, still, I venture to say, holds the field.* Fornander's philological argument forms part of the case by which he attempts to prove (and has proved, I believe) the Aryan descent of the Polynesian race.

Briefly put, he asserts that in the far off dawn of history there broke off from the parent stock on the Aryan highlands, not only westward roving tribes, the progenitors of the Celt, Teuton and Slav, but also tribes which journeyed to the south. One of the earliest of these, at an epoch long before the present Malay race inhabited the East Indian Archipelago, was the parent of the Polynesian. Bearing with them, not only the customs and language of the pre-Sanscrit Aryans, but also many of the myths and customs of the Cushite population with whom they had dwelt in close contiguity, they passed through the Indian peninsular, moved on to the islands, resided awhile in Java (a name they bore with them to Hawaii, which is really Hawa-iki, "little Java"), and in the course of centuries distributed themselves among the various groups of islands in the Pacific. In the first century of our era the Pacific was entered from the Asiatic Archipelago, and colonies established in Fiji (only temporarily) and Samoa. In the fifth century the migratory movement reached Hawaii for the first time, and in the eleventh and succeeding centuries fresh colonies brought new blood and some new customs. From the thirteenth century onwards to 1778, the date of Cook's discovery, with the exception of a stray Japanese, and probably one or two Spanish ships, no intercourse was resumed with the outside world.

The argument of course is a very wide one, and includes such lines of proof as the following:

1st. The distribution of geographical names along the route of the assumed migration. In like manner, we might argue the history of American colonization from the English, French and Spanish names common in different parts of the continent.

2nd. The argument from comparative mythology, the cor-

* The Polynesian Mythology and Linguistics of Abraham Fornander. In three volumes. London, 1885.

respondence between Hawaiian myths and those of the pre-Vedic and pre-Iranian Aryans subject to Cushite influence.

3rd. The argument from customs and religious rites, such as the use of circumcision, the institution of caste, cities of refuge, lustral waters, methods of reckoning time, &c.

4th. The argument from language, to which I confine myself in this paper.

The old theory of a Malayan origin is, as I have already pointed out, refuted by one simple fact, viz.: that the Polynesian is more primitive than the Malayan. Dieffenbach says: "The Polynesian language is, in its whole formation and construction, by far, more primitive than the Malayan and the rest of the Javano-Tagalo languages. It belongs to a primitive state of society." It is generally recognized that all languages in their development proceed from the simple to complex, from the agglutinative to the inflexional. Opponents of the Aryan origin of Hawaiian have usually made the mistake of supposing that it was desired to prove the descent of an agglutinative tongue, like Hawaiian, from a highly inflexional language, like Sanscrit. This would, of course, be absurd. What is contended for, is that from an equally agglutinative pre-Sanscrit tongue the migrants carried the language which they have maintained to the present day (phonetic decay apart) in its primitive simplicity.

Max Müller has told us of the earlier languages: "The original elements of the Aryan language consisted of open syllables of one consonant followed by one vowel, or of a single vowel." Such is precisely the present condition of Hawaiian, with this single qualification, that two or more vowels now often come together, on account of the elision of immediate consonants. This elision may be historically determined, and the rejected consonants are even yet distinguishable in the best native pronunciation.

Before coming to the actual facts of the comparison we have instituted, it may be well to refer to the objections of Sayce and Whitney. It is almost sufficient to say that their objections are due to unfamiliarity with the Polynesian side of the question. Sayce declares that "unless the grammar agrees, no amount of similarity between the roots of the two languages could warrant us in comparing them together, and referring them to the same stock." This may readily be granted. Nevertheless, there is no comparison necessary between Hawaiian and Sanscrit grammar. The comparison is between the grammar of Hawaiian and that of the pre-Vedic language, of which we may observe (1) That it is unknown; (2) that it must have been primitive, like the Hawaiian, not inflexional, like the Sanscrit, and (3) that, so far as we may draw inferences from its later developments in the Indo-European languages, is quite in accord with the grammar of Hawaiian.

Whitney's objection is the merely general one, that it was

absurd and unscientific to prove identity of source from likeness of sound. He asserts, rightly enough, that it would be absurd to take the Polynesian "maka"—"an eye"—and on the strength of its resemblance to the modern Greek *mati*, claim community of origin, while forgetful that the latter is a corruption of *ommatni*—"a little eye." But there is no need to manufacture fictitious instances, and no one, but a tyro, would be likely to go to work after this fashion. Max Müller's axiom is sufficiently well-known: "Sound etymology has nothing to do with sound," and we might just as well adopt the process ridiculed by Swift, and interpret Achilles as "a kill ease," or Alexander the Great as "all eggs under the grate." If Whitney had carefully followed Mr. Fornander's work he would have seen that the Hawaiian scholar was as scientific in his workmanship, as the best comparative philologist of them all.

To-day, I can but cover the ground he has traversed but slightly, though independently, in order to illustrate, not only the validity of the theory in question, but also the high importance of the subject as throwing light upon the original meaning of many Sanscrit roots, and as bearing, also, upon the history, date and conditions of the separation of the various members of the original Aryan stock.

Bearing in mind Prof. Sayce's warning, let us first consider the Grammar, then the Vocabulary—remembering at the same time that in tolgues so primitive the grammar is but slight, the endings are unknown, and but little distinction is made between noun and verb.

THE ARTICLE. Hawaiian: *Ka, ke, the.* Samoan: *Ta.** Sanscrit: *Tad.* Greek: *ὁ, ἡ, τό* (obsolete form *τός, τή, τό*). Latin: *Iste, ista, istud.* Gothic: *Thata.* Saxon: *The, that.* German: *Das.*

The Hawaiian plural *na* is (according to Bopp) akin to the Sanscrit *nava*, various, and the Irish *na*, they. The *na lamha*, the hands, is strikingly like the Hawaiian for the same, *na lima*.

THE VERB. Out of many instances suggesting comparison, I select the participial endings:

- (a) Present Participle. Hawaiian: *Ithua, moe, to sleep, moeana, sleeping.* This is represented exactly by the Sanscrit *ina*, Greek, *ῶν*. Latin: *ans*, Gothic, *ands*, English: *ing*, with which the New Zealand *erge* is strikingly parallel. So in converting a verbal participle into a noun substantive we have: Hawaiian: *Moe, to sleep, moeana, a sleeping place; nana, to bring forth, hanauana, a birth.* Sanscrit: *krōd, to be angry, krodana, anger; bud, to know, budana, teacher.*

*The word *Ta* is not a true article, but a particle, and is therefore interchangeable, b

(b) **Past Participle.**—Hawaiian: Ia. Sanscrit: Ya e.g.,
Hawaiian: Hana, to do; hanaia, done. Sanscrit: Vaj,
to sacrifice; yajya, sacrificed.

PRONOUNS.—Of these but one example, viz.: The first person
singular. Hawaiian: Au, or owau. New Zealand: Ahau.
Javanese: Aku. Sanscrit: Aham. Greek: ἐγώ. Latin:
Ego. Gothic: Ik. German: Ich. English: I.

PREPOSITIONS.—In Hawaiian, roughly speaking, a, e and i.

(a) **A** and **o**—of. Sanscrit: Apa. Greek: ἀπό. Latin:
A, ab. Gothic: Af. English: Of.

(b) **E**—out of. Sanscrit: A. Greek: ἐκ, ἐξ. Latin: E, ex

(c) **I**—in, at, to. Sanscrit: , to go (cf Latin: Es, ire).
Greek: ἐν. Latin: In. Gothic: In. English: In.

NUMERALS.—The numerals of a language always furnish inter-
esting matter for comparison, and particularly here, as
there are indications that the breaking off from the parent
stock took place at a time when it was unusual to count
beyond five. A quaternary system was apparently in use at
first, each four being a kauna, or tally. Then the doubled fist,
or stretched out hand, representing five, became the tally,
and this system became the common possession of Cushite,
Aryan and Polynesian. The Sanscrit five is panch, from the
root "to spread out," and signifies the hand with its fingers
spread out. The Hebrew five is הַחַמֵּשׁ from a root signify-
ing (1) to double up the first; (2) to arm. The Hawaiian
five is lima, the hand. The common origin of the simpler
numerals is instantly seen

One.—Hawaiian: Akahi. Sanscrit: Eka. Zingahi: Yek.
Latin: Hic, this one.

Two. Hawaiian: Lua. New Zealand: Rua. Borneo, &c.:
Dua. Sanscrit: Dvi. Persia: Du. Latin and Greek:
Duo. Anglo-Saxon: Twa. English: Two.

Three.—Hawaiian: Kotu. New Zealand: Toru. (Remem-
ber k and t, and l and r are interchangeable.) Sanscrit:
Tri. Greek: τρεῖς. Latin: Tres. Anglo-Saxon: Thri.
(According to Sayce, the idea is of a fresh effort beyond
the simplest form of division—so akin to trans. Sans-
crit: Trāmi, I pass beyond.)

Four.—Hawaiian: Ha. New Zealand: Wha. Tonga: Fa.
Sanskrit: Chatur, or chatvar (evidently a compound
word, chat var, the former part denoting a tally, as in
Latin quat-uor, and Gothic fid var.) The radical in all
seems to be the fa or va, our English four.

Greater numbers than five were evidently out of the com-
mon range of the primitive Hawaiians. Umi, ten, appeared so
great that umumi became the word for beard, denoting a vast
number of hairs. Forty tens (400) was a lau, a word implying
the innumerable leaves of the forest. Hundreds were not

used till after the arrival of Captain Cook. Hanere being an imported word of comparatively recent date.

VOCABULARY—Coming to the Vocabulary, I select a few roots, not always the most striking, but the easiest to exhibit in a short paper, and including words more or less familiar to us all.

1. Kanaka, a man, evidently a derivative from kane, man, and corresponding exactly to Sanscrit: Janaka, from jan, to be born. Greek: *γίγνομαι, γένος*. Latin: Gigno, genus, gens. Anglo Saxon: Cyn. German: Kind, König (not as Carlyle supposes from kenem, to know, but literally, the man). English: Kin, king.
2. Ariki, a chief (a consonant, k, lost between the two final words). New Zealand: Ariki. Sanscrit: Rij, for: rāj, to reign. Latin: Rego, rex. Saxon: Rik. Irish: Righ, a king. English: Ric (in bishop-ric).
3. La, sun, light, day, Iani, the heavens. New Zealand: Ra and rangi. Sanscrit: Laji, to shine. Greek: *φλεγω*. Latin: Flagrare, flamma. (Perhaps it is more than a coincidence that ra is the word for sun in Chaldean and Egyptian.)
4. Loha, to love (known best in the familiar greeting: aloha). New Zealand: Aroha. Sanscrit: Lubh, to court; lobha, desire. Latin: Lubet, it pleases. Saxon: Lufian, to love.
5. Kahu, to make a fire. Samoan: Tatu. Sanscrit: Tap, to heat. Zend: Tap. Greek: *θαπρω* (originally to dispose of the dead by burning; now, to bury) *τάφος*. Latin: Tepeo, tepidus.
6. Kana, to bind, tame. Fiji Tama. Sanscrit: Dam, to tame. Greek: *δάμαζω δάμασ*, (perhaps *δάμω*, to build, if building consisted first of tying materials together). Latin: Domo, domitus (cf. Fiji tamata, tamed). Irish: Daml, cattle. Anglo Saxon: Tam (tame), team.
7. Ma, to grow, increase. New Zealand: Maha, many much. Sanscrit: Mah, to grow (cf. maha-rajah, great rajah). Greek: *μαγν*. Latin: Magnus. Anglo Saxon: Mura, more. Irish: Mor, great.
8. Ma, the moon, more frequently as matamatama, moon-light. Sanscrit: Ma, to measure. māś, the moon. Greek: *μα*. Latin: Mensis, mensura. Anglo Saxon: Muna, English: Moon, month.
9. Ma, the eye, face. (In other groups, mata.) Sanscrit: Mākha, the face, month, e. g., maka muka, the crowd, etc. lit. to grieve. Anglo Saxon: Muth, mouth.
10. Mana, intellect, mind, especially in compounds, e. g., hōmana, to worship, lit. to remind (the gods); manamā, to remember. Sanscrit: Man, to think, manas, the mind. Zend: Mantira, an invocation. Greek: *μάντις*, a seer. Latin: Mens. English: Man, mind.

11. Pa, anything flat, such as a board, a fence; secondarily, the idea of protector, as pa-pohaku, a stone fence. New Zealand: Pa, a stockade. Sanscrit: Pā, to protect. So our father; lit., the protector.
 12. Hope, the end of anything, the tail of a bird, result, consequence. (There is no more oft-repeated word in Hawaiian than mahope, byē and-bye.) Samoan: Sope, a lock of hair left as ornament. Sanscrit: Sap, to follow. Greek: ἴπω and ἴπομαι; perhaps, ὀπίσω and ὀπίσθεν.
 13. Kata, to call. Samoan: Tala. Sanscrit: Kal, to sound. Greek: κάλέω. Latin: Calo, clamo. English: Tell, call.
 14. Pu, to blow; e. g., puhi, a shell trumpet, conch. Sanscrit: Pū, to blow; so to purify, pavana, the wind. Greek: Πάν. (as in myth of Pan and Syrinx, the wind and the reed). Latin: Poena, punishment (designed to purify, as castigo from castus); cf., also, farunus, fan, van.
 15. Apo, to catch. Sanscrit: Ap, to obtain. Latin: Apiscor, capio. English: Hap.
 16. Hale, a house. Tonga: Fale. New Zealand: Whare. Sanscrit: Vri, to cover; varana, an enclosure. Zend: Ware, enclosure. Persian: Wārah, a house. Irish: Forus, a dwelling place.
- To these may be added by way of note :
17. Waha, to carry. Sanscrit: Vah, to carry. Latin: Veho.
 18. Pau, finished. Greek: παύω, to make to cease.
 19. Paka, dropping of rain on roof. Sanscrit: Pat, to fall. Greek: πᾶτάσσω, πᾶττω, patter.
 20. Wai, water, in older form probably wati, wati. Sanscrit: Vadhu, a river. German: Wesser. English: Water.
 21. Hiki, to go to. Sanscrit: "Etum" (Inf.) to go. Greek: ἰκνίομαι, ἴκω.
 22. Ola, to live. Greek: ὅλος, whole, hale. Latin: Salvus.
 23. Mele, song, chant, like Greek μέλος, and Norse mal. Probably akin to Sanscrit omri, to remember.

These are but instances of which many more may be worked out from the pages of Judge Fornander's learned work. To that mine of research, while working at the same time independently, I am deeply indebted, and with the hope that my paper may suggest to other a very fruitful line of research and study, have ventured to bring forward my humble contribution to the great science of comparative philology.



THE PILGRIMS EMBARKING AT DRIFT HAVEN.

RELICS OF THE CLIFF DWELLERS.

BY STEPHEN D. PEET, PH. D.

In treating of the Cliff-Dwellers, we have thus far given much more attention to the architectural structures than we have to their relics, for we find in them distinguishing traits, which enable us to identify the culture, progress and history of this peculiar people. There are, however, some advantages in studying the relics of the Cliff-Dwellers and making them a source of information, about their history and social status; the chief of which is that the relics are now gathered into museums and subjected to the inspection of all the visitors, and so presented to the public that specialists have an opportunity of studying them at their leisure.

Great care will, however, be necessary to distinguish these relics from those of the wild tribes who have continued to dwell in that vicinity since the departure of the Cliff-Dwellers, and who have left their relics mingled near the ancient habitations, and sometimes in the very midst of the ruins. This is not always easy to do, for there is far more similarity between the relics of the two classes of people, than between the structures; the structures having been made of entirely different material,-- wood and bark used by the wild tribes, but stone and adobe by the Cliff-Dwellers; while the relics of the wild tribes and Cliff-Dwellers were made of all kinds of materials-- wood, stone, shells, bones and pottery, and it is difficult to distinguish between those of one class and those of another. It is hardly expected that the ordinary observer will be able to distinguish between these relics as they are gathered into museums and collections, and say which belonged to the wild hunters, who have continued to roam in the same region, and which to the Cliff-Dwellers, nor can it be expected that he will be able to distinguish between the pottery and other relics of modern Pueblos and the ancient people; yet it is important that this should be done, for by this means, do we determine the difference between the condition of the later and that of the earlier and less known people.

We may say that the early explorers who visited the pueblos, and especially those who went into the midst of the cliff dwellings, were more careful than some of the later explorers and relic hunters, and were able not only to distinguish between the two classes--the ancient and modern,-- but also able to point out the tribal distinctions by examination of the weapons, implements, peculiarities of dress and ornaments, and say whether they belonged to Utes, Navajos, Mojaves, Pimas, Papagoes, or other tribes which roamed through the region after the American explorations began.

correspond very closely with the Cliff House specimen illustrated in the cut. The region now inhabited by the Pueblo tribes, seems to have been a favorite residence of ancient people. Ruins and remains of ceramic art may be found at any time, and it is a common thing to find ancient vessels in the possession of Pueblo Indians. This is especially true of the Zuni and Moquis, from whom considerable collections have been obtained. It seems



VASE FROM THE TUSAYAN PUEBLOS.

unaccountable that so large a number of ancient vessels should be preserved, but many have been picked up by the later Pueblo tribes and put away for special use, or, probably, as heirlooms. Besides the archaic white ware and its closely associated red ware; the Province of Tusayan furnishes two or three distinct varieties, which are apparently confined to limited districts. There are few better examples of the skill and good taste of the ancient potter than a bowl, the upper part of which is painted a bright red, bordered in black, with fine white stripes; a globular vase, with an ornamented surface, separated into two parts by vertical panels. A vessel, shown above, is from the Tusayan province. The whole decoration consists of interlinked meander united; not arranged in belts, but thrown together in a careless manner across the body of the vase. A superb vessel is a typical example of the work of the ancient potters of Cibola. In form it falls a little short of perfect symmetry. A similar vase from Zuni is illustrated in the catalogue. The ornament consists of three zones, a band of step figures about the neck, the handsome meander chain with twisted links upon the rounded body, and a broad band of radiating meanders encircling the body.

6 and 7. In reference to the relics from the Rio Grande, from the caves among the Potreros, and from the pueblos on the Chaco, Mr. A. F. Bandelier has furnished the most information. He says:

The pottery is mostly evenly glazed. The potsherds are of the older kind, black with white decorated lines, and corrugated.

There were three distinct epochs of occupation, the most recent of which was by the Chacoans. On the Rio Grande, in the vicinity of Bernabilio, the pottery is of the common type, and with decorations, but the common cooking pottery, painted in various ways, was represented. Much obsidian, moss agate, chert, flint and lava, broken metals, and a few bits of turquoise were the other objects lying on the surface. The pottery of the Chaco ruins decidedly of the ancient type, and the specimens of glazed ornamentation has been found in that vicinity. In the valley of San Mateo, the specimens of pottery were very remarkable.

I was greatly surprised, however, at seeing the specimens of pottery which the excavations had yielded. I can safely assert that, in beauty and originality of decoration, they surpass anything which I have seen north, west and east of the Rio Grande, except and indeed the Saines. There

were among them bowls of indented pottery, one-half of their exterior being smooth and handsomely painted and decorated with combinations of the well-known symbols of Pueblo Indian worship. On another specimen, I noticed handles in the shape of animal heads. Such specimens are quite rare. The shape of the vessels did not differ from those which other ruins and even the Pueblos of to-day afford. It was only the decoration, and especially, the painting, that attracted my attention. Mr. Lummis speaks of other objects—shell beads, stone axes, hammers, metals and arrow heads.

8. As to the relics on the Gila, Mr. Bandelier says:

The pottery on the upper Gila is like that which I found on the Rio Grande at San Diego. It is different from the pottery of the Salines, and has marked resemblance to potsherds from eastern Arizona and especially those from the Sierra Madre, Casa Grandes in Chihuahua, although better in material and more elaborately decorated with a greater variety of shades, the same fundamental patterns underlie the decorations, as in Utah, Colorado, New Mexico, and on the Rio Grande; in short, everywhere where Pueblos are found. It is Pueblo pottery, in the widest sense of the term, as well as in its narrowest acceptance. The basis for the decoration is always the well-known religious symbols of Pueblo ritual, only more elaborately and tastefully combined and modified. We recognize the clouds, the earth, rain, the "double line of life," but there is a progress in execution, as well as in combination of the figures. Only near Casas Grandes do we find a decided improvement in the form of the hand-mills or metates. Those on the Mimbres and its vicinity are as rude as any further south. The same may be said of mortars and pestles, which are sometimes decorated with attempts at the carving of animal forms. Trinkets and fetiches seem to be the same everywhere as far as latitude of 29°. Of textile fabrics, cotton has not been found on the upper Gila, as far as I know, but the yucca has played a great role in dress and feticle work. Mats of yucca, plaited kilts of the same material, resembling those described as worn by the Zunis three centuries ago, sandals and yucca thread (pita) have been found in sheltered ruins. In a cave village on the upper Gila, I noticed a piece of rabbit fur twisted around a core of yucca thread. Of such strips the rabbit mantles of the Moquis, which Fray Marcos heard of, and was, of course, unable to understand, were made, and are made at this day. Turquoise beads are not unfrequently met with, associated with shell beads.†



WATER JAR.*

II. We turn from the subject of the distribution of relics, to consider their characteristics. We have already said that the relics of the Cliff Dwellers resemble those of the Pueblos of the more ancient type. Together they constitute a very unique series. They are, in fact, as unique as are the relics of the Lake Dwellers in Switzerland, but instead of belonging to the borders of the neolithic and bronze age, as they do, they constitute a subdivision of the neolithic age. The relics of the Mound-Builders make a subdivision on the one side, and those of Mexico and the far southwest a subdivision on the other side. The relics from the tribes of the northwest and those of the Canadian tribes of the northeast, also make other subdivisions of the same age. The Cliff-Dwellers' relics are so

* The ornamentation and shape of this vessel show much taste.

† Paper of the Archeological Institute of America—American Series, no. 1, pp. 15, 16, by A. V. Bandelier.

marked in their characteristics that they can be easily recognized in any museum or large collection, even if they are not placed in separate rooms.

They are very instructive, as they suggest a stage of progress and cultural condition which was distinctive. They indicate a peaceful and sedentary life, as a large number of them consist of implements which were used in industrial pursuits; the pottery exceeding in number and interest, all other specimens. They may be divided into several classes, as follows: 1. Those which were made of stone, whether used as weapons of war, for industrial pursuits, or for domestic purposes. 2. Those which were wrought from wood, the most of them being implements which were used in agriculture; others, articles used for weaving and other domestic purposes. 3. Those which were made of shell, turquoise and other material, and used for personal ornament. 4. The pottery which is found



METAL FROM THE ZUNI CERRO.

in great quantities, great varieties of shape, and in many patterns. 5. Textile fabrics, which are of two or three classes: (1) Those made from wood, such as willow and bark; (2) those made from yucca and other plants—especially cotton; (3) those made from feathers and skins of animals. It will be interesting to take up these different classes of relics and examine them in turn.

1. We begin with the stone relics which were used for ordinary purposes, and mention first those discovered near the cliff dwellings of the San Juan. There are many weapons of war and the chase among the relics, such as arrow heads, spears, lance heads, darts, battle axes, tom-awks and arrow polishers or straighteners. Mr. Burdette says:

The greater part of the weapons are imported of the origin, having been procured from the interior of the mountains, but some, at least, are the products of the local industry, though they were evidently a peaceful

people. We would not expect to discover these weapons of the Pueblo race, however, immediately under the walls of their own buildings but rather further out on the plains. The majority of our specimens were found in the close neighborhood of the mural remains.

It is undisputable that great battles have been fought here. Among the relics of battles are the barbed arrow heads, which were used as missiles; many of which were probably shot from the loop hole forts by the warriors who were stationed there to watch against the approach of enemies. The arrow heads are particularly noticeable on account of their delicacy, perfection, symmetry, diminutiveness and exquisite coloring. We first find them varying from less than half an inch in length to three inches. The materials are of agate, jasper, chalcedony, flint, carnelian, quartz, sandstone, obsidian, silicified and agatized wood. Sometimes we find a beautiful transparent amber-colored chalcedony specimen; again, a flesh-colored arrow head made of agatized wood; and another of a pea-green tint, red jasper, flint of every shade and color. According to form, they may be classified into nine divisions: (1) leaf shaped; (2) triangular; (3) indented at the base; (4) stemmed; (5) barbed; (6) beveled; (7) diamond shaped; (8) oval shaped; (9) shape of a serpent's head. The leaf shaped occur more numerous at a distance from the ruins on the plains, where they have been employed in the slaying of game, but the barbed near the cliff dwellings. The smaller variety of axes may have been used as tomahawks. Household implements were more widely distributed than the weapons. They were scattered through all the ruins; the majority crudely made, but some of them smoothly polished and ground to a cutting edge. A number of forms of hammers and mauls were discovered, varying in weight from a few ounces to twenty-five pounds. They were usually made of compact sandstone, and were cylindrical with the groove of the handle extending around the circumference at one end. The heavy mauls must have required more than one pair of hands to wield them. Some of the hammers were ovoid, with the groove extending around the centre, so that either side could be used at will.



AXE.

Numerous serrated implements were picked up among the debris of the ruins, of different sizes and forms, which were evidently intended for sawing. The fragments of some indicated that the entire instrument had been several inches in length, and one inch or so broad. One, however, was a circular stone, of a bright green color, in which the entire circumference, with the exception of a small arc, had been toothed or chipped. This was probably used in the same manner as the straight saws, being held between the finger and the thumb.

Chisels, awls, borers and rimmers occur in abundance. The chisels or

pointed tools were probably used in chipping out hieroglyphics. The awls, borers and rimmers were employed in perforating skins, wood, stone, etc.

Stone mortars are rare in a state of entirety, yet we found many fragments scattered over the plains and through the canyons. The prevailing material seems to have been sandstone. Pestles are very rarely seen. However in the Moqui village, I observed several stone mortars, some eight or ten inches in diameter, with their accompanying pestles, which had been placed on the house tops; and I was told that they had not been in use for many years, having descended with many old stone implements from the forefathers of the tribe.

One of the most common objects to be found in and about the crumbling buildings is the millstone or *metate*, and with it the corn grinder. Lieut. Emory says of the ancient remains along the Gila River: 'The implements for grinding corn, and the broken pottery, were the only vestiges of the mechanical arts which we saw amongst the ruins, with the exception of a few ornaments, principally immense well turned beads, the size of a hen's egg.'



ARTS OF CLIFF DWELLERS

Mr. Nordenskiöld discovered stone relics among the cliff dwellings which should be classed with the implements and weapons. At Ming House he found skinning knives made of quartzite, also drills and stone axes; at Kodak House, a flint knife of black slate, arrow head and spear head, scalper, a metate made of brown sandstone, large stone hammer, a large rough-hewn circular mortar, rounded stones used for grinding, and long flat disks of wood, baskets of woven yucca, made water tight and coated on the inside; gourds and squashes, mats made of withes split and held together by cords of yucca, snow shoes and pieces of cotton cloth.

For the sake of comparison, we turn to the stone relics of the Pæribos. They were mainly relics designed for industrial and domestic purposes. They consist of hammers, mauls, stone axes, knives, saws, chisels, darts, rimmers, borers, scrapers

or fleshers, mortars, pestles, mill stones, metates, grinders, arrow polishers, perforated stones for drawing out sinew, gauges, and pounders. These resemble the stone relics found in other parts of the country, and especially those found among the Pueblos.

A very large collection of them has been gathered in the National Museum. Catalogues have been published at different times. That which was prepared in 1879 by Mr. James Stevenson, and published in 1881, is, perhaps, the earliest and most reliable. We give a plate* on which the axes are represented, taken from this report. Of these, Mr. Stevenson says:†

No. 42257 is a grooved axe of basalt, the only specimen of this particular form in the collection.

No. 42208 is a large stone celt of coarse sandstone, shaped like a wedge. It is about ten inches long, has four flat sides, and may have been a grinder. Its surface is quite rough and pitted.

No. 42337 is a grooved maul of compact sandstone, almost round. Several such specimens were collected. They have been better preserved than the axes, as their shape adapts them to grinding food, hence they were not used for splitting or cutting.

No. 42213 is a water worn boulder of quartzite, grooved around the center.

The axes on the plate are of the ordinary form, and show much use. The metate, shown on page 110, is of the ordinary kind. Many such mills or metates are found in nearly every pueblo. The different apartments were designed to hold the meal as it grew finer under the grinding process. Mortars and pestles are also common.



MORTAR AND PESTLE.

Mr. Stevenson described a paint mortar, gathered at Zuni, with a pestle made from a quartz pebble; another, made of sandstone, with a square pestle, designed to move backward and forward, instead of up and down and around. Another mortar is represented in the cut with a pestle inside of the mortar. The pestle has a pit hole in its side, which was designed to hold the pigment after it was ground, which was used with a brush for decorative purposes. The cup and pestle were found together. Besides these relics, there are many idols, or images, which represent the fetiches, or gods, of the Pueblos. These are made in the shape of animals, such as the wolf, bear, panther, eagle and mole. They sometimes have arrows bound to

* See page 11. The numbers refer to the catalogue number of the museum.

† See Second Annual Report Bureau Ethnology, 1871, pp. 10-473.

them.* They form an interesting series which show the religious superstition of the people. The plate, which is taken from the Report of the Ethnological Bureau 1881, illustrates this. Mr. Cushing has described them and their uses.

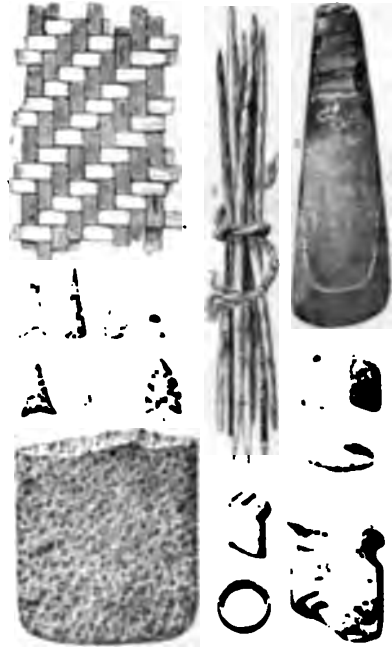
2. All of the explorers have spoken of the mechanical tools which are found among the cliff dwellings, though some of them were at a loss to know to what use they were put. Mr. Holmes described a series of relics which were discovered in the cliff dwellings of Mancos Cañon, some of which were wood and stone, and a few of shell, and gives a cut to illustrate them. He says

This cut contains drawings of a number of stone implements arrow heads, ornaments, and other articles manufactured or used by the ancient inhabitants of this region. Nearly all were found so associated with the architectural remains, that I do not hesitate to assign them to the same period.

No. 1 represents a small fragment of rush matting. A large piece of which was found on the floor of one of the cliff houses of the Rio Mancos. It was manufactured from a species of rush that grows somewhat plentifully along the Mancos bottoms.

No. 2 represents a bundle of small sticks, probably used in playing some game. They are nearly a foot in length, and have been sharpened from one end by scraping or grinding. They were found in one of the cliff houses of the Mancos. I used beneath a pile of rubbish. The flat end of each stick, which they were found in, is not unlike the end of a bow, and was used with a small piece of wood to strike the ball. A number of sharp points, some of different sizes were also found. The beauty of the workmanship of the people. The fibers are a little coarser and thicker than those which are obtained from a species of *SUCCA*, which grows in the mountains of the southwest.

No. 3 is a very peculiar species of stone implement, found buried in a large number of the houses of the Mancos Cliff houses. It is 8 inches in length and 2 inches in diameter at the broadest part, its greatest thickness is only $\frac{1}{8}$ inch, the one end is slightly convex while the other is nearly flat. The sides are rounded and the edge is quite sharp.



ARROW HEADS, FLINTS, AND GRINDER FROM MANCOS CANYON.

* See Mr. Cushing's Report, "The Ethnology of the Indians of the Plateau," "Masks and Symbols," p. 10, Vol. 1, p. 10.

† See Mr. Holmes' Report, "The Cliff-Dwellers of the Southwest," p. 10, Vol. 1, p. 10. The Cliff-Dwellers of the Southwest, p. 10, Vol. 1, p. 10. The Cliff-Dwellers of the Southwest, p. 10, Vol. 1, p. 10. The Cliff-Dwellers of the Southwest, p. 10, Vol. 1, p. 10.

It is made of a very hard, fine-grained, siliceous slate; is gray in color, and has been ground into shape and polished in a most masterly manner. Although its use is not positively determined, it belongs, in all probability, to a class of implements called "scrapers," which are employed by most savage tribes in the dressing of skins. This specimen may have been used for other purposes, but certainly not for cutting or striking, as the metal is very brittle. The most conclusive proof of its use, is the appearance of the edge, which shows just such markings as would be produced by rubbing or scraping a tough, sinewy surface.

No. 4 represents a part of a metate or millstone. The complete implement consists of two parts—a large block of stone with a concave surface, upon which the maize is placed, and a carefully dressed, but coarse grained slab of stone for grinding. This slab is generally from eight to twelve inches long by three to six inches wide, and from one to two inches thick. The specimen illustrated is made of black cellular basalt, and was found, with many others, at the ruined pueblo near Ojo Caliente, New Mexico.

No. 5 is a very much worn specimen of stone axe, which was found at an ancient ruin near Abiquiu, New Mexico. It is made of light colored chloritic schist, and measures two inches in width by three in length.

No. 6 and 6a are specimens of ear ornaments, such as are found in connection with very many of the ruins of southern Colorado. These are made of fine-grained gray slate, only moderately well polished, one measured an inch and a quarter in length.

No. 7 represents a marine shell of the genus *Chicella*, obtained probably from the Pacific coast. Large numbers of this and allied shells are found about these ruins. They are generally pierced, and were doubtless used as beads.

No. 8 represents a small carved figure found on the Rio Mancos. It is made of gray slate. Its use or meaning can not be determined.

No. 9 represents a stone ring, five-eighths of an inch in diameter, and probably intended for the finger. It is made of hard gray slate; is shaped like the usual plain gold ring, and is quite symmetrical.

No. 10 represents arrow heads which were found associated with nearly every ruin examined. They present a great variety of form; some of the more striking of these are given in the cut. The materials used in their manufacture are principally the more beautiful varieties of obsidian, jasper and agate.*



WOODEN SHOVEL.†

Mr. Stevenson has described certain wooden relics from the Zuni pueblos. One of them is an ordinary shovel, which was used to shovel the snow off the roofs; another is the bow and drill, which was used for drilling stone. A cut is also given, in which a native is represented as sitting upon a Navajo blanket, dressed in the usual costume now worn by the Zunis, drilling a hole in a turquoise. The cut illustrates the manner in which the drill was used.‡

*A. N. S. p. 10. *The Ancient Remains of Southwestern Colorado Examined During the Summer of 1881*, by W. H. Holmes, pp. 23 and 24.

†Dredged up from the Zuni Pueblo.

‡Dunbar's *Annals Report Bureau of Ethnology*, p. 100.

3. The personal adornments of the Cliff-Dwellers are worthy of notice. They may be classed according to material, as follows: Bead ornaments made from shells or earthenware, necklaces made from bone, horn, stone, claws and teeth of animals, ear pendants of turquoise; feather head dresses, woven sashes, fringes of fur, and tassels of fur and fibre. The following description is by Mr. E. A. Barber:

The marine shells were converted into beads by the ancient tribes, but they are valued highly by the present Navajo Indians, who were constantly grubbing about the old buildings and adjacent graves in search of these trinkets, which accounts in some manner for their great scarcity in the ruins to day. They were undoubtedly obtained by the ancients from other tribes,

which brought them all the shells from which they were fashioned from the Pacific coast.

Of the second class of ornaments, many are found among the heaps of ancient pottery which surround all the ruined buildings. A small piece of pottery, generally of the best glazed and painted ware, is taken and the edges ground down to a rectangular or circular form, from a 1/2 inch to 1 1/2 inches in length. The circular specimens have perforations in the centre, the square, have holes near one end.

The turquoise were obtained from the Los Cerillos Mountains in New Mexico, south east of Santa Fe. Here is a quarry which was worked before the arrival of the Spaniards, and it was here, undoubtedly, that the ancient Cliff-Dwellers obtained their turquoises. Here, probably the *Mogons*, *Floecos*, and *Zenis* produced the turquoises mentioned by the Friar Marten de Niza, 1539, and by Coronado in 1541. Marten de Niza writes: "They have emeralds and other jewels, although they esteem none so much as turquoises." In truth, they adorn the waists of the people of their houses and their apparel and in fact they use them instead of money in their transactions. The last class of bead ornaments, or pendants, were made of stone or earthenware and were used as earrings or necklaces. They were from half an inch to two inches in length. They were suspended from the ear by circular drops or from the neck by long strings. Such ornaments are still worn by the *Mogons*, *Mapas*, and *Zenis*.



Mr. Barber says:

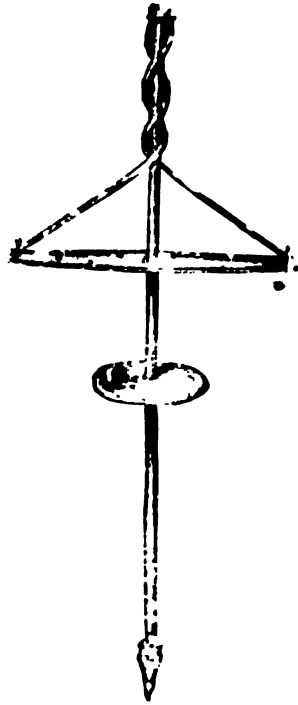
"I have seen many of these beads at Santa Fe, also at the ruins of the Cliff-Dwellers, and frequently met with them in the ruins of the *Mogons*. In central Arizona, near the ruins of the *Salado*, I have seen many of these beads, and also specimens like those shown in the accompanying illustration. Many shells of the *Union* species have been found in the ruins of the *Salado*, *Arizona*, *California*, *Florida*, *Georgia*, *Illinois*, *Indiana*, *Mississippi*, *North Carolina*, *South Carolina*, *Texas*, *Virginia*, *West Indies*, and *Yucatan*. The *Union* species are found in the *Las Grandes*, *Las*

as far as I know, are marine shells. The finding of such shells at a point so far away from the sea coast and nearly equidistant from the gulfs of Mexico and of California, is a remarkable feature, implying a primitive commerce, or inter-tribal warfare, which carried the objects to the inland pueblo at Casas Grandes.*

4. The pottery from the cliff dwellings is next to be considered. It is worthy of notice that the coiled and corrugated pottery and that in black and white are found in great abundance in nearly all of the cliff dwellings—those on the Mancos, Rio de Chelley, Rio Verde and on the Rio Grande—and are regarded as the oldest of all. There are specimens of pottery in red and various colors and with different patterns found among the Pueblos. This would indicate that the Cliff-Dwellers were older than the Pueblos, and that the stage of culture similar to theirs had spread throughout the entire region; but at a later date, though preceding the advent of the Spaniards, a new style was introduced. The proof of this is seen in the recent explorations by J. Walter Fewkes among the ruins of Sikyatki and among the Hopi Pueblos. The pottery which he discovered was of quite a different style and color from that of the Cliff-Dwellers, and contains many very interesting mythologic figures, such as the man eagle, the war god, the serpent and unknown reptiles, and the germ goddess, as well as the mountain lion. These symbols show that a mythology arose among the Pueblos, which did not exist among the Cliff-Dwellers.

Mr. W. H. Holmes speaks of the pottery of the Cliff-Dwellers in the following terms:

The study of the fragmentary ware found about the ruins is very interesting, and its immense quantity is a constant matter of wonder. On one occasion, while encamped near the foot of the Mancos Canyon, I undertook to collect all fragments of vessels of different designs within a certain space, and by selecting pieces having peculiarly marked rims, I was able to say with certainty that within ten feet square, there were fragments of fifty-five different vessels. In shape the vessels have been so varied that few forms known to civilized art could not be found. Fragments of bowls, cups, jugs, pitchers, urns and vases, in infinite variety, may be obtained in nearly every heap of debris.



DRILL AND BOW.†

* Papers of the Archaeological Institute of America,—American Series,—Vol. IV, p. 500.

† This relic is from the Zuni Pueblo.

marked in their characteristics that they can be easily recognized in any museum or large collection, even if they are not placed in separate rooms.

They are very instructive, as they suggest a stage of progress and cultural condition which was distinctive. They indicate a peaceful and sedentary life, as a large number of them consist of implements which were used in industrial pursuits; the pottery exceeding in number and interest, all other specimens. They may be divided into several classes, as follows. 1. Those which were made of stone, whether used as weapons of war, for industrial pursuits, or for domestic purposes. 2. Those which were wrought from wood, the most of them being implements which were used in agriculture; others, articles used for weaving and other domestic purposes. 3. Those which were made of shell, turquoise and other material, and used for personal ornament. 4. The pottery which is found



METAL FROM THE SAN JUAN.

in great quantities, great varieties of shape, and in many patterns. 5. Textile fabrics, which are of two or three classes: (1) Those made from wood, such as willow and bark. (2) those made from yucca and other plants—especially cotton. (3) those made from leathers and skins of animals. It will be interesting to take up these different classes of relics and examine them in turn.

1. We begin with the stone relics which were used for ordinary purposes, and mention first those discovered near the cliff dwellings of the San Juan. There are many weapons of war and the chief among the relics are, as arrow heads, spears, lance heads, darts, battle axes, tomahawks, and arrow polishers or straighteners. Mr. Barrows says:

The great majority of the weapons are made of flint or gun, having been prepared by the natives of the region themselves, but some, at least, are the products of the use of the primitive implements of a peaceful

people. We would not expect to discover these weapons of the Pueblo race, however, immediately under the walls of their own buildings but rather further out on the plains. The majority of our specimens were found in the close neighborhood of the mural remains.

It is undisputable that great battles have been fought here. Among the relics of battles are the barbed arrow heads, which were used as missiles; many of which were probably shot from the loop hole forts by the warriors who were stationed there to watch against the approach of enemies. The arrow heads are particularly noticeable on account of their delicacy, perfection, symmetry, diminutiveness and exquisite coloring. We first find them varying from less than half an inch in length to three inches. The materials are of agate, jasper, chalcedony, flint, carnelian, quartz, sandstone, obsidian, silicified and agatized wood. Sometimes we find a beautiful transparent amber-colored chalcedony specimen; again, a flesh-colored arrow head made of agatized wood; and another of a pea-green tint, red jasper, flint of every shade and color. According to form, they may be classified into nine divisions: (1) leaf shaped; (2) triangular; (3) indented at the base; (4) stemmed; (5) barbed; (6) beveled; (7) diamond shaped; (8) oval shaped; (9) shape of a serpent's head. The leaf shaped occur more numerous at a distance from the ruins on the plains, where they have been employed in the slaying of game, but the barbed near the cliff dwellings. The smaller variety of axes may have been used as tomahawks. Household implements were more widely distributed than the weapons. They were scattered through all the ruins; the majority crudely made, but some of them smoothly polished and ground to a cutting edge. A number of forms of hammers and mauls were discovered, varying in weight from a few ounces to twenty-five pounds. They were usually made of compact sandstone, and were cylindrical with the groove of the handle extending around the circumference at one end. The heavy mauls must have required more than one pair of hands to wield them. Some of the hammers were ovoid, with the groove extending around the centre, so that either side could be used at will.



AXE.

Numerous serrated implements were picked up among the debris of the ruins of different sizes and forms, which were evidently intended for sawing. The fragments of some indicated that the entire instrument had been several inches in length, and one inch or so broad. One, however, was a circular stone, of a bright green color in which the entire circumference with the exception of a small arc had been toothed or chipped. This was probably used in the same manner as the straight saws, being held between the finger and the thumb.

Chisels, awls, borers and rimmers occur in abundance. The chisels or

pointed tools were probably used in chipping out hieroglyphics. The awls, borers and rimmers were employed in perforating skins, wood, stone, etc.

Stone mortars are rare in a state of entirety, yet we found many fragments scattered over the plains and through the canyons. The prevailing material seems to have been sandstone. Pestles are very rarely seen. However in the Moqui village, I observed several stone mortars, some eight or ten inches in diameter, with their accompanying pestles, which had been placed on the house tops; and I was told that they had not been in use for many years, having descended with many old stone implements from the forefathers of the tribe.

One of the most common objects to be found in and about the crumbling buildings is the millstone or *metate*, and with it the corn grinder. Lieut. Emory says of the ancient remains along the Gila River, 'The implements for grinding corn and the broken pottery, were the only vestiges of the mechanical arts which we saw amongst the ruins, with the exception of a few ornaments, principally immense well turned beads, the size of a hen's egg.'



AXES OF CLIFF DWELLERS.

Mr. Nordenskiöld discovered stone relics among the cliff dwellings which should be classed with the implements and weapons. At Mug House he found skinning knives made of quartzite, also drills and stone axes, at Kodak House, a flint knife of black slate, arrow head and spear head, scalper, a *metate* made of brown sandstone, large stone hammer, a large rough-hewn circular mortar, rounded stones used for grinding, and long flat disks of wood, baskets of woven yucca, made water tight and coated on the inside, gourds and squashes, mats made of withes split and held together by cords of yucca, snow shoes and pieces of cotton cloth.

For the sake of comparison, we turn to the stone relics of the Pueblos. They were mainly relics designed for industrial and domestic purposes. They consist of hammers, mauls, stone axes, knives, saws, chisels, darts, rimmers, borers, scrapers

or fleshers, mortars, pestles, mill stones, metates, grinders, arrow polishers, perforated stones for drawing out sinew, gauges, and pounders. These resemble the stone relics found in other parts of the country, and especially those found among the Pueblos.

A very large collection of them has been gathered in the National Museum. Catalogues have been published at different times. That which was prepared in 1879 by Mr. James Stevenson, and published in 1881, is, perhaps, the earliest and most reliable. We give a plate* on which the axes are represented, taken from this report. Of these, Mr. Stevenson says:†

No. 42257 is a grooved axe of basalt, the only specimen of this particular form in the collection.

No. 42208 is a large stone celt of coarse sandstone, shaped like a wedge. It is about ten inches long, has four flat sides, and may have been a grinder. Its surface is quite rough and pitted.

No. 42337 is a grooved maul of compact sandstone, almost round. Several such specimens were collected. They have been better preserved than the axes, as their shape adapts them to grinding food, hence they were not used for splitting or cutting.

No. 42213 is a water worn boulder of quartzite, grooved around the center.

The axes on the plate are of the ordinary form, and show much use. The metate, shown on page 110, is of the ordinary kind. Many such mills or metates are found in nearly every pueblo. The different apartments were designed to hold the meal as it grew finer under the grinding process. Mortars and pestles are also common.



MORTAR AND PESTLE.

Mr. Stevenson described a paint mortar, gathered at Zuni, with a pestle made from a quartz pebble; another, made of sandstone, with a square pestle, designed to move backward and forward, instead of up and down and around. Another mortar is represented in the cut with a pestle inside of the mortar. The pestle has a pit hole in its side, which was designed to hold the pigment after it was ground, which was used with a brush for decorative purposes. The cup and pestle were found together. Besides these relics, there are many idols, or images, which represent the fetiches, or gods, of the Pueblos. These are made in the shape of animals, such as the wolf, bear, panther, eagle and mole. They sometimes have arrows bound to

* See page 11. The numbers refer to the catalogue number of the museum.

† See Second Annual Report Bureau Ethnology, 1881, pp. 39-46.

them.* They form an interesting series which show the religious superstition of the people. The plate, which is taken from the Report of the Ethnological Bureau 1881, illustrates this. Mr. Cushing has described them and their uses.

2. All of the explorers have spoken of the mechanical tools which are found among the cliff dwellings, though some of them were at a loss to know to what use they were put. Mr. Holmes described a series of relics which were discovered in the cliff dwellings of Mancos Cañon, some of which were wood and stone, and a few of shell, and gives a cut to illustrate them. He says

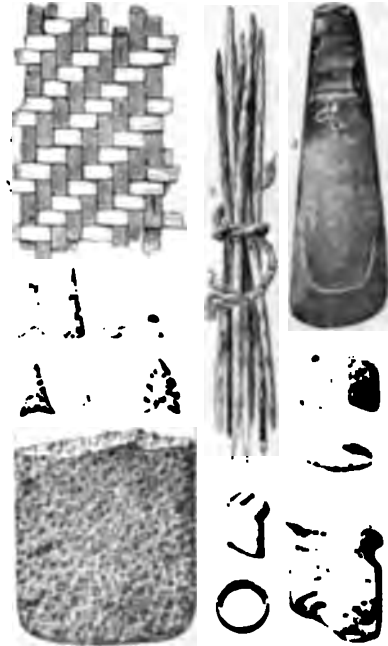
This cut contains drawings of a number of stone implements, arrow heads, ornaments, and other articles manufactured or used by the ancient inhabitants of this region. Nearly all were found so associated with the architectural remains, that I do not hesitate to assign them to the same period.

No. 1 represents a small fragment of rush matting. A large piece of which was found on the floor of one of the cliff houses of the Rio Mancos. It was manufactured from a species of rush that grows somewhat plentifully along the Mancos bottoms.

No. 2 represents a bundle of small sticks, probably used in playing some game. They are nearly a foot in length and have been sharpened at one end by scraping and grinding. They were found in one of the cliff houses of the Mancos. Lined beneath with a soft bluish felt, and covered with which they were fastened, they look like the shafts of a bow and were used with a small strip of yucca bark, the end of the number of sharp points of different sizes were made to the beauty

of the work, and used by the people. The fiber is a little coarser and more elastic than the species which is obtained from a species of yucca which grows in the same locality.

No. 3 is a very peculiar specimen of stone implement, found buried in a large pile of ruins in one of the Mancos Cliff houses. It is 8 inches in length and 2 inches in diameter at the broadest part, its greatest thickness is only $\frac{1}{8}$ inch, the other end is slightly convex while the other is nearly flat. The sides are convex and rounded, and the edge is quite sharp.



ARROW HEADS, FIBERS, AND GRINDER FROM MANCOS CAÑON.

* See Report of the Ethnological Bureau, U. S. Department of the Interior, "Mesa and Symbols," pp. 100-101.

Mr. Cushing's description of the Mancos Cliff houses is given in the Report of the Ethnological Bureau, U. S. Department of the Interior, "Mesa and Symbols," pp. 100-101. The description of the Mancos Cliff houses is given in the Report of the Ethnological Bureau, U. S. Department of the Interior, "Mesa and Symbols," pp. 100-101.

It is made of a very hard, fine-grained, siliceous slate; is gray in color, and has been ground into shape and polished in a most masterly manner. Although its use is not positively determined, it belongs, in all probability, to a class of implements called "scrapers," which are employed by most savage tribes in the dressing of skins. This specimen may have been used for other purposes, but certainly not for cutting or striking, as the metal is very brittle. The most conclusive proof of its use, is the appearance of the edge, which shows just such markings as would be produced by rubbing or scraping a tough, sinewy surface.

No. 4 represents a part of a metate or millstone. The complete implement consists of two parts: a large block of stone with a concave surface, upon which the maize is placed, and a carefully dressed, but coarse grained slab of stone for grinding. This slab is generally from eight to twelve inches long by three to six inches wide, and from one to two inches thick. The specimen illustrated is made of black cellular basalt, and was found, with many others, at the ruined pueblo near Ojo Caliente, New Mexico.

No. 5 is a very much worn specimen of stone axe, which was found at an ancient ruin near Abiquiu, New Mexico. It is made of light colored chloritic schist, and measures two inches in width by three in length.

No. 6 and 6a are specimens of ear ornaments, such as are found in connection with very many of the ruins of southern Colorado. These are made of fine-grained gray slate, only moderately well polished, one measured an inch and a quarter in length.

No. 7 represents a marine shell of the genus *Olivella*, obtained probably from the Pacific coast. Large numbers of this and allied shells are found about these ruins. They are generally pierced, and were doubtless used as beads.

No. 8 represents a small carved figure found on the Rio Mancos. It is made of gray slate. Its use or meaning can not be determined.

No. 9 represents a stone ring, five-eighths of an inch in diameter, and probably intended for the finger. It is made of hard gray slate; is shaped like the usual plain gold ring, and is quite symmetrical.

No. 10 represents arrow heads which were found associated with nearly every ruin examined. They present a great variety of form; some of the more striking of these are given in the cut. The materials used in their manufacture are principally the more beautiful varieties of obsidian, jasper and agate.*



WOODEN SHOVEL.†

Mr. Stevenson has described certain wooden relics from the Zuni pueblos. One of them is an ordinary shovel, which was used to shovel the snow off the roofs; another is the bow and drill, which was used for drilling stone. A cut is also given, in which a native is represented as sitting upon a Navajo blanket, dressed in the usual costume now worn by the Zunis, drilling a hole in a turquoise. The cut illustrates the manner in which the drill was used.‡

* A. N. S. of the Ancient Remains of Southwestern Colorado Examined During the Summer of 1887, by W. H. Holmes, pp. 23 and 24.

† The relic is from the Zuni Pueblo.

‡ Burd. Annual Report Bureau Ethnology, p. 177.

3. The personal adornments of the Cliff-Dwellers are worthy of notice. They may be classed according to material, as follows: Bead ornaments made from shells or earthenware; necklaces made from bone, horn, stone, claws and teeth of animals; ear pendants of turquoise; feather head dresses; woven sashes; fringes of fur, and tassels of fur and fibre. The following description is by Mr. E. A. Barber:

The marine shells were converted into beads by the ancient tribes, but they are valued highly by the present Navajo Indians, who were constantly grubbing about the old buildings and adjacent graves in search of these trinkets, which accounts in some manner for their great scarcity in the ruins to day. They were undoubtedly obtained by the ancients from other tribes, which brought them all the shells from which they were fashioned from the Pacific coast.



Of the second class of ornaments, many are found among the heaps of ancient pottery which surround all the ruined buildings. A small piece of pottery, generally of the best glazed and painted ware, is taken and the edges ground down to a rectangular or circular form, from a 1/2 inch to 1 1/2 inches in length. The circular specimens have perforations in the centre, the square, have holes near one end.

The turquoises were obtained from the Los Cerillos Mountains in New Mexico, south-east of Santa Fe. Here is a quarry which was worked before the arrival of the Spaniards, and it was here, undoubtedly, that the ancient Cliff-Dwellers obtained their turquoises. Here, probably, the Moquis, Tiguas and Zuñis procured the turquoises mentioned by the Friar Mateo de Niza in 1539, and by Coronado in 1541. Mateo de Niza writes: "They have emeralds and other jewels, although they esteem none so much as turquoises, wherewith they adorn the waies of the perils of their houses and their apparell and mantles. They use them instead of money, to buy the necessities." The last class of bead ornaments and pendants were made of stone or earthen ware, and were used as earrings or necklaces. They vary from half an inch to two inches in length. They were suspended from the ear or hung as drops or from the neck by means of cords. Such ornaments are still worn by the Moquis, Miquis and Zuñis.

Mr. Barber says

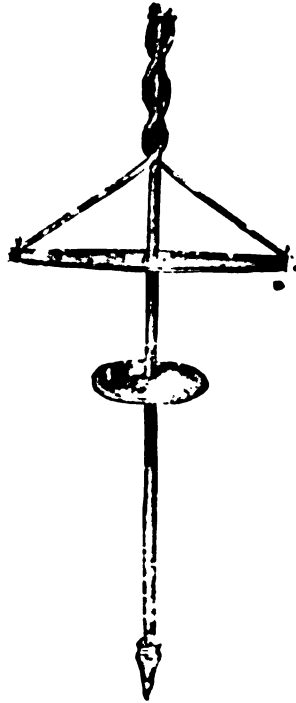
At the Cliff-Dwellers' sites, I have seen many of these beads, but they are not frequently met with at the ruins of the Pueblos. In the central and southern parts of the present Navajo Indian Reservation, I have seen many specimens of the same material, but they are not so precisely like those of the Cliff-Dwellers. Many shells of the same material have been seen at the ruins of the Pueblos in the West Indies, and at the ruins of the Pueblos in the States of Texas and New Mexico.

as far as I know, are marine shells. The finding of such shells at a point so far away from the sea coast and nearly equidistant from the gulfs of Mexico and of California, is a remarkable feature, implying a primitive commerce, or inter tribal warfare, which carried the objects to the inland pueblo at Casas Grandes.*

4. The pottery from the cliff dwellings is next to be considered. It is worthy of notice that the coiled and corrugated pottery and that in black and white are found in great abundance in nearly all of the cliff dwellings-- those on the Mancos, Rio de Chelley, Rio Verde and on the Rio Grande-- and are regarded as the oldest of all. There are specimens of pottery in red and various colors and with different patterns found among the Pueblos. This would indicate that the Cliff-Dwellers were older than the Pueblos, and that the stage of culture similar to theirs had spread throughout the entire region; but at a later date, though preceding the advent of the Spaniards, a new style was introduced. The proof of this is seen in the recent explorations by J. Walter Fewkes among the ruins of Sikyatki and among the Hopi Pueblos. The pottery which he discovered was of quite a different style and color from that of the Cliff-Dwellers, and contains many very interesting mythologic figures, such as the man eagle, the war god, the serpent and unknown reptiles, and the germ goddess, as well as the mountain lion. These symbols show that a mythology arose among the Pueblos, which did not exist among the Cliff-Dwellers.

Mr. W. H. Holmes speaks of the pottery of the Cliff-Dwellers in the following terms:

The study of the fragmentary ware found about the ruins is very interesting, and its immense quantity is a constant matter of wonder. On one occasion, while encamped near the foot of the Mancos Canyon, I undertook to collect all fragments of vessels of different designs within a certain space, and by selecting pieces having peculiarly marked rims, I was able to say with certainty that within ten feet square, there were fragments of fifty-five different vessels. In shape, the vessels have been so varied that few forms known to civilized art could not be found. Fragments of bowls, cups, jugs, pitchers, urns and vases, in infinite variety, may be obtained in nearly every heap of debris.



DRILL AND BOW.†

* Papers of the Archaeological Institute of America,—American Series,—Vol. IV, p. 553.

† This relic is from the Zuni Pueblo.

The art of ornamentation seems to have been especially cultivated, as very few specimens are found that are not painted, indented or covered with raised figures. Indeed, these ornamented designs are often so admirable, and apparently so far in advance of the art ideas of these people in other respects, that one is led to suspect that they may be of foreign origin. This suspicion is in a measure strengthened when we discover the scroll and the fret struggling for existence among the rude scrawlings of an artisan, who seems to have made them recognizable rather by accident than otherwise. It is not improbable, however, that the specimens referred to are but rude copies of models designed by more accomplished artists, or procured from some distant tribes.

No. 1, represents a large vessel obtained in one of the Mancos Cliff



FIG. 1. VESSEL OBTAINED BY W. H. HOLME.

No. 1, is a large vessel, of very novel pattern of manufacture. It is of the ordinary shape, and is made of thin, red, earthy material. The specimen is preserved.

No. 2, is a small cup, obtained by Mr. Adair, near a ruin of the same kind, and is made of thin, red, earthy material. Its diameter is two inches.

No. 3, is a small part of a vessel, obtained by tearing a fragment from the side.

No. 4, is a small specimen of a bowl, of a similar simple pattern.

No. 5, is a small part of a vessel, of a similar pattern.

The designs on the vessels are of a very simple character, and are in certain respects similar to those which are found on the work of the same tribe, and are also similar to those which are stated, to

be found in one of the Mancos Cliff houses. It is of the corrugated variety, has a capacity of about three gallons, and was probably used for carrying or keeping on hand a supply of water. In the specimen figured the workman has begun near the centre of the rounded bottom and laid a strip in a continuous, but irregular, spiral (No. 3), until the rim was reached, indenting the whole surface irregularly with the finger. Two small conical bits of clay have been set in near the rim as a decoration. Other specimens have small spirals, while others have scrolls, and still others very graceful festoons of clay (Nos. 2 and 2A). A number of the more distinct styles of indentation are given in connection with this figure (Nos. 3, 3A, 3B, 3C, and 3D).

No. 4 is a bowl restored from a large fragment. It is painted both inside and out, and the designs are applied with rather more than usual care.

Nos. 5, 6, and 6A are fragments among the ornamented designs. I have corrected the drawing, but have not added a new element.

remains of kilns or manufactories were discovered. The forms and styles of ornament are pretty uniform, which is to be expected in either case, since the inhabitants of the various villages must have had constant communication with each other.*

Mr. Jackson says of the pottery of Mancos Cañon:

All who have ever visited this region, which extends from the Rio Grande to the Colorado and southwest to the Gila, have been impressed



POTTERY DESCRIBED BY W. H. JACKSON.

with the vast quantities of shattered pottery scattered over the whole land, sometimes where not even a ruin now remains, its more enduring nature enabling it to long outlive all other specimens of their handwork. It is especially instructing, as enabling us to see at a glance the proficiency they had attained in its manufacture and ornamentation, displaying an appreciation of proportion and a fertility of invention in decoration, that makes us almost doubt their ante-Columbian origin; but, nevertheless, without going into the details, we believe them to antedate the Spanish occupancy of this country, and to owe none of their excellence to European influences, being very likely an indigenous product.

* A. N. S. P., *The Ancient Remains of Southwestern Colorado, Examined During the Summer of 1891*, by W. H. Holmes, pp. 21, 22 and 23.

No. 1 is a jar from the valley of Epsom Creek, of dark gray and rather coarse material without color or glaze, of the indented and banded ware peculiar to the ancient artificers only. It is made by drawing the clay into ropes, and then, commencing at the bottom, building up by a continuous spiral course, each layer overlapping the one under it; the indentation being produced by a pressure with the end of the thumb, and by a slight doubling up of the cord of clay. The design is varied by running several courses around quite plain. Its diameter was 18 inches, with the same height, and 9 inches across the mouth. For so large a vessel, it was very thin, not more than one-fourth of an inch. Inside, the surface was rubbed perfectly smooth.

Nos. 2, 3 and 11 are restorations from well preserved fragments of mugs or cups, each elaborately ornamented in black on a white glazed ground, the last one, especially, is of firm, excellent ware, and the design is put on with great precision. The first two are 3½ inches in diameter and 4 inches high and the last one 4½ inches in diameter by 5 inches in height.

No. 4 is a flat disk of pottery for covering a jar.

No. 5 is the small jug found at the great cave ruin on the Rio de Chelley; it is 3½ inches in diameter, of dark gray ware, perfectly round and very neatly painted. The handle has been broken off, but leaving the marks where it had been attached.

No. 6 is a slightly oval shaped jar, 10 inches in diameter, and a mouth 5 inches wide, with the lip rolling over sufficiently to attach a cord to carry it by.

No. 8 is a small jug, with side handles and narrow neck, 4½ inches in diameter and 1½ inch across the mouth.

No. 9 is a cup or



FIG. 1. MAZE OF COILED WARE.

draped bowl. Mouth 2 inches in diameter, bowl 4 inches in diameter, handle, 4 inches.

No. 10 is a fragment from a grave on the banks of the San Juan, near the mouth of the Rio de Chelley, by Toluca, Mex. In the same find, were other fragments of the same ware, and also a human jaw bone, and a few other articles, but they are of a coarse, gray material, somewhat like the ware of the present day, and not to be described.

No. 12 is a fragment of a vase among the Masques or Tegues. They are a ware of the present day, which is supposed to come from, or who made it. It is painted with a black design on a white ground. The material is rather soft, being easily scratched with the finger nail, and the paint is rather cracked and peeling off in places, and the surface is rather uneven and rough. The tallest portion is 10 inches high.

No. 13 is a fragment of a vase, also among the Masques or Tegues. The material is of the same quality as the preceding examples, but the design is more intricate, and the paint is more evenly applied, and the surface is smoother.

5. The collections made by Mr. Nordenskjöld while exploring the cliff dwellings are important in this connection. He discovered a large amount of pottery, consisting of several kinds: (1) Coiled ware; (2) plain ware, undecorated; (3) plain, with indented ornaments; (4) ware, painted in red, black and white. He also found woven and plaited articles; wicker work; mocassins; plaited ropes; feather cloth; loom woven nets; a whole jacket of skin, found in a grave; several skin pouches; cord wrapped in a thong of hide; necklaces of shell; a head-dress of feathers, tied in rows, designed for plumes; cotton cloth; a belt or head piece, made with a wrap of yucca and a woof of cotton; a double-woven band; a bag or pouch, made from the skin of a prairie dog, filled with salt, and sewn together in such a manner as to leave the hole, corresponding to the mouth of the animal; also a necklace of turquoises and white beads, which were perforated; a black bead of jet, found at Spring House; a cylinder of polished hematite; a mummy, shrouded in a net work of cord with thongs of hide, and the feet clad in mocassins of hide; also a large piece of feather cloth wrapped around the skeleton of a child, and, at Step House, a shroud of feather cloth.



PUEBLO WOMAN WITH POTTERY JAR.*

At this place, he found a large vase of coiled ware, holding twenty-five litres; also a jar in a net of yucca; a large jar with a tasteful indented pattern in triangles; a large, shallow bowl, ornamented with regular designs; and, at Spring House, an oblong vessel, probably a lamp. It resembled a bowl, but had two loops on the top, designed to be held with cords and hung to the wall. There were cotton wicks placed in the opening or mouth. He also discovered a ladle with handles, black and white bowls, encircled by a black line and black streaks running obliquely down, making a step pattern, bowls with a black pattern on a white ground; a large bowl with a meander pattern and parallel lines, executed with great skill; a bowl with an especially handsome ornament in black on a gray ground; a large bowl with a black ornament on a white ground, with a handsome meander.

* This cut, representing a modern Zuni woman with pottery jar on her head, is given to show the contrast between the Cliff-dwellers' pottery and that of the modern Pueblos.

At Step House, he found a bowl with a suastika on the outside, with white diamonds and black spots on the inside, this was in a grave; also a fragment of a large bowl with a suastika, and a scroll in black with a large leaf in black and gray; also a mug, ornamented in black and white; spoons with ornaments, some running parallel, others with transverse bars, a large spherical jar and ladles and dippers; one beautiful jar of red ware, with spiral coils, perfect in form and design; its fine details and coils executed with great care, the figures in curved and spiral lines. These finds by Mr. Nordenskjold are very important, especially of the red ware and of the suastikas.

Some maintain that the Cliff-Dwellers were a very ancient people, and were, in fact, the ancestors of the Aztecs, and that the famous migration from the Seven Caves, described by the Mexican picture records, was from this region. Others maintain that they were quite modern, and were the same as the Pueblos, and occupied the cliffs as resorts while cultivating the soil and remained there until after the arrival of the Spaniards. The examination of the relics gathered from the cliff dwellings, however, disproves both of these positions.

There is, in the first place, not a single ornament which resembles those used by the Aztecs, and the ordinary relics are of a very different character. In the second place, most of the pottery is entirely different from that used by the modern Pueblos, and lacks the symbols and ornaments which are supposed to have been introduced among them late in their history. They give no evidence of contact with the white man. There are, to be sure, such symbols as the suastika, the Greek fret, the Egyptian tau, the scroll, the volute and the stepped figure which are common in oriental countries, but these are world wide in their distribution, and seem to be almost universal.

We conclude that the Cliff Dwellers received them from the same source that the Mound Builders of the Mississippi valley and the civilized tribes of the southwest did. The stepped figure is not found among the mounds, but nearly all the other symbols are. The plumed serpent is especially prominent.

These same symbols are very common among the Pueblos, but in addition to them there are many figures which seem to have had a later origin, perhaps were introduced after the advent of the Spaniards.

EDITORIAL.

ARCHAEOLOGY AND HISTORY.*

Great interest has been awakened in American history, and many books are appearing which relate to the past; some of which are new editions of works with which we have already become familiar; others entirely new. There is one peculiarity about the books which are most acceptable, which has not been noticed, but is especially interesting: Archaeology seems to be made very prominent in them, and the descriptions of the scenery, of vessels, buildings, equipages, dress and appearance of the people are minute and accurate. The books are not all of them illustrated, though they would be very much improved if the publishers had taken the pains to reproduce more of the old engravings which are extant, and so brought to the eye the very events which were enacted in their proper settings; still, the books which are destitute of engravings contain a series of word pictures which are very graphic, and we realize that in them archaeology is the basis of history.

There are historical treatises which deal with abstract truths and general principles, and are full of philosophy. There are others which treat of the positions of statesmen and the discussions which have been carried on, as well as the political measures which have been adopted. These are of great value, for they show the connection of one event with another, and reveal the inner workings of human thought and power which individuals have exerted in molding society. The best historians, however, are true artists. They make the background of a picture such as will set off the figures which are to be placed upon it, and use the contrast of color and the variety of light and shade, as well as the symmetry and form, to illustrate the thought and the motive which are in the writer's mind. In these particulars, no author has ever excelled our own celebrated Parkman, who took infinite pains to make himself familiar with all of the surroundings, and describe the objects,

* *Pioneers of France in the New World. France and England in North America*. Part First. By Francis Parkman. Boston: Little, Brown & Co., 1878.

The Jesuits in North America in the Seventeenth Century. France and England in North America. Part Second. By Francis Parkman. Boston: Little, Brown & Co., 1878.

The Pilgrims in Their Three Homes. England, Holland and America. By William Enot Griggs. Boston and New York: Houghton, Mifflin & Co.; the Riverside Press, Cambridge, 1878.

History of Pilgrimages in New England Among Landmarks of Pilgrim and Puritan Days, and of the Provincial and Revolutionary Periods. By Edwin M. Bacon. Silver: Burdett & Co., New York, Boston and Chicago.

one after another, in detail with the utmost accuracy. In reading the fascinating descriptions, we sometimes think that he is giving play to his imagination, but on examining the subject and comparing the descriptions with the actual objects which archaeology has made familiar, we find that they correspond very closely.

The same is true to a certain extent of the writings of Dr. John Fiske, who, like Parkman, has taken different epochs, as well as different localities for his series. The same charm, also, is felt in reading the book, prepared by William Elliot Griffis, on "The Pilgrims in Their Three Homes."

The history of the West, or what was West at one time, — that is, the region beyond the Alleghany Mountains, but east of the Rocky Mountains, — is brought before us by the majority of Parkman's books, though the first volume is given to the description of the planting of the colonies on the Atlantic coast by the Spanish, and on the St. Lawrence by the French. The exploration of Champlain into the Huron country opened the interior to view, and the efforts of the Jesuits to establish missions among the Iroquois and Hurons, give to us an idea of the difficulties which were experienced by them in bringing the natives into Christian civilization.

Another peculiarity to all of these histories, is that they take the native population into account and recognize the part which the Indians held in the early history of our country. None of them undertake to go back to prehistoric times and describe the relics or monuments which are reminders of those times, yet the natives who met the white men and disputed the possession of the land with them, are mentioned frequently, and their homes are carefully described. There are, indeed, certain links which might be put into the narrative, and information which can be gained from the study of maps, furnished, but, as these belong to the earlier period — that which intervened between the discovery and the explorations of the interior — we have no right to complain.

There are two or three scenes in which the natives took part, which are illustrated by paintings. One of which, by Thule de Chastrop is represented in the Frontispiece, a plate kindly furnished to us by Little, Brown & Co., the publishers of Parkman's works. It represents the Jesuit Missionary Jogues before a council of the Mohawks. His errand was half political and half religious, for not only was he to be the bearer of gifts, wampum and messages from the Governor of Canada and founder of Montreal, Maisonneuve, but he was also to found a new mission.

Parkman says: "There was a council in one of the lodges, and while the crowd of warriors smoked their pipes, Jogues stood in the midst, and harangued them. He offered in due form the gifts of the governor with the wampum belts and the message of peace while at every pause his words were echoed by a unanimous shout of applause from the attentive concourse. Peace speeches were made in return, and all was

harmony. When, however, the Algonquin deputies stood before the council, they and their gifts were coldly received. The old hate, maintained by traditions of mutual atrocity, burned fiercely under a thin semblance of peace; and, though no outbreak took place, the prospect of the future was very ominous."

The picture represents the manner of dressing the hair and wearing ornaments on the head, as well as the shape of the long house and the dress and ornaments of the warriors; all of which are described by Parkman, his word pictures and paintings closely corresponding.

In contrast with this picture of the aborigines is one which represents the Pilgrim Fathers at the time of their departure from Delft Haven. The following is the description: "In picturing to our minds the departure of the Pilgrims, we can not imagine the elegantly dressed ladies and gentlemen, with feathers and silks and jewels, such as we see in some highly-idealized pictures, any more than we can conjure up, as a certain lithographer once did, two full-rigged ships with a vast crowd of people in boats waving farewells, or the imaginary rocks and high lands which exist on canvas, but not in reality. It is more than probable that the picture painted by the Cuyps, father and son, gives the exact facts. This painting, small in size, superb in color, and lively in detail, represents, with the usual Dutch realism, a gay horse and horsemen, the inevitable little dog, a Diana like huntress, with a boy carrying her birds, arms and case, in the foreground, and a group of sheds or huts, serving as store houses for cargoes and naval goods, at the end of a quay. It gives no hint of any island such as now fronts Delft Haven, and which one sees as he enters or leaves Rotterdam on the steamers of the Dutch or Holland-American line. The buildings were not splendid affairs of masonry, brick and iron, as to-day. The woodcuts and paintings of the period depict them as they were. In garb of dark or brown clothes of the rigid style and cut of English Puritans, with high and wide-rimmed black hats, with ruffs around their necks, a company of men numbering a dozen or so, with a boy or two, are walking down toward the end of the pier. A big Dutch porter women in front and a porter man at the rear, carry big bundles for them. Three or four of the party have muskets, and one, a short, doughty figure, with his legs covered with long, high cordovan leather boots, holds his arms akimbo and wears a sword. In the middle, arm-in-arm with the mate or captain, both of whom are dressed, not as Puritans, but as ship folk, is a man with a round or melon-shaped cap, such as clergymen wore in those days. This is not Elder Brewster, who probably wore no special costume, and who was then, as we think, hiding in England, but the Rev. John Robinson. About the cabins or store houses on the shore are more emigrants, and among the shipping to the left, beside the tri-color Dutch flags on the vessels sailing, or about to sail, is a heavily masted pinnace, lying on the low but rising tide, apparently of about sixty tons

burden. Out of her sides are poked the noses of three cannons. On board are many people, among whom are gayly dressed English sailors. Though the Dutch flag flies fore and aft, yet toward the bow is carved the beast best known in English heraldry. This rampant red lion, the shape and rig of the vessel, its abundance of color, and the gay dress of the crew, tell of an English ship of the model of Elizabethan or Jacobean times.*

As to the "Historic Pilgrimages in New England," by Edwin M. Bacon, it is manifest that the chief object is to represent the things which remain in New England, especially near Boston, and which remind us of the events of early history. This book owes its value to the cuts which are judiciously scattered through the letter press, and which bring before the eye the houses in which the New England fathers lived, the furniture with which they were filled, and the portraits of the chief men who occupied the homes.

A volume, published by the John Hopkins University, illustrates the scenes of the Southwest, and gives the picture of some of the churches, convents and mission houses which were erected by the Spaniards before the Americans came into possession of the territory.

Several volumes have been published by the American Historical Association, which have no illustrations and very little archaeology, and still the most interesting articles are those which are founded upon the concrete and contain descriptions of scenes and personages. Among these may be mentioned the article by Dr. Richard S. Storrs on "Contributions Made to Our National Development by Plain Men", also, the "Diary of Edward Hooker," and the "Correspondence of Clark and Genet," which brings before us the expedition of George Rogers Clark in a very graphic manner.

"Old South Leaflets" carry out the vision still further. These begin with the government of Scotland and England, pass on to the first voyage of Amerigo Vespucci, furnish the funeral oration on Washington, then take up Northwest territory and the Western Reserve, give an address by James A. Garfield, and extracts from Lewis and Clark's Journal.

The "New England Historical and Genealogical Register" is also full of descriptions of churches, taverns and private houses which were erected by the early settlers from 1620 on.

*Description of plate on page 28 which was kindly loaned us by Houghton, Mifflin & Co. It is from an old Dutch printing and is used in the volume by William L. G. Allen.

The History of the City of New York, from its First Settlement to the Year 1807. By James S. Wood. New York: Government Printing Office, 1807.

Journal of the Expedition to the Westward of the Old South Work, Old South Meeting House.

PLAN OF HOUSE



STATUE OF A KING



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*The illustration of parts of page 124, which was kindly loaned us by H. C. G. Mather, Esq., of Boston, is the property of the printer, and is used in the volume "American Antiquarian," p. 124.

Published by the American Historical Association, 125 North 4th Street, Philadelphia, Pa., 1897.

Printed by the American Historical Association, 125 North 4th Street, Philadelphia, Pa., 1897.

TEMPLE OF RAMSES.



STATUE OF HORUS.



PREHISTORIC EGYPT.

A paper read before the Amer. Numis. and Arch. Society of New York City by Henry de Morgan, gives an account of the discoveries made by his brother, Mr. Jacques de Morgan, and criticises an account which had been published in the New York Sun by a writer, who claimed that the finds were all prehistoric.

The embarrassment of Mr. de Morgan was very natural, when he found that the scrap-book which he had given into the hands of the newspaper writer, to select such facts as might be suitable and interesting to the public, had been entirely misconstrued, and that the facts were not stated at all as they were rendered, and that he was quoted as authority on the subject.

It was an experience, however, which is very common. Upon the whole, archaeologists have learned from experience that they must write their own articles and insist upon it that they should be published as written, if they are to have the facts given correctly. It is not even safe to place a volume on archaeology for review in the hands of an ordinary newspaper reporter, for he will be sure to make egregious blunders and leave out something important.

In the matter of prehistoric relics in Egypt especial care is needed, for it would seem that Egyptologists are often deceived. Some of them deny that there are any prehistoric stations, and explain all the relics as survivals; while others are very ready to accept any relic which has been chipped, especially if it is rude, as not only prehistoric, but paleolithic.

M. Maspero in 1875 made the following statement. "Nothing, or next to nothing, remains to us of the primitive generation. Most of the cut flint arms and implements which have been discovered could not be attributed to them with any degree of authenticity. The inhabitants of Egypt continue to employ stone for certain uses, for which other people were using metals. They were fabricating stone arrow heads, knives, scrapers under the Pharaohs, under the Romans, during all the mediæval times, and the mode has not entirely disappeared.

Mr. F. Petrie found in upper Egypt tombs of very primitive character, containing flint instruments and pottery of a peculiar nature, but refused to believe his own eyes. He said in 1875: "They must not be supposed to be prehistoric in all cases, or, perhaps, in any case. Flints were used side by side with copper tools, from the 4th to the 12th dynasty; they were still used for sickles in the 15th dynasty."

Mr. Jacques de Morgan in the same year said "Stone implements belong to every epoch, some are known to belong to the Ptolemæic period," but in 1878 he says "This was my opinion in 1875. I could hardly imagine that relics of the Egyptian soil lasting nearly a century had ever been brought

to bear on these questions. Now that prehistoric localities are reckoned by hundreds, this question has entered into a new stage, and there is no doubt as to the date of the stone implements. I can't understand why this discovery was not made sooner. The neolithic station of mineh, south of the ruins of a Roman city, is situated in a natural depression, 100 metres above the present level of the Birket-el-Koroun. During the stone age, water from the lake reached that level, and the prehistoric station was located on its shore. The water of the lake has gradually receded since prehistoric times. If you go from the site of the prehistoric station down to the shore of the lake, the ancient Lake Moeris, you find the implements until you reach the altitude of 60 metres, then they disappear.

Further down are the Roman remains, descending to the present level of the lake shore. I have read of some strange sepultures, found this winter by Mr. F. Petrie, some 60 kilometres south of Cairo. Those of El Amrah are particularly typical. They consist of an oval cavity dug in the alluvial gravel, at a depth of $1\frac{1}{2}$ or 2 metres. The body is laid on the left side, the legs are bent upward so that the knees reach the height of the sternum, around the body are earthen vases, large urns full of ashes and animal bones; nearer are small vases cut in stone, some decorated with painted red ornaments. Here were found slate figurines, representing fishes, quadrupeds, flint implements, necklaces and bracelets made of shell. Bronze is seldom met with, and when found, the implements are very small, such as needles.



STATUE OF A PERSIAN WARRIOR.

"Numerous prehistoric stations, with their necropolis, their huts and their debris, have been found in a great many spots in upper Egypt. From the inspection of the objects, I do not believe there will be any doubt as to the existence of the stone age in the Nile valley."

In strong contrast with this report, is the one which was made by the newspaper writer, who used in his account of it an illustration of the rock cut tomb of Ramses II. (Sesostris 1333 B. C.), which is given in the plate. It is plain to any intelligent reader that the statues and temples which belong to the age of Ramses and which are often represented in engrav-

ings, are entirely different from the prehistoric kings, and from the graves of the "stone-age."

To an archaeologist the absurdity is apparent at once, and yet probably many readers took the statues of Ramses and the finished temple to be representations of the tombs of the days before Menes. The same indiscriminating class has probably taken the report that the grave of Osiris has been discovered and that Osiris was an actual historic personage, as strictly true, because, forsooth, the name of a reputed archaeologist has been given to the report.

The connecting link between the prehistoric and the Pharaonic Egypt is at the tomb of Negadah, discovered last winter by Mr. J. de Morgan. Here is the oldest royal document ever exhumed in Egypt. The true reports of the Negadah finds were published for the first time by Mr. de Morgan and Prof. Wiedmann. It was a grave of cremation, the plan and general disposition resembled nothing else exhumed in Egypt.

The preliminary report of Prof. J. de Morgan's excavations at Susa has been submitted recently to the French Minister of Public Instruction. He has unearthed important monuments belonging to the Auzanite dynasty. M. Dieulafoy in 1885 did not dig deep enough to reach the strata of this ancient period. Assurbanipal's account of the destruction of the city by fire is now confirmed, many of the monuments bearing traces of flames. A large stele represents the king above him three suns with helmet, bow and arrow, pursuing his enemies in the mountains. It is an important piece of Elamite art, and shows that the Auzanites equalled the Assyrians and Chaldeans in skill. A bronze table or altar, and two blocks of stone, one white and the other black, with inscriptions and historic and religious emblems, are valuable. The most remarkable monument is an obelisk, covered on its four sides with deeply cut inscriptions. There are about 10,000 characters the longest inscription yet discovered in Mesopotamia.

We suggest that the cut on preceding page, be now taken to represent this old king, as it will be easy to recognize the "bow" and to see the enemies under his feet. There are to be sure lacking in the cut the three suns and some other items. The cut, however, according to Mr. de Morgan, represents a Persian, and not Elamite or even Chaldean.

The conclusion which one naturally draws from all this, is that the symbolism and the portraiture of these ancient eastern nations need to be studied more carefully.

ETHNOGRAPHIC NOTES.

THE ETHNOLOGICAL SURVEY OF CANADA.

BY JOHN MACLEAN.

The British Association two years ago appointed a committee to undertake an ethnological survey of Canada, having similar objects to the committee appointed to organize an ethnographical survey of the United Kingdom. The chief objects of investigation in Great Britain and Ireland are: 1. Physical type of the inhabitants. 2. Current traditions and beliefs. 3. Peculiarities of dialect. 4. Monuments and other remains of ancient culture. 5. Historical evidences as to continuity of race.

The Canadian committee has two definite branches of investigation: 1. That dealing with the white races. 2. That dealing with the aborigines. The former treats of the old centers of French colonization in Quebec and Acadia; the metis or half-breed population of Manitoba and the North-west Territories, where French and Scottish immigrants have mingled with the native races; and the settlements of English, Scotch, Irish and other races, which have been so long established as to give rise to special peculiarities of language or customs. And the latter is concerned with the location of ancient settlements, places of resort, burial places and routes of travel of the natives of Eastern Canada, and the languages, folklore, physical characteristics, arts and customs of the Indians of the western and northern part of the Dominion.

At the Bristol meeting of the Association the following committee was appointed to organize an ethnological survey of Canada: Prof. D. P. Penhallow, chairman; Dr. George Dawson, secretary, Mr. E. W. Brabrook, Prof. A. C. Haddon, Mr. E. G. Hartland, Dr. J. G. Bourmat, Abbé Cuoq, Mr. B. Sulte, Mr. C. Hill Tout, Mr. David Boyle, Rev. Dr. Scadding, Rev. Dr. J. MacLean, Dr. Serec Beauchemin, Rev. Dr. G. Patterson, Mr. C. N. Bell, Prof. E. B. Tylor, Hon. G. W. Ross, Prof. J. Mavor, and Mr. A. F. Hunter.

General members of the committee are now making special studies in harmony with the work outlined in the circular of instructions. Sets of anthropometric instruments have been given to Mr. Charles Hill Tout, of Vancouver, who is using them in his investigations among the tribes of Indians on the Pacific coast, to Mr. A. F. Hunter, who is making an analysis of the composition of the population of the several counties of the province of Ontario, and to Dr. A. C. Hebbert, of Montreal, who proposes to use the material to be found in the various military organizations, public institutions and universities of Montreal.

edge of the plateau of Pamir, "the roof of the world", his two passages across the great desert of Takla-makan, and the giant mountains into Northern Tibet, are graphically told. In the Pamir region there are many shrines of saints where the superstitious offer small gifts. These may be the memorials of the proselyting campaign or Arab invasion of the eighth century. It is with strange feelings that we learn that the great sandy desert of Eastern Turkestan covers the ruins of a civilization which existed two thousand years ago. One of the cities of this old kingdom, between Gurun-kash and Keriva-daria in latitude 38°, is known as Nasar. Here were found clay vessels, burned bricks, old coins, rings, articles of bronze, bits of glass, and so on. Borasan, near Khotan, is another ancient site, where were found coins, engraved gems, and terra cotta images. Some of the latter reminded the author of the Assyrian Izduhar or the Greek satyr; others look more like griffins. It would seem that the ancient arts of India, refined by Greek influence, had penetrated Central Asia. Human images belong, perhaps, to the age of Asoka in the third century before Christ. Manuscripts were also found, and full evidence of the influence of Buddhism. This may have been the kingdom of Tu-ho-ko mentioned by Chinese authors. Further north on the Keriva-daria, is still another more important site. Ruins of buildings were visible above the sand. The area must have been two or two-and-a-half miles in diameter. The building material consisted of reed stalks bound in hard bundles and fastened to stakes, and plastered with a coating of clay mixed with chaff, a tough, solid and durable material. The walls "were decorated with a number of paintings, executed in a masterly manner." They represent human figures, the women kneeling and with hands clasped, as in prayer. There are also representations of dogs, horses, boats rocking on the waves and various ornaments. Images of Buddha are numerous. We must not take the space to catalogue the many objects discovered. The excavation of the ruins of these ancient cities is impossible; but future centuries may lay them bare by the migration of the desert sands.

It may be remarked that a Christian medal was found at Khotan; also, a golden image of a seraph, and a copper cross. Are these the relics of early travellers, or do they prove the former existence of Christian churches in Central Asia?

Many interesting legends are connected with the buried cities. They seem to have been overwhelmed because of the sin of their inhabitants such as an indignity offered to some holy man. Vast herds of gold are believed by the natives to be buried beneath the sands, but furious storms overtake and destroy all who undertake to recover these treasures. Many have entered the desert for this purpose, but none have returned.

Enough has been said to indicate the absorbing interest of these splendid volumes. Some of the net results of the explorations are the following: Welcome information concerning little-known parts of the earth; enlargement of geographical and meteorological knowledge; extension of the bounds of the knowledge of natural history; accounts of manners and customs, superstitions and traditions; trustworthy explanations of the formation of dunes and the migration of lakes, rivers and deserts; studies of rare animals, vivid descriptions of natural scenery; location of mountain passes, the revelation of the ruins of a buried kingdom, and so on. It is many a day since we have met with any other work of equal interest and value, and that appeals to so many classes of readers. In several respects the explorer has surpassed all his predecessors. It is to be hoped that he will soon put us in possession of the scientific results of his explorations, for which he has collected a large amount of material.

AFGHANA. Its Geography, Topography and Antiquities. By William L. Woodhouse, M. A. F. R. G. S., classical lecturer in the University College of North Wales, Bangor, some time Craven Fellow in the University of Oxford; formerly student of the British school at Athens. With Maps and Illustrations. Oxford, The Clarendon Press, 1897.

One needs to be a classical scholar, as well as a thorough archaeologist, to appreciate this book or to realize its value. There are so many engrav-

ings representing many beautiful scenes and picturesque ruins that any one would find it very interesting to glance through its pages, even if for no other object than the exercise of a love and taste for art. It is, in fact, a book which ought to be placed on a gentleman's table for the purpose of entertaining guests, especially those who have literary and artistic taste. For the classical student it has a special value, for it represents not only the geographical features, the ethnological divisions of Aetolia, but describes the sites of the ancient cities, and their peculiarities. The architect will also appreciate the book, for in it he will discover the different kinds of ancient walls and the peculiarities which mark the different periods of history.

Taking it all in all, there is no book which will give a clearer idea of the beauty and variety of the scenes which prevailed in ancient Greece and especially in Aetolia. We do not need to commend it, for it commends itself.

TALES FROM THE TOWNS OF THE HIBERY. Collected by James Deans. Edited by Oscar Lovell Triggs. Vol. II. Archives of the International Folk-Lore Association. Chicago, 1892.

LEGENDS OF THE THOMPSON RIVER INDIANS OF BRITISH COLUMBIA. Collected and annotated by James Teit, with introduction by Fritz Boas. Boston and New York. Published for the American Folk-Lore Society by Houghton, Mifflin & Co., London. Dardell North, 270-271 Strand, London. 10 to 12 brass, w. 7, Ironstrasse 14, 1897.

The collection of folk-lore tales from the Northwest coast seems to be rapidly increasing, as the two Folk-Lore Societies and the Smithsonian Institution are endeavoring to publish them. For the first, though a complete list of tales the work prepared by our associate, Mr. James Deans, Norway, of the article, "Twenty-one tales from our" appeared in the *AMERICAN ANTIQUARIAN*, they are scattered through the present numbers from Vol. VIII to Vol. XVIII. They are printed in the volume by a gentleman, one of the Hibery, called History people, and the title is "Tales of the Hibery, and the customs and traits of the houses, with a list of the names of the houses."

CHURCH MEMBERS OF PRIMITIVE METHODISM IN RELATION TO THE RELIGIOUS HISTORY AND MORAL DEVELOPMENT OF MASSACHUSETTS. By Joseph W. Curran. Boston, 1892. 12ms, and Four Plates. Price, 50 cents. Boston, Little, Brown, & Co., 1892.

This is a very interesting and valuable work, embracing about thirty pages of text, and a number of plates. Mr. Curran was a member of the Church of the Primitive Methodists, and has been a member of the Church since its organization in New York, and has been a member of the Church since its organization in Massachusetts. He has collected a large amount of material, and has arranged it in a very appropriate and interesting manner. The work is well written, and is a valuable contribution to the history of the Church in Massachusetts.



A.....9-10
 III
 7-8
 5-6
 II
 4-3
 I
 2
 1

SECTION OF THE ASH AND GRAVEL OF AN ABANDONED, FRASER VALLEY OF THE MOUNTAINS.
 Wherein, possibly, it may be seen to resemble the profile of the Fraser Valley. The section is a cross-section
 of the Fraser Valley, and is a typical example of the Fraser Valley type.

THE
American Antiquarian

VOL. XXI.

MAY AND JUNE, 1899.

NO. 3.

QUATERNARY DEPOSITS AT ABBEVILLE, FRANCE,
WHEREIN PALEOLITHIC IMPLEMENTS
WERE FIRST DISCOVERED*

BY G. D'AULT DU MESSIL,†

[NOTE.—The interest in this deposit lies in the fact that it was first found the Paleolithic implements made by man. This was the great discovery of Mons. Boucher de Perthes, and it revolutionized the world's idea concerning the antiquity of man. There has been much discussion over this deposit, and some persons have doubted the conclusions drawn therefrom. The present, I believe, is the first thorough, complete and reasonably scientific investigation and description made of the strata forming the deposit. This has been done by a thoroughly competent person, a man of considerable renown as a geologist, who resides in Abbeville, and has for many years been Curator of its Prehistoric Museum.—THOMAS WILSON.]

I. GENERAL CONSIDERATIONS.—There have been discovered in the environs of Abbeville, during the past three or four years, an excellent stratum of pleistocene deposits containing the remains of the *Elephas meridionalis* and *Elephas antiquus*, the like of which has not heretofore been known in Picardie. The memoir of Mons. Ladjrière of Lille upon the quaternary deposits in the north of France‡ enlightened us much on the stratigraphy of that region, but he scarcely touched upon the fauna.

The following table describes the succession of strata in the quaternary deposit wherein the *Elephas meridionalis* has been discovered in the Champ de Mars at Abbeville:

A. Brown loam (limon§), recent, with numerous sharply broken flints of white patina disseminated through the mass, inclined stratification, containing objects of human industry, polished stone, Gallo-Roman, Merovingian, etc.

* Translated and edited by Prof. Thomas Wilson, Curator, Division Prehistoric Archaeology, United States National Museum, Washington, D. C.

† Revue Mensuelle de L'École D'Anthropologie de Paris, Sixième année, IX, 15 Septembre, 1897.

‡ Etude stratigraphique du terrain quaternaire du Nord de la France (Annales de la Société Géologique du Nord, t. XVIII, p. 5).

§ Limon is a French word difficult to translate. Its synonyms are "loam" (mud) and "fange" (earth soaked with water and mixed). Latre renders it "1. Deposit of earth formed at the bottom of lakes or ditches, or carried down by running waters.—'God formed man of limon de la terre.'" A term in geology; rock in which sand and clay predominate." I have translated it in this paper as loam.

- | | | |
|-----|---|--|
| IV | A | 10. Yellow calcareous loam (<i>limon</i>),* remains of <i>Elephas primigenius</i> , rare, without fauna or human industry.† |
| | | 9. Blocks of broken flint with white patina. |
| III | B | 8. Red clayey sandy loam (<i>limon</i>) with <i>Elephas primigenius</i> , objects of human industry at the base. |
| | | 7. Blocks of broken flint of white patina, with tertiary pebbles. |
| | | 6. Yellow sandy loam (<i>limon</i>) with beds of clay. Objects of human industry at the base. |
| | | 5. Thin bed of gravel. |
| II | C | 4. Gray or yellow gravels, <i>Elephas primigenius</i> and objects of human industry at the base. |
| | | 3. Rounded gravels and sand in layers and distorted stratification mixed type of fluviatile alluvium) with <i>Elephas primigenius</i> , and sometimes <i>Elephas antiquus</i> . Numerous blocks of sandstone, chipped flints. Erosion of the deposit next below. |
| I | D | 2. Gray sandy marl; horizontal stratification with <i>Elephas primigenius</i> , <i>Elephas antiquus</i> , <i>Elephas meridionalis</i> , <i>Rhinoceros Merckii</i> , human industry at the base. |
| | | 1. Large gravels, slightly rolled, stratification horizontal, with remains of <i>Elephas antiquus</i> , <i>Elephas meridionalis</i> and <i>Rhinoceros Merckii</i> § |

The researches made in this field have proved the association in stratigraphic, and, therefore, in paleontologic order in the marl and inferior gravels (Nos. 1 and 2), of three elephants, *Elephas meridionalis*, *Elephas antiquus*, and *Elephas primigenius*. The survival of the *Elephas meridionalis* enforces the antiquity of that formation and its intimate relation to the upper pliocene; while, on the other side, the existence of a new species, the *Elephas primigenius*, serves as a bond between that horizon and the supposed pleistocene. At this level the debris of *Elephas meridionalis* and *Elephas primigenius* are rare, the predominance being conceded to the *Elephas antiquus*, while the latter is found only exceptionally in the beds of the *Elephas primigenius*. This latter elephant is encountered, ordinarily alone, in the gravels and sands (strata 3 and 4), and it only becomes extinct in the red-clayey sandy loam (strata 8), where it is presented under a more recent form. The *Rhinoceros Merckii* always accompanies the *Elephas meridionalis* and *Elephas antiquus*, but disappears before the extinction of the last of these great mammals. The *Rhinoceros Merckii* has never been encountered at the Champ de Mars.

It is to be remarked that in the stratigraphic order each bed of gravel and of sharp flint boulders (*with a rugulent*, called *cut-*

* *Limon*, a French word, meaning a fine yellowish earth.

† *Elephas primigenius*, the mammoth of the Champ de Mars.

‡ *Elephas antiquus*, the mammoth of the Champ de Mars. It is distinguished from the mammoth of the Champ de Mars by its smaller size, its smaller tusks, and its smaller horns.

§ *Rhinoceros Merckii*, a species of rhinoceros which they are indicated relate to the *Elephas meridionalis* and *Elephas antiquus*. In the section of the Champ de Mars, the *Rhinoceros Merckii* is found in the same stratum apparently with the *Elephas meridionalis* and *Elephas antiquus*. The details of the *Rhinoceros Merckii* are indicated in the section of the Champ de Mars, at the base of the *Elephas meridionalis* and *Elephas antiquus*. The *Rhinoceros Merckii* was found in greater numbers in the section of the Champ de Mars than in the section of the Champ de Mars.

loutis) is overlaid by a deposit of loam. More than this, we are able to trace an ancient soil level, recognized by their vegetable debris, or the turf or peat, announcing the arrest in the sedimentation. The implements of human industry are always found at the base of these loams, and in general they are found at no other place; they are not distributed at hazard, save in exceptional cases of implements rolled in the gravel.

The stratigraphy shows a succession of gravel beds covered by loam, but the upper loamy deposits present a certain irregularity; and the intercalation of beds of broken flint (*anguleux cailloutis*) are sometimes more numerous than those indicated in the tables, which has authorized the creation of other purely local subdivisions. A fact of some importance is here to be noted: Each time a bed of gravel or of sharp flint cuts into a stratum of the deposits, we almost always find chipped flints at the point of contact. The separation into the strata of the quaternary deposits establishes divisions which may differ according to the classification adopted, but that is a matter of juxtaposition. It is thus in the pleistocene strata at Saint-Prest, Cromer, etc., which is reckoned as lower quaternary. The beds at Abbeville constitute, then, the middle and upper quaternary.

In order to explain the association of different human industries found together, we invoke the proofs already furnished by paleontologists. The human industries evolve slowly, as do the fauna. Sometimes the rude instruments are mixed with types much finer. In this case the dominant form became the characteristic of each level. In the fauna, as in the industries, the changing forms announce the slow but regular progress, even though we may not be always able to fix their exact limits.*

From our point of view, the capital facts of this study is the incontestable discovery of the existence of man during the first phase of the pleistocene period. All observations prove that the quaternary of Abbeville is closely related to the upper tertiary by an insensible transition, and we note the presence of numerous fauna in which the pliocene affinities are strikingly marked.

In this short note we describe only one locality, in order to the better fix the place where the *Elephas meridionalis* was discovered associated with the other elephants. The section of this sand and gravel bank presented by the photograph (Frontis-piece) is certainly incomplete, but it enables us to know with precision the great accidents which have modified the stratification of the alluvial. It shows us, also, the superposition of the beds of loam of the *Elephas primigenius* on the beds of the *Elephas antiquus* and *Elephas meridionalis*.

*Voy. de M. de S. sur les industries préhistoriques en six époques, by Ph. Salignon, (Extract from Bulletin de la Société Française d'Éthnologie et d'Anthropologie, Session March, 1892.)

the *Elephas antiquus*, have been found in the upper part, and above all, at the base of the gray marl (No. 2). Some of these teeth are found upon the bed of rolled chalk, under the deposit of rolled or water worn stone. The *Elephas antiquus* has been found at the summit of the marl associated with the *Elephas primigenius*. During the early phase of the pleistocene period, the association of the three elephants is well established by the positions which they occupy in these beds. The teeth of the *Rhinoceros Merckii* and hippopotamus have been found in the same bed. In this bed or stratum of marl, particularly rich in bones, we have gathered nearly all these animals.

The fauna of the lower pleistocene is related to the beds or passage of Saint-Prest, Cromer, Chalon-Saint-Cosme, Durlfort, probably of Solilhac in the basin of du Puy,* etc. This conclusion is adopted by Mons. M. Boule † and Mons. C. Deperet, who place these deposits in the quaternary. Abbeville, especially, marks the point of junction.

Nearly all the fossil debris was discovered and extracted under our own eyes, and the places marked exactly on the plan, so that under the proposition which we are now arguing no person need have doubts as to the association of the different animals; indeed, during several months the strata (Nos. 1 and 2), gravel and marl, existed alone in the quarry, the covering being recent loam. As for the bones found by the workmen, no error was possible. Often the physical characteristics of the bones were evidence of the deposit which contained them. In the beds of sand and gravel (Nos. 3 and 4), the fauna was that of *Elephas primigenius* found everywhere about the environs of Abbeville at this level, with this difference, nevertheless, that the *Elephas antiquus* was co-existent therewith. The list of mammals is, nevertheless, more complete than in most of the deposits of this age. It includes *Elephas antiquus*, *Elephas primigenius*, *Elasmotherium*, the ox in great quantity, the horse as well as the deer. This fauna, except the *Elephas antiquus*, is that described by Boucher de Perthes and found isolated in the sand banks, which contained it alone.

There is no brusque change operating in the renewal of the fauna, all of which goes to prove once more the imperfections of our methods of classification. The *Elephas antiquus*, the direct descendant of the *Elephas meridionalis*, succeeded him regularly and co-existed with him in the deposits at Abbeville. When the *Elephas antiquus* accompanied the *Elephas primigenius*, it formed only an exception. Finally the *Elephas primigenius* remained

* C. Deperet, Notes sur la succession stratigraphique des faunes de mammiferes pliocenes du Bassin de la Loire, et en particulier de l'Abbeville. Bull. Soc. geologique de France, t. XXI, mai, 1894.

† M. Boule, Essai sur la classification des faunes de mammiferes pliocenes du Bassin de la Loire, et en particulier de l'Abbeville. Bull. Soc. geologique de France, t. XXI, mai, 1894.

alone in the gravels and sands (Nos. 3 and 4), and disappeared at Champ de Mars in the beds of red-clayey sandy loam (No. 8).

In the time of Boucher de Perthes, the fauna of the *Elephas meridionalis* and *Elephas antiquus* was unknown. No one even suspected their existence in the deeper deposits of the quaternary at Abbeville. This is a good proof of the isolation of the two faunas.

The revision of the animal bones discovered by Mons. Boucher de Perthes and Mons. D'Ault du Mesnil in the quaternary deposits in the region of Abbeville, were made with the greatest care, and none of us have been able to find the reindeer,

as it has been mentioned by our learned compatriot.* This animal, stated to have been found in red loam, ought to be stricken from our lists. Mons. A. Gaudry has determined, in the collection at Abbeville, the bones of animals gathered in the quaternary deposits. No trace of the existence of *Cervus tarandus* was found, and its presence in these deposits is, to say the least, problematical.

The red clayey sandy earth (No. 8) terminating at the top of the quaternary series of the quarry Leon, contained no fos-

sils. The bones which we have been describing, were not, in general, distributed at hazard in the mass of the alluvial, but were gathered on the level, just above the bed of flint and gravel. As for the brown earth on the surface, it contained nothing but modern animal remains.

IV. **THE FLINT.**—For the last ten years the presence of chipped flint tools contemporaneous with the remains of the *Elephas meridionalis* and *Elephas antiquus* have been recognized. Their existence, and in the conditions stated, is no longer doubtful, they have been studied, again and again, with great care. The

* *Revue Archéologique*, t. 1, p. 107. — *Revue de la Société de Préhistoire*, t. 1, p. 107. — *Revue de la Société de Préhistoire*, t. 1, p. 107. — *Revue de la Société de Préhistoire*, t. 1, p. 107.

same thing has been remarked in the *ballastière* of Tilloux (Charente) by Mons. Boule,* Dr. Capitan,† and by Mons. Chauvet.‡

In archaeological order, beginning at the bottom, associated with the *Elephas meridionalis* and the *Elephas antiquus*, appeared a human industry, gross and rude, with types of implements, lanceolate or *amygdaloides* (almond-shaped), fashioned by flakes generally large and massive. (Fig. 1) Then other strata are distinguished by implements chipped on both faces, though sometimes on one only, although these types never become dominant. The almond-shaped type, more or less lengthened, remains the same, while the chipping by small flakes gave to that industry a special character. During the long duration of the age of the *Elephas primigenius*, the implements improved sensibly. In the lower beds of gravel and sand (Nos 3 and 4), characterized by the rudimentary chipped flints, there succeeded at the summit of the yellow, sandy loam (No. 6)

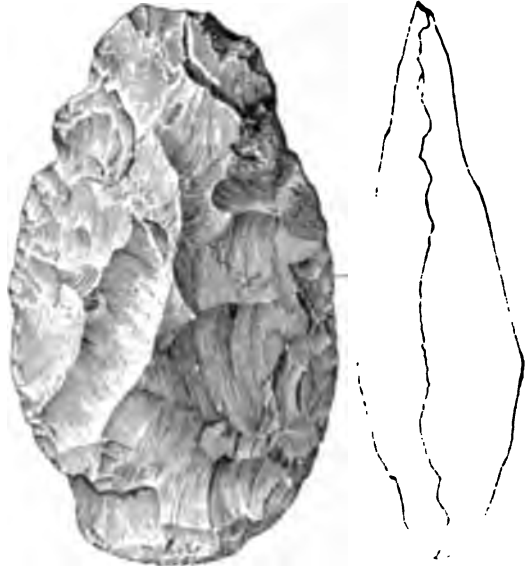


FIGURE 2.8

a human industry, composed of chipped flints, which frequently had a beautiful white patina. (Fig. 2.) They were fashioned with small flakes made by successive retouching, and compared favorably with, or were similar to, those at the base of the red-clayey sandy loam (No. 8), with which they have frequently been confounded. The better class specimens resemble much those of St. Acheul (Fig. 3) and of Normandy, though found

* Mons. Boule, "La Vallée de Tilloux."

† Dr. Capitan, "Les industries à la Ballastière de Tilloux (Charente)." Extrait de la Revue de l'Institut Archéologique, Novembre, 1872.

‡ Mons. Chauvet, "Les industries éphémères de Tilloux (*Elephas antiquus*) contemporaine de l'homme primitif." Extrait du procès-verbal de la séance de la Société archéologique et historique de la Charente, Janvier, 1872.

§ The photograph is a reproduction of the chipped flint implement. Associated with *Elephas primigenius*.

Dr. Capitan, "Bull. Soc. D'Anthropologie de Paris," séance du 12 Février, 1874, p. 106; E. J. A. y. p. 117; G. de Mortillet, p. 272; G. d'Ault du Mesnil, p. 196.

at a level slightly inferior. The chipped flints are also found at the base of the loam at Saint Acheul.

Each human industry has its proper physiognomy, although showing in each level the persistence of ancient types. Each industrial group is easily distinguished by the appearance of new types, and above all, by the predominance of certain characteristic implements. Nevertheless, it appears well proven that the general forms are everywhere the same. The evolution of archaeological forms, however slow, was pursued throughout the entire period.



FIG. 1.

The implements of human industry contained in these alluvials is, even more than the fauna, to be found gathered in certain well established levels. The implements were always at the base of the different beds of loam, above the broken flints and gravel, or even reposing upon them. No doubt is possible as to the worked flints (Fig. 1) being found associated with the *Elephas meridionalis* and *Elephas antiquus*. They are found at the lower part of the marl (stratum 2), rarely at the base of the gravels (stratum 1). They sometimes show a white patina, but are ordinarily black or marbled. Their massive form places them among the lanceolate or *amgalaunda* types with sinuous borders or edges (the *coups de poing* of Mons. G. de Mortillet). The beds of gravel contained few of them, having generally

only the rolled instruments. The lower part of the sand (No. 4) near the gravel shows a great number of implements with a more advanced style of chipping. The variety of the forms is a characteristic of this industry. The patina of this flint is yellow, brown, gray, blue, black and marble (Fig. 2).

At the base of the red earth, clayey sand (No. 8) is shown a bed of broken flint with white patina, which bed is particularly rich in worked flint (No. 7). The type varies, being always fashioned with small flakes (Fig. 3). The implements are remarkable for their form, and were chipped, sometimes on one

side and sometimes on both. Their white patina attracts attention forcibly. A variety of form among the implements, is a general rule. The same implements were found near Amiens, at the base of *ergeron* (a Belgium stratum), by Mons. de Mercey* and Mons. Ladrière.

The industry, at first gross and rude, improved, and is perfected; the implements began to differentiate, and a slow evolution of form has been followed throughout. The predominance of a form and the appearance of new types characterized each level. The gross and rude implements continue, and are found in all the beds associated with the finest forms. More than this, each archæologic age terminates with forms common to both neighboring industries. There are intermediate halting places where the flints show the forms of transition which we, with our learned friend Capitan, have often stated. But, on the other hand, these divisions do not follow regularly, or without mixture.†

The observations presented apropos of the fauna apply equally to the products of human industry. The pockets referred to contain a large number of implements belonging to all levels, which had descended pell-mell along with the material, as the pockets were filled. It is thus that there is found the chipped flints of the upper level buried in the sediment at the bottom of the pockets. The workmen continually remarked that the implements were abundant near these pockets. This observation is correct and easily explained: the beds of broken flints (No. 7), the richest in worked flints, has fallen at the edge, by reason of which the beds become vertical and contain, naturally, the greatest number of implements. This change of bed from horizontal to vertical has been one of the great causes of error, and against which one can not be too guarded. The recent brown earth in these pits or pockets contains the debris of the industries of all epochs. One can there find the polished stone hatchet associated with objects of the Gallo-Roman, Merovingian, and the Middle Ages.

* De Mercey, *Étude des dépôts quaternaires anciens du Nord de la France*, (p. 10).

† See the *Revue de la Préhistoire*, 1902, p. 115.

SHORT REVIEW AND NOTES ON THE SECOND
VOLUME OF THE MEMOIRS OF THE AMERICAN
MUSEUM OF NATURAL HISTORY.

BY C. HILL-FOUT.

I have just read the second volume of the "Memoirs of the American Museum of Natural History," which comprises the second report of Dr. Boas on the work of "The Jesup North Pacific Expedition." This report deals with the mythology of the Bella Coola Indians of British Columbia, and gives the most complete and satisfactory collection of the traditions and beliefs of this tribe yet brought together and published. The volume contains upwards of twenty five distinct traditions or myths, besides a general description of the mythology of the tribe and remarks on their two great ceremonials, and a closing chapter on the origin of the Bella Coola mythology.

Besides this, the "Memoir" contains twelve large plates illustrative of the ceremonial masks and carvings of the Bella Coola Indians, accompanied by explanatory notes. As this is the first systematic attempt to learn and explain the use and significance of these masks, this part of the "Memoir" is not the least valuable.

With Dr. Boas' general conclusion, I find myself in perfect agreement, which, briefly, is this: that the peculiar social system of this isolated division of the Salish has been developed through the influence of the customs of the coast tribes upon their own more simple Salish customs. That one of their most important ceremonials—the *Sisau'k*—was borrowed, is clear, it seems to me, from the traditional account of its origin. Dr. Boas has recorded a short tradition bearing on this, named *Sel'na*, to which he adds, also, a variant form by Philip Jacobsen. As this is one of the most important traditions of the whole collection, it will not be out of place if I here offer another version of this myth, which differs in many respects from both, and is fuller and longer than either.

THE STORY OF THE *SISAU'K*—A TRADITION OF THE BELLA COOLA
INDIANS.

There was once a chief named *Dak'lesla*, who had four sons. One day he told his sons to go out on the inlet and see if they could catch any harp seal. The sons got ready their canoe and spears and started on their hunt. Four days passed without their seeing any sign of the game they sought and being disheartened by their ill luck they determined to go out into the open sea beyond the inlet. They pulled on till they came to a

little bay about sundown, where they camped for the night, making their beds in the canoe. During the night they heard something flapping against the canoe, and one of them got up to investigate. It turned out to be a dog fish, which darted off on being seen. They camped at this bay for four successive nights, and each night the flapping against the canoe occurred; but on the fourth night they caught the dog fish and tore off the ear-bone from the head and then threw it overboard again. After this nothing else happened to disturb their slumbers, till one of the brothers awoke later, under the impression that the rain was beating in his face. On looking about him, he perceived what seemed to be a very large and handsome house before him, the like of which he had never seen before. He thought that he must still be dreaming, and bit his finger to see if he was really awake. Finding that he was wide awake, he looked around him again and saw that the canoe was in the midst of the house, and surrounding him on all sides were all the wondrous things of the deep. Beyond the fire sat the great sea chief Komokoa, the Neptune of the Bella Coolas. He thought it high time to awaken his brothers, who still slept. As each awoke, he went through the same performance of biting his finger, as the first had done, to make sure he was not dreaming. Komokoa now called to the bow man, who was the spearman of the boat, and gave him the name Aijultala; the second he called Komokoa; the third one, Koma-uni-Kala, and the fourth, Takis. The chief was very angry with them, and demanded why they had torn off the ear-bone of the dog fish, who, when in Komokoa's presence, appeared as a woman. She had complained to the chief that the brothers had torn off her blanket, who, thereupon, had sent a messenger to bring the men in their boat to him. They pleaded ignorance of what they were doing, and the chief, taking into account that it was their first offence, forgave them, and invited them to come and sit with him at the back of the fire. Calling his servants, he bade them bring forth the sea potatoes; but Sijut, one of his followers, suggested that he should give them a hair seal to eat, which he did. The chief told Sijut to put on his blanket and turn himself into a blackfish and go to Mank Anglice Rivers Inlet, and bring some cooking stones with him to cook the seal. Sijut started off at once, and was back again with the stones before the brothers had realized that he had gone, though the distance was nearly 200 miles. He then proceeded to cook the seal in a large box kettle four feet long, four feet high, and three feet wide. He first put the meat into the box and covered it with water, then he heated the stones in the fire and when quite hot dropped them into the box, and continued doing this till the meat was cooked. While they were feasting, Komokoa went and examined their canoe, and perceiving their spear exclaimed: "No wonder you could not kill any

seals with a spear like this. This thing is no good; I will give you my own spear, which kills every time it is pointed at a seal." They gladly received his present. He then addressed himself to Ajultala and said: "I am sure you have never seen a dance; I will show you one, and will call it the Sissanich dance." When the dance was over he gave him the sacred Sissanich whistle, whose sound is an imitation of the voices of the spirits when they return to this earth in the shape of wolves and other animals.*

Komokoa then invited them to remain with him for four days and he would then send them back to their own country again. When they were about to leave him on the fourth day, Komokoa told Ajultala, the oldest brother, that he must build a house, when he returned home, exactly after the pattern of his own submarine dwelling, and put a totem pole before it, like his own, which should represent the history of the Sissanich dance to succeeding generations. He now sent them to sleep, and four days later, when they awoke, they found themselves in Bella Cooola Inlet at the island Helkatsino, or Hunter's Island. They were now curious to try the spear Komokoa had given them. They soon satisfied themselves of its nature, for it never failed to kill, however far it was thrown.

After some little trouble they found a boat, and set out for their home. When they arrived, the people expressed great surprise at seeing them, for the four days which they had spent with Chief Komokoa had really been four years. They found their friends in mourning for them, their hair being cut off, after the custom of the tribe.

Ajultala set to work at once to build himself a house after the pattern of Komokoa's, after which he instituted the Sissanich dance and became the chief of his tribe. He is said to have been the first to build a house in Bella Cooola. Before his time the tribe were living in rude huts. This is the origin of the House of Komokoa, and the four clans of the tribe trace their descent to one or the other of the heroes of this adventure, and thus they account for the origin of the famous Sissanich whistle, the Sissanich dance and their houses.

It will be seen from a perusal of this tradition that the number four plays an important part in the account. It is the sacred number of the Bella Cooola. The Kwakiutl element in the proper names of this, as in many other of their myths, point unmistakably, as Dr. Boas has observed, to the source from whence it was borrowed. I desire to say here that I am unable to stand sponsor for the rendering of the native names in any version. I write

* It is to be noted that the name of the dance is Sissanich, and not Sissanich, as the Indian must so pronounce it. The name of the dance is said to have been Sissanich, but the name of the Sissanich dance was changed to Sissanich by the chief of the tribe, and the name of the dance is now Sissanich. The name of the dance is Sissanich, and not Sissanich, as the Indian must so pronounce it. The name of the dance is said to have been Sissanich, but the name of the Sissanich dance was changed to Sissanich by the chief of the tribe, and the name of the dance is now Sissanich.

them as they were given to me, but as my informant was no authority on Indian phonetics, it is not improbable that they may be wanting in scientific exactness. The term Sissanich, for example, is clearly the same word as Dr. Boas' Sisau'k, but whether the difference in form here seen is due to dialectical divergence on the part of my informant I cannot say, as I have never heard the word uttered by a Bella Coola Indian.

Those, like myself, who are accustomed to Dr. Boas' system of phonology as employed by him in his well-known Reports to the British Association on the Northwestern Tribes of Canada, will wonder why he has used a new and entirely different system in this volume on the Bella Coola. He doubtless has justified to himself the adding of another to the already over-numerous systems in use in American linguistics, though I must confess, that, with due regard to Dr. Boas, his reasons are not apparent to me. Having had occasion to go over much of the same linguistic ground in this region as Dr. Boas has gone over, and having adopted his earlier system of phonetics as employed by him in his Reports to the British Association, I have found that for all practical purposes that system answers very satisfactorily, and I cannot but express a regret that he has thought it necessary to throw it aside and adopt another one. However, this is but a minor point, and anthropological science stands greatly indebted to Dr. Boas for this valuable addition to our knowledge of the aborigines of this region.

THE ORIENTATION AMONG THE ALIGNMENTS OF FRANCE.

The orientation of the British circles was the subject of an article by Mr. A. L. Lewis in the last number. The alignments of France were not embraced in his treatise, but as orientation in them has scarcely been thought of, the following quotation from an article published in the *New York Independent* some years ago, from the pen of Mr. A. S. Packard, will be of interest :

"I spent some time in exploring the dolmens and alignments of the Quiberon peninsula, accompanied by M. Gaillard, who was enthusiastic and interested in having me see everything of archaeological interest. M. Gaillard had brought his compass with him and now demonstrated a curious fact to us. He had already called our attention, while visiting the alignments of Kermario and of Ménéac, to the occurrence between certain of the rows of a single menhir, standing by itself, and which has been overlooked, he said, by all other archæologists. In the alignments of Kerdescan this mysterious odd stone is situated, we think, near the seventh or eighth space between the rows. It is about eleven feet high, and from nine to ten feet thick at its greatest diameter.

which is not far from the top, the stone being smaller at its base. In the alignments of Ménez the single menhir is in the third space from the northern side; namely, between the third and fourth rows of planted stones. In each group of alignments, at least in four of them, this odd menhir occurs, though varying in situation, depending apparently on the position of the rows, none of which are exactly in an east and west course, as their builders had no compass. They are all situated not many paces, perhaps fifty more or less, from the cromlech.

"Now our friend and guide took the greatest interest and satisfaction in placing his compass on one of the middle stones of the cromlech at St. Pierre and demonstrating to us that the line of 50' (it varies from 45' to 50' in different groups of alignments) intersects the single menhir. M. Gaillard has been here, as well as at the other alignments, at sunrise on the morning of the longest day in the year, the 21st of June, has placed his compass on this menhir, and at the moment the sun appeared above the horizon the odd or single unaligned menhir was seen to be in line with the median stone in the cromlech and with the sun. It is therefore inferred, and very naturally, that the designers and builders planted these stones in accordance with a fixed plan, and that the inclosure must have been the scene of some ceremony at the time of the summer solstice. And this confirms the idea insisted on by archaeologists, among them MM. Catalhac and Gaillard, that the groups of standing pillars were planted after a common design and nearly at the same epoch, and that the people who erected them were possibly worshippers of the sun, having brought with them from the far East, their original home, the cult so characteristic of Eastern races.

"On the morning of our last day spent in the Morbihan—and what soul stirring and awe-inspiring days they were, with the charm of the fresh Atlantic breezes, and the bright sun lighting up the heaths and plains, the quaint costumes and dialect of the peasants lending an unusual human interest to the scene—we drove to the dolmens and alignments of Erdeven, through a region of lilliputian farms. The property of the country people is chiefly in land, and the farms handed down from one generation to another become gradually halved and quartered, though many were triangular or polygonal in shape, until some of them seem scarcely large enough to support a sheep or cow, or to afford room enough for even a small potato patch. The largest of the dolmens in Brittany is that of Crucuno, called *La Roche aux Fées*, or the Stone of the Fairies."

ANCIENT CANALS, ROADS AND BRIDGES. •

PREHISTORIC AND HISTORIC.

BY STEPHEN D. PEET, PH. D.

The transition from the prehistoric to the historic structures is very important, especially as it has a direct bearing upon the growth and progress of architecture. Very little, however, has been known about it until quite recently. Archaeologists had been working among the prehistoric monuments. Architects, artists and historians had been studying the early historic structures; but there was a gap between them which was not filled, and it seemed to be almost impossible to span the distance, or to find a foundation upon which to erect the supports for any bridge which might give safe passage.

Fortunately, however, the explorations of Schliemann in Greece and Asia Minor, and of Lanciani in Rome, have brought to light many structures which may serve as connecting links. These structures carry back our knowledge of the historic into the prehistoric age, and help us to understand how the prehistoric gradually developed into the historic.

The discoveries of the "Treasury Houses" at Mycenæ and Orchomenos, the Tomb of Clytemnestra, called Mrs. Schliemann's "Treasury," the Bee-hive and Chamber Tombs, and especially the Lion's Gate, have shown how the ordinary hut, constructed of wood, grew first into the conical structure called a "bee-hive house," and from the "bee-hive house" into the "treasure house," with its massive portals and elaborate gateways, the tomb having been used in Greece for the preservation of the royal treasures, as well as the sacred deposit for their bodies. These tombs seemed to answer for the ancient kings of Greece, the same purpose that the pyramids did for the monarchs of Egypt, though there were more and richer treasures deposited in the tombs than in the pyramids.

The discovery of certain so-called "hut urns" near Rome also enables us to trace up the growth of Roman



HUT URN FROM ITALY.†

• Read before the Wisconsin Academy of Science and Art, September, 1881.

† The spirals on this urn show its antiquity.

architecture from prehistoric times. This occurred as early as 1817, but was despised and neglected when it took place. Lanciani says: "It is now considered to be the most important discovery ever made in connection with the foundation and early history of Rome."* It carries us back to the times when the ancestors of the Romans lived in conical houses, and, perhaps, were shepherds.

Two of these "hut urns" were found near Melos under an undisturbed layer of consolidated volcanic ash, and belong to a time when the volcanoes near Rome were still in a state of activity, and date back to the close of the Bronze Age. Sir John Lubbock pronounced them models of Swiss lake dwellings. The description is as follows: "The Museum at Munich contains a very interesting piece of pottery, apparently intended to represent a lake hamlet containing seven round huts. The huts are arranged in three rows, thus forming three sides of a square. The fourth side is closed by a wall, in the centre of which is an opening leading into a porch, which is represented as being thatched. The platform on which the huts stand is supported by four columns, represented as consisting of logs lying one upon the other. The roof is unfortunately wanting. The sides are ornamented with the double spiral, so characteristic of the Bronze Age."†



LAKE DWELLINGS

Each "hut urn" contained the remains of an incinerated body, with fibule and other objects in amber and bronze, and was surrounded by vases and utensils of every description.

Another "hut urn" was discovered, which is supposed to represent in its shape and style the shepherd's hut in which Romulus, the first king of Rome, found lodgement, and also to be of the same type as the prehistoric huts which were used by the Lake Dwellers.

Lanciani draws the following conclusions: "1st, that Rome was built by colonists from Alba Longa, 2d, that these colonists were simple shepherds; 3d, that the foundation of Rome dates from the Age of Bronze."‡

"These discoveries show a continual line of development from the prehistoric to the historic structures. But this is not all, for they show when the earliest specimens of Greek architecture appeared. It was during the time when the Mycenaean civilization prevailed, and when the celebrated Lion's Gate was erected. The violent displacement and change experienced by Mycenaean civilization is explained by the appearance of the Dorians. The Mycenaean capital, which is presented by the columns before the Treasury of Atreus, is pronounced as the

* *Ancient Rome*, by K. Hof. Lanciani, I. I. 13.

† *Prehistoric Times*, by Lubbock.

‡ *Ancient Rome*, by K. Hof. Lanciani, I. I. 13.

first step towards the Doric; but the Mycenaean style underwent a regular development until it was closely allied to the modern Corinthian."*

The prehistoric structures of America also show a line of progress, which is even more marked than that recognized at Rome or in Venice. The line stretches across the entire continent, for the rudest structures are found at the north, and the most advanced far to the south. We maintain that many of the prehistoric works were architectural, because, though widely separated, they together form a system of construction which shows both ornamentation and style.

These styles differ with the different tribes, and so remind us of the architectural styles which different nations introduced after the date of history. They appear first in the wigwams or tents which were occupied by the hunter tribes, as each tribe had its own type or style of wigwam, which could be easily recognized and identified. They appear next in the stone structures which were erected by the Pueblos; these had a style peculiar to the region, and one that is found nowhere else in the world. They appear next among the Nahua tribes located in Mexico, who had a style peculiar to themselves, as did, also, the Maya stock which inhabited the region of Central America, in Yucatan and Guatemala. The inhabitants of Peru ruled by the Inca dynasty, had a style of architecture which is as marked as that of the Egyptians or Babylonians, or even the Greeks and Romans. These different structures, which were erected in America during prehistoric times, may be classed among the beginnings of architecture, and the fact that their styles are so distinctive makes them worthy of the name. They, however, are not the only structures which can be regarded as the connecting links, for there are many others in America which are as important as these.

We refer now to those structures which were erected for the convenience of travellers and for the comfort of the people, and were the common things in sight, such as roadways, canals, bridges, storehouses or treasure houses. Many of these have been overlooked by those who have been studying the prehistoric works of America, but they certainly are very important, for they exhibit the border lines where the order of progress in America left off and where the historic structures of other countries began.

These are the true links which connect the unknown past with the present and unite the prehistoric with the historic, and prepare the way for us to understand the later developments which appeared in other lands.

To these might be added those various objects which were used for religious purposes, and which remind us of those spoken of in classic literature as common in the early days of Greek history. These have not the same glamour about them,

* "S. Hermann's Explorations," by Schuchhardt, p. 317.

yet they served the same purpose among the aborigines of America that they did among the early Greeks, whose religion has been celebrated. They may be enumerated, though the names cannot express the sacredness with which they are held. The shrines or oracles, the sacred groves, the sacred springs and lakes, the kivas or sacred chambers, the shelter caves used as sacred depositories, the mountain peaks, also very sacred; the streams and waterfalls, as well as the temples and sacred cities, are all worthy of comparison with those in classic lands. A volume could be written in reference to these, but, for the present, we will consider only those contrivances which were the most useful in securing subsistence and in carrying out the ordinary affairs of life.

1. The term architecture, when used in connection with some of these American works, needs to be modified, for it might be misunderstood when so applied. If it is to be defined as the art of ornamentation, and it is held that no structure is architectural which is not ornamented, then many of the prehistoric works here must be excluded; but the same is true of



HAIDAH BOAT

a large majority of prehistoric works everywhere. If, however, we may use the term to designate the art of building, and include under it the art of constructing bridges, houses, walls, forts, roadways, boats and canals, it would apply to a large proportion of works which prevailed here during prehistoric times. The modern methods of building ships, iron bridges, forts, houses—especially sky scrapers, churches and cathedrals and great capitols were, of course, unknown. Yet there was enough skill applied to many of the structures which were erected during prehistoric times, to make it proper to apply to them the terms of military, naval, domestic and temple or sacred architecture.

There were boats on the northwest coast, before the Discovery, which were models of beauty, and which anticipated in their graceful lines the most majestic of our ocean steamers. There were, also, suspension bridges in South America which stretched from rock to rock, while far below the streams ran darkly in deep gorges, the graceful curves of the bridges contrasting with the abruptness of the shores. These bridges anticipated those which now span the wide rivers and connect



BOATS OF THE LAKE DWELLERS AND NORSE SEA KINGS.



BOATS IN THE MICHIGAN AND W. ROCK ISLAND ILLINOIS.

the great cities with one another.* The prehistoric bridges were built of ropes and withes, while the historic bridges are built of steel wire, iron rods and braces, but the principle is the same and both were useful. There were, also, forts in America before the advent of the white man. They were not constructed with all of the military skill of modern forts, nor were there any fire arms or deep-mouthed cannon to be seen, for the arrow and the spear were the chief weapons of ancient warfare. The forts owed their security to their situation, as they were placed upon the summit of rocks, and were strongholds as well as forts. There were walled towns which resemble those of the far East, and occasionally there were fortifications near by, which were used as places of safety and refuge in case of defeat.† There were forts which were built upon the high hills, and were constructed of stone and had high walls surrounding them. Their gateways were models in their way.

There were fortresses in the southwest, which were either built upon the high mesas or hid away in the cliffs, which were marvels to those who first discovered them. These were castles in the true sense of the word, for they contained the families and, in fact, were the permanent homes, and had all the advantages of village life. There were fortifications in Peru which were more like modern forts, for they were built upon elevations and had strong walls furnished with returning angles, and resembled the fortresses of the East, especially in their cyclopean walls.

It is remarkable about the military works of America that they present a succession of structures which illustrate the progress of society and the increased skill of the people. These may be arranged geographically. They begin with the rude stockades built of timber, which were so common on the St. Lawrence and in the State of New York, and pass on to the earth fortress, with the ditch and wall, common on the Ohio. The next stage is shown by the stone forts common in Tennessee and Kentucky, but the next is given by the so-called "great houses" of the Pueblos and the fortresses among the cliffs; the next is found in the pyramidal structures of Mexico. Perhaps the crowning work of all is in the stone forts of Peru.

The same succession or line of progress is shown in the domestic architecture of America, for we have here the rude huts, made out of poles covered with skins, or made from timber posts covered with bark and furnished with thatched roofs; the next are the "great houses," made from stone and adobe; next to these are the pyramids of Mexico, which were surmounted by temples, and the cities which were built up in the lakes with elevated roads leading to them. Highest of all, were the pyramids and palaces of Central America, whose facades were covered with the most elaborate of barbarous

* The rattlesnake bridge, which is now so popular, was in use in China and Tibet long before it was known in America.

† The tribes in the State of Ohio had many such forts.

ornaments; their doorways were furnished with columns and the walls were finished in elaborate cornices. In these we find the beginnings of architecture in the strict sense of the word, for the pier and lintel are common as well as a modified form of the arch and the column.

There was, also, a temple architecture in America which exhibited a remarkable line of progress. This seems to have passed in prehistoric times through different stages, and finally reached a high degree of development. The primitive temple in America was a hut, and the fire in the centre of the hut was always regarded as sacred. It is sometimes difficult to distinguish the temple from the ordinary house, but as architecture developed, the difference became more perceptible. It



• GRAVEL ROAD IN CHIE

is interesting to notice that in parts of America, the beams and posts of the hut were carved in the shape of animals or human figures, and these were regarded as household divinities and were worshipped by the entire people. Such was the case among the *Tall* tribes, and especially in the northwest coast. Here the totem poles, which stood in front of the house, showed the descent of the family and represented the mythological ancestor, or supernatural being, from whom the clan or family descended.

The irrigating ditches, aqueducts and canals also show a remarkable line of progress. The canals and aqueducts in America were not used as much for the transportation of freight or for line of travel, but were very useful for irrigation purposes. They are more numerous in the semi-arid regions where the *Pueblos* and *Cave Dwellers* made their homes, and served an excellent purpose in irrigating the soil



LOOKING EAST



THE GREAT SWIFT BRIDGE



BOATS AT MANILA, PHILIPPINE ISLANDS



These canals were built by the conjoined labor of the people, who were thoroughly organized into village communities and officered by village "caciques," and were useful to the different villages which were situated along the valley of the same stream and were united by the same line. They suggest the idea that the village communities, which now are so separate and distinct from one another, were at one time united under a tribal government which resembled a confederacy, and that the organization of society was quite similar to that which appeared in Greece and elsewhere at the opening of history. They were the works which met the demands of the people, and have the appearance of great antiquity. They are attended with boulder-marked sites, which are foundations of old buildings which have gone to ruins, but which were connected with permanent stone villages. A large area of fertile bottom land generally laid alongside of these ancient canals. It is probable that the water was taken out of the rivers and carried in mother ditches long distances and finally distributed in smaller canals, which might be called the daughters. They were sometimes gathered into great reservoirs and preserved there for a time of drought. These canals are now seen in ancient villages which have long been deserted, and alongside of them are the ruins of extensive villages which are without inhabitants, and not even a tradition concerning the people who formerly dwelt in them remains.

The canals extend for many miles and are widely distributed, showing that an ancient population dwelt in the land which had reached a state of civilization almost equal to that which is now seen in the same region.*

There were also ancient roadways in various parts of America which remind us of the roads of the historic lands. The general habit of the Indians was to travel in trails and take the nearest available route between the different points; yet, there were roadways even in the Mississippi valley which connected the villages with the river banks, and seemed to be attended by ferries, so as to cross the rivers; the villages and the roadways being protected by earth walls, showing that the people were constantly beset by enemies, but were able to carry on their pursuits by means of the thorough organization which existed. There were also graded ways which extended out into the streams, as if the design was to make landings for canoes, the walls from the villages extending on either side, as if to protect the people as they went to and fro from the villages to the canoes. These roadways are supposed to belong to a rude, uncivilized people, and by some are regarded as hardly worthy of mention, when compared with the paved roads which the Romans built in their day.

* The ancient canals have been described by Mr. F. H. Cushing. They varied in length from ten to eighty miles, and in width from ten to eighty feet. Each canal was terraced, that is, by a ditch it was thrown out and formed a wider canal, which in turn, contained a narrower one. The canals are now marked by lines of boulders, as the embankments are worn down. The villages situated on the same irrigating ditch used the same acequia and were contiguous, yet they were independent of each other for a long time.

There were bridges and roads in South America, which are worthy of notice. These have been described by historians as among the marvels of the world. Prescott has described the roadway which extended such long distances across the Andes in Peru and united the different parts of the Inca Kingdom. He says:

The traveller still meets, especially in the tablelands, with memorials of the past, remains of temples, palaces, fortresses, terraced mountains, great military roads, aqueducts, and other public works, which, whatever degree of science they may display in their execution, astonish him by their number, the massive character of their material and the grandeur of their design. Among them perhaps the most remarkable are the great roads, the remains of which are still in sufficient preservation to attest to their magnificence. There were many of these roads traversing the different parts of the kingdom, but the most considerable were the two which extended from Quito to Cuzco, and again diverging from the capital, continued



SUSPENSION BRIDGE IN PERU.

in a southerly direction. One of these roads passed over the great plateau; it was conducted over pathless Sierras bared in snow. Galleries were cut for miles through the living rock, rivers were crossed by means of bridges that swung suspended in the air, precipices were scaled by stairways hewn out of the granite bed, ravines of hideous depth were filled up with solid masonry; in short, all the difficulties that beset a wild mountainous region and which might appal the most courageous engineers, were encountered and successfully overcome. The length of the road is variously estimated at from 1,000 to 2,000 miles, and stone pillars, in the manner of European milestones, were erected at stated intervals of somewhat more than a league, and along the route. Its breadth scarcely exceeded twenty feet. Over some of the heaviest streams it was necessary to construct suspended bridges made of the same material, the length of one of the oser of the country, which has been the subject of degree of strength and tenacity. These oseres were very simple, and consisted of the thickness of a man's body; the large stones were then strung across the water, and were conducted through rings or holes cut in the oseres, and some raised on the opposite banks of the rivers. Several of these enormous cables bound together formed a bridge, which consisted of the planks well secured and detained by a railing of the same material, and the stones offered a safe

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MUNICIPALITY OF JAPANESE FAMILIES

passage to the traveller. All along these highways caravensaries or *tamos*, as they were called, were erected at a distance of ten or twelve miles from each other, for the accommodation, more particularly, of the Inca and his suite and those who travelled on public business. Some of these buildings were on an extensive scale, consisting of fortresses, barracks and other military works, surrounded by a parapet of stone and covering a large tract of ground.

These prehistoric works, when enumerated according to their order of time, are about as follows: 1, the kitchen middens; 2, the mounds* and tumuli; 3, dolmens, menhirs and cromlechs; 4, lake dwellings; 5, towers and burgs. We find also in South America similar works, viz.: Shell heaps, lake dwellings, mounds, and a few dolmens, especially in Peru.† Here, also, are found some very elaborately carved stones, which



CARVED COLUMNS IN PERU

might be classed as menhirs, or standing stones. These are the first objects which attract attention in the cities on the mountains. They seem like visitors from another world, a realm which in Europe has been long hidden from sight and has been almost forgotten in America. If they are not survivals of prehistoric times, they certainly remind us of those times, for they are inhabited by a class of people in about the same social status, and occupy about the same position among the races of the earth.

II. We now turn to our new possessions in the Philippine Islands and Hawaii. We shall find in them various structures, such as canals, bridges, forts, houses and boats, which are very similar to those which were common among the aborigines in

* There are many instances of the Great Wall of China, which resemble those in North America, such as those of the Kogi and Kickapoo Indians. These are probably historic, rather than prehistoric in their character.

† There are dolmens in Japan, and in the East Indies, which resemble those of Great Britain. Such instances, however, of Europe, though they resemble prehistoric in character, it is unknown by what race they were erected.

America in prehistoric times, and they help us to understand the condition of society and the state of civilization which prevailed on this continent. Some of them are of recent origin and show the effect of contact with civilized races, but many of them are indigenous and may be regarded as survivals from the Prehistoric Age. They show to us what the condition of society was during the latter part of that age. They, in fact, were on the borders at the time of the Discovery, and indicate a social status which reminds us of that which existed in Europe at the beginning of history.

These pile dwellings in the Philippines were probably introduced by the Moros from Borneo, and belong to that widespread people called the "ground race." These pile dwelling stand upon their lofty stilts above the water, and confront us like great water birds, close cousins to those which were long ago buried in the fresh waters of the lakes of Switzerland. We find here, also, canoes or dugouts which surprise us by their resemblance to the canoes used by the aborigines of America, and at the same time remind us of the rude boats which have been exhumed from the peat beds of Great Britain.

The comparison of these structures which have been brought to our notice in the islands of the sea, with those which have long existed and are still seen on the mainland, shows us that they belong to the intermediate grade of culture and exhibit an intermediate stage of advancement, and so furnish us a new picture of the prehistoric condition of society. They convince us that here, the people were following a line of advancement, and had already reached the constructions which are characteristic of the "beginnings of history." We have been brought to see objects which are somewhat unfamiliar, and yet they are very similar to those which have long been common among the aborigines. We refer now to the canals, the boats, the thatched houses built above the water, the huts upon the land, the towers which overlook the sea, and the various objects which are present in engravings, as if they were all new, but they are already old, for just such structures were here in prehistoric times. We shall, therefore, call attention to those found in Europe and America.

If we take these various tokens and draw the parallel between them and those which were found upon the Pacific coast, in the same latitudes, we will find that a striking resemblance can be perceived, leading us almost to believe that there was, throughout this continent, a style of culture, which was of uniform and as clearly bounded as ever was the Mycenaean culture, which appeared in Greece after the Homeric days had passed. We do not call these people savages, nor do we call them barbarians, nor civilized, but we do say that they were ancient. They were not hunters, nor were they fishmen, nor were they artists, but they were Islanders, and so had a mode of life peculiar to themselves. It is remarkable that we should be brought, in these days, so



THE LARGEST STONE ARCH IN THE WORLD



A CHINESE BRIDGE, OVER CANAL.



BRIDGE ON FALLOOY FIDGE IN ENGLAND



BRIDGE ON THE RIVER IN ENGLAND

closely in contact with a phase of society and a social condition, which is so unique, and yet has so many points of resemblance to that which was. The Pacific Ocean is opening to our vision a new parallel between history and archaeology, which is worthy of especial study.

A Moro village at low tide, as presented by Dean Worcester, is probably not very unlike the villages which Columbus discovered on the coast of South America and led him to give to it the name of Venezuela, because they reminded him of Venice. They may be taken as representatives of the palafittes, or lake dwellings, of Switzerland, which have been regarded as prehistoric, also as survivals of the only palafittes, or lake dwellings, which have been known to exist on the American coast. We may also take the canoes which float in the water, as good representatives of those which were used in prehistoric times, with the exception that they have outrigging, to prevent the canoes from being capsized in rough water.

The thatched roofs and wattle work contained in the houses will give to us an idea of how the huts, which existed in the interior of America in the valley of the Gila, were built, and may also help us to understand their state of civilization. The bridges which connect the houses with the land are similar to those which prevailed in prehistoric times. There are bamboo bridges in the Philippines which are attractive, their very simplicity giving them a beauty which is rare even in those made by civilized man. The fences in the Philippine Islands, which surround the fields and line the roadways, seem very rude, but they are very similar to those which were used by the American aborigines to protect their fields from the invasion of wild animals, and so they help us to understand another phase of prehistoric America. It will be understood that there were, here, no oxen and no ploughs; no fields which indicated individual ownership; no boats in which kings rode in state; no wheeled vehicles; no fire arms; no saw mills; scarcely any sail vessels; certainly no churches or cathedrals; yet there were warriors, who carried shields on their arms and spears in their hands, and who dressed in about the same manner as the Filipinos. The canals, near Manila, which are represented as having Tagalog houses near them, are not altogether unlike the canals which formerly prevailed in the deep interior of America. These are nearer the grade of the American canals than are those common in Hawaii to-day, but they help us to understand what kind of canals the aborigines used; still the fact that canals are used for cultivating rice in these islands, shows how essential the prehistoric ditches were for the cultivation of maize in the arid regions.

There are forts in these new provinces which may be supposed to resemble the ancient forts of the aborigines, as they are erected upon the summit of the hills and near the streams, while the huts of the inhabitants are situated in the valley

below them.* We give a picture of an old fortification on a hill, near the San Juan River in Nicaragua. It is old, and yet modern, and the houses have the historic stamp upon them. The comparison of the Nicaragua huts with those in the Philip-pine Islands, and these again with the houses in Hawaii, help us to understand the state of things which prevailed in prehis-toric times.

By eliminating the historic structures introduced by the Spaniards since the discovery by Magellan, we come back to the semi-civilized state of the population in these islands. They furnish a very good pattern of that semi civilized condi-tion which prevailed in America. The comparison leads us to ask whether there was not on this continent a race similar to the Malays, which differed essentially from the Mongolians, a race which naturally takes to the sedentary life and rests satisfied with the inventions which may come from such a condition. May we not place the savages of the American forests, who were hunters, upon one side, and the civilized people upon the other, and say that these represent a stage which formerly pre-vailed in America in the extremes of latitude? It may assist us to define the exact position of our new neighbors, if we present the two pictures—that of the bridges and houses of the civil-ized and enlightened parts of Europe and America upon one side, and that of the aborigines on the other, and show what inventions they possessed, and thus bound the middle status. We use the cuts without comment, leaving them to express the thought.

III. There are structures in Siberia, China and Thibet, which may be regarded as connecting links between the pre-his-toric and the historic, though the historic age here goes back into an indefinite past. These structures follow a meridian line along which they may be arranged according to their stage of progress, as those at the north are exceedingly rude, while those in the south, especially in India, are far advanced in architec-tural character. We take them in their order, and begin with the rude Mongolian tents or huts. These have been described by M. Hue and others. They are very similar in shape and style to the wigwams of the North American Indians, but are still occupied by the nomads, who follow their flocks from place to place and wander over the vast plains, which spread out north and west of the Great Wall, but have no permanent villages. The Wall itself follows a parallel of latitude, and was designed to form a barrier against these tribes, but is no more effective than an imaginary line, though it is a monument of the architecture of the period in which it was built, 305 B. C. M. Hue says

There are no towns, no cities, no arts, no industry, no cultivation, no forest, everywhere it is a plain, sometimes interrupted by a few lakes,

* See the *Illustrations of the History of Hawaii*, pp. 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100.



DAKOTA WIGWAMS AND CAMP, Schoolcraft.



HOUSES, FENCES, AND HOUSES IN THE PHILIPPINES.

by majestic rivers, by rugged and imposing mountains; sometimes spreading out into vast limitless plains.

The Mongolian tent, for about three feet from the ground is cylindrical in form, it then becomes conical, like a pointed hat. The woodwork of the tent is composed below of a trellised work of crossed bars, which fold up and expand with pressure. Above these are circular poles fixed in the trellise work, which meet at the top, like the sticks of an umbrella. Over the woodwork is stretched, once or twice, a thick covering of coarse linen, and thus the tent is composed. The interior is divided into two compartments; the left is reserved for the men, the right is occupied by the women, and there you find the culinary utensils—large earthen vessels of glazed earth, wherein to keep water; the trunks of trees hollowed into the shape of pails, for the milk. In the centre is a large bell-shaped cauldron; behind the hearth a sofa, with its two pillows, which have their end plate of copper gilt and are skillfully engraved. A number of goat horns, bows and arrows, match locks, and vessels filled with butter hang on the walls.*

South of the Great Wall, the Chinese architecture begins to make its appearance. Here we find the villages situated along the streams, which answer for historic times what the lake dwellings did in prehistoric, as the most of them have but one story and are huddled close together near the stream.

A little further south and throughout the Chinese domain, we find the Buddhist temples and shrines, with their peculiar projecting roofs, and curved ridge poles, and many-storied towers, slender and tapering, resting generally on huge bases.

The temples are built with considerable elegance, but it would be difficult to state to what order of architecture they belong, being always fantastical constructions of monstrous colonnades, peristyles of twisted columns and endless ascents. The interior of the temple is usually filled with ornaments, statues and pictures illustrating the life of Buddha and the transmigration of the more illustrious Lamas. The Lamasaries are all constructed of brick and stone, but other habitations of earth.

As we pass further south into the mountain ranges of Thibet, we enter another belt where the houses are of an entirely different character. These remind us of the "pueblos" found on the great plateau of America. They exhibit an architecture of the same general character, though they are arranged in separate houses, and not in one "great house." They are flat-roofed and rise in terraces, one above the other, their foundations conforming to the slopes of the mountains. The people who occupy them are in about the same grade of advancement as the Pueblos, though they have not the same organization or history, and their religion is very different.

As we pass over the mountains, and go down the rich valleys of the Indus and the Ganges, we find a civilization which corresponds for historic times to that which prevailed in Central America during the Prehistoric Age. The Vale of Kashmir furnishes us an illustration of this. Here we see, cities scattered along the beautiful river in a high stage of advancement.†

* "Travels in Tartary, Thibet and China," by M. Hue, Vol. I, p. 48.

† The mountains of Lebanon and Assyria also present scenes which are very attractive. The cities here are modern, and yet the history goes back to an indefinite past and joins hand upon the Prehistoric Age. These are situated in the same belt of latitude as the ancient cities on the Euphrates, Ganges and Indus, and show that society reached a point of civilization here, earlier than in the north.

They lead us to realize that the progress of society is always affected by the geographical situation and surroundings, and yet that there is a chronology back of these scenes which dates from a marvellous antiquity. It is possible that the same antiquity may be ascribed to the regions of the north, but, if so, the progress has been very much slower.

Let us pass over the belts of latitude again, beginning at the north and going southward, and take in the common objects, such as boats, bridges and canals, instead of the houses and temples.

We start with the Ainus, who are the most primitive people in existence, though there may have been an aboriginal race which preceded them. Can anything be simpler than the bridge which the Ainus used? It consists of a series of logs placed on stilts formed by wooden horses. It is furnished with a rope which serves to steady the person who undertakes to cross it. This bridge, with the canoe by its side, carries us back to the "shell heap" period, and leads us to ask whether the shell heaps, which are so common in Japan, did not belong to the Ainus.

Following these in the order of progress are the Mongolians, who lived in huts and who built the rudest bridges and boats, but did not tarry long enough in one place to need canals, or even houses. The bridges, boats and canals of China, Independent Tartary and Thibet, bring us up to the Iron Age, and the constructions which prevailed in that age. There were bridges in those days which were very rude, but the suspension bridges of Peru and the cantilever bridge of Thibet are also rude; perhaps the earliest specimens of this kind appeared in China. Here we find cantilever bridges, the first, perhaps, in the world. These bridges are rude in their appearance, as they are made out of logs, which are placed one above the other, each one projecting further out over the stream, until the space between is narrow enough for a single timber to be placed on the end of the supports. A railing is placed at either side, the whole structure having a rustic appearance, which with the surroundings exhibits considerable beauty.

A DECADE OF HITTITE RESEARCH.

BY CHARLES W. SUPER.

It is hardly putting the case too strong to say that no problem connected with the study of antiquity has in recent years received more careful study and investigation, than the civilization now designated as "Hittite." It may be regarded as fairly certain that several centuries before our era, this people had established a powerful empire in western Asia, while it is at least probable that some of its outlying provinces were in Africa, and others in Europe as far west as Italy.

Two decades ago, this empire had begun to loom up before the mind's eye of a few scholars, in the dim and distant vista of historical perspective, like some huge object seen through a mist, the outlines of which are so ill-defined, that it is scarcely possible to determine whether it is the work of man or of the physical forces of nature; so a number of extant remains of gigantic proportions have led to different interpretations, as to their origin and assignment. A careful study and comparison of these remains has, however, quite recently brought something like order out of the preëxisting chaos, yet not enough for a cautious student to draw any conclusions even fairly definite. What can be said in a historical sense to be known about the Hittites can be condensed into a very small volume; what is conjectured, or even accepted as true, regarding them, by a few scholars fills several volumes, as we shall see. It must be considered as remarkable that the importance of this people has been so recent in impressing itself on the minds of the historians of antiquity.

The words Hittite and Hittites occur about fifty times in the Old Testament—sufficient evidence that it represents a great and relatively civilized people when the Hebrews were endeavoring to establish themselves in Palestine. Now that the present generation has become fully persuaded that the Hittites of antiquity were really a powerful nation, and not a mere obscure tribe, it begins to look as if a spirit rising from their monuments was taking revenge for the long neglect, or indifference, with which those who constructed them had been treated. From a condi-

"The Hittites, Their Inscription and Their History." By John Campbell, Toronto, 1890. Vol. I., pages, 400. Vol. II., pages, 350.

"Gli Eteoi-Pelasgi." Ricerche di Storia e di Archiologia orientale, greca ed italiana del P. Cesare A. De Cara della compagnia di Gesù. Volume primo. Siria, Asia Minore, Ponto Eussino. Roma, 1874. Pages, 70.

"De la Race et de la Langue des Hittites." Par Leon de Lantsheere, Bruxelles, 1892. Pages, 112.

"The Hittites and Their Language." By C. R. Conder, New York, 1891. Pages, 750, with map.

tion closely bordering on oblivion, they are springing into notice everywhere. Some one has said that whenever we find Professor Sayce, we may be sure the Hittites are not far away; but I hardly think they are as ubiquitous for him as for Dr. Campbell. He simply reads: Ugrian equals Hittite. Mathematically speaking, no matter how many unknown quantities enter into his equation, when their value is found, it is always the same. The dynasty of the Babylonian Nebuchadnezzar was Hittite. The historical traditions of the Persians are Hittite. Achamenes, or Achiman, was originally Hittite. It was no mere coincidence that an Arbag, or Arbaces, heads the line of Media, and an Achamenes that of Persia. Agamhan appears in the Irish genealogies. He was the Achoran Achaman of the Guanches, who were the aborigines of the Canary Islands, and from him the oldest Guanche tribe was called that of Achimencys. In Japan, he is Hachiman, the god of war; in Mexico, Hueman, the last king of the Toltecs, and in Peru, the land of the Incas, Huaman.

In the Iliad, Acamas is a leader of the Dardanians and a son of Antoner, and he fights along with Æneas, the son of Anchises; or, he is a Thracian, son of Eyssorus or Jeshor.

But it is better to put briefly before the reader, in Professor Campbell's own words, what he thinks he has proved. He says:

"The Taraman element that came into prominence in the palmy days of the Egyptian Hyksos, that underlay the cultures of the empires on the Tigris and Euphrates, that preceded Israel's occupancy of Palestine, that filled Syria and Asia Minor, that gave to Greece her mythology and her sacred rites, and overflowing into Illyria, Italy, Spain, and Britain, bore the Iberian and the Pictish name, now only recognized in the Basques of the Pyrenees, that element on which Cyrus built up his first Arvan empire, and which, voluntake, broke forth in Parthian days that preceded the Brahmanic Northern India, that, in early Christian centuries, traversed Turkestan and peopled the Siberian wastes, that for two centuries turned China into Cathay, and that still occupies Corea and the islands of Japan, that Taraman element, moreover, that driven by adverse fortune, crossed the northern Pacific in the New World, that reproduced the mounds of European Scythia, of Syria and the Caucasus, of India and Siberia, on level prairies and the margins of rivers from Alaska to the Gulf of Mexico, that founded the empires of Mexico and Peru, and that lives in many an Indian tribe from the frozen north to the southern land of fire, is Hittite.

Verily, this is a "big contract"; yet, in spite of the author's evident sincerity and confident tone, it is doubtful whether he will convince many readers, however closely they may follow his arguments.

One hesitates to venture an opinion on a work like that of Father De Cara. When we remember with what ridicule Schliemann's proposal to exhume Troy was greeted by nearly all scholars who gave it any thought, and how he turned the laugh on his detractors, we do well not to be unduly incredulous, so long as any new discovery that may be broached does not violate a well established law of the physical universe. Whether the enthusiastic German discovered Troy or not, is, here, neither

affirmed nor denied: this case is merely cited here to illustrate how seemingly the most absurd theories may in the end prove to be facts. As to De Cara's etymologies, most of them are not more paradoxical than many of those long current among Aryan philologists and not yet wholly abandoned. In the first half of this beautifully printed and finally illustrated work, we have before us a scholarly attempt to prove that the Pelasgians of antiquity were Hittites, and that their settlements extended from Cyprus and the Syrian coast northeastward to the Caucasus Range, thence northwestward to and including the lands of the Scythians, thence southward to Crete. The territory thus included is thickly dotted with Hetheopelasgic settlements, while a few lie beyond these limits. The second volume is to be devoted to the isles of the Mediterranean, to Greece proper and Italy. The book seems to have attracted but little attention. I have seen but few notices of it, and a leading bookseller of Leipzig told me that the only copy he had sold went to the United States.

As a sort of starting point, the author calls attention to the variants in the transliteration of the Biblical proper names כֶּתִים and כֶּתִי , כֶּתִים and כֶּתִי in the Septuagint, the Vulgate, and in ancient codices. Here, the initial letters kheth and kaph, so closely allied in sound, have led to much confusion. He thus finds for the sons of Javan, and, therefore, of Japhetic stock, the following forms: Cethim, Cetthim, Κήτιοι , Χεθθίμ , Κίτιοι , Chetim, Chittim, with the interpretations, Italy, Romans, and even Apulia and Lombardy. For the sons of Canaan, and, therefore, Hamites, he finds Cheth, Hethæum, Ethæum, Χιτταίων , Hetthim, Hethæos, Cethæum, Cethæa, Ceteorum.

I am inclined to think that more stress is laid upon this point than is wise, though I do not question the value of the genealogical table in the tenth chapter of Genesis; nor is there any doubt that the similarity of the initial letters led to more or less confusion. De Saulcy says that Cethim designates the islands of the Mediterranean and of southern Europe. De Cara quotes a passage from the First Book of Maccabees in evidence that the ancients believed Alexander to have come from Cethim, that is Macedonia. Here the Greek has Χεττειείμ . Citations from Calmet, Bochart, Gesenius, and others make it clear that Kethim, Cethim, Chittæi were terms of wide application, including even part of Italy. It is well known that one of the names of Cyprus was Χεθίμ or Χεθίμα , according to Josephus. Now, De Cara contends that this is a case of *pars pro toto*, and that all the region we have designated above, in its widest sense, bore this name no less than the island. This is the same territory ancient tradition assigns to the Pelasgi. Stress is likewise laid on the similarity existing between the name Ἀμαθοῖς in Cyprus, which Stephanus of Byzantium calls $\text{Ἡδὺς Κύπρου ἀρχαιοσύνη}$, and Hamath, the capital of the Hittites in Syria, as well as the

chief seat of their power. The Cypriote city exhibits the same variety in the orthography of its name that has been spoken of above, for we find it written Amath, Hamath, Emath, Hemath, Chemoth and Chammath. There is thus a strong probability that the one was a colony of the other, or at least they stood to each other in the relation of mother and daughter. Asia, as is well known, was in Homer's time a term of limited signification. Its connection with the Hittites is thus explained: these people were known to the Assyrians as Khatte or Khate, and to the Egyptians as Kheta or Khita. Now Asia is nothing more than Asi or Ati without the initial sound found in Khati or Hethei, and Asia is Khatia. Pel, in Hamitic signifies *adventure*, and Pelasgi is merely Pelatiki transformed and somewhat abbreviated, as is usually the case when words pass from the mouth of natives to that of foreigners. The term Pelasgi is, therefore, a compound, meaning "immigrants from Asia."*

Many pages are devoted to a consideration of the word or name *Kādmos*, that has given writers on Greek antiquities so much trouble, and the interpretations of which seemed to have exhausted all the possibilities without discovering the right one. De Cara holds that it is nothing more than a transformation of Hethei, and is virtually identical with the Cyprian Khetmos or Kethimos, the final syllable being a mere terminal added by the Greeks.

The name *Καππαδοκία* appears in the Persian inscription as *Katapadukka* or *Katapatuka*. This is to be compared with *Kataoria* lying to the south of Cappadocia. *Kataonia* is *Καταφονία*, and is probably allied to Lycaonia; there is thus no difficulty in establishing the identity of the syllable *Kat* with the initial syllable in the ethnic designation of the Hittites or Hethites.

The name *Kōris*, both that of a goddess and of several Thracian kings, also contains a reminiscence of the same people. According to the tradition preserved in the Homeric Poems the original seat of the Pelasgi was in northern Greece; but as they were confederates of the Trojans, the hypothesis is at least admissible that they retained some traditions of their Asiatic provenience. When we come to the time of Herodotus, they are much more widely scattered. They are found in both northern Greece and in the Peloponnesus, as also in Asia Minor, and even in Italy.

I have pointed out above the relation De Cara finds to exist

*The word *Asia* is derived from the name of the Hittite city of Asia. They are very probably the same people as the Kheta or Khita mentioned above. It is also possible that *Asia* is derived from the name of the Hittite city of Asia. There is a strong probability that the one was a colony of the other, or at least they stood to each other in the relation of mother and daughter. Asia, as is well known, was in Homer's time a term of limited signification. Its connection with the Hittites is thus explained: these people were known to the Assyrians as Khatte or Khate, and to the Egyptians as Kheta or Khita. Now Asia is nothing more than Asi or Ati without the initial sound found in Khati or Hethei, and Asia is Khatia. Pel, in Hamitic signifies *adventure*, and Pelasgi is merely Pelatiki transformed and somewhat abbreviated, as is usually the case when words pass from the mouth of natives to that of foreigners. The term Pelasgi is, therefore, a compound, meaning "immigrants from Asia."*

between the Hittites and Asia. In this connection attention may be called to the place names 'Ασίνη, 'Αθήναι, 'Ασάναι, 'Ασάναι, 'Αθάνα, and others, all of which are variant of a single form. There were at least six cities named Asine, of which number, four were in Greece, one in Cyprus, and one in Cilicia. Still other forms of the word are 'Αζήνια, 'Αζανία, 'Αιζηνία, 'Αζάναια, 'Αζάνη, and many more. With 'Αυσονία, 'Αύξονες, 'Αύξην we pass into Italy, but we are still in the realm of the Athi or Khati or Hethi.

Whatever we may think of the author's method in detail, it can not be said that his main thesis is absurd. If, as now seems to be held by nearly all competent anthropologists, the whole human race is descended from a single pair, there is nothing antecedently improbable in the assumption that successive waves of a certain degree of civilization spread far and wide. The initial impulse may have proceeded from the Mesopotomian region, as maintained by Hommel, and proceeded northward, or even eastward into China, as De la Couperie has shown with much plausibility. This theory need not militate against the development of certain phases of culture that partook more or less of a local character. The vicissitudes of the Germanic race in comparatively recent times exhibit in a striking manner how environment may not only develop widely different ethnic traits, but even lead to bitter national animosities. An empire so great, as that of the Hittites undoubtedly was at the zenith of its power, was destined sooner or later to break into pieces.

The conclusions reached by De la Lantshgere may be summed up almost in his own words. In the sixteenth century before our era, there dwelt in northern Syria a people known to the Egyptians as Khetas. During the following centuries they gradually spread toward the south as far as Hamat. They appear to have reached the apogee of their power during the reign of Rameses II., at which time their dominion extended to the banks of the Euphrates on the east; over Cilicia, and even over portions of Asia Minor in the west and northwest. Subsequently they were broken up by the Assyrian conquerors into a number of independent principalities that were confined to northern Syria, and bounded on the east by the left bank of the Euphrates and northern Mesopotamia. Their historic existence ended about 717 B. C.

The physical type of the Hittites was peculiar and altogether different from that of the Semites. Both their own monuments and the representations of the Egyptians prove this beyond a doubt. An influence, artistic as well as civilizing, due to these people, radiating from Syria as its center and source, extended across Asia Minor to the very borders of Europe. As to their language we must rely chiefly on personal names, so far as the accessible material is concerned, because those of places for evident reasons are less trustworthy, it being often difficult and fre-

quently impossible to distinguish between their nomenclature and those of the earlier inhabitants, or the later comers. The language of the Hittites was related to that of the people of Gamgoum, Patin, Kummuh, Cilicia, and others in this vicinity. It probably had likewise some affinity with the proto-Armenians.

The Hittites possessed a hieroglyphic system before they entered Syria: in other words, they had invented it anterior to the fifteenth century B. C. Their primitive home is to be sought in that part of Armenia where the Euphrates, the Halys, and the Lycus approach nearest to each other.

To what race did the Hittites belong? Owing to the extremely limited number of data as yet available, the author expresses himself with great reserve, and it is scarcely worth while to occupy space here with hypotheses to which he himself does not attach much weight. His conclusion is very much like that of Johnson's *Rasselas* in which nothing is concluded. The book is, nevertheless, not without merit or the evidence of sound learning. Its author is wiser than some others who have built up elaborate theories only to be knocked to pieces by the next man who deals with the same subject.

In his work on the Hittites and their language, the well-known Colonel Conder submits to the reader the results of a ten years' study of the subject. He thinks he has shown by the evidence of language and physical type that the Hittites were originally a Mongol tribe that was finally dispersed in the seventh century B. C., that the peculiar script of Syria and Asia Minor is intimately connected with that of the Sumerians of Chaldea; that the language is clearly Mongol, not Aryan or Semitic, and that the historic references to the first Kassite kings point to dates between 2250 and 2000 B. C.

As the origin of our alphabet is clearly connected with his subject the author places some of his conclusions relating thereto before the reader. The Hittites did not use it—therefore their script is probably older than the time of its invention, which can not be placed later than 1000 B. C. The syllabaries from which all letters (Phœnician, Aramæan, Greek, Ionian, Etruscan, etc., alike) are derived were those used by the Mongol races, and come from the system of hieroglyphics called Hittite.

"The Phœnicians, knowing the hieroglyph whence each sign was derived, named it accordingly. They taught the early Greeks of Europe. The Ionians, on the other hand, the Carians, Lycians, and Etruscans, came directly in contact with the original race which invented the syllabary, and thus, in the case of the Etruscans at least, never used the Semitic names, and employed at least ten signs not used in Phœnicia.

The historic succession of the different modes of writing, the author places in the following order: Hittite hieroglyphics used 2200 B. C.; cuneiform, 1500 B. C.; alphabets, about 1200 B. C. It was chiefly in Syria that the transformation took place. I quote further:

"It appears, therefore, that the whole alphabet can be found in the Hittite system (excepting as yet *Tsade*), and that the Mongol syllables describe the same symbols, which are to be inferred from the Semitic names of the letters. The Greek names, whether the same with or varying from the Phœnician, equally point to the same hieroglyphic signs. The investigation of the origin of the alphabet thus strengthens our case for twenty-six signs of the Hittite, by giving a bilingual check on the meaning and sound required by the signs; but only on the assumption that the originators of the system were Mongols, whose short words were easily represented by the single syllabic signs. These comparisons are indicated for the first time in these pages, and have not, to the author's knowledge, been made by others, though some coincide with Mr. Ball's proposed derivation from cuneiform direct. The signs are all common syllabic emblems in Hittite; and to this race the origin of the alphabet is due, though the actual invention of twenty-two letters was Phœnician, and some ten others were taken by Aryans from the syllabary, which is known (from the text remaining) to have been used at Xanthus in Lycia, as well as at Troy and in Cyprus.

"Having thus laid a foundation for study of the texts by historical research, examination of all the possible languages and detailed examination of the symbols by themselves, we are prepared to proceed to translation; and it will appear that the result is the recovery, on coins and texts, of historic Kassite names, which is a further confirmation of the soundness of the conclusions reached by various means."

The book gives a full account of the provenience of the Hittite texts and describes their present condition. These are given in full with interlinear translations. On the accompanying map the Hittite monuments are clearly indicated, though compared with other authorities there are some omissions. They extend from Babylon on the southeast, to Eyuk in the Black Sea region in the north, and as far west as Mt. Sipylos. In the southwest, Lachish forms the extreme limit, Colonel Conder thinks the home of the Semite race was in Assyria, not in Arabia, as many suppose. It was in northern Mesopotamia that they first attained sufficient importance to feel the desire to leave inscriptions in their own language. This was at a time when the ancestor of the Hebrews is represented to have lived at Ur of the Chaldees and at Harran. During his migrations westward he found other Semitic tribes,—the Amorites, or "Highlanders," and the Canaanites, or "Lowlanders," though these were already somewhat mixed with Hittites and other Mongols.

The first great shock to the Mongol power in Asia was due to the Egyptians, though its final overthrow was brought about by Semites in Assyria. Up to the time of the onslaught of the Egyptians the Mongol race had ruled without rivals, the Sumerians in the south, and the Kassite or Akkadian conquerors in the north, where they had succeeded to the imperial power enjoyed for several generations by the kings of Elam. Its original home was among the mountains of Kurdistan and Media. The dialects of the two branches just named were not materially different. The civilization they had attained was at least equal to that of Egypt, and extended over the whole of western Asia south of the Taurus range.

The Turanians, or Mongols, came forth from their fastnesses

in two hordes, the Sumerians proceeding to the southwest, the Kassites to the northeast. The former were of pure blood, while the latter, as they spread over Syria and Asia Minor, were early mixed with Semites. These were Arameans, who first appear in history about 2100 B. C. as Phœnicians and Amorites. They were, however, probably preceded by Mongols. The Aryans first appear about 1300 B. C., pushing eastward and northward from Thrace. Four or five centuries later they are seen issuing from the Caucasus in the neighborhood of Lake Van. The cradle of this race was the northern shores of the Caspian Sea. As a result of these migrations the races in this region are still much mixed, a condition of things that prevailed more than 3000 years ago. The languages likewise became more or less commingled, though, as was the case in the Norman conquest of England, the primitive type was not wholly obliterated. The important point to be held in view in this connection, is the family pride of the governing class, and that both Mongols and Semites kept this pure in the main. It is with these we have chiefly to deal. When he speaks of the Mongols, Colonel Conder does not mean the eastern branch now found in and north of China, but the type still represented by the Turks and Tartars of Bactria; a type that we find delineated by statues and bas-reliefs. The Sumerian language, he asserts, in agreement with Hommel, presents "all the main features of Turkish speech. The vocabulary contains upwards of three hundred words which are easily compared with pure Turkish and Mongolian." While the language of the Kassites is not nearly so well known, the accessible evidence proves it to have been akin, also, to the Sumerian. The testimony of the bas-reliefs, inscriptions and language, all go to prove that the Hittites were Mongols. "It can no longer be doubted that the Hittites were Mongols by race, but that they spoke a Mongol language."

The eight appendices that constitute nearly one-half of Colonel Conder's book, and which may be said to sum up his conclusions, are occupied with the following subjects: 1, Chronology; 2, The Akkadian Language; 3, Notes on Deities and Mythologies; 4, The Hittite Syllabary. This consists of 167 characters that are compared with the Hittite emblems, with the linear Bablonian, the Arameic syllabery, and with the Akkadian sounds; 5, The Origin of the Alphabet; 6, The Hittite Texts; 7, The Hittite Vocabulary; 8, List of Authorities. Sixteen plates, placed after a good index, put before the reader the known inscriptions. While such words as "seems," "appears," and their equivalents occur frequently, the tone of the book is one of confidence, and shows that its author is thoroughly convinced of the truth of the theories he advocates. In spite of the fact that the diction is often careless in the structure of sentences, the book is easy reading and carries conviction to the reader who

gets his information about the Hittites wholly or chiefly therefrom. A wider knowledge of the intricate problems involved; of the insufficient data from which far-reaching conclusions are drawn, and of the divergent opinions of competent scholars, will make him exclaim, in closing the book, that the verdict can but be summed up in the words, "plausible, but not proved." We are brought once more, as we so often are in our historical studies, to the sentiment that Tacitus has put on record in his *Germania*, "quæ neque confirmare argumentis neque repellere in animo est."

It remains yet to add that Dr. Peiser, of Königsburg, is a recent writer who has pronounced an opinion in favor of the relationship between the Hittite and the Turkish, though he has not, so far as I am aware, translated any of the texts. Dr. Jensen, of Marburg, tries to establish the connection of the Hittite with the Armenian. In an article which he published in the *Sunday School Times* of May 7, 1898, he discusses at some length their religion. He states explicitly "that the modern Armenians are descendants of the old Hittites," and that their religion is connected with those of western Asia. Though he makes no mention of De Cara's work, he says that a word like *Hatiš* would mean an inhabitant of *Hati*, the country of the Hittites. He sums up his conclusions in these words:

"Thus we have good reason to suppose that as well as the language, the personal names and the native names of the Hittites survived in those of the old and modern Armenians; the last traces of their religion, above all, are to be recognized in the Armenian triad of gods. We may add that most probably the name of their supreme god, *Sande*, whose emblem is the lightning, survives in the Armenian *sand*, denoting lightning."

It seems that there can be little doubt that the Hittites were Mongols, and that they set forth on their career of conquest from some point—perhaps Turkestan—in the territory still occupied by them. The initial impulse probably originated in the breast of some able and ambitious leader, such as we have seen more than once overrun a great part of Asia in more recent times. Their history, though we know little of it, chiefly because there is not much to know, proves that they are capable of attaining a certain grade of civilization and incapable of rising above this grade, except under strong external pressure. The raids they have made in historic times may be taken as a type of others that occurred much earlier. When they had run their course, they were subdued or exterminated by Semites, who were a more progressive race. Many of the Semitic tribes, however, showed hardly more capacity for culture than the Mongols—the Jews being the most noteworthy exception—and were in time displaced, more or less completely, by Aryans. But, for some of these, the local conservative influences were too strong, and those who remained in Asia in the course of time degenerated to the

social level of their environment, in spite of occasional great achievements. It was not until the Aryans had become fully domiciled in Europe, that they developed an essentially modern type of civilization, the most important element of which is the capacity for unlimited expansion, both intensively and extensively.

STONE SQUARES IN ARIZONA.

EDITOR AMERICAN ANTIQUARIAN:

In the March and April AMERICAN ANTIQUARIAN, the article on "Prehistoric Stone Circles" has led me to write you of what may be called "Prehistoric Stone Squares." I enclose herewith a rough sketch of my meaning. It is not meant to represent any particular place, but to convey an idea of these stone squares as they actually exist in southern Arizona. Occasionally I have found them on the desert, but, of course, always near a hill, for on the desert plain there is but little or no rock. On the mesas near the foot of the mountains, they are a common occurrence. In general appearance, they are perfect squares, and, practically, they are of all sizes, say from 10 to 300 feet. On some mesas there are, perhaps, but one, and again, I believe, I have seen as many as a dozen within an area of ten acres. In some cases they are pretty well covered over by the wash from the hills above, and again they stand out bold and plain, as when first put in place. There are several fine specimens of these squares on the western foot of the Santa Catalinas, about twenty miles east from Tucson. Some of the squares are made of rock quarried from granite by following the seams, and pieces five feet long and six to eight inches square, are not uncommon. These pieces are set firmly in the ground, a few inches apart, of equal elevation and straight sides. In some cases these squares are in the immediate neighborhood of old towns, but not always. These are not the Cliff Dwellers, of which so much has been said, nor do they appear to have been the people who cultivated the great plains and built reservoirs and canals, but a people who cultivated narrow strips of land along water courses and fortified the hills above. Some years ago, I made accurate measurements of several of these squares, but this material has been lost, and I am not at present in position to do the work over again.

HERBERT BROWN

Yuma, Arizona, March 10, 1892.

CYCLOPEAN WALLS AND BASALTIC COLUMNS IN THE CAROLINES.

[Selection from the *British Geographical Journal*, February, 1872.]

A book published in Germany eighteen years ago, under the title "Essay on South Sea Curiosities," gave Professor Kubary's description of the wonderful prehistoric ruins discovered in the Caroline Islands, almost in the mid-Pacific. These ancient works are remarkable not only for the fact that the columnar shafts of basalt, many weighing several tons each, were transported from twenty to thirty miles to build up the defences, tombs and other structures, but also because the little islands themselves on which the walls were reared are mainly artificial in formation, having been built up out of the shallow waters of the lagoon by the heaping up of these shafts of basalt.

Professor Kubary's description of these ruins was the first written account of them. But he was able to visit only a part of them, and his ground on the ground were necessarily very incomplete. As the ruins are really among the world's prehistoric wonders, the recent studies of Mr. F. W. Christian at Ponape Island, near the eastern end of the Carolines, are particularly interesting and acceptable. The paper he read before the Royal Geographical Society, which is printed in the *Geographical Journal* for February, gives an excellent idea of these remains.

Ponape is the largest island of the Carolines. It is nearly surrounded by coral reef, with narrow openings here and there, and between the reef and the land, is a lagoon of very shallow water, most of it not over one to three feet in depth. The ruins are in this lagoon, off the east coast of the island and close to the south coast of the little island of Tomun.

Mr. Christian says:

The islets are mostly rectangular and are built up out of the shallow lagoons, and are enclosed in mangrove clumps. A network of shallow canals intersected the island labyrinth. The natives call them "waterways," and the group of islets they call "waterways between the houses." A massive breakwater runs along the edge of the deep sea, shutting in the woods and waters. Out to sea lie other islands, where there are scattered remains of another ancient sea wall. The most remarkable of all the ruins are on the Islet Lanack. The water front is filled with a solid line of massive stone work about six feet wide and six feet above the shallow waterway. Above this is a striking example of immensely solid cyclopean masonry—a great wall, twenty feet high and ten feet thick, formed of basaltic columns laid alternately together and crosswise, and enclosing an oblong space which can be entered only by one gateway in the middle of the west face. A series of rude steps leads up to the spacious court-yard, strewn with fragments of great pillars. Beyond this, and enclosed by it, is a second terraced enclosure, topped by a rude projecting frieze and cornice of stone-work. The outer enclosure is 185 by 115 feet; the wall varies from twenty to forty feet in height, the inner court is parallelogram and measures seventy-

five by eighty feet. Another rude flight of steps leads up to the great central vault or massive chamber, said to be the grave of an ancient monarch named Chan-te-Leur. This underground chamber faces the great gateway. It is about eight feet deep and roofed with enormous slabs of basalt. There are other vaults in the enclosure. Standing on the south-west angle, where the wall of the enclosure is about forty feet high, one looks down on the green abyss, with never a glimpse of canals, but the northwest angle, as we came out upon the canal, gives a happy impression of the style of architecture, the two walls at the junction run high and bluff like the bows of a Japanese junk.

The names of some of the islands are significant. One means "The Place of Loftiness"; another, "The Place of Cinder Heaps," from the cooking fires of the workmen, who helped the demi-gods build the walls; another means "The New Pavement."

These islands cover an area of about nine square miles. It will be observed that most of them are rectilinear in form. It happens that the break in the reef to the east is here unusually wide, and heavy rollers would come in from the sea if it were not that a number of long stone islands were built on the east, which serve as a seawall or breakwater. The massive walls of this breakwater are seen stretching southward for three miles, the masonry showing here and there through the dense tangle of shrubs and mangroves that crown and encircle the islets. The dense tropical vegetation that covers all the islands makes their exploration difficult. A visitor who was not observant might visit the spot and never know of the existence of the remarkable objects around him. An immense amount of work had to be done to see the ruins at all, and photographs could be taken only after a great deal of clearing away of underbrush.

There are between fifty and sixty of these artificial islets. A network of shallow channels intersects the island labyrinth, the water in which, for the most part, is deep enough merely to float a canoe. All the islets and the walls, tombs and other structures on them were built of basalt columns, commonly known as columnar basalt, of which specimens may be found along our shores on the Hudson. There is no basalt near the artificial islands and the enormous quantity that was required by the ancient builders must have been carried in great canoes or on rafts a distance of twenty to thirty miles along the coast. Christian found the great quarries where these pillars and blocks were obtained. The most distant of the two quarries is at Chokach, thirty miles away, where the columnar basalt formation is very strikingly marked. Here all the shafts and pillars required were lying around ready shaped to the hands of the builders. They had to be removed some distance to the sea from the dikes at the foot of a perpendicular scarp, whence they had fallen. Many of them weigh at least three and a half tons. The problem of getting them to the sea edge was probably the easiest part of the undertaking. It is likely that large forces of workmen equipped with levers, rolled

them over and over till they reached the water. Then, somehow or other, no one knows how, they were placed on the rafts or in the canoes and transported to the spot where they were wanted. We can hardly realize the prodigious amount of toil that was required to provide the material with which to rear these fifty to sixty islets and the structures on them. How were these columns, weighing tons, lifted to a height of twenty to thirty feet to form the top of the walls reared on the islets?

Mr. Christian suggests that it was done by a large number of men hauling or rolling them up over cocoa timbers covered with oil, and thinks that the builders were an "intelligent minority" swaying an "ignorant majority"; resembling, perhaps, the Inca kings who built the cyclopean forts and the great temples and palaces of Peru, and connected them with paved roadways and long suspension bridges, and were able to make the industry of the people contribute to their wealth and power.

The explorer was able to trace the course of the canoes or rafts which brought these great masses down to the building places. He found the bottom of the lagoon, from the quarries to the stone islands, strewn with blocks of basalt. The most reasonable explanation of their presence there, is that they fell from the canoes during the journey, or sometimes, being too heavy for the boats or rafts that carried them, sank with their craft.

The islands seem to have been reared beneath the water by dumping in the material with little regard to regularity, except that care was taken to provide a solid foundation and straight outlines. The interstices between the prisms of basalt were filled in with large blocks and then with rubble, the whole forming a compact mass. The island was reared above the water from five to ten feet, and on this foundation were erected great walls, the largest of which is on Nan Tauach, where the wall rises to a height of thirty feet and is ten feet thick. All these walls were laid in the same manner. The prisms of basalt were placed close together, alternately lengthwise and crosswise. In old times the walls must have been considerably higher, but much of the masonry has now fallen into lamentable ruin. It is believed that these enclosed spaces were used for tombs, treasure chambers, and forts. The natives say that they were built by all the tribes of the island, united at the same time under a powerful line of kings, in the days when Ponape was much more populous than at present. In the course of time there was a great invasion of peoples from the south. According to this native legend the invaders must have come from some part of New Guinea, the New Hebrides, or some neighboring portion of the Melanesian area. The strangers came in fleets of canoes under the command of a fierce and terrible warrior. The savages poured in upon the peaceful inhabitants, and blotted out the ancient civilization after a great battle in which multitudes were slain on both

sides. Part of these walls, behind which the natives fought, were thrown down, and their defenders were either slain in battle or offered in sacrifice to the war gods of their conquerors.

Mr. Christian was able to make a few excavations in the burial vaults within the spaces enclosed by the walls. His finds include many parts of shell fish-hooks, which were possibly broken and thrown into the graves at the time of the burial of some renowned chief; a considerable number of shell rings, a few of them elegantly carved, but most of them plain, a large number of shell beads, and the greatest prizes were ten or twelve ancient axes, three of them about a yard in length, rubbed down from the central shaft of the giant clam. Some of the smaller axes were of fine workmanship, white as polished marble, strong, and having keen cutting edges. Others had suffered great deterioration during their burial ages. He also extended his investigations to some other islands, for these ruins are not confined to Ponape, though seen in by far their largest development there.

In the island of Uele the ruins are of a different character, being built not of basaltic prisms, but of irregular blocks of stone, some of very large size. They are also on the land instead of the water.

On Strong Island are also the remains of cyclopean masonry. Here, also, was an enclosure formed of basalt blocks, and a network of canals intersecting a tract of low land which had been reclaimed from the sea. Here the lofty walls exhibit an elaborate system of fortification, the product of native work, under the orders of a superior, and one who had a knowledge of engineering. The islanders use axes or adzes of excellent workmanship, laboriously ground and polished down from the great central piece of popoi shell. In length they measure from six to nine inches, and two inches wide. These would be used as hoes for agriculture, or as adzes for cutting wood, but would be of too use in hewing the hard basaltic blocks. There are, however, no signs of tool marks on the rocks. The columns were treated very much as logs of wood and were piled on top of one another in log house fashion. In this they differ from the structures in Tonga but they show considerable advance in skill beyond the piling of stones in a wall.

Admiral Budge of the British Navy, who has seen some of these Caroline Island ruins, and commented on Mr. Christian's paper, says it seems to him incredible that any people of the present race could have constructed these immense works. The defences all face seaward and not inland, which, to some extent, shows that they were built by residents and not by people attacking the island from the sea.

HONOLULU'S GREAT MUSEUM.

[From the *Scientific American*.]

In the Bishop Museum of Honolulu, the history of Hawaii is spread out as on a printed page. The New York Tribune recently had an interesting account of the museum. Mrs. Bishop, who is descended from a long line of native kings, endowed the museum with property which yielded \$86,649 last year. The museum is in a western suburb of Honolulu. The idea was to exhibit and preserve the relics of Mrs. Bishop's people and kindred races of the Pacific Ocean. The most interesting thing in the museum to any one not a specialist is easily the great collection of "kahilis." Before the revolution there were 105 in the museum, and since that time the number has been augmented. The "kahili" is the glorified descendant of the common fly brush, and but few great ones remain outside of the museum. Only royalty is entitled to the extraordinary insignia of the "kahili."

These affairs are carried before royalty, or left to mark its tomb and perish by the weather. Some of them are gorgeously shaped like enormous bottle brushes, the feathers being splendid plumage of all kinds of birds, and the long wooden handles embellished with ivory, mother-of-pearl, and costly woods, and occasionally a shark or human tooth to give interest.

In the same room with the "kahilis" the other relics of Hawaiian royalty, the "ahullas," or leather cloaks and capes, are kept. These are truly wonderful affairs made from feathers of the mamu bird, now said to be extinct, or from the small tuft of feathers found beneath the wings of the oo bird. The collection of enough feathers to make one of the magnificent cloaks often took many years. Only preeminent chiefs were entitled to wear the gorgeous mantles of golden feathers, and the appearance of the sable warriors when clad in these was regal.

The helmets which covered the heads of the ancient warriors are extremely interesting, resembling the Roman helmets and the Greek headdress. Most of them are covered with canary and red feathers, which were the favorite form of ornamentation in Hawaii. There are weapons edged with sharks' teeth, which went with these feathered marks of state, and hand daggers, which were fashioned at the time the first voyagers came to the island. In the museum there is also a collection of Hawaiian birds, containing many choice specimens, not a few of which are now extinct. The museum also includes many specimens of mats, native Hawaiian cloth beaten from the inner bark of the paper mulberry tree, wooden bowls and dishes, some of them being nine feet in circumference, nets, hooks, native sleds, weapons, etc.

THE CANNIBALS OF THE NORTHWEST COAST.

The report on the Kwakiutl Indians by Dr. Franz Boas, published by the Smithsonian Institute National Museum, 1895, has been criticized for what seems to be an exaggeration of the atrocities committed by flesh-eaters and dog-eaters. A clipping from the Rocky Mountain News, of February, 1878, confirms the account. It was published by Rev. Mr. Duncan of the Church Missionary Society of British Columbia:

"The other day we were called upon to witness a terrible scene. An old chief, in a fit of blood, ordered a slave to be dragged to the beach, and rendered and thrown into the water. His orders were quickly obeyed. The victim was a poor woman. Two or three reasons are assigned for this horrid act. . . . Presently two bands of furious wretches appeared, each headed by a man in a state of nudity. They gave vent to the most unceremonious and the naked men made themselves look as unearthly as possible, proceeding in a creeping kind of a stoop, and stepping like two proud horses, at the same time shooting forward each arm alternately, which they held out at full length for a little time in the most defiant manner. Besides this, the continual jerking of their heads back, causing their long black hair to twist about, added much to their savage appearance. For some time they pretended to be looking for the body, and the instant they came where it lay they commenced screaming and rushing around it like so many angry wolves. Then they seized it and dragged it out of the water and laid it on the beach, where they commenced tearing it to pieces with their teeth. The two bands of men immediately surrounded them, and so hid their horrid work. In a few minutes the crowd broke again, when each of the naked cannibals appeared with the half of the body in his hands. Separating a few words they commenced a most horrid yell, their still more horrid feast of eating the raw flesh of the body. The two bands of men belonged to that class called *moche* or *moche*."

I may mention that each party has some characteristics peculiar to itself. In a general sense their divisions are but three, viz.: those who eat human flesh, the dog-eaters and those who have no custom of the kind. Furthermore, during the papas would be out on the beach or on the rocks in a state of nudity. Each had a pipe in the front of his own tribe, and of this pipe could interfere in the slightest degree. After the post creature had been put out, one, his head and screaming for some time, a party of the *moche* would surround and others surrounding him, would commence tearing at the *moche* party or a *moche* carried a dead dog to their pipe, which, with some need to tear, in the most dog-like manner. The party of *moche* kept up a low growling noise, or a whoop, which was accompanied by the high noise made from an instrument, which they brought to be the *moche* or *moche*.

All the parties mentioned are so much headed as the cannibals. One day I saw a *moche* saw the *moche* of the camp which had been caused by the *moche*. When I saw the *moche* I saw hundreds of *moche* on the beach. They were in a state of nudity, and they had their pipes pushed away from the beach. I was told that the *moche* party were in search of a body to devour, and if they could find the least one it was probable they would seize the first animal that came in their way, so that all the people being near the beach, they were obliged to throw the animal away, and being torn to pieces. It is thought that these *moche* are to be the *moche*, but I suppose for the *moche* they take care to deposit the corpse somewhere in order to satisfy their *moche* or *moche*.

The *moche* are the only party which are in the day during the winter months, while the nights are taken up with amusements, singing and dancing.



DOG EATERS OF THE NORTHWEST COAST.

EDITORIAL.

PREHISTORIC EGYPTIAN TOMBS.

We have in a previous article passed over the continents and given a general survey of the rude structures which are found intermingled with the more advanced, and recognized in them the survivals of prehistoric times. Considering these in their geographical situation, we have been able to trace the line of progress, which corresponds with the growth of architecture through the different ages.

One of the peculiarities of all these structures is that they date their beginnings back to prehistoric times, and we may trace their growth through the early historic periods and see by what stages they have reached the culminating points in later history. The same peculiarities are also found in the larger and more pretentious structures which have appeared in the regions where ancient history began, and the same work remains for us to do in connection with them. This work is, indeed, more difficult, for there are very few tokens in existence which we can take as the connecting links, and we have to go sometimes to great distances in order to find them, and then, by an arbitrary and somewhat uncertain method of comparison, trace out that which we may suppose was the order of progress with them. This is, however, our privilege, if we are careful enough to gather all the facts, and make these the basis of our conclusions, rather than any favorite theory or preconceived opinion. We maintain that the European continent furnishes many hints as to the prehistoric stages, but that the Asiatic provinces and the regions about the Mediterranean furnish the earliest historic data, while the various structures of Europe, Asia and America furnish the later-historic, the three continents combined containing a series complete from beginning to end.

Our first work is to carry history back to its earliest date, and study those structures which have been assigned to that period. This we are, fortunately, able to do, provided we keep pace with the discoveries which are being made so rapidly and if we are allowed to anticipate others which may be made.

A brief review of what has been accomplished and a sketch of the structures which have been disclosed will be appropriate. The discoveries in Egypt are very interesting, especially as they carry the records of this very ancient land back from the historic into the prehistoric period, and even bring us into contact with both the Bronze and the Stone Ages and show that great changes occurred not only in the customs of the people, but also in their art forms, and especially in their architectural

structures. These discoveries were accomplished through the explorations of the well-known archaeologists, Messrs. Petrie, De Morgan and Amelineau. These explorations were conducted at several points—Abydos, Negadah and El Kab. The result of the explorations has been not only to prove the actual truthfulness of monumental evidence, but also to illustrate the value and reliability of archaeological research.

Students of Egyptian history have hitherto had to depend upon the fragmentary accounts of Manetho, or the scraps of the Turin Papyrus, for their chronology of the earliest period in that land of mystery. Many have been tempted to doubt the correctness of the statements of Manetho as to the first four dynasties, holding that Menes himself was nothing more than a myth. The actual discovery of the tombs of Menes at Negadah and of other monarchs of the first two dynasties at Abydos has settled definitely the historicity of their reigns. But the explorers have been struck by the fact that the tomb of the first of these great kings displays a remarkable advancement in art, which must have been accompanied by no mean civilization. The most remarkable fact is that even these Pharaohs claimed supremacy over both Upper and Lower Egypt, proving that Menes was by no means the founder of the united kingdom. The discovery carries the date of the history of Egypt back at least several centuries, and forms the connecting link between history and that distant time, when civilization had its birth on Egyptian soil.

The researches at Abydos occupied two seasons, 1895-1896 and 1896-1897. The latter was contemporary with M. de Morgan's work at Negadah.

The result of the work at Abydos was the discovery of four royal tombs, in brickwork, similar to those at Negadah. They are situated two miles west of the great temple of Seti at Abydos. The western plain of Egypt at this point is a vast sandy desert, with small hills or undulations, and it is in these low hills that excavations have been successfully made.

The two largest tombs had at some former time been cleared of all small objects. One is square in shape, the other a longish rectangle, thirty by fifteen feet, and both are built of unbaked brick. Each one contained a funeral stele,* with the "ka" name or Banner name of its occupant. The tomb of Den, a little to the south of the above, gives no more information. Its dimensions are—Exterior, thirty-seven by twenty-six feet, interior, twenty-three by thirteen feet eight inches. It has very thick walls of unbaked brick. The floor of the chamber is composed of large tiles of red granite. The tomb chamber is entered by a stairway having two landings and a doorway, thirty-seven feet long, all included. A noble granite stele was inside the chamber, but was without inscription. Fortunately the king's banner name was found on a

* One of the steles is plain granite, and is covered with long inscriptions and has a resemblance to the steles of Chaldaea and other countries.

large mortar of grey granite, which the tomb-robbers had found too heavy for removal, and also on a few small objects now in the museum at Gizeh. Round this tomb, but outside it, were the chambers of offerings, with many hard stone jars and large earthenware jars, closed with cones of clay impressed by cylinders bearing the same name, or the names of other kings. This is most important as being a key to the order of succession of these early monarchs. Some of these seals bear the Ka name of Menes himself. It is evident that all the kings whose property or stores were buried with King Den were his predecessors. The impressions taken from these cylinder seals are sometimes very imperfect, and, therefore, difficult to read.

The fourth tomb is most singular in plan. There is a large central chamber, with small chambers on two sides for the funeral offerings, all of which open into the central one. The peculiarity is that the tomb itself is enclosed in an outer wall or casing of brick, leaving an interval of fifteen inches all round. The dimensions of the central chamber are about thirty-six by eighteen feet, and of the outer enclosing wall, forty-four by thirty-eight feet. A stele of limestone, of beautiful finish and style of execution, was found in the central chamber.

Round these four royal tombs are innumerable smaller tombs of the court functionaries and families attached to the royal house. These had not attracted the attention of the spoiler, and many small objects have been obtained from them, especially tablets of limestone, with rude characters inscribed on them, similar to those found in the tomb of Dja. Fragments of stone vases or jars have been recovered, notably one of alabaster, bearing a royal name, also found in the tomb of King Den. Another similar fragment bears the Ka name of Menes.

These four tombs all bear witness to having been thoroughly burnt out, but whether by Coptic plunderers, as M. Amelineau supposes, or by religious rite and custom, there is no evidence to show.

During the winter of 1871-72, M. Amelineau was occupied in the study of an enormous tomb in the same locality, namely, Abydos. It is a series of fifty-seven chambers around a central funeral hall. The front measures about thirty-five feet, the back twenty-one feet, but the length is no less than 172 feet.

There are some things which indicate that the Pharaonic race had its origin in Mesopotamia and brought thence the habit of constructing its royal tombs of brickwork, and their pattern and style. Also, beside the knowledge of metals, the treatment of stone for vases, jars, &c., and the introduction of cereals for cultivation and food purposes. On all these points, M. Lejeune comes to the same conclusions as those already presented in the name of M. de Morgan. M. Lejeune points out that the square tomb of Dja at Abydos, with its encircling wall, is a transition from the older royal tombs to the Mastabas of the old empire. It is an observation helpful in

the attempt to place these monarchs in rightful order of succession. He also points out that the use of Babylonian cylinders for sealing clay was superseded by the use of scarabs as early as the third and fourth dynasties. The cylinder lingered till the Middle Empire. Here again is a pregnant hint for chronologists. No scarabs are found in these earliest royal tombs, or in the tombs of their families or courtiers. One conclusion is important to notice, namely, that the hieroglyphics are indigenous to Egypt. The epigraphy begins with rudeness and imperfection under Menes, improves with Dja, and foreshadows its finer achievements in the relics of Ty.

Two tombs were found at Negadah, and five at Abydos. Of these, no less than five show signs of a practice of cremation, which is always characteristic of the Bronze Age. One at Negadah affords no evidence, and the latest in time, that of Ty, shows no trace of fire. Is there not here proof of some great change in custom, perhaps of religious belief? Out of these seven royal tombs, not one bears any trace of mummification—of that strange reverence and care for the body shown by later dynasties.

The mode of burial was in itself a proof of high antiquity. The tombs were never more than five feet long, showing that the bodies were not deposited at full length, but were curled up. In fact, several skeletons found were lying on their side, the knees drawn up to the head, the arms lying under the head.

Mr. Quibell's find consisted of numerous graves of the Neolithic native race, both before the dynastic times of the old kingdom and also of the same race in contact with their conquerors. The evidence in the shape of methods of burial and the objects found is the same as that presented by Dr. Petrie in his "Memior" on Negadah and Ballas, and by M. de Morgan in his "Royal Tomb of Negadah," and confirm M. de Morgan's conclusion, that the predecessors of the Pharaohs were a Neolithic white race akin to the Kabyles of North Africa.

These old kingdom structures are of brick, with outer paneled walls, and another wall enclosing the tomb itself. The contents are similar also. Diorite and alabaster bowls and pottery are like those already described, but from one tomb which had escaped the notice of tomb robbers a necklace of alternate gold and carnelian beads, and a gold bracelet of thick wire, were recovered. These Mastabas were tombs of nobles only, so the works of art have nothing special about them to call for notice. The tombs were built of rude bricks, so unevenly laid that it seemed as if these early masons knew nothing of a plumb line. The floor of the tombs of the kings was laid with heavy planks of sycamore wood, fastened together by strips of copper. The ornaments were sometimes crude, and at others well finished. One bone, carved into the shape of a hand, seemed comparable to the relics of European cave dwellers. There were stone knives and saws of remarkable execution.

for starting the excavations of this remarkable temple. Shortly before the excavations of this year were brought to an end, there were discovered, below the pavement of the temple, complex remains of still earlier buildings, which, it is expected, will be carefully examined in the next year.

MERENPTAH's mummy has been long sought for, particularly because he was understood to be the Pharaoh of the Exodus. The best Egyptologists do not believe that oppressor was drowned in the "Reedy Sea," for there is no positive assertion that he found a watery grave; nevertheless, as his body did not turn up, some literalists have claimed his drowning. Now Mr. Groff (an American), a keen student, who announced his belief that the so called mummy of Amenhotep IV. is that of Merenepthah, is supported by a number of scholars who have critically studied that dry and concrete evidence. Surely the inscriptions should settle the question.

THESES. This mine is inexhaustible. Near the temple of Amenhotep I., Mr. Newberry and Dr. Spiegelberg have made an interesting discovery, which Professor Muller describes quite minutely:

The chapel discovered close to the northeast side of the temple of Amenophis I. in Drah Abu Neggah turned out to be that of Queen Ahmes neferari, the wife of Ahmose I., the ancestor of the eighteenth dynasty who was worshipped especially in the twentieth dynasty. Then the heli El Barabi, near Gurna, was removed. In its lowest strata traces of a palace of the famous Queen Hat shepsut were found, foundation deposits and remnants of walls from bricks stamped with the name of Hat shepsut. Only a few pieces of plaster indicated the magnificent decoration of the walls. Evidently the building was torn down directly after the death of the queen (c. 1500 B. C.), when her nephew (or brother-in-law), Thutmose III., attained to the government, and satisfied his hatred of Hat shepsut by a fierce destruction of her buildings, or, at least, by erasing her name from the inscriptions. Ramses II. built on the ruins a sanctuary with stones taken from the temple of the same queen at Der el Bahri. The new temple was enlarged by Ramses III., but already in the twenty fourth dynasty it was so decayed that it began to be used as a quarry. In Greek and Roman time burials were made in it. The inscriptions discovered are few, but many of them coincide with hieratic inscriptions, giving the dates, etc., present great and of great interest.

THE ARCHITECTOLOGICAL SURVEY continues its good work of transcribing the texts and pictures of sculptures going to destruction. Yet Mr. Davies, in charge, discovers as well as transcribes. In the tomb of Ptah-hotep he has found some colored hieroglyphs of rare beauty and faithfulness, which will add just so much to the study of hieroglyphic paleography. And here I would like to introduce Mr. Griffith's fine quarto on "Hieroglyphs," beautifully illustrated, recently published by the Fund, which has just sent out the superb royal quarto "Der el-Bahari, Part III," scientifically treating the risen ruins of Queen Hatshepsut's great temple, but they will keep for my next Notes. I close with a cordial invitation to every reader of my Notes to write to me (525 Beacon Street, Boston) for our new illustrated circular.

BOOK REVIEWS

THE KINGDOM OF BABYLONIA AND ASSYRIA. By Morris Jastrow, Jr., Professor of Semitic Languages in the University of Pennsylvania. Boston: Ginn & Co., Publishers, The Athenaeum Press, 1902.

The Kingdom of Babylonia and Assyria is of great interest, both on its own account and on account of its relations and affinities with the religion of the Hebrews. Much in the latter can not be understood, except after study of the books of the Euphrates and Tigris. Few authors have attempted a history of the subject. Prof. Jastrow has translated and condensed a series of the Harvard lectures of 1897, and published a book which is presented in French by the Librairie Sirey and in English by the American Book Co. It is a volume of 200 pages, with 100 illustrations. It is a masterpiece of the art of condensing, and furnishes the reader with the substance of a full and complete history of the Kingdoms of Babylonia and Assyria. The volume of nearly 500 pages, which represents the original material, is now available by one of the foregoing publishers.

The author is one of the best qualified to originate as revealed by his own researches. Mr. Jastrow holds that the literature remains and the art of Babylonia and Assyria are of a high and beautiful production. The art of the Assyrians, which extends to the most so-called and artistic of the East, is not that of the Egyptian or of the Persian. This is shown in the art of the mixture of iron in Mesopotamia and the use of iron in the Assyrian art. For whose Sargon, Assurbanipal, the king of the Assyrians, and Ashurbanipal, the king of the Assyrians, are mentioned. Mr. Jastrow's book is a masterpiece of the art of condensing.

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THE STUDY OF MAN. By Alfred C. Haddon, M. A., D. Sc., M. R. I. A. Illustrated. New York: G. P. Putnam's Sons, London: Bliss, Sands & Co., 1898.

The first part of this book is occupied with a description of the physical characteristics of the different ancient races, hence the name, "The Study of Man," is given to it. Two-thirds of the book is devoted to the description of games and their distribution over the globe.

The first chapter treats of "measurements," the second of "hair and eye color," the third of "value of head form," the fourth of "the nose," the fifth of "the ethnography of the Dordogne district." The best point which the author has made is the one which illustrates the pertinacity of the race characteristics. This appears both among the Egyptians, the Jews, the Hindoos, and even among the English people.

Over 3000 years ago, the artists who depicted the Egyptian tombs, distinguished between four races. All the races can be recognized from the portraits at the present time. Among the Jews, there were in Bible times two types, a dark and a blonde; the same can be recognized now. Some think that the three different races, Hittites, Amorites and Semites, can be recognized in the modern Jews. The persistent types have remained for thousands of years. The races of Britain are more difficult to trace. A few skulls resemble the neolithic or long Barrow type; we may recognize in them the true autochthones, who are identical with the Iberians of Spain. What paleolithic man was like we have no positive information, but a gradually increasing amount of evidence tends to the conclusion that he belonged to the race of which the well-known crania of Neanderthal, Spy, etc., are examples. The immigrants who introduced bronze into Britain, usually buried their dead chieftains in round barrows and are called the "Round Barrow Race." In India, there are two main groups, the aboriginal population and the Aryan invaders. "Ethnologically speaking, India is more European and less Asiatic than Lapland."

The book is nicely bound and is well illustrated by maps and plates.

CHRISTIANITY, THE WORLD RELIGION. Lectures delivered in India and Japan by John Henry Barrows, D. D., president of the world's first Parliament of Religions, and Haskell lecturer on Comparative Religion in the University of Chicago. Chicago: A. C. McClurg & Co., 1897.

A WORLD PILGRIMAGE. By John Henry Barrows. Edited by Mary Eleanor Barrows. Second edition. Chicago: A. C. McClurg & Co., 1898.

The lectures of Dr. John Henry Barrows in India were epoch making. The subjects were as follows: 1, The world-wide aspect of Christianity; 2, The world-wide effects; 3, Christian theism as a basis of a universal religion; 4, The universal book; 5, The universal Man and Saviour; 6, the historic character of Christianity; 7, The World's Parliament of Religions.

The book entitled "A World Pilgrimage," edited by Mrs. Barrows, contains a description of the first impressions of German life, a description of Paris and a tour in France, a description of German universities, Germany's capital, of old England, of Turin, Milan, Florence, Athens, Constantinople, Smyrna, Ephesus, Jericho, Jerusalem, the Nile, Memphis, Bombay, Benares, Calcutta, Lucknow, Madras, Ceylon, the Chinese coast, Japan and the Japanese, all beautifully illustrated.

The two books are companions and should be read together; the one shows the thought which ruled the journey and which accomplished its mission; the second gives the incidents, settings and surroundings. Both are well printed, and the last one is beautifully illustrated.

THE LAND OF THE TEMPLE BUILDERS. By Walter Scott Perry. 127 illustrations, 249 pages. Prang Educational Company, Boston, New York and Chicago.

This is an elegant book and one which will especially please the art lover. The engravings are fine half-tone plates, taken from photo-

graphs, and represent the monuments of Egypt very beautifully. The letter press is also clear enough and definite enough to make it serve as a good guide book, the descriptions are short and to the point. We heartily commend this volume as very valuable.

THE CONSTRUCTION OF THE BIBLE. By Walter F. Adney, M. A. New York: Thomas Whittaker, 1878.

There are several very primitive streams that come down to us from the mountains of antiquity and combine to start the wheel of revelation. Three in particular may be mentioned, viz.: The primitive ballads, the primitive traditions and the primitive laws. The author has briefly, but very comprehensively treated of these sources, which constitute the feeders of this book so far as literature can be said to feed revelation. They are with archæology and the monuments the side lights.

THE HISTORY OF THE ENGLISH BIBLE STUDIED BY THE LIBRARY METHOD. By S. G. Ayres, F. D., and Charles F. Sitterly, Ph. D., with an introduction by Henry M. MacCracken, L. L. D. New York: Walter B. Ketchum.

This book is a catalogue of the names and dates of the illustrious writers from Coedmon down to the revisers of a few years ago, who have aided in preparing the way for the triumph of the English Bible and necessarily of the English language.

OUR EXCHANGES.

THE ANTHROPOLOGICAL JOURNAL OF AMERICA.—This valuable journal, which has been continued for a month by gentlemen connected with the Anthropological Society of Washington, is now under the control of the committee appointed by the American Association and is published at a quarterly volume for \$5.00 of the price \$18.00 per year. There is a manifest improvement both in the appearance and contents. We hope that it may have a permanent future and cooperate with other journals in bringing the department of anthropology into the prominence which it deserves.

ASSAY READER OF THE NEW YORK STATE INSTITUTE FOR 1878.—This contains articles on "The New Peoples," by Dr. F. F. Hamy; "Comparative Migration of the Pacific Ocean," by Prof. S. G. Olden; "Indic Settlements and Anthropological Studies in Central America," by Dr. Carl Sapper; "The Languages and Customs of Peru," by J. Walter Fewkes; "Race Characteristics," by Prof. W. M. Fisher; "Peru," and "The Japanese Nation," by Catherine G. Hubbard.

SCIENCE OF MAN.—An Australasian ethnological journal, edited by Dr. A. Carrillo, published as a monthly under the auspices of the Anthropological Society of Australasia, is now appearing. We welcome this new journal to the list of useful periodicals, for its great success, as usually conducted, as it is.

THE PUBLISHED MANUSCRIPTS OF THE NEBRASKA STATE HISTORICAL SOCIETY.—A translation of the Records, by Amos Barrett, the "First Territorial Legislature," by H. F. Bennett, and "Travels in Nebraska," by F. D. Shippey.



FROM A RAILWAY CARRIAGE

ROBERT LOUIS STEVENSON

Faster than faires, faster than witches,
 Bridges and houses, hedges and ditches,
 And charging along like troops in a battle,
 All through the meadows the horses and cattle,
 All of the sights in the land and the plain
 Fly as thick as driving rain,
 And ever again in the wink of an eye,
 Painted stations whistle by.

Here is a child who clatters and scra:bles,
 All by himself and gathering brambles;
 Here is a tramp who stands and gazes,
 And there is the green for stringing the daisies!
 Here is a cart rug away in the road
 Lumping along with man and load,
 And here is a mill and there is a river,
 Each a glimpse and gone forever!





PANEL IN THE NORTH ENTRANCE OF THE TEMPLE, REPRESENTING
GANAPATTI. HALABEDE, INDIA.



THE IDOL VENKAT.

The above figures of horses are prominent idols in India. They are evidently modern, as their costumes well show. The figure of the elephant upon the opposite side of the page is ancient as far as the art of prohibition times. It illustrates the superstition about the elephant as an object of worship. The contrast between the two are very instructive. Animal worship was one of the earliest forms of religion, but it has not ceased; for the worship of the elephant and the ox, and even representations of the horse, are common.

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NO. 4

SOUTHERN VISITS OF THE ESKIMO.*

BY W. M. BEAUCHAMP, D. D.

If the Northmen reached the shores of New England, as many think, it will scarcely be doubted that the Eskimo then resorted there, and that the later Indians at that time were at least few along our northern coast. The period referred to is about 600 years ago. Nearly four centuries since, other Europeans went along our eastern border, finding the later tribes in full possession. Had they in any way dispossessed a northern race?

The entire period in which our middle and eastern states were occupied by our so-called Indians, as permanent homes, has been much over estimated. The early Huron tradition was that they settled in their part of Canada between 1400 and 1450, coming there then with two of their nations, and archaeological evidence supports this statement. The other two nations came near the beginning of the seventeenth century. The Mohawks came to their valley late in the sixteenth century, and there were no villages there before them. Most of the Onondagas reached their historic territory about the same time, this was a time of general disturbance. There are earlier forts and villages, but no reasonable calculation will carry a settled occupation of New York back to A. D. 1000. This seems true of New England. Our colonists came there less than 300 years ago, when the Indian population had recently been large. The historic sites are well known, but how many are there back of these? Leaving out the small camps of wandering hunters and fishermen, are there enough to show a settled occupation of anything like 500 years?

For the State of New York the evidence is very clear that a very few centuries since, it had no settled inhabitants, as many parts have few or none now. It was a land where men came to hunt and fish, but where, as a rule, they did not dwell. Studying the traces of both visitors and dwellers for many years, I have been interested in inquiring whence some of these came. In many cases, their routes, character and haunts are

*Read at the Brooklyn meeting of the A. A. S., August, 1884.



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It is well known, also, that some writers have thought that the Hurons and Iroquois were kindred to the Eskimo, at least of mixed races. I hardly incline to this opinion, but have not examined it recently, and yet there is a suggestive resemblance between a few Iroquois articles and those farther north. Beyond stone axes or chisels, and a few rude implements, the Iroquois wrought less in stone than some other nations. They made fine flint arrows, and yet but few of these. Their favorite materials were wood, clay, bone and horn. Even after the year 1700, they still used the one-sided bone harpoon seen in all northern collections. Sometimes the bone and horn carvings of that date are quite artistic.

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A belt of porcupine quills in the Canadian Institute, suggests what might have been the primitive Iroquois belt. The moose leather, or rather quill belt, in the Point Barrow Eskimo collection is still more like the Iroquois belt of wampum, and may well illustrate the primitive one of hard quills. Hiawatha called down the wampum belt from the sky, says the legend, and made the first belts and strings of its quills.

The beaver wooden spoons still to be seen in Iroquois houses, are much like those of the Eskimo, nor does the form differ much when these are made of horn, metal or bone. All such present

resemblances may or may not indicate early contact, but the contact itself is undoubted, whether of trade or travel.

There are earlier articles in Canada and New York, not made or used by any branch of the Huron Iroquois family. A stone scraper or drill is never found on an Iroquois site, but scrapers are abundant in some parts of New York. The Iroquois never used soapstone vessels, nor had some of our early visitors any of these, yet fragments of shallow soapstone vessels are frequent along some of our larger rivers, but never far from water. I simply call attention to their situation and resemblance to Eskimo forms. Most of these were probably of southern origin, as I do not recall them in Canada.

The articles which seem most clearly indicative of Eskimo visits, rather than mere contact, are two kinds of slate knives. One is usually a large form, though not always, and corresponds with the Eskimo woman's knife. Among that people it is now usually of iron, set in the groove of a long, straight handle. Formerly they were of slate, and these are found yet. Those which occur in Canada, New England and New York, are of thin, polished, half-circular pieces of flat slate, sharpened around the convex edge. The straight edge is either of the thickness of the rest, or forms a straight and thickened back, like some kinds of combs; I have seen but one of these west of the State of New York, and here they are an early implement.

The other form has a still narrower local range, as far as known. I have seen many in Canada, and they occur in some parts of New York, but not in the western part, nor south of Lake Ontario. They are also found along Lake Champlain, but not in the Mohawk valley, except very rarely on its uppermost waters. They seem most common near Oneida and Onondaga lakes, and are much like the double-edged slate knives once used by the Point Barrow Eskimo. Generally they are sharp on both sides; rarely, on but one; and they have a tapering base, with or without notches for attaching them to a handle. Usually they have also a sharp barb on each side. They may be broad, or somewhat narrow, long or short, and the slate varies in color. One found at Oneida lake is especially fine, but quite different from the typical form.

Locally, they are termed slate arrows, but I have always thought them knives used for cleaning fish. As a rule, they are found near water, and seldom on spots long occupied. I have figured up all that I have seen or known, and there are: From Canada, 24; from Lake Champlain, 7, and from the rest of New York, 62. Their rarity would argue their use by very small parties of wandering men, and their uniform contact with water that these men were fishermen, more than hunters. Their range points them out as essentially a northern implement.

BRITISH STONE CIRCLES.

BY A. L. LEWIS, F. C. A.

Respecting the second class of circles mentioned in my former article—those placed round the bases of sepulchral tumuli there is not much to be said. Where the enclosed tumulus, or traces of it remain, their object is clear; there may be instances, though I do not know of any, in which the tumulus has been carted away and spread over the fields, and the surrounding stones have been left, and in such a case, there might be a doubt which the circle belonged to, but such



STONE CIRCLE WITH ROOF OF TURF.

instances, if they exist at all, would in no way affect the conclusions already arrived at.

The first class of circles mentioned, that circles, deserves some attention on its own account. The prehistoric British dwellings were in all probability mostly circular, as were those of Italy, the Swiss lake dwellings, and Gaul, but the materials of which they were constructed differed with the locality. Where stone was easy to obtain it was used, but where it was not, wattle (sticks and clay) or rushes, skins, or other things were doubtless used instead. On some of the Kentish commons groups of small pits still remain which are believed to be the remains of British villages, but the superstructures, which were probably of some of the lighter materials mentioned, have long perished. In Scotland, Ireland, Wales, and Devonshire and

Cornwall, on the contrary, stone was used, though without mortar, and many ruins and a few complete, or nearly complete, structures remain. It is not very easy to trace much progressive development in the remains that are left to us, though the brochs of the north of Scotland, and some of the oratories and other buildings in the west of Ireland, are in every respect finer and more important structures than the Beehive huts of Cornwall, and this is probably due to the fact that the former districts did not come under that Roman influence which in other parts of Britain led the inhabitants to give up their old style of habitation, and adopt the more elaborate methods and more convenient arrangements of the Roman builders, and that the older methods were somewhat more fully developed as time went on in the districts which the Romans did not occupy.

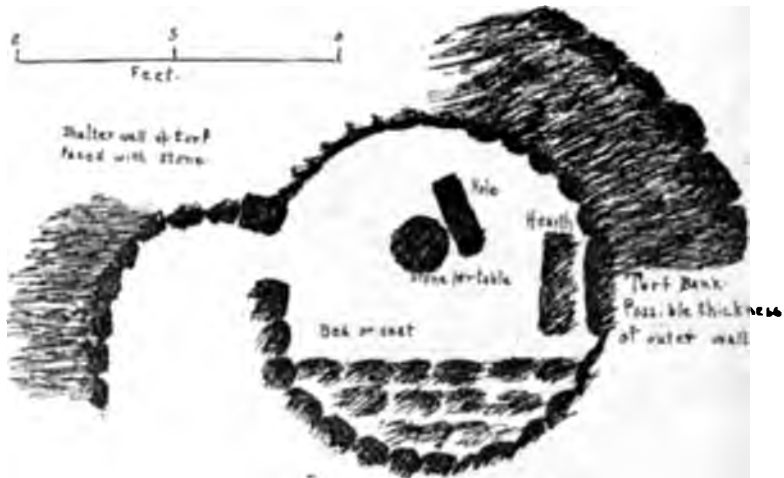


FIG. 10. *Stone Hut Foundation*
 STONE HUT FOUNDATION.

Many of the circular stone hut foundations on Dartmoor have recently been explored. Their interior diameters vary from six to twenty-two feet, and in some cases the walls were never more than about three feet high, the conical roof, which rested on them, being probably of poles covered with turf or other material, this is proved by the fact that when all the fallen stones were replaced, the wall was complete to that height and no higher; it being also certain that no stones had been removed. Those circles contained a slightly elevated platform on one side, suitable for a seat by day and a bed place by night, a hearth, a hole in the ground filled with ashes, and in some cases having a large pot in it, which apparently had been used for cooking by the hot stone method, and a stone which seemed to have served as a sort of table. The entrances

were between two stones, 2 $\frac{1}{4}$ to 3 feet high, with a lintel laid across, and were usually paved, and in some cases were protected from the wind by a wall outside them. Only a few pieces of worked flint have been found in these hut circles.

In Cornwall, on the other hand, the huts often had a stone roof, formed of courses gradually narrowed until they met. In some cases, as at Carnbrae, naturally placed boulders were utilized as parts of the walls. There are also in the Lands End district some narrow underground passages with chambers opening out of them, which appear to have been used as dwellings. One of these was described by the late W. C. Borlase, with illustrations, in the Proceedings of the Society of Antiquaries, November 29, 1868. The total length of the passage was eighty or ninety feet, a circular, domed chamber, about sixteen feet in diameter and twelve feet high, was joined to it by another short passage. Fragments of pottery and an iron spear head were found in the long gallery.

STONE CIRCLES AND UPRIGHT STONES IN NEW MEXICO.

BY A. M. SWAN.

I have seen no mention, in any publication, of existing circles and lines of upright stones in New Mexico, and, therefore, conclude that their existence has escaped the eye of every scientist who has visited this country. There are two localities where very remarkable systems of upright stones may be seen, each of which appears to belong to a very early period.

One of these systems was discovered by Major George H. Pradt, while making a Government survey along the east line of the Socorro grant in Socorro county, New Mexico. Major Pradt has long been interested in archæology of this country, and is a close observer. He describes the stone circles as located "on a low hill, an extension of the north end of the Oscura range." The inner circle was about thirty feet in diameter. The stones stood three or more feet above the ground, and from one to four feet apart. Some of them had fallen down. In the centre of this circle were three upright stones, and one that had fallen, forming a square. One broad stone had partly fallen, and without doubt had covered the four stones, forming a table or altar. Around this inner circle was an outer circle, many of the stones still standing. There were many petrified trees, some of great size, scattered all around, lying on the same surface in which the upright stones were imbedded.

The second system of upright stones was discovered by Colonel Walter G. Mirmon, while running the first correction line of the Navajo Reservation survey. This field is located about thirty miles northwest of Fort Defiance, and two miles

east of the point where the correction line crosses Cañon de Chelly, in the Navajo Reservation. Colonel Marmon describes this field as consisting of long lines of upright stones in parallel rows. The stones are about three feet high, and from five to ten feet apart. They stand in a dense pine forest, thus not easily attracting attention.

Near both of these systems of upright stones are extensive ruins that have not the characteristics of Pueblo remains—using the term, in a racial sense. These remains are, I think, worthy of investigation, especially as they bear so great resemblance to the stone circles of the old world.

Albuquerque, New Mexico.

A PREHISTORIC TRAGEDY IN THE FOREST OF WASHINGTON.

BY ALICE D. BAUKHAGE.

It was Sunday in the logging camp, and the woods that all week long had echoed the hearty voices of the men, the monotonous sound of the incessant saw and the frequent thunderous crash of the falling trees, were as still as though they were indeed God's temples.

The men had dispersed to their homes in the neighboring town, or lounged in slumberous ease on their blankets in the sunny clearing around the camp. I, a curious visitor in their midst, lay full length upon an ancient trunk through whose dead heart a younger giant grew, and beneath whose rotting base I, yesterday, had found three skulls: two, man and woman, and the third a beast, the latter cloven with a hatchet made of stone.

Musing on this old tragedy—old before our age began—I lay and listened to the sounds that nature makes to cheer her solitudes. In this green nave those sounds were few, or merged with the low insistent murmur of the river that swept swiftly between the narrow banks from its source among the foothills to the sea. Wishkah, the accursed, the Indians call it, and for generations have shunned its neighborhood, though its bottom lands afford the best of hunting grounds and its clear waters teem with mountain trout. Its voice has witchery in it to charm their children, they affirm, and hint at its dark deeds, as though it were a cruel ogre whom they scarcely dared to name for fear of vengeance. The bravest Siwash among them would not have dared to lie, as I was lying, on its banks; but in me, bold worldling that I was, there dwelt no thought of danger. Above me the green arch of spruce and hemlock, beneath me the soft carpet of moss and lichen, and about me the sweet incense of the woods, that, with the song of wind and river, charmed my soul and tuned it to accord with nature.

Back through the years, the long, dim vista of unnumbered years, my mind went groping: back into the indefinite past,

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A NEW BOOK BY THE DIRECTOR OF THE UNITED STATES BUREAU OF BUREAU OF BUREAU AND SOME OF THE RESEARCHERS OF THE UNITED STATES DEPARTMENT OF SCIENCE

TRUTH AND ERROR

OR

The Science of Intellection.

By **LAW POWELL**

Professor of Psychology, University of California

Important to Psychologists and Students of the Philosophy of Science

Truth and Error, or the Science of Intellection, is a book of great interest and value to all who are concerned with the study of the human mind. It is a book that should be read by all who are interested in the philosophy of science, and by all who are interested in the psychology of the human mind. The book is written in a clear and concise manner, and is easy to read. It is a book that should be read by all who are interested in the human mind, and by all who are interested in the philosophy of science.



PANEL IN THE NORTH ENTRANCE OF THE TEMPLE, REPRESENTING GANAPATI. HALABEDE, INDIA.



THE IDOL VENKAT.

The above figures of horses are prominent idols in India. They are evidently modern, as their costumes would show. The figure of the elephant upon the opposite side of the page is ancient and a relic of prehistoric times. It illustrates the superstition about the elephant as an object of worship. The contrast between the two are very instructive. Animal worship was one of the earliest forms of religion, but it has not ceased. For the worship of the elephant and the bull and even representations of the horse are

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The broad wooden spoons still found in Iroquois houses, are much like those of the Eskimo, nor does the form differ much when these are made of horn, metal or bone. All such present

resemblances may or may not indicate early contact, but the contact itself is undoubted, whether of trade or travel.

There are earlier articles in Canada and New York, not made or used by any branch of the Huron-Iroquois family. A stone scraper or drill is never found on an Iroquois site, but scrapers are abundant in some parts of New York. The Iroquois never used soapstone vessels, nor had some of our early visitors any of these; yet fragments of shallow soapstone vessels are frequent along some of our larger rivers, but never far from water. I simply call attention to their situation and resemblance to Eskimo forms. Most of these were probably of southern origin, as I do not recall them in Canada.

The articles which seem most clearly indicative of Eskimo visits, rather than mere contact, are two kinds of slate knives. One is usually a large form, though not always, and corresponds with the Eskimo woman's knife. Among that people it is now usually of iron, set in the groove of a long, straight handle. Formerly they were of slate, and these are found yet. Those which occur in Canada, New England and New York, are of thin, polished, half-circular pieces of flat slate, sharpened around the convex edge. The straight edge is either of the thickness of the rest, or forms a straight and thickened back, like some kinds of combs; I have seen but one of these west of the State of New York, and here they are an early implement.

The other form has a still narrower local range, as far as known. I have seen many in Canada, and they occur in some parts of New York, but not in the western part, nor south of Lake Ontario. They are also found along Lake Champlain, but not in the Mohawk valley, except very rarely on its uppermost waters. They seem most common near Oneida and Onondaga lakes, and are much like the double-edged slate knives once used by the Point Barrow Eskimo. Generally they are sharp on both sides; rarely, on but one; and they have a tapering base, with or without notches for attaching them to a handle. Usually they have also a sharp barb on each side. They may be broad, or somewhat narrow; long or short, and the slate varies in color. One found at Oneida lake is especially fine, but quite different from the typical form.

Locally, they are termed slate arrows, but I have always thought them knives used for cleaning fish. As a rule, they are found near water, and seldom on spots long occupied. I have figured up all that I have seen or known, and there are: From Canada, 24; from Lake Champlain, 7, and from the rest of New York, 62. Their rarity would argue their use by very small parties of wandering men, and their uniform contact with water that these men were fishermen, more than hunters. Their long points them out as essentially a northern implement.

BRITISH STONE CIRCLES.

BY A. L. LEWIS, F. C. A.

Respecting the second class of circles mentioned in my former article—those placed round the bases of sepulchral tumuli there is not much to be said. Where the enclosed tumulus, or traces of it remain, their object is clear; there may be instances, though I do not know of any, in which the tumulus has been carted away and spread over the fields, and the surrounding stones have been left, and in such a case, there might be a doubt which class the circle belonged to, but such

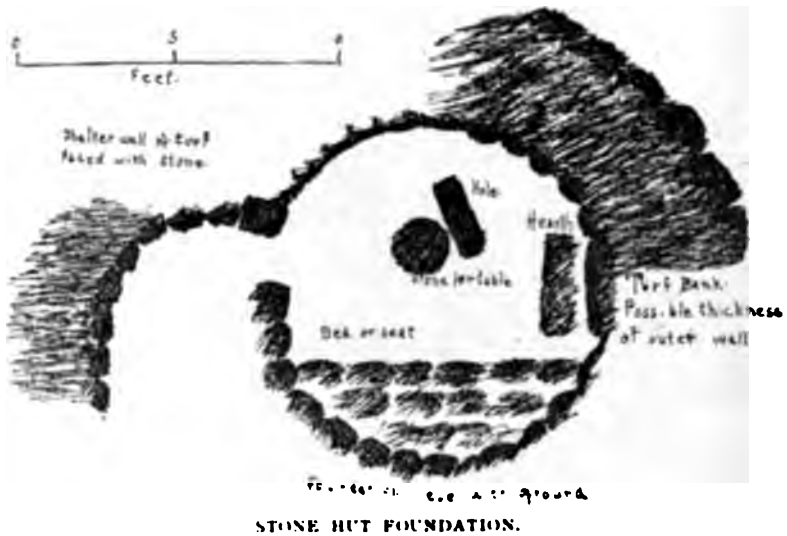


STONE CIRCLE WITH ROOF OF TURF

instances, if they exist at all, would in no way affect the conclusions already arrived at.

The first class of circles mentioned—that circles—deserves some attention on its own account. The prehistoric British dwellings were in all probability mostly circular, as were those of Italy, the Swiss like dwellings, and Gaul, but the materials of which they were constructed differed with the locality. Where stone was easy to obtain, it was used, but where it was not, wattle (sticks and clay) houses, skins, or other things were doubtless used instead. On some of the Kentish commons groups of small pits still remain which are believed to be the remains of British villages, but the superstructures, which were probably of some of the lighter materials mentioned, have long perished. In Scotland, Ireland, Wales, and Devonshire and

Cornwall, on the contrary, stone was used, though without mortar, and many ruins and a few complete, or nearly complete, structures remain. It is not very easy to trace much progressive development in the remains that are left to us, though the brochs of the north of Scotland, and some of the oratories and other buildings in the west of Ireland, are in every respect finer and more important structures than the Beehive huts of Cornwall, and this is probably due to the fact that the former districts did not come under that Roman influence which in other parts of Britain led the inhabitants to give up their old style of habitation, and adopt the more elaborate methods and more convenient arrangements of the Roman builders, and that the older methods were somewhat more fully developed as time went on in the districts which the Romans did not occupy.



Many of the circular stone hut foundations on Dartmoor have recently been explored. Their interior diameters vary from six to twenty-two feet, and in some cases the walls were never more than about three feet high, the conical roof, which rested on them, being probably of poles covered with turf or other material; this is proved by the fact that when all the fallen stones were replaced, the wall was complete to that height and no higher; it being also certain that no stones had been removed. Those circles contained a slightly elevated platform on one side, suitable for a seat by day and a bed place by night; a hearth, a hole in the ground filled with ashes, and in some cases having a large pot in it, which apparently had been used for cooking by the hot stone method, and a stone which seemed to have served as a sort of table. The entrances

were between two stones, 2½ to 3 feet high, with a lintel laid across, and were usually paved, and in some cases were protected from the wind by a wall outside them. Only a few pieces of worked flint have been found in these hut circles.

In Cornwall, on the other hand, the huts often had a stone roof, formed of courses gradually narrowed until they met. In some cases, as at Carnbrae, naturally placed boulders were utilized as parts of the walls. There are also in the Lands End district some narrow underground passages with chambers opening out of them, which appear to have been used as dwellings. One of these was described by the late W. C. Borlase, with illustrations, in the *Proceedings of the Society of Antiquaries*, November 20, 1868. The total length of the passage was eighty or ninety feet; a circular, domed chamber, about sixteen feet in diameter and twelve feet high, was joined to it by another short passage. Fragments of pottery and an iron spear head were found in the long gallery.

STONE CIRCLES AND UPRIGHT STONES IN NEW MEXICO.

BY A. M. SWAN.

I have seen no mention, in any publication, of existing circles and lines of upright stones in New Mexico, and, therefore, conclude that their existence has escaped the eye of every scientist who has visited this country. There are two localities where very remarkable systems of upright stones may be seen, each of which appears to belong to a very early period.

One of these systems was discovered by Major George H. Pradt, while making a Government survey along the east line of the Socorro grant in Socorro county, New Mexico. Major Pradt has long been interested in archæology of this country, and is a close observer. He describes the stone circles as located "on a low hill, an extension of the north end of the Oscura range." The inner circle was about thirty feet in diameter. The stones stood three or more feet above the ground, and from one to four feet apart. Some of them had fallen down. In the centre of this circle were three upright stones, and one that had fallen, forming a square. One broad stone had partly fallen, and without doubt had covered the four stones, forming a table or altar. Around this inner circle was an outer circle, many of the stones still standing. There were many petrified trees, some of great size, scattered around, lying on the same surface in which the upright stones were imbedded.

The second system of upright stones was discovered by Colonel Walter G. Marmon, while running the first correction line of the Navajo Reservation survey. This field is located about thirty miles northwest of Fort Defiance, and two miles

east of the point where the correction line crosses Cañon de Chelly, in the Navajo Reservation. Colonel Marmon describes this field as consisting of long lines of upright stones in parallel rows. The stones are about three feet high, and from five to ten feet apart. They stand in a dense pine forest, thus not easily attracting attention.

Near both of these systems of upright stones are extensive ruins that have not the characteristics of Pueblo remains using the term, in a racial sense. These remains are, I think, worthy of investigation, especially as they bear so great resemblance to the stone circles of the old world.

Albuquerque, New Mexico.

A PREHISTORIC TRAGEDY IN THE FOREST OF WASHINGTON.

BY ALICE D. BAUKHAGE.

It was Sunday in the logging camp, and the woods that all week long had echoed the hearty voices of the men, the monotonous sound of the incessant saw and the frequent thunderous crash of the falling trees, were as still as though they were indeed God's temples.

The men had dispersed to their homes in the neighboring town, or lounged in slumberous ease on their blankets in the sunny clearing around the camp. I, a curious visitor in their midst, lay full length upon an ancient trunk through whose dead heart a younger giant grew, and beneath whose rotting base I, yesterday, had found three skulls: two, man and woman, and the third a beast, the latter cloven with a hatchet made of stone.

Musing on this old tragedy - old before our age began - I lay and listened to the sounds that nature makes to cheer her solitudes. In this green nave those sounds were few, or merged with the low insistent murmur of the river that swept swiftly between the narrow banks from its source among the foothills to the sea. Wishkah, the accursed, the Indians call it, and for generations have shunned its neighborhood, though its bottom lands afford the best of hunting grounds and its clear waters teem with mountain trout. Its voice has witchery in it to charm their children, they affirm, and hint at its dark deeds, as though it were a cruel ogre whom they scarcely dared to name for fear of vengeance. The bravest Siwash among them would not have dared to lie, as I was lying, on its banks; but in me, bold worldling that I was, there dwelt no thought of danger. Above me the green arch of spruce and hemlock, beneath me the soft carpet of moss and lichen, and about me the sweet incense of the woods, that, with the song of wind and river, charmed my soul and tuned it to accord with nature.

Back through the years, the long, dim vista of unnumbered years, my mind went groping; back into the indefinite past,

Eternity itself seems hardly vaster, till it reached the time when men were young upon the earth, and old and mouldering trunks like this prone giant stood upright to the sun and man and beast strove face to face, foes then as now, but then more equal ones. In that dim time beneath this very hemlock dwelt a man and woman, strong, wild and fierce, perhaps, but still man and woman. By day they dwelt in happiness, content to live as God had made them, with no thought of care or sorrow for the morrow, or for the night though it often brought them danger. For at night the beast came forth from out its lair and disputed with the man for sovereignty, and when he came, the man arose and fought with him, opposing to his cruel teeth and claws the flinty weapon he had laborously wrought to slay with. And many times the man prevailed and drove the beast cowed and disheartened back into the forest. But at last there came a night when the man slept deep and did not hear the silent footfall of the beast. Nearer and nearer crept the stealthy one. A low growl and a woman's scream awoke the sleeper, and in the darkness thick about him he grasped the axe, and with one mighty blow flung it deep into the great beast's brain, who, ere he fell, caught at the man's bare throat and crushed it.

When morning broke they lay there, the man, the woman, and the beast, and all the woods were still. At noontime the sun cast one brief glance upon their quiet forms and then the shadows came, filling the empty spaces of the wood and covered them. A few leaves fluttered down and fell upon their upturned faces. The hours passed on and morning broke again, and still again, again and again, until the days had grown to years, the years to centuries, all unrecorded save by the circles in the ancient trunk so merged now with decay as to be past reckoning. At length there came a day when the great tree, because the fulfillment of its time had come, shivered, from crest to rotted base, and fell. Relentlessly it tore its way through the lesser tree-tops, crushing them with its mighty weight as it crushed the skeletons, long since covered by the refuse of the years, and there it lay while other years came, did their work, and passed.

On a certain time a seed pod fell and rested in a cleft in its rough surface, where it burst and grew, and the years passing by beheld it a sapling, a tree and a second forest giant. Meantime, beyond the confines of the wood

Is heard the tread of pioneers
Of nations yet to be,
The first low wash of waves where soon
Shall rise a human sea.

AGRICULTURE AMONG THE PUEBLOS AND CLIFF DWELLERS.

BY STEPHEN D. PEET, PH. D.

There is one question connected with the Cliff-Dwellers, which to some has been difficult to answer, namely, how does it happen that they, in the midst of their strange surroundings, should be so superior to the wild tribes which have for many generations infested the region? This can not be ascribed to any natural superiority, for, so far as known, they were quiet people, and somewhat sluggish in their habits, and manifested much less energy and strength than the people they considered their enemies. Some have accounted for it on the ground that there was here an inherited civilization, one which had been introduced from the regions far to the southwest—Mexico, or possibly Nicaragua, the signs of which are to be seen in the ancient ruins at Quemada and the Casas Grandes in Sonora.

The key to the problem, however, is undoubtedly furnished in the fact that the Pueblos and the Cliff-Dwellers alike were, and had been from time immemorial, agriculturists, and this led them to a sedentary life which would naturally result in their continued improvement, and so produced the same contrast between them and their neighbors that exists elsewhere between the civilized and the uncivilized.

It is certain that they were so thoroughly given to agriculture, that they continued it under the most unfavorable circumstances, even when driven to the greatest straits from the constant presence of an enemy which threatened to attack their homes, and were often successful in destroying their crops and so depriving them of their common subsistence. In this they differed from the wild tribes, who were hunters and had no permanent dwelling place, but were nomads and wandered from place to place, according as the spirit moved them. This peculiarity was noticed by the Spaniards when they first reached the region, although at that time the contrast between them and the wild tribes did not strike them as forcibly as it has others, for they came from a region where a sedentary life was common and agriculture was the rule, rather than the exception. To the American explorers, it was more of a surprise, for they were accustomed to the ways of the hunters and considered all of the aborigines in the light of nomades who occasionally resorted to agriculture as merely incidental to the hunter life.

The modern archæologists understand that this furnishes the clew to the whole problem of society as it existed among both

the Pueblos and the Cliff-Dwellers, and fully accounts for the difference between them and the people who were besieging them. It is well known that the three stages of savagery, barbarism and civilization are attended by different modes of life and different means of subsistence, and that the savages are generally nomads, that agriculture is distinctive of barbarism, and that dwelling in cities is frequently a sign of civilization.

The fact that the Pueblos were practicing agriculture raises them above others, one whole stage in the scale of human progress. It is not often, however, that the lines are so strongly drawn and the contrast so marked as here. It is like the mesas which rise above the level of the valley abruptly, and upon the mesas the terraced houses are sometimes conspicuous from their very height; so the practice of agriculture raises the people above the mass of humanity which was still held in the low plains of savagery, the very houses which were erected being in contrast to the huts which savages occupied.

Some maintain that whatever civilization there was in America in prehistoric times was owing to agriculture, and the change from the nomadic state to a sedentary life. This position was held by Mr. Morgan. It was also the opinion of Baron von Humboldt, who speaks of the value of agriculture in maintaining the original population and keeping it up to a high stage of development, in the following words:

It at the commencement of the empire of the Incas of Peru in the cordilleras of Quito and the elevated plains of New Granada and in the Mexican Andes, the population has maintained itself and in some points even considerably increased, the cause must be sought in the fact that hundreds of years before the Spanish Conquest, the population consisted of agricultural tribes. In general views of the manifold grades of intelligence manifested by those who are so vaguely and often improperly denominated savages, the human nation is carried back to the present to an indefinite past in which the greater part of the human race lived in the same condition, but even in the savage state, we are struck by signs of spontaneous awakening in the social power, in the knowledge of several languages and the antiquity of their existence, and in traditions that boldly rise to the origin of the human race and its abode. The borders which occupy the country between New Mexico and the river Gila especially attract our attention, because they are scattered along the line of march which, in the period from the sixth to the twelfth centuries, the various nations known as the Toltecs, the Quiches, Nahuas, and Ytecs proceeded, when they traversed and peopled northern and central Mexico.

Mexico and portions of the architectural and industrial skill of the nations that have since attained a high degree of culture. The various states and provinces of the American states are pointed out by means of historical paintings and ancient traditions, and the large, many-storied houses, built of the same material, suggest as to the mode of building in use among the southern tribes.

In the course of the American migrations of nations from north to south, might not some of the best be traced to the north of the Gila? All the countries mentioned with the most probability as regarding the sources of a certain amount of the material content of the original seats of wandering nations have been the theatre of history and civilisation. Want of faith in finding a satisfactory solution of the problem must nevertheless not be allowed to lessen our diligence of settlements to our inquiries. The far more

extensive and flatter eastern regions, though covered with a net work of rivers, was inhabited only by savage tribes, isolated and scarcely capable of any co-operation for a warlike undertaking, and maintaining themselves wholly by hunting and fishing.

I. The point which interests us, is that agriculture was so wide-spread among the Pueblos. This was the one thing which made the difference between them and the wild tribes which have continued to inhabit the same region. This is illustrated by the facts which have been made known by the different explorers who passed through the country when the aborigines of both classes were occupying the region, and when they were left to their natural tastes, without the restraining influence of any army or the presence of any civilized people.

If we begin with the regions situated on the Rio Grande, and pass over the different districts towards the west and north, and take the testimony of the explorers, we shall see how extensive agriculture was in prehistoric times and also see the contrast between the Pueblos and Cliff Dwellers and the hordes which invaded their territory. We shall not run amiss if we take the testimony of any of those who belonged to the exploring expeditions, though some are more explicit in their account of agriculture than others. We shall, therefore, confine ourselves to such accounts. Mr. B. Mollhausen, who accompanied the expedition under Lieutenant Whipple, has given some excellent descriptions of the Pueblos and the deserted villages which he saw, but he has also spoken of the practice of agriculture as almost universal. He first visited San Domingo and the Rio Grande, and there saw the method of cultivating the soil by irrigation. He says:

The neighborhood of settlements and cultivated lands was recognizable long before reaching the place, by the canals and ditches which intersected the new lands and were designed to carry the water of the river to the plants and seeds, for without such measures, it would be scarcely possible to raise the most scanty harvest under the arid climate of New Mexico. Flocks of marsh and water birds animate the fields thus irrigated, and under the shelter of the close stalks of Indian corn, some of the sportsmen get effective shots among them.

The valley of the Rio Grande is closely cultivated in many parts, from the mouth up as far as Taos. The inexhaustible wealth of nature, which renders the colonization of America so easy, is not in so high a degree characteristic of New Mexico, and in some places there are great deficiencies, but the fruitful valleys of the Rio Grande and its tributaries, as well as the mountains rich in iron, coal and gold, are profuse enough in their gifts, not only to maintain but to enrich whole nations and carry them to the highest point of civilization.

The Zuni Indians are more favorably disposed to civilization than those of any other Pueblo. Besides agriculture, they, or rather their women, are skilful in the art of weaving and, like the Navajos, manufacture durable blankets. The pueblo, with its terraced houses, elevated streets, numerous holders and the figures climbing up and down them, tame turkeys and eagles sitting upon the walls, presented an interesting picture, and still more attractive when we looked back upon the wide plain, stripped of its harvest and with a background of grand masses of rock and blue distant mountains.

In speaking of the Colorado Chiquito, Mr. Mollhausen says:

The fertile soil, quite capable of cultivation, lay on both sides of the river, and more and more ruins, in such quantities as to afford ground for the belief that a wandering race of a remote antiquity had possessed extensive settlements in this valley, where we found every requisite for human subsistence, pure wholesome water and fruitful soil.

The ruins described by Captain Sitgreaves lie at a short distance. They are obviously the remains of extensive settlements that have lain scattered over an area of eight to ten miles about the valley, and which must have been at one time a thickly peopled district. That no water is found near the ruins which lie farthest from the river, is considered sufficient to account for their abandonment. It is, however, scarcely conceivable that in the vicinity of a river that is never dry, there could be a want of water, or that the industrious people could allow their reservoirs to become choked. It is more probable that a general emigration under the repeated attacks of Indian tribes occasioned the abandonment of these numerous towns. It must strike everyone that the more southerly ruins manifest greater culture and experience in their builders, and also indicate that their towns and settlements were more thickly populated and inhabited for a long time.

Mr. Brackenridge, who visited the mounds and monuments opposite St. Louis, called Cahokia Mounds, and gave the earliest description of them, has also furnished a description of the pueblo tribes situated in New Mexico, and especially of their buildings, which he called "castles," and of their agricultural habits. He says:

Their habits and character were entirely the reverse of a migratory people. These habits fixed them permanently in the spots which they occupied. There never was a people less fitted for migration than the occupants of the Castle Cibola. It will strike most readers as a singular fact that there should be found in America a land of "castles," with successive platforms like those of Babylon, and rising to the height of seven stories, like the pagodas of China. They were not permanent works, like those of the Rhine and the Danube, nor were they the abodes of feudal chiefs, on the contrary, they were places of defense occupied by an industrial population, ruled by councils of elders, and exposed to the war-like depredations of the nomadic savage tribes which lived on the buffaloes which swarmed in vast numbers in the regions of the north.

There were no divisions of streets, but the houses were raised one above the other in stories or stages, the roofs projecting over those below, forming sheltered galleries with doors entering into separate apartments. The castles rose from three to seven stories on a solid basement ten feet in height to which there was no entrance, thus serving for defense against their enemies. A fertile valley capable of being irrigated was chosen for the site of the castles, where they cultivated squashes, beans and also a little cotton for the domestic tribes. Their canals for irrigation and supply of water were of great extent. No domestic animals were used.

It does not appear that the towns were dependent upon any central government or in any way connected by leagues, the government was uniformly one which was confined to villages or castles.

The following extract from Mr. Bartlett's work will give us an idea of the ruins and villages on the Gila and the Salinas, as well as the Pima villages which were visited by Coronado, as well as the irrigating contrivances which prevailed here. He says:

In every direction, as far as the eye can reach, are seen heaps of ruined edifices with no portion of their walls standing. One thing is evident, and

that is, that at some former period, the valley of the Gila, from this ruin to the western extremity of the rich bottom land now occupied by the Pimas and Maricopas, as well as the broad valley of the Salinas, for upwards of forty miles, was densely populated; the ruined buildings, the irrigating canals—some of them twenty feet wide, the vast quantities of pottery, show that, while they were an agricultural people, they were much superior to the present uncivilized tribes. Their civilization extended far beyond the district named. From information given by Leroux, it appears that ruins of the same sort exist on the San Francisco or Verde River.

There is one fact which I regard as of importance in forming a conjecture about this people. This is the cultivation of the cotton plant and the use of cotton in the domestic fabrics. This plant was not known to the Northwest Indians, and is nowhere indigenous beyond the tropics, whence they derived it. Was it from Mexico or Peru? There was no intercourse between this region and Mexico. This fact has the appearance of pointing to an Asiatic origin, the strongest argument being that the earliest races of America are uniformly found on the western side of the Continent, and not on the Atlantic side.

Major Powell draws a distinction between the tribes, such as the Utes, Shoshones, Shiwits, Navajos and Apaches, who were hunters and fed upon the flesh of animals killed in the fall, and were clad in skins and furs, and the Pueblos, who lived mainly upon grain, and were clothed for the most part in cotton garments and had reached a higher civilization. He says of the Utes:

These people built their shelters of boughs and bark, and to some extent lived in tents made of the skins of animals. They never cultivated the soil, but gathered wild seeds and roots, and were famous hunters and fishermen. They have always been well clad in skins and furs; the men wore a blouse, loin cloth, leggings and moccasins, and the women dressed in short kilts. Sometimes the men would have a bear or elk skin for a toga, but more often they made their togas by piecing together the skins of wolves, mountain lions, wolverines, wild cats, beavers and otters. The women sometimes made theirs of fawn skins, but rabbit skin robes were far more common. Cords were made of the fibre of wild flax or yucca plants, and around these cords, strips of rabbit skin were rolled so that they made long ropes of rabbit skin coiled, the central coil of vegetable fibre, then these coils were rolled to parallel strings with cross strings of fibre. The robe when finished was about five feet square, and made a good toga for a cold day and a warm blanket for night. Neither men nor women wore a head-dress, except on festival occasions for decoration.

He says of the Shoshones:

The region from Fremont Peak to the Uinta Mountains has been the home of Indians of the Shoshonian family from time immemorial. It is a great hunting and fishing region. The flesh of the animals killed in the fall was dried for summer use. The seeds and fruits were gathered and preserved for winter use. When the seeds were gathered, they were winnowed by tossing them in trays, so that the wind might carry away the chaff; they were roasted in the same trays. Afterward the seeds were ground on mauling stones and moulded into cakes that were stored away for use in time of need.

The Shiwits, "people of the spring"; the Uinkirets, "people of the Pine Mountains," and the Unkakaniguts, "people of the red lands," who dwell along the Vermilion Cliff, are found on the terraced plateaus. These people live in shelters made of boughs piled up in circles and covered with juniper bark, supported by poles. These little houses are only large enough for half a dozen persons, huddling together, to sleep. Every year they have great hunts, when scores of rabbits are killed in a single day. It is managed in this way. They make nets of the fibre of the wild flax and of some other

plant, the meshes of which are about an inch across, into which they drive the rabbits. A great variety of desert plants furnish them food, as seeds, roots and stalks. More than fifty varieties of such seed-bearing plants have been collected. The seeds themselves are roasted, ground and preserved in cakes. The most abundant food of this nature, is derived from the sunflower and the nuts of the piñon. They will make stone arrow heads, stone knives and stone hammers, and kindle fires with the drill.

In speaking of the inhabitants of the Kanab River and the Vermilion Cliffs, in the heart of the Grand Canyon, who dwell in pueblos, some of which were three stories high, he says:

From extensive study of the ruins, it seems that everywhere tribal pueblos were built of considerable dimensions, usually to give shelter to several hundred people. Then the people cultivated the soil by irrigation, and had their gardens and little fields scattered at wide distances about the central pueblos, by little springs and streams, and wherever they could control the water with little labor to bring it on the land. At such points stone-houses were erected, sufficient to accommodate from one to two thousand people, and these were occupied during the season of cultivation and are known as rancherías. Sometimes the rancherías were occupied from year to year, especially in time of peace, but usually they were occupied only during seasons of cultivation. Such groups of ruins and pueblos, with accessory rancherías, are still inhabited, and have been described as found throughout the Plateau Province, except far to the north beyond the Uinta Mountains. A great pueblo once existed in the Uinta Valley, on the south side of the mountains. This is the most northern pueblo which has yet been discovered. But the pueblo-building tribes extended beyond the area drained by the Colorado. On the west, there was a pueblo in the Great Basin at the site now occupied by Salt Lake City, and several more to the southeast, all on waters flowing into the desert. On the east, such pueblos were found among the mountains at the head waters of the Arkansas, Platte and Canadian Rivers. The entire area drained by the Rio Grande del Norte was occupied by Pueblo tribes, and a number are still inhabited. To the south they extended far beyond the territory of the United States, and the so-called Aztec cities were rather superior pueblos of this character. The known Pueblo tribes of the United States belong to several different linguistic stocks. They are far from being one homogeneous people, for they have not only different languages, but different religions and worship different gods. The Pueblo people are in a higher grade of culture than most Indian tribes of the United States. This is exhibited in the slight superiority of their arts, especially in their architecture.*

Thus we see from the reports of the earliest explorers that, notwithstanding the great number of ruins and the apparent aridity of the soil, agriculture was carried on through the central parts of the Pueblo territory, especially on the Rio Grande, the Little Colorado and the Gila Rivers, though mainly by irrigation. There seem to have been valleys among the mountains of the north, especially along the Rio San Juan, where agriculture was conducted without the aid of irrigation, for, here, the rain was precipitated by means of the mountains often enough, so as to supply needed moisture. This explains the pertinacity with which the Cliff Dwellers clung to their homes hid away among the mountains, and emphasizes the calamity which came upon them when the nomadic hordes invaded their possessions.

* See *Journal of the American Anthropological Association*, Vol. 1, p. 111.

The testimony of all the explorers is that the soil here is extremely fertile and needs but little cultivation to raise excellent crops. Mr. Jackson says :

The Rio San Juan drains a great interior basin covering over 20,000 square miles, as well as several great mountain masses bordering it. The river at the mouth of the McElmo has an average width of fifty yards, and a depth of four to six feet. The water is warm and well freighted with the soil which it is continually undermining, contrasting strongly with the ice-cold tributaries which give it existence, and the bottoms are from three to five miles in width and, bordering the stream, covered with dense growths of cottonwoods and willows. The broad and fertile alluvial lands, well covered with grass, prove a rich agricultural possession.

The Rio de Chelly was also a favorable place for carrying on agriculture. Mr. Mindeleff says of it :

Near its mouth, the whole bottom of the canyon consists of an even stretch of white sand, extending from cliff to cliff. A little higher up, there were small areas of bottom land and recesses and coves only a foot or two above the bed of the stream. Still higher up, these became more abundant, forming regular benches or terraces. At Casa Blanca, the bench is eight or ten feet above the stream, each little branch canyon and cave in the cliffs is fronted by a more or less extensive area of cultivatable land. These bottom lands are the cultivatable areas of the canyon bottom, and their currents and distribution have dictated the location and occupation of the villages now in ruins. They are also the sites of all the Navajo settlements. The Navajo hogans, or huts, are generally placed directly on the bottoms, the ruins are always located so as to overlook them. Only a very small proportion of the available land is utilized by the Navajos, and not all of it was used by the old villagers.

The horticultural conditions here, while essentially the same in the whole Pueblo region, present some peculiar features. Except for a few modern examples, there are no traces of irrigating works. The village builders did not require irrigation for the successful cultivation of their crops, and under the Indian method of planting and cultivating, a failure to harvest a good crop was rare.

As to the climate : In December, it becomes very cold and so much of the stream is in the shade the greater part of the day, that much of the water becomes frozen. In a short time, great fields of ice are formed. This, and the scant grazing afforded by the bottom lands in winter, accounts for the annual migration of the Navajos; but these conditions would not materially affect the people who did not possess domestic animals, but were purely agricultural. The stream when flowing is seldom more than a foot deep, except in times of flood, when it becomes a raging torrent, hence irrigation would be impracticable, nor is it successful here for extensive horticulture.

These statements throw light upon the former habits of the Cliff Dwellers of the Rio San Juan and show conclusively that they had their permanent abodes in these canyons, because of the fact that they could easily secure subsistence here, and because they became attached to their mountain home. The evidence is that they first made their homes here as a matter of choice on account of the fertility of the soil, and not on account of the dangers with which they were surrounded. After the invasion of the savages, they were compelled to build their houses high up in the cliffs for the sake of defense, but it is

likely that they built them so far above the stream in order to escape the mountain torrents which swept through the valleys, even before the savages came upon them. As Mr. Mindeleff says:

Canyon de Chelly was occupied because it was the best place in that vicinity for the practice of horticulture. The cliff ruins there, grew out of the same natural conditions that they have in other places. It is not meant that a type of house structure was invented here, and was transferred subsequently to other places. The geological topographical environment, favored their construction. From a different geological structure in other regions, cavate lodges resulted; in other places, there were watch towers, and still others, single rooms. The character of the site occupied is one of the most important evidences to be studied in examination of the ruins in the Pueblo country. The sites here are all selected with a view to an outlook over some adjacent area of cultivable land, and the structures erected were industrial or horticultural, as well as military or defensive. The immense number of storage cists are a natural outgrowth of the conditions there. The storage of water was very seldom attempted. A large proportion of the cists were burial places. As a rule, they are far more difficult of access than the ruins.

In the cliff ruins of De Chelly we have an interesting and most instructive example of the influence of a peculiar and sometimes adverse environment on a primitive people, who entered the region with preconceived and fully developed ideas of house construction, and left it before these ideas were brought fully in accord with the environment, but not before they were influenced by it.

II. The question arises, whether the Cliff-Dwellers had permanent agricultural settlements, or were they merely farming shelters, used by the Pueblos who lived upon the mesas.

1. On this point, it may be well to examine the architecture of the region which has been often described, and concerning which there is more discussion than any other, namely, that found in the Rio de Chelly.

This valley has been described by different explorers, commencing with Col. Simpson, F. T. Bickford and Mr. Mindeleff and others, each one of whom has described the different villages, especially those called the Casa Blanca, or the White House, the village in Mummy Cave, in Canyon del Muerto, and one on the Banito.

Mr. Bickford says that the Canyon de Chelly and its two principal branches, Monumental Canyon and Canyon del Muerto, have an aggregate length of more than forty miles. "They vary in width from 200 to 300 feet, and their walls, which are precipitous throughout, are from 800 to 1,400 feet in height. Through all the branches there run streams of clear water, which unite and form the Little Rio de Chelly. The soil of the canyon is fertile, and under the tillage of a more intelligent race would bear rich crops. Though not comparable in grandeur to the Grand Canyon or the Yosemite, it is, nevertheless, one of the most beautiful of western canyons. The cave villages are found sometimes only thirty feet from the level, and sometimes 800 feet. The reason why such sites were selected does not fully appear. The conclusion so often and so easily reached, is that

they were places of refuge from the attacks of the invading races. So far as appearances go, they seem to have been, not the places of occasional retreat, but the regular, permanent dwelling place of their builders. The traces of fires are found in the ruins. Rock paintings abound, and hundreds of shapes of human hands are found adorning some of the roofs of the now inaccessible caves. Symbols are frequent, the dragon fly, the rainbow, the sun, objects of reverence to the living Pueblos. Few animals are pictured, the elk, the antelope and the red deer being the most numerous.

"The most remarkable group of ruins is found in a branch of Monumental Canyon, and is about 700 feet above the bottom of the canyon, which is very narrow. The finest group of ruins, 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 is about thirty feet from the bottom of the canyon, 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 loop hole 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, 900 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." It is the only painted cave dwelling of which we have any knowledge. 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 the cave.

"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. It is found near the head of Canyon del Muerto, and is known as Mummy Cave, from the fact that its discoverer found near it an undisturbed cist, from which he removed a well preserved mummy. The southern wall of the canyon here retreats, forming a wide, shallow bay, around which, at the height of about 200 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 stand upon it has fallen away, and now forms

part of an immense mass of debris, which makes the cave more easily accessible. Only those walls remain which are 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."

2. The distribution of kivas in the ruins of De Chelly affords another indication that the occupancy of the region was permanent. The position of the kivas in some of the settlements on defensive sites, and their arrangement across the front of the cave, suggests at first sight, that they were used for outlooks and their occupancy by villages came at a later period. Kivas are found only in permanent settlements. They are sacred chambers in which the civil and religious affairs of the tribe were transacted. They also formed a place of resort or club for the men. Their functions are many and varied. It seems to have been a common requirement in the Pueblo country that the kivas should be wholly or partly underground, but the greatest care was bestowed upon their construction and finish; the interior was plastered with a number of coats and was ornamented with markings and symbols in the shape of bars or bands and triangles, which were of a ceremonial, rather than of a decorative origin. Chimney-like structures were used for ventilation, showing that the kivas were occupied permanently by the men. Circular rooms, built and arranged on the same plan, with exceedingly slight variations in size and construction, reappear in every cliff dwelling, except the smallest one.

Ventilation by the introduction of fresh air on a low level, striking on a screen a little distance from the inlet, and being thereby evenly distributed over the whole chamber, is a development in house construction rarely reached by our own civilization. A stone pier at the opening of the ventilator, and between it and the fire, constantly brings into the kiva the fresh air. The entrance is always at the top, and is generally kept open. This makes a draft which carries off the foul air from below, which would be an absolute necessity, for the men and boys are always congregated in the kivas in great numbers, and make it their sleeping place.

.3 The number of storage cists found near the cliff dwellings, prove that they were permanently occupied. These have been referred to by all the explorers, from Jackson and Holmes down to Mindeleff and Matthews. Mr. Jackson speaks of store houses which were placed high up in the cliffs in the Mancos Cañon, above the cliff dwelling called the "Sixteen-windowed House." These were reached by climbing the side of the cliff at one end of the ledge, and then passing from one store house to another. There were remains of corn and beans and other products in these store rooms, so that one is called the fire room; another, the bean room, and another, the corn room.

The people dwelt in the rooms which were built on the lower ledge, and had their separate apartments, which extended back to the rock and were lighted by the windows in front. A round room, with a narrow passage-way, or flue, near the floor, was undoubtedly the estufa furnished with a ventilator, after the plan of other estufas in the region. The only court in this village was at the end of the ledge, and just below the stairway which led up to the store rooms. Running water was found within a few yards of this group of houses.

Mr. Jackson speaks, also, of the store rooms or cists scattered along the cliffs near the Montezuma and the Hovenweep. He calls them cubby holes and rock shelters, and speaks of them as occurring in all sorts of positions, from the level of the valley to the height of over 100 feet, and from the smallest kind of a cache, not larger than a bushel basket, to buildings that sheltered several families. Some of them were little, walled up, circular orifices in the rock, generally inaccessible; but many were



STORAGE CIST.

approached by steps, or rather small holes, cut in the rock so as to enable the climber to ascend, as if by a ladder. The steps leading up to them show that they were considerably used, and were probably resorted to by the house wives as they needed the products which were stored away. In one of the cave dwellings, the skeleton of a human being, nearly covered with the excrement of small animals, dust and other rubbish, which covered the floor a foot deep, was found.

Mr. F. H. Chapin speaks of the store rooms back of the line of houses in Cliff Palace, and of the burial places which were in the niches of the rocks, showing that the people were so permanently settled, as to bury their dead in the midst of their houses. He speaks, also, of a little isolated room, with a single

window for an entrance, which was situated on the upper ledge of Acowitz Cañon. It is probable that this was used both as a store room and a look-out station. It was very difficult to reach and was perched in a little cleft, high up in the side of the cliff, where it constituted one of a second group of buildings.

Mr. Mindeleff mentions the store rooms in the Cañon de Chelly. There was a group of ruins located on a narrow bench 300 feet above the cañon bottom; access to the upper ledge was exceedingly difficult, requiring a climb of almost vertical rock over forty feet. At the northern end of the upper ledge, there are five small cells, occupying its whole width, whose front wall follows the winding ledge. These cells could hardly have been used as habitations. There was one room which measured



CLIFF VILLAGE ON DEL MUERTO

fifteen by five feet, which may have been employed for the storage of water.

He also speaks of the reservoir for the storage of water, as situated at the bend of the river and directly above the stream, and suggests that water may have been drawn up from the stream and poured into the reservoir at a dry time. It constitutes a part of a cliff village.

A granary in the rocks is described, which was reached by a narrow passage way about 2½ feet wide, and was protected by two small rooms on

one side, and by the village itself, on the other. The interior forms a convenient dry, airy space.

Another village on the Del Muerto is situated on a narrow ledge nearly 400 feet above the stream. It was almost inaccessible, but was reached by climbing up the rock by aid of hand and foot holes. The entrance to the village was guarded by a room whose walls were pierced by oblique loop holes for the discharge of arrows. The site commands an extensive outlook over the cañon bottom, including several areas of cultivable land. Immediately below are the remains of a large settlement, and nearby, a number of small settlements, connected with it *

4. Another proof that the cliff dwellings were permanent residences, is found in the fact that bodies were buried and relics deposited in such great numbers

*NATIONAL ANTHROPOLOGICAL ARCHIVES, PHOTODUPLICATION SERVICE, SMITHSONIAN INSTITUTION, WASHINGTON, D. C.

Nordenksjold discovered bodies of children in Johnson Cañon and at Spruce Tree House. In a little room there were five bodies with arrows lying across their heads, and between the skeletons four bows. One skeleton lay on the top of a mat, with a bow on one side and a mug and a basket on the other; a pair of mocassins on the feet, and some feather cloth under the head. After taking up the bodies, a large mat was discovered covering the floor, and below the mat, a skeleton with a medicine-stick and two prairie dog-skin pouches. This skeleton was covered with a willow mat, made of grass, and under the grass mat, one of feather cloth; after that, a buck-skin jacket with a fringe.

Mr. Nordenksjold also speaks of the wooden implements used for planting sticks; of the baskets and pottery vessels used for holding grain; of the textile fabrics which were made from cotton; of the mats and sandals made from corn leaves; of the ears of corn found in the ruins; of the corn meal, also discovered in small quantities, and of the store houses where the corn was stored, and other tokens. He says: "The most common implement is a wooden stick, 1.4 metre long, pointed like a sword at one end, and often furnished with a round knob at the other. This instrument closely resembles the stick used in planting maize. With it, a hole about fifty centimetres deep is made in the ground, and a kernel of the maize is then dropped into the hole. The implements found in the cliff dwellings were probably used in the same manner. They also served as spades of a general character.

"A circumstance which bears out the conjecture that these tools were used as planting sticks, is that the custom prevailed, both among the Cliff-Dwellers and the Moquis, of laying beside the corpse at the time of burial, one of these planting sticks, considering that the deceased ought not to enter upon his new existence without this important adjunct to the planting of maize. It seems that the same idea prevailed among the Cliff-Dwellers.

"As a rule, the maize of the Cliff-Dwellers is smaller in ear than that cultivated by the Indians at the present day. It was probably grown, partly on the mesa, and partly on the more gradual slopes, which were sometimes terraced. After the harvest, the corn was stored in rooms set apart for this purpose in the bottom story of the cliff dwelling."

Numerous fragments of cotton cloth have been found. The cotton plant was probably cultivated by the cliff people, at least in some localities, for cotton seeds have been found in the cliff dwellings of southern Utah, and cotton garments are also found. A mat, composed of withes split in two, held by the stiff cords of yucca, was found wrapped around a corpse in a grave at Step House; a woven band, used in carrying bundles, made of yucca and cotton, was found in Ruin No. 11, and a double woven band

in an estufas in Ruin No. 12; pieces of cotton cloth, with pattern woven in threads of dark brown color, was found in Mug House; a large basket of yucca in two different colors was found in Spruce Tree House; a willow basket, tightly plaited, of osiers, was found in a grave at Step House, and a basket, coated on the outside with some substance to make it water-tight, was found at the same place.

Marco de Nueva in 1539, was told by the Indians of a great plain of about thirty days' travel, inhabited by people living in large towns built of stone and lime, who wore cotton garments, and who possessed an abundance of gold, turquoises and emeralds. This shows that cotton was cultivated in prehistoric times even by the natives of America, and that agriculture of various kinds was practiced by the Pueblos.

5. The use of shrines by the Cliff-Dwellers is evidence that

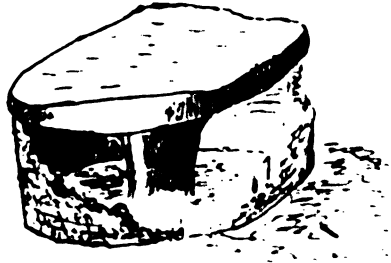


SHRINE IN WALL OF HUMAN SKULL.

they made permanent homes in the canyons, and depended upon agriculture for subsistence. Shrines are very common among the Pueblos, and are there attended by peculiar symbols, such as the symbol of the sun and moon, the swastika, the Nile key, the Egyptian tau, the Greek fret, and the coil. Dr. J. Walter Fewkes has recently discovered a large quantity of pottery, which contains some new and rare symbols, among them, the bird figure and reptilian figures, cloud emblems, spiral designs, arrows of a peculiar type, a sun emblem with white rays projecting from a black circle, the rays being arranged in a spiral form, but having notches in them, making them resemble notched plumes. This might be called the whirling sun. These symbols are supposed

by some to have been introduced among the Pueblos later than the time of the Cliff-Dwellers. There is a food bowl with the figure of a masked dancer, among them. This food bowl was made of red ware with black lines. The pottery was taken from a ruin near the Gila River, at the pueblo Viego; also at Four Mile Ruin, and near Taylor and Pine Dale, similar to that of the Salado River, near Tempe. A sacrificial cave was also discovered in the Graham Mountain, which was full of prayer emblems. Fragments of basketry were found with prayer sticks. The symbols on the decorated pottery of the pueblo Viego ruins are the same as that further down the Gila, and remotely related to the Little Colorado and its tributaries.

The shrine and rock inscriptions of the Cliff-Dwellers* are different from any that have been found in the Pueblo region. They are generally placed underneath the huge boulders which are common in the valleys, and are large enough to afford a shelter underneath them, as well as for a look-out or tower on the summit. Mr. Gunckel has described several of them, one of which had a wall built up around the base of the boulder, inside of which was space enough for quite an assembly of devotees, the interior of the shrines being protected by shelving



TOAD STOOL SHRINE.

rock, which projects over the shelter, making a dark space which was regarded as full of mystery to the people on account of its shadows. One boulder, which was used as a shrine, was in the shape of an immense skull, with holes in the rock, representing eyes. This was called Boulder Castle and is situated two miles from the mouth of McElmo, and half a mile from the river. The rock is fifty feet high, in the midst of a wild, picturesque region, surrounded on all sides by immense sandstone boulders; ruins were on the top of the rock which, possibly, may have been used as a look out. The room below sloped back to a few inches in height. Back of the boulder, was an inclosure seven metres each way. Pictographs, consisting of human feet, circles, animals and dumb bell figures, were found. Above Boulder Castle was a large cluster of ruined houses and towers, some of them round; others, square, and in the valley were springs with an abundant supply of water. The pictographs contained the same symbols which are found among the ruins of the south—circles, crescents, human hands, serpents figures, the suastika, and the coil.

* The shrines here are more elaborate than those among the Pueblos further south, though they remind us of the shrine and sacred spring of the Znaia.

Another shrine described by Mr. Gunckel was a sandstone rock in the shape of a toad stool; flat on the top, the shaft below. A wall has been constructed around this shaft, leaving an open space, which may have been used as a shrine, or as a double circle, or as a place of religious ceremony. This shelter cave is situated in Ruin Cañon, fourteen miles from McElmo.

6. The erection of towers and cliff dwellings in the neighborhood of springs and lakes, is another evidence that the cliff dwellings were permanent abodes. Major Powell has described ruins situated on the brink of Glen Cañon, in the midst of the

rocks of the Grand Colorado Cañon. Here was a tower which gave a commanding outlook, and a building in the shape of the letter L.

The most remarkable tower, is the one at Montezuma Castle, first described by Dr. W. H. Hoffman, and referred to by many others. He says, that the Cliff-Dwellers occupied this valley for raising crops and for agricultural purposes, seems evident from the fact that it is the only favorable district found within a convenient distance of the cliff remains, and also the nearest patch of irrigable land upon which we find any traces of former occupation.

An interesting place and one which was probably used as a permanent home, is that called Montezuma Wells, on



MONTENZUMA CASTLE

account of the sunken well or lake which exists there. It is in the same region as Montezuma Castle, and has been regarded as an agricultural settlement, the houses which were here, being placed in the sides of the cliffs and near the lake or pond of clear water, for the sake of convenience. It was, however, near agricultural land, and only separated from the land by a narrow ridge of limestone, through which there was an opening which made a convenient gateway to the fields. Nowhere else, is there such a strange setting of a cliff village as here, and yet there is every reason to believe that it was a permanent settlement.

Mr. Lummis says: "This sudden well in the gray limestone is about eighty feet deep, from rim to water level, and 200 yards in diameter. The walls are apparently as circular as man could have carved them. The tar-black lakelet at the bottom is of an unknown depth—a 380-foot line at my last visit (1891) having failed to find bottom. On the side where Beaver Creek has eaten into the hill, there is left only the thinnest of rims to hold the 'well.' Yet between the creek and the 'well,' on this knife-edge rim of limestone, are huddled the ruins of one of the prehistoric Pueblo fort houses. A crumbled talus of masonry, with its tallest remaining walls not to exceed eight feet, it is yet one of the most suggestive types of the ancient régime when the few first American farmers and home makers made head against the outnumbering vagrant savages and niggard wilderness. Below, along the pinched creek, were their tiny irrigated farms; up here, on the ridge-pole between two precipices was their communal town of several stories; and commanded by it, their last retreat. The fort house absolutely controlled the only reasonable entrance to the well; the only other path down to the lake's edge, could be held by boys against an enemy."*

The remarkable specimens of cliff villages, or cave houses, are those discovered by Mr. Carl Lumholtz. They were found in the midst of the mountains of Mexico. These caves are situated on the Piedras Verdes, 6,850 feet above the sea. He says:

They contain groups of houses, or small villages, and the houses are splendidly made of porphyry and show that the inhabitants had attained a comparatively high culture. The dwellings were sometimes three stories in height, with small windows and doors made in the form of a cross or the letter T, and occasionally there were stone stair cases. The relics show that these people cultivated maize, beans and cotton, and knew the use of indigo.

The caves, which number about fifty in a stretch of twenty miles, are from 100 to 200 feet above the bottom of the canyon, and the largest is some fifty feet high. At the entrance of one of the cave villages we were astonished to come upon a huge vessel made like an *olla*, or water jar, twelve feet high and twelve feet in diameter. The sides of it were eight inches in thickness and as hard as cement, the frame being made of straw ropes, coiled and plastered outside and inside with porphyry pulp. At the bottom was a three-foot high entrance, through which a person could crawl in; the top, which was only three feet wide, was also open. It made a marvellous impression, looking at a distance like a huge balloon, and seen nearby, it was as fresh as if made a week before. I believe it was for the storage of maize. In one of the other caves we met with three ruins of similar, but smaller vessels, their circular bases only being left. There were built, also, some reservoirs for grain, dug down in the bottom of the caves. In the background of this cave, were the houses built in complete darkness. In the deepest caves the houses were built at the entrance, while in the smaller ones the houses were found at the back. It is to be noted that all the caves are natural.†

* "Montezuma's Well in Land of Sunshine," by Chas. F. Lummis

† "Report of Explorations in Northern Mexico," by Carl Lumholtz. Published in Bulletin American Geographical Society, September 30, 1891.

Mr. Lumholtz speaks of the Tarahumari, a wild people, who are scarcely raised above the Troglodytes in their social condition. He says:

They are much inferior to the Cliff Dwellers; their pottery is exceedingly crude, and they are utterly devoid of the architectural skill exhibited in the remarkable structures of the northern Cliff-Dwellers. These caves are fitted up as their houses, with the same utensils, grinding stones, baskets and jars; the fires in the middle of the cave. The store houses, so necessary to the household life for storing corn and clothing, is never missing in the caves. They are built of stone and adobe along the inner walls, and serve as big closets. These store houses are quite an institution. They are found everywhere in remote places, perched generally on high rocks or boulders. Very often caves, difficult of access and walled-in, are used as store houses.

The Tarahumaris, according to their own tradition, came from the north and east, the same country as the Apaches.*

III. The most remarkable thing about the agriculture of the Pueblos and, perhaps, the Cliff-Dwellers, is the Snake Dance and its connection with the rain. It is not generally known that the real purpose and intent of this dance is, to secure rain, and that it is a prayer to the rain gods, who dwell in the clouds, and are symbolized by lightning and the clouds which assume the shape of serpents. To the white man this seems far fetched and purely imaginary, but to the aboriginal mind, there was always an unconscious habit of associating supernatural beings with the natural, making the material object a symbol of the immaterial force. The natural powers and the supernatural creatures were closely related. Their imagination was so active and vivid, that they recognized resemblances which would escape the attention of ordinary minds, and their superstition changed the resemblance into realities.

There were three ways in which they expressed their beliefs and made known their wants; all of which might be called prayers. The first was by a symbolic picture, the second was by an image decorated with various symbols and ornaments, and the third was by a sacred drama in which the divinities were personified. Under the first head may be embraced the sand paintings or mosaics, in which the rain clouds, the lightning, the sky, the sun and the nature powers were all represented. The sacred screens also represented the same elements. It will be noticed that corn is also represented in connection with these screens and altars. Among the Navajos, not only corn, but beans, vines and other plants are represented as under the care of certain divinities.

Under the second head, must be included the great number of dolls which abound among the Pueblos, and are supposed to have a remarkable significance. They are decorated with feathers, which symbolize the clouds, and have others symbols of the rains and nature powers.

* *Amer. Ant. Soc. Proc.*, the Tarahumaris of the Sierra Madre, by Carl Lumholtz. Published by the Bulletin of the American Anthropological Society, September 30, 1894.



THE SNAKE DANCE AT ORAIBI



THE SNAKE DANCE AT ORAIBI

Under the third head, may be embraced all the sacred dramas in which are the sacred myths and legends which have been inherited and are embodied in elaborate ceremonies, and are personified by men, women and children, who take part in the dances and songs.

The myth which lies back of the so-called Snake Dance, is one that relates to some event in the early history of the people, and is connected with the scarcity of rain. It is a myth, which is told by the Tusayans in reference to their ancestors, but it also prevails among other tribes; and it is not at all unlikely that the Cliff-Dwellers had a similar myth and a similar custom, for there are rock-inscriptions near the cliff dwellings, which represent serpents and other symbols, closely resembling those of the Pueblos.

Mr. J. Walter Fewkes, who is the best authority on the sub-



SNAKE DANCE AT WALPI

ject, after long study, concludes that the Snake Dance, which he saw in three pueblos—Walpi, Oraibi and Hano,—was not only a rain ceremony, a pantomime of prayer for rain; but was also connected with corn worship, especially as the symbols of corn are present on every side. No clue could be obtained in regard to the deity addressed. There are, however, figures of rain clouds, which, so far as they go, prove that rain worship was one of the prominent features, but the personages in the drama, especially the girls in the Flute ceremony, and the Snake Maiden in the Tusayan ritual, represent the Corn or Germ Maids; the images also represent the same. The girls have figures of corn painted on their body, and images which are highly elaborated into dolls are called "calako," corn maids. These dolls have characteristic symbols on their

cheeks, the same rain cloud ornament on the head, an ear of corn on the forehead, eyes of different colors, and painted chin. The Snake Maid, in the dramatization, holds a bowl of stalks of corn and bean vines. The Flute girls carry corn pahos on which corn is depicted. The entrance of the Flute girls into the town on the ninth day of the Flute ceremony, corresponds, according to legends, to the entrance of the Corn maids.

By a similar course of reasoning, Mr. Fewkes concludes that the Walpi Snake Dance perhaps represents the same corn worship, combined with rain worship. This is celebrated by men, who carry reptiles in their mouths; but the Walpi "Lalakonti" is a sky god. He is a renowned hero, appearing in different disguises, and is called White Corn, and was one of seven brothers who sought and found a maiden in a cave. She became his bride. It was noticed that her prayers for rain were efficacious. She conceived; in a tempest a child was born, and she erected the rain cloud altar in her native home. White Corn and his wife retired to a distant mesa, where she gave birth to reptiles and disappeared.

The description of these dances have been given by Mr. J. Walter Fewkes, at great length. There is a story connected with them, and it is as follows:

A youth, under guidance of Spider-woman, visited the underworld and had many adventures with several mystic beings. He entered a room where people were clothed in snake skins, and was initiated into mysterious ceremonies, in which he learned prayers which bring corn and rain. He received two maidens, associated with clouds, who knew the songs and prayers efficacious to bring rains. He carried them to the upperworld to his own people. One, the Snake-woman, he married; the other became the bride of the Flute youth. His wife gave birth to reptiles; he left them and their mother, and migrated to another country.*

The main points in all the stories are, when compared, as follows:

A culture hero sought a mystic land blessed with abundance, and brought from that favored place, the Corn and Rain Maids, whose worship or prayer was powerful in bringing food and rain. Stripped of pathetic embellishment, the legend has a practical interpretation. The two necessities, corn and rain, failed the ancient Hopi at some early epoch in their history, so that they were in danger of starvation, when one of their number, furnished with prayer offerings as sacrifices, sought other people who knew prayers, songs and rites to bring the desired gifts. In order to learn these charms, he was initiated into their priesthood by this foreign people, and to make that adoption complete, married one of their maids, and, to save his brethren, he brought his bride and offspring to live with his own people. His children were like those of her family (the Snake clan), and unlike his, and hence trouble arose between them. The mother returned to her own land, and the father also sought a new home. Their children inherited the the prayers and songs which bring corn and rain, and they were ancestors of the present Snake people.

So it is, I believe, that every year, when the proper time comes, the men of the Snake family, who have been initiated into the Snake fraternity, and

*"Tusayan Snake Ceremonies," by Jesse Walter Fewkes. Annual Report Bureau of Ethnology, 1894-5, p. 30.

the descendants to whom these prayers, songs and fetiches were transmitted, assemble, and in order that their work may resemble the ancestral, and be more efficacious, they gather the reptiles from the fields; dance with them, as of old; personating their mother, the Corn and Mist Maids, in the kiva dramatization, and at the close of the dance, say their prayers in hearing of the reptiles, that they may repeat them to higher deities.

While this theory of the Snake Dance is plausible, it offers no explanation of why reptiles are carried in the mouths of the priests. It can readily be seen that it pre-supposes that they dance in the plaza with the priests, but why are they not simply carried in the hands? For this, I confess, I have no adequate explanation; but the fact that they are carried in the hands as well as in the mouth at Oraibi is suggestive, especially if the Oraibi is the most primitive.

Some daring priest, for a sensation, still holding the reptile in this way, put its neck in his mouth, possibly to prevent its coiling and hiding its size.



THE SNAKE DANCE.

That method was startling, and was adopted by all, a condition which persists at Oraibi.

The public exhibition called the Antelope Dance, on the afternoon of the eighth day, is evidently connected with corn celebrations, for at that time a wad of cornstalks and melon vines, instead of the reptiles, is carried in the mouths of the priests, as on the following day.

The episode in the Snake kiva at Waipi, when the bear and puma personators carried cornstalks in their mouths, and moved them before the faces of the men, women and children, has probably the same significance. The pouches of different colored sand which were taken from the sand picture of the antelopes before it was dismantled, were carried to the corn fields, as symbols of the different colored corn; they hoped their prayers would bring, conformably to the legend of its efficacy, in that direction.

The Snake Dance is an elaborate prayer for rain, in which the reptiles are gathered from the fields intrusted with the prayers of the people, and

then given their liberty, to bear these petitions to the divinities who can bring the blessings of copious rains to the parched and arid farms of the Hopis. It is, also, a dramatization of an ancient half mythic, half historic legend dealing with the origin and migration of the two fraternities which celebrate it, and by transmission through unnumbered generations of priests has become conventionalized to a degree, and possibly the actors themselves could not now explain the significance of every detail of the ritual.

The seriousness and gravity with which the ceremonials are conducted is very impressive. The ceremonies are religious and make up the complicated worship of the people of Tusayan. Even a visitor, bent on sightseeing, will be impressed with the seriousness of the Indian dancers, and the evidence of deep feeling perhaps it should be called devotion in the onlookers. Not only in the sombre Snake Dance, but in every other ceremony of Tusayan, the actors are inspired by one purpose, and that is to



THE SNAKE DANCE.

persuade the gods to give rain and abundant crops. So the birds that fly, the reptiles that crawl, are made messengers to the great nature gods with petitions, and the different ancestors and people in the underworld are notified that the ceremony is going on, that they, too, may give their aid. The amount of detail connected with the observance of one of the ceremonies is almost beyond belief, and, being carried on in the dark kiva, has rarely been witnessed by others than the initiated priests.

The following is the description of the Snake Dance :

The grand entrance of the Snake priests is dramatic to the last degree. With majestic strides they hasten into the plaza, every attitude full of energy and fierce determined purpose. The costume of the priests of the sister society of Antelopes is gay in comparison with that of the Snake priests. Their bodies rubbed with red paint, their chins blackened and

outlined with a white stripe, their dark red kilts and moccasins, their barbaric ornaments, give the Snake priests a most sombre and diabolical appearance. Around the plaza, by a wider circuit than the Antelopes, they go, striking the *apafu* plank with the foot, and finally leaping upon it with wild gestures. Four times the circuit is made; then a line is formed facing the line of the Antelopes, who cease shaking their rattles, which simulate the warning note of the rattle snake. A moment's pause and the rattles begin again, and a deep, humming chant accompanies them. The priests sway from side to side, sweeping their eagle feather snake whips toward the ground, the song grows louder and the lines sway backward and forward toward each other like two long undulating serpents. The bearer of the medicine walks back and forth between the lines and sprinkles the charm behind to the compass points.

All at once the Snake line breaks up into groups of three, composed of the "carrier" and two attendants. The song becomes more animated and the groups dance, or rather hop, around in a circle in front of the *Uru*.



FIG. 11. CARRIER AND GATHERER.

one attendant the "hugger" placing his arm over the shoulder of the "carrier," and the other (the "gatherer") walking behind. In all this stir and excitement it has been rather difficult to see why the "carrier" dropped on his knees in front of the *Uru*; a moment later, he is seen to rise with a squirming snake, which he places midway in his mouth, and the trio dance round the circle, followed by other trios bearing hideous snakes.

The "hugger" waves his feather wand before the snake to attract its attention, but the reptile inquiringly thrusts its head against the "carrier's" breast and cheeks and twists its body into knots and coils. On come the decorative groups, to music, now deep and resonant and now rising to a tremulous pitch, accompanied by the increasing sibilant rattles of the Antelope horns. Four times around, and

the "carrier" opens his mouth and drops the snake to the ground, and the "gatherer" who has picked it up, adds it in the same manner, from time to time. Their snakes, too, may have a tale, but are composed of rattle snakes, bull snakes and arrow snakes. The bull snakes are large and showy, and in proportion to their harmfulness. When all the snakes have been fully danced around the ring and the nerve tension is at its highest point, there, suppose the chief priest advances to an open place and, perhaps seated on a mat on the ground, out lining a ring with the six or seven ornaments which the snake priest gatter around. At a given signal the snakes are thrown on the ground, crawling and a wild scramble for the prizes ensues, and a shower of spittle from the spectators on the walls above. On a second signal the priests start up again with one or more snakes, away they dart for the plaza, and the two attendant messengers to their native habitations. They dash away the message and reappear far out on the track, now swinging like the wind with the tremendous burdens. The Antelope priests next march gracefully around the plaza four times, thumping their feet upon and the feet to their sides. The ceremony is done.*

* The Museum of the University of California, Berkeley, has a photograph of the Carrier by the name of "Carrier and Gatherer," which is a reproduction of the above.

INITIATION AMONG THE AUSTRALIAN BLACKS.

BY JOHN FRASER, LL. D.

There is a growth and a decay of races, as of plants; the world's history proves that. In Australia, if the blacks had remained sole possessors of the land, they might have continued to exist and perhaps prospered, but the inroads of the white man's civilization is rapidly driving them out of existence. The last of the Tasmanians died in 1876; in the colony of New South Wales there are now only 3,200 full-blood blacks, and a slightly larger number of half-castes. In spite of every care to preserve the race, it is dying out in the settled districts of our island. Soon the black fellow will be only a memory, and his habits and customs an antiquarian study.

It is needless to say that our blacks have been misunderstood and often maligned. In the early days, those settlers who saw a Karabari Dance in the forest, or observed how a black man avoided his wife's mother, regarded those customs as merely the pranks of savages, and spoke and wrote of them as such. All the early books on the aboriginal inhabitants of Australia are unscientific, and it is only within the last thirty years or so that the anthropology of this land has become a study, and books written by competent men on that subject. One of these has just been published by Macmillan & Co., London.* The authors of it have personal knowledge of the tribes of Central Australia, and describe and explain the native rites, customs and habits which they have seen there.

It is now agreed that the Australians are negroid, but of so modified a type as to have a special name, Australoid. The African negroes are by descent the cousins of the Australian blacks, for I believe that both races are of the same origin as those "black heads," whom Cyrus the Great records as having become his subjects when he conquered Babylon. That Hamite race occupied the low country at the mouth of the Tigris and Euphrates from the earliest times. Thence they divaricated, as I think, in two streams—the one into Egypt and Ethiopia, and thence into Central and Southern Africa; the other became the earliest occupiers of India, where they were afterwards subdued or dislodged by the incoming Aryns. Many took refuge in the tableland of the Dekkan, while others fled up the slopes of the Himalayas, and it is in these regions, accordingly, that we find the closest resemblances to the Australians, so much so, that Huxley classifies the Dravidic tribes of the Dekkan as Australoid.

The conquest of the plains of India, and other movements

* "The Native Tribes of Central Australia," by Prof. Baldwin Spencer, Melbourne University, and F. J. Gillen, special magistrate at Alice Springs, South Australia.

at a later time, drove the aborigines farther afield - into the Eastern Peninsula and the Archipelago, whence in process of time they passed into Australia, New Guinea, Fiji and the New Hebrides, and in all these regions their descendants are still located. That, at least, seems to me, the most reasonable way of accounting for the facts of the case.

Some important usages link the Australians with the African negroes of the Congo and Guinea. The most forcible of these is the striking correspondence between the initiation rites of the Congoes and the Australians. In an Australian tribe, when young men have reached the age of puberty, they are admitted as members of the tribe by means of peculiar ceremonies, for which preparations have been made by the chief old men some time before. These have sent their own tribal messengers to the neighboring tribes, to tell them that there will be an initiation at a stated time and place, and to invite all who choose to come. The neighbors do come, and in great numbers, for although there may be enmity and even war between the tribes, yet all are friendly at such a time. Meanwhile, some experienced men of the tribe to which the boys belong, have made two flat circles on the ground in the depths of the forest, raising a slight ridge of earth all round to mark the circuit of each. The space within these circular enclosures is carefully cleared of every bit of wood, and even of every blade of grass. The one is at the foot of a rising spur of the mountains, and has a narrow path leading from it up to the other, or sacred, circle, which cannot be seen from the other ground lower down. In this upper circle a fire is kept constantly burning in the centre, like the sacred hearth of Vesta; and the enclosing ridge of earth is so sacred that, like the Pomarium of ancient Rome, none but priestly men can walk across it.

Everything being now ready for the ceremonies, a great crowd of people assembles around the lower circle, and are made to lie prone on the ground wrapped in opossum cloaks. Several of the old men, armed with spears, keep on running round the prostrate company, threatening to thrust through with the spear anyone who dares to look up. Meanwhile the postulants, perhaps three or four in number, have been set in the middle of this circle, daubed all over with red paint. Their mothers come forward and manumit them, that is, by certain symbolical movements, hand over the custody of the boys to the "Caraves" or "medicine men," who are to train them in the knowledge of the mysteries. These men seize the boys and run away with them up the narrow path which leads to the circle of invitation - the inner shrine, as it were, of this open-air temple in the woods. When they are gone, the crowds that have been lying on the ground are allowed to rise up, and they depart to their dwellings in great glee.

Within the other circle, the lads have to lie flat on the ground, it may be, for two or three weeks, under the constant

charge of several old men, and during that period they get only a little bread and water. One young man, who had been initiated, told me that when at last he got the order to rise, he was so faint that he staggered and fell. The trees around this circle, have the bark cut with numerous devices to the height of seven or eight feet up, to represent the gods of the native mythology; the boys were taken round to these and bidden to look on them, and are told which god each device represents; the old men also continue from time to time to instruct them in the beliefs of their ancestors. When the boys, by fasting and low diet, have been brought to a sufficiently ethereal state of mind to believe submissively all that their instructors say, they are carried to a camp some miles away, but are assured by that old men that they have got there by flying through the air. Here, they are kept for a long time, receiving instruction in the tribal lore, the duties of the tribesmen, and all other thing that a full member of the tribe ought to know. When their instruction is completed, the boys with all the men go to a big pool of water near-by, and wash off all the paint—red and white—from their bodies. They then form themselves into two parties and engage in a mimic battle, to test the valor of the youths as warriors. This over, the initiated are now full members of the tribe and begin to bear their new duties and privileges.

These, then, are the Australian ceremonies of "man-making"; they are best known by the name of "the Bora," and I have described them "in petto" as they were practised in my part of the country. Elsewhere they have other names, and the rites are abridged or varied; yet in all tribes they are essentially the same.

It is worthy of note that in the Bora grounds which I have examined, the path up the hill faces the east, or nearly so. Does that mean that the principle of orientation is part of the religious system of our blacks?

Now, to all these ceremonies close analogies are found among the natives of the Congo and Upper Guinea, and less markedly in other parts of Africa. And these analogies are so conspicuous, that I can account for them only by believing that the Australian blacks and the blacks of the Congo regions had a common origin in the far distant past. There are several other remarkable instances of correspondence in their beliefs, but these cannot be noted here at present.

Professor Spencer's book also explains the tribal organization of the tribes which he visited. Nearly every tribe in Australia has two or more intermarrying classes, and marriage and descent are strictly regulated, according to the classes and totems, as is well known. But in one of the tribes which he notices, descent is counted in the male line, not through the mother, as in many other tribes. It is clear, therefore, that, notwithstanding all that has been written about Australian mother-right and father-right, the whole subject still requires investigation.

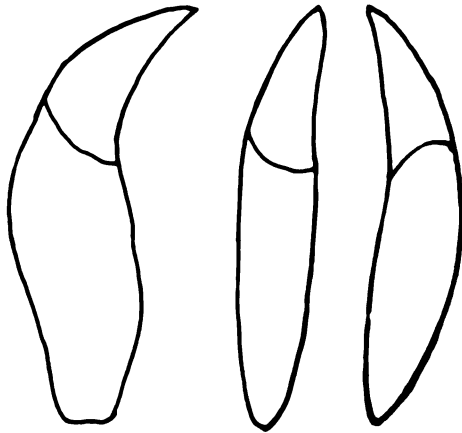
TEETH TOOLS IN CANADA.

BY G. E. LAIDLAW.

When one considers the needs and necessities of primitive people, one is not surprised at their display of originality in means and material necessary to their well being and comfort, nay their very existence, especially amongst the semi-sedentary and hunter tribes of the north. True, they had the material at hand which every primitive people have, namely, stone, bone, wood, horn and clay; but, nevertheless, in the manufacturing of implements and utensils from these and other materials, not for everyday uses and needs, but for occasional special uses, lies their ingeniousness.

At occasional times lately, while investigating the ash-beds of this vicinity (Toronto), I was struck with the occurrence of

certain teeth ground into various shapes for use as tools, notably the canine teeth of bears and the incisor teeth of beavers and porcupines. The first formed into knives, shavers, and possibly borers, by grinding laterally flat on the enamel, while the latter were formed into knives, chisels, and graters, the knives be-

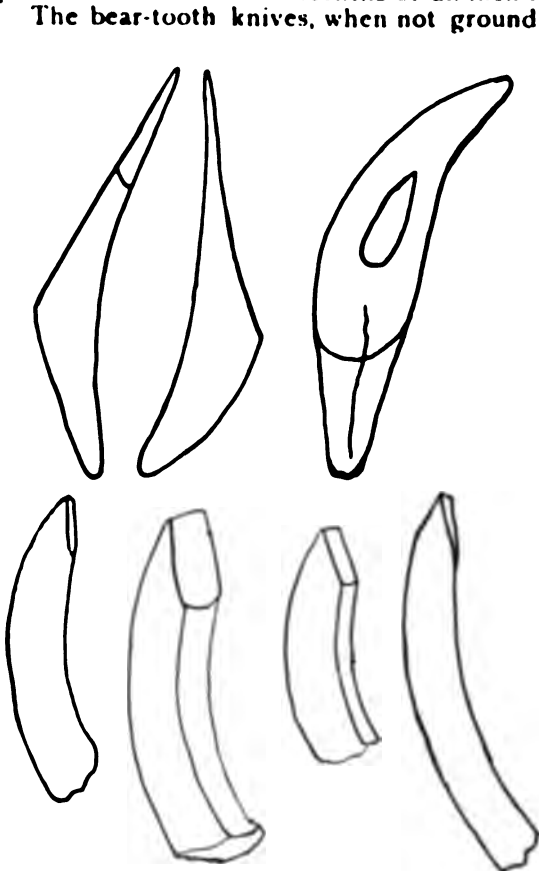


BEAR TOOTH.

Side, back and front views. Natural size.

ing formed by splitting the teeth longitudinally and grinding the fractured side to an edge, either on the outside of the tooth, or on the inside, as the necessity or fancy demanded, thus in one case forming a knife having the edge on the longitudinal convex portion of the blade, useful in cutting from the user, and vice versa in the other, it being edged on the concave portion, and used in drawing toward the user, such as cutting thongs, scraping shatts, etc. The chisels and graters called graters because they fit the narrow, incised lines on pottery which was made before the vessel was baked, a use which the smaller rodents' teeth need not be ground for)

having the top surface ground smooth, to a greater or less degree forming an acuter angle with the cutting edge than the natural one. These chisels and gravers are the full width of the tooth, though, in an exceptional case, the tooth has been split and the sides ground down, forming in one instance a graver of about three-sixteenths of an inch in width at the bit.



BEAR TOOTH AND BEAVER TEETH.

Upper figures, 1 and 2—Bear tooth ground for knife. Lower figures, 3, 4, 5, and 6—Beaver teeth ground for graver and chisel.

The bear-tooth knives, when not ground very thin, can be used as shavers, by placing on the ground part, the convex side facing out, and shoving away from the user, when they are capable of taking off a fine shaving; but these shavers may have been knives, abandoned before being completed, for some reason or other. However, when more fully ground, they are capable of being used in various ways, not excepting boring, for their enamel edge is very sharp and is capable of doing just as good, if not better, cutting in wood than a blade of flint is.

The above subject is here treated in a local

sense, and is necessarily short, on account of lack of material, some dozen or so specimens only having been obtained. This class of artifacts, only being noted in ash-beds, elude the search of, except the most vigilant investigators. The only mention of these particular tools that has come to my notice so far, is in "Primitive Industry," page 213, where a lower incisor of a beaver that is ground to an edge, is figured, and is from a grave in the Mohawk valley.

There were other uses for teeth by the aborigines, such as perforated teeth of the bear, wolf, elk, dog, etc., for suspension as necklaces or ornaments for the dress; and teeth with denominational marks upon them, used in various gambling games (see "Chess and Playing Cards," issued lately by the Smithsonian Institute). Sometimes we come across bears' teeth, split longitudinally in half through the longest transverse diameter and the split side smoothed by grinding. Its a problem to what particular use these latter were put to.

Again, in the southern mounds of Georgia and Florida, according to Clarence B. Moore and Cushing, sharks' teeth, both fossil and of the present geological period, are found, which show traces of having been put to some use, having their edge worn or perforated, and their points chipped or showing wear by use.



BEAR TOOTH

Split in half and then ground smooth with sharp inner edge, for a tool.

With the exception of these isolated cases, I have come across no other instance of teeth used as tools by our aborigines (not regarding the Esquimaux). The ashbeds of this vicinity contain a great number of these beaver and porcupine incisor teeth in their natural condition, showing wear at the cutting edge, and quite a few showing grinding on the sides. These teeth, generally split up to fragments on exposure to the air. The lower incisor teeth of the beaver, being naturally adapted to cutting wood, and the teeth of the porcupine to stripping bark and cropping twigs for food, can we wonder, then, that the aborigines noted this and improved on their cutting propensities, for, according to A. F. Hunter, in a letter on the above subject, "aboriginal genius was very flexible and much more adaptable to what they had to work with than European genius."

Kau, in "Prehistoric Fishing," gives on page 38 a figure of a fish hook, made out of a wild boar's tusk, from the lake dwelling at Moosedorf, and on pages 28 and 32, bears' teeth having the figures of a pike and a seal engraved on them, respectively, found in the bone cave of Duruthy Grotto, France.

We have no spades that I know of, or plows, also, no native shells large enough for hoes. I often come across shoulder blades, on village sites, splintered at the broad edge, which may result from use as hoes, etc. They must have had some sort of agricultural tools for the cultivation of corn, etc., which was noticed by the early priests explorers in the Huron and other countries, also remains of which are found in ashbeds.

AMERICAN INDIANS' HANDICRAFT.

BY W. H. BRAINERD.

In the niches of the beautifully carved Corse Hill (Scotland) sandstone of the grand western staircase of New York State's famous Capitol are neat cases of oak and plate glass, containing American Indian curios. These relics of New York aborigines form a section of the State Museum. They are the property of the State of New York, by purchase, and are in the custody of the Regents of the University, who control the affairs of the University of the State of New York. The University consists of all incorporated institution of academic and higher education, the State Museum, the State Library, and such other libraries and museums or other institutions for higher education as may be admitted by the regents. The regents also have in their possession the wampums of the Six Nations of New York, a powerful combination in its day, the University having been appointed keeper of these unique belts in July of 1898, when the chiefs representing the descendants of the once powerful tribes visited the Capitol and formally placed the valuable historic relics in its keeping. The wampums are the widest on record.

But the purpose of the writer is not to tell of wampum, but of the earthenware of the New York aborigines, and clay tobacco pipes, mainly. The valley of the Mohawk is rich in specimens of Indian handicraft. There are yet many mounds which have never been explored. They were used for burial purposes, religious ceremonies, and in some instances as places for observation. The value of these mounds to the archæologist does not depend upon their size. Frequently the Indians would heap up a great quantity of soil over the body of some chief and, after the mound was leveled, the archæologist would obtain little for his pains. The burial mounds are usually about 100 feet long, fifty feet wide and of varying height. The mounds in New York State are usually of this kind.

There has been much written on the results of explorations of mounds, the most recent contribution to literature on the subject being "Earthenware of the New York Aborigines," by Rev. W. M. Beauchamp, of Baldwinsville, forming one of the bulletins of the University of the State of New York. This is profusely illustrated. A. R. Richmond, a banker at Canajoharie, who has about 20,000 specimens of Indian products in his collection; Rev. O. C. Auringer, of Albia, and Prof. D. F. Thompson, of the Rensselaer Polytechnic Institute, are the more prominent of the collectors of New York State. They find that the Indians occupied only the territory to the west of the

Note. Cuts which illustrate these pipes will be found in the chapter on Mound-Builders and Indian Relics in the book on Mound-Builders; chapter xiv.

Hudson River, judging from the relics discovered. As a rule, vessels of stone or bark preceded earthenware. Those of bark have left no trace, but those of potstone or steatite are not rare in many localities, but where they are found, earthenware is usually absent. The Iroquois and Algonquin Indians employed the latter largely. The Esquimos still use potstone vessels. The earthenware vessels are mostly of unique decoration, their makers employing strings, pebbles, grain, finger nails and sometimes the human face for that purpose. In some instances the collectors have been unable to definitely decide just what device was used, to bring about some of the results obtained. For the greater part the vessels were sun baked, fire being used in comparatively few instances. There have been discovered a few places which have been taken for kilns, the prospectors judging from the pottery found and its position.

It is Dr. Beauchamp's belief that the Iroquois did not make stone pipes when first known, unless rarely, the clay pipe being then in use throughout the nations of that large family, but for official purposes stone calumets appear quite early. Captain George Weymouth, in visiting Long Island in 1605, found that the heads of tobacco pipes were sometimes made of clay, and sometimes were only the claw of a lobster. Henry Hudson observed among the Hudson River Indians copper pipes and cooking utensils. Evidences of the use of copper are frequently brought to light in other states than New York. In Martha's Vineyard, Massachusetts, pipes with hard dried clay bowls, and stems of copper, finely closed and cemented together, were found recently.

The Hurons were fond of a pipe, known by collectors as the Huron pipe, which had characteristic human heads and arms. Another popular design with this tribe, was a bowl entwined with serpents and with a snake head bowl, which, however, was more strictly a favorite of the Seneca tribe. Owl pipes were made by the Petuns and the Oneidas, and the long stems, with lines and elliptic indentions were everywhere popular. Dr. Beauchamp believes that but little pottery has been found in New York to which an age of much over 500 years can be safely ascribed, unless it may be on small hunting camps. Chronologically, most the articles he describes in his Regents' Bulletin belong to the seventeenth century, and the larger part of the rest apparently to the sixteenth.

The question whether tobacco smoking originated in the eastern or western continent is still an unsettled one, but the authorities mostly lean to America as being its birthplace. Edwin A. Barber is of the belief that fairy pipes, Celtic or elfin pipes, are the oldest form known in Great Britain. Dr. Beauchamp in his able paper, says

The usages connected with tobacco are of great interest. It was an acceptable offering to spirits of every kind, and a little bag of it is attached to a large wooden mask lying before the writer, to keep the spirit of the mask in a peaceful mood. It allayed storms, and was grateful to the

thunders. It was always used at the burning of the white dog, and was indispensable at councils of peace or war. In digging ginseng a little of it was scattered over the first plant found, which was left unharmed. How largely it entered into Indian life may be seen in old chronicles, or even on a reservation now.

This native northern tobacco, *nicotiana rustica*, is used in all sacred functions, and grows spontaneously when once introduced. It has a yellow flower, and is smaller than our commercial kinds. In the prosperous days of the Tionontatie, or Tobacco nation of Canada, it was a source of revenue to that ancient people. Loskiel said, "The species in common use with the Delawares and Iroquois is so strong that they never smoke it alone, but smoke it with the dried leaves of the sumac or other plants." The Onondagas still cultivate this species sparingly, calling it *oyenkwa honwe*, real tobacco.

On his pipe the Indian exercised his highest taste and skill, nor did he wish to lose his own enjoyment of its beauty. Early clay pipes had the finest features within the smoker's sight, the face on the bowl being usually turned toward him. Later examples often reversed this feature, both in clay and stone. Quite commonly it will be found that the figure on the bowl was molded separately, and then attached. Detached heads occur, broken off, and often beautifully wrought. Symmetrical designs appear, as when two or more heads of any kind are grouped in various ways. Very often the form is both simple and elegant, as in the trumpet pipes with their graceful curves. After a time, however, the cheap and convenient pipe of the white man, or the elegant red stone pipe of the west, displaced the work of the native forest artist.

A very large proportion of the aboriginal clay pipes of New York were made by the Iroquois, and many are very neatly finished, the work on them being much better than that on earthen vessels. Some are so smooth as to suggest a dull glaze. This appearance, however, comes from the careful finish of the surface. They vary much in color, as the vessels do. Some Seneca pipes have almost the appearance of black marble. Those found farther east are much lighter in hue. The ornamental work varies still more, and is often quite artistic. Human heads, with those of quadrupeds and birds often embellish the bowls, and more rarely the stems. Lines and dots are sometimes tastefully arranged. The upturned and open jaws of some animals occasionally form the bowl, while some peculiarities hint at a knowledge of the whites in a few prehistoric sites. The Algonquins also made pipes of clay.

Precisely when European pipes began to be used by the New York Indians, we may not be able to decide. Large white stems, carved as ornaments, appear on the Onondaga site of 1654, but this was occupied for some years longer. No Dutch pipes have been found, known as such, and it is not likely that English pipes would have been introduced inland, till the English took and retained possession of the province of New York. On some sites of the last quarter of the seventeenth century, such pipes have been found. In 1684, duties were laid on tobacco pipes and boxes intended for the Indian trade, amid a host of other things, so that they must then have had an extensive use here and elsewhere. As public gifts to the Indians they first appear in a council held in 1692, but some may have been given before. The older ones have the bowl rather small and barrel shaped, and the maker's initials may appear on the projecting heel below the bowl. A large number of pipes have been found of these and somewhat differing forms, and some are of much interest to the antiquarian. In later councils wampum pipes appear as presents, but without any suggestion of their form or nature. They are mentioned in reports for 1702.

THE PREHISTORIC MONUMENTS OF BRITTANY.*

BY PROFESSOR A. B. MACALUM.

The menhirs, dolmens, and tumuli of Brittany, though much discussed, still offer problems for solution which are of importance in determining features of the Neolithic and Bronze periods.

The age of these monuments is undecided, for Fergusson† believes that they are all post-Roman, while others claim for them an anterior origin. The difficulty in this matter is due to the fact that the remains were not, until the close of the last century, thought worthy of reference by writers who must have seen them. Caesar, who was in the neighborhood of Carnac when the sea fight between his galleys and those of the Veneti took place in the Gulf of Morbihan, makes, in his description of that battle, no reference to the thousand menhirs, which, if they were there then, he must have seen also at the time. On this ground Fergusson regards them as of later date, but one cannot depend very much on such a line of argument, for Madame de Sevigné visited Auray and the Carnac region in 1680, and although she wrote copiously about everything that apparently came under her observation then, she makes no reference to the existence of these monuments. Are we, therefore, to conclude that they were erected in the eighteenth century? On the other hand, the site of a Roman camp has been discovered in the area covered by the menhirs of Kermario, in the neighborhood of Carnac, and some of the menhirs were used in the construction of the wall, while others inside the enclosure are blackened with soot, probably due to the legionaries using them as hearthstones. This clearly indicates an *Ante-Roman* date for the foundation of these monuments. In regard to the age of the dolmens of Brittany, the character of the skulls found in them is decisive—while the skull of the tribesman in Brittany in Caesar's time was brachycephalic, that of the dolmen builders was sub dolichocephalic, or mesaticephalic. From this it is concluded that the dolmen-builders were a race which preceded the Celts in Western France. How far back in time dolmens were first erected it is impossible to say, but it must be recognized that in North Germany, in Norway and Sweden, and in Ireland dolmens were erected in the Christian era.

In regard to the significance of the menhirs, nothing as yet has been definitely determined. Remains of human skeletons, accompanied in some cases by flint implements, have been found

* Reprinted from the *Canadian Institute Proceedings*, vol. 10, pp. 103-105, 1902. See also *Journal of the Royal Anthropological Institute*, vol. 32, pp. 1-10, 1902.

† *Journal of the Royal Anthropological Institute*, vol. 32, pp. 1-10, 1902.

at the foot of some of them, and hence it is inferred that they are the equivalents of our burial headstones. This explanation must appear doubtful to anyone who has examined the "alignments" of Carnac. Here very few human remains have been found in connection with them, although there are thousands in the district. The view that the "alignments" were connected with sun-worship or serpent-worship, postulates first of all an explanation of the object of the isolated menhirs in other parts of France and in Great Britain. Sun-worship undoubtedly obtained amongst ancient British and Gallic tribes, but the founders of the menhirs have yet to be shown to be of Celtic or Belgic affinities. There is very little evidence to show that serpent-worship obtained among these, or among the earlier inhabitants of France. In the tumulus on the island called Gav'rinnis, in the Gulf of Morbihan, the local guide points out to visitors a sinuous line which is believed to represent the serpent, but anyone who examines closely the rich sculpturing about it will see at once that the artist had no preconceived plan, and that the sinuous line, being made last, is the unforeseen, haphazard result.

It is difficult to believe that the "alignments" were not connected with some religious observance or creed. The extraordinary size of some of the menhirs forming them, and particularly of the fallen and broken one near the Dol des Marchands, is such as to force one to question whether any influence, save religious, could have compelled the founders to undertake the gigantic toil of their erection. Undoubtedly they must have been regarded as sacred objects, and this leads one to understand why they were used in some cases for human burial. Their use, therefore, as burial monuments may have been secondary. We have an instance of such secondary use in the case of cathedrals and churches of to-day. The existence of stone circles or cromlechs, like the one which terminates the alignments at Menec, would further seem to strengthen the view that all these monuments were in some way connected with religious observances.

The dolmens present less difficulty as to their significance. They are more or less caverns formed in many cases of gigantic stones which are usually only partially sunken in the earth, and covered by very much larger flat stones, often weighing many tons. In these chambers have been found human bones, flint and sometimes bronze implements, with some specimens of rude pottery. Wedge-shaped specimens (*celts*) of jade, or green stone, have also been found in some dolmens. This bears on the "axe" cult which undoubtedly obtained among the dolmen builders. In the dolmen near Locmariaquer, called the Dol des Marchands, a large figure of an axe is engraved on the under surface of the covering stone. On the large flagstone on

the floor of another dolmen of that neighborhood, the *Mane-Lud*, there is a very large figure of an axe in relief. This is pointed out by the local guide as the figure of a sword. On one of the flat stones taken from the tumulus to the south of Locmariaquer, called *Mane-cr-H'rocc*, there are many axes sculptured. In order to understand the significance of these figures, one must compare them with what has been observed in several of the Marne caves. In these are three instances of a female figure rudely sculptured, associated with the outlines of hafted axes. In the dolmen of Colloïgues, in the Department of Gard, the slab forming the central part of the roof has a female figure rudely outlined, and under it is cut the figure of an axe. All



DOLMEN OF GRAND ISLAND, FRANCE.

these sculptures have been found associated with burial. The axe, therefore, was the symbol of some cult, believed to be that of a deity who is now termed the "Axe Goddess." This cult was accepted by the Celtic and other contemporaries and successors of the dolmen builders in Gaul, and was continued even during the Roman occupation, for amongst the Romanized Gauls the practice obtained of putting a figure of an axe on a headstone, or in place of the figure the words, "*axē axat*," or "*saxē t. t. t. t. t.*" What the cult of the Axe Goddess signified it is impossible to do more than conjecture. Its association with death and burial possibly points to the belief in a goddess of death. The cult has for students of the origin of religions this important interest: It is the only one we know as

belonging to the Neolithic age, and further, it was handed down from Palæolithic times, or at least from the transition period between the Palæolithic and Neolithic ages, when caves were not inhabited, but used as burial places. Borlase* attempts to show that the cult obtained over the whole of Western Europe, and he claims that indications of it are shown in the pottery of Hissarlik found there by Schliemann. That it had a wide range may be granted, for in Palæolithic times there was probably one race occupying the whole of Europe, and this fact would account for a wide diffusion of ethnic and religious ideas, but it may be doubted if some of the figures, e.g., those of the pottery at Hissarlik, supposed to be those of the Axe Goddess, are more



DOLMENS AT LOCHMARIAQUER OF TABLE MARCHAND.

than accidental resemblances to the symbols of her cult.

The tumuli were undoubtedly used for the sepulture of important persons, such as kings, chiefs or leaders, and their relatives. It is not improbable that they may have been used in the case of certain religious rites, for in the tumulus called *Maner H'roec*, at Lochmariaquer, and in *Mont St. Michel*, at Carnac, a large number of celts (stone axes) were found, and these have been regarded as votive offerings either to the Axe Goddess, the manes of the dead, or to the divinities of death. In many of the tumuli the bones found were more or less incinerated, proving that cremation was practised. On the

* "The Dolmens of Ireland," vol. II., page 576

exposed surface of the greater number of the slabs forming the walls of the tumulus of Gavr'inis the line-tracing or sculpture is very rich, and gives a marked distinction to this tumulus. It would seem to have been the tomb of a king.

It is in the dolmens, however, that one finds the largest number of inscriptions. These have not been deciphered. They would appear to consist of two kinds—one ornamental, good examples of which are to be observed in the upright supporting stone of the Dol des Marchands, the second totemic, of which examples are to be found in the dolmen at Kerioned, in the Alée Couverte des Pierres Plates, near Locmariaquer, and in the Alée Couverte of Luffang. A curious fact is that in the two last named there are the outlines of the same figure, which seems to the writer to be that of an opened lentil pod. On one of the slabs in the Mane Lud dolmen there is an inscription which is difficult to classify. It is clearly not ornamental, and it is not totemic, for an almost similar one has been described as found in the New Grange tumulus, near Drogheda, Ireland. Something similar is to be observed on one of the vertical slabs at the end of the cavern in the Gavr'inis tumulus, but here the outlines are less readily traced, owing to the surrounding lines of sculpture following the curves of the inscription. It may be hierogrammatic in function.

Of what race were the dolmen builders? The definite answer to this question would determine also who were the founders of the tumuli, for it is generally conceded that the three classes of monuments may have, in Brittany at least, been built by the same tribe or race. Though first looked upon as of Celtic origin, it is now recognized that they are the remains of a race which inhabited the western and northwestern part of Europe before the advent of the Celts. This race, known as Iberian, also occupied Ireland, Wales, and the western portions of England and Scotland, and thus the distribution of dolmens and other megalithic remains would be accounted for. There are, however, difficulties in accepting this view. The dolmen-builders were mesocephalic, the Iberians dolichocephalic. The Iberians who inhabited the Dordogne district and the portion of the Landes district, including Dax and its neighborhood, from Paleolithic times, did not build dolmens, and in all the country lying between the Gironne and the Pyrenees, inhabited in Caesar's day by the Aquitani, a tribe of the Iberians, there are very few megalithic remains.

The explanation of these difficulties can only be conjectural. According to Collignon* the Iberians were not a race, but an assemblage or collection of tribes, derived from three races which inhabited from the earliest times the Spanish peninsula.

* *Revue Archéologique*, 1890, p. 107. *Revue Archéologique*, 1891, p. 107.

These were the Neanderthaloids of Gibraltar, a people like the Cro-Magnon race, and the type called *be De Quatrefages* the race of *Mugem*, whose remains are to be found in kitchen middings, on the banks of the *Tagus*. Accepting this view, it would be possible to regard the *Aquitani* as a less mixed race descended from the Cro-Magnon type of Palæolithic times, and, therefore, not possessed of the same customs as the more mixed Iberian race or tribes. *Sergi*,* on the other hand, claims for the Iberian race a single African origin, and that as a uniform race it spread over Western France and the British Isles.

It would appear that in order to ascertain definitely who the dolmen builders were, it is necessary first of all to determine clearly the origin and history of the Iberians, and this can only be done when the anthropology of the Spanish peninsula is as fully worked out as that of France.

EGYPTOLOGICAL NOTES.

BY REV. W. C. WINSLOW, LL. D.

THE TOMB OF PTAHHOTEP. The Archaeological Survey Department of the Egypt Exploration Fund has been making a thorough study of the celebrated tomb of that wise Solomon Ptahhotep, prince and priest in the fifth dynasty of Tetkara, rated on the Abydos tablets as the thirty-second king of Egypt. The official of the society, Rev. N. de G. Davies, has just sent us a vivid, as well as scientific, account of his labors at that tomb. I use some of his manuscript and follow his spelling of proper names. He says he has spent the whole five months in the tomb of Ptahhotep at Saggara, dwelling alone in its corridor, and copying its sculptures. For a little excavation soon showed that the name and plan, which were the whole notice of it in Mariett's "*Mastabas*," were quite misleading. Another burial chamber was found to exist on the west, and both this and the corridor were inscribed in honor of his son, Iknethetep. The little chamber of Ptahhotep (dating from the fifth dynasty, c. B. C. 3600), which, both by reason of its workmanship and its charming compactness and completeness claims to be one of the most perfect specimens of the art of the ancient kingdom, was found to be all in the tomb which bears his name. The decoration of the chambers of his son is distinctly inferior. The stone is in places wretchedly poor, precluding good work, and the scenes of the corridor exhibit all stages of execution, from the almost defaced first sketches in ink up to the delicately moulded low relief, over

* *Ursprung und Verbreitung des Mitteländischen Stammes*. Autorisierte Uebersetzung von A. Eyzano, Leipzig. Verlag von Wilhelm Friederich.

the gentle swellings of which one can pass one's hand with almost as much pleasure as over the surface of the living limb. Nor are the inscriptions of any special interest. They are few and customary, and the most uninteresting subject—the bearers of offerings—being that which was of most vital concern to the dead, the first place and the best efforts of the sculptor were given to this. Nevertheless, there is proof that the artist was capable of the highest, especially in one half-finished group of cattle, which may scarcely be surpassed by anything similar in Egypt. And even the hundredth "Reward of the Spirit" did not fail to excite anew keen admiration for the bold draughtsmanship and skilful technique, and for the artistic appreciation of those subtle curves which the human form assumes.

The art traditions of the tomb being then so high, and the productiveness of the most ancient golden age of art known being limited, Mr. Davies has taken some pains to give something like a fac simile in outline of the whole relief. Those of them which are defaced, or in bad preservation, require an amount of labor quite disproportionate to their value. Hence his sojourn has been much longer than he expected or wished. He can only hope that the pleasure which he has received from the beautiful wall surfaces, which have supplied him with shelter and entertainment, as well as hard labor, so long, may be communicated in appreciable measure to many who can never hope to see originals which he has reburied under their guardian sands.

The unfinished state of the corridor of this tomb of Ptah-hetep helps to carry one back to days when the draughtsmen of a simpler age were at work on these walls. It would be deeply interesting were it possible to come into nearer acquaintance with the men whose spirit and cunning have immortalized themselves in these stone sculptures. It is scarcely to be believed that men of these highest powers were many in number at any time. Such perfection could hardly be reached apart from continuous employment, and the quantity of finest art which remains from any reign of this age is not more than might be due to one or two masters. Possibly the work of some Egyptian Michael Angelo is before us in this tomb, so that the scheme of subject, the faultlessly pious inked outlines, and the deft chisel work which so beautifully replaced them, are the work of one versatile hand. Without having so complex a mental life as ours, and lacking nomenclature and historic precedent for his sensations, this genius, in whom the natural bent of his country men toward the feelings and powers out of which true art is born found gathered expression, may have been one whose spirit found delight in beauty, and in the creation under his hand of beautiful forms. But all knowledge of these men is lost, and we are most thankful for as much as an initial in the corner of the picture of one of these "makers" of olden time. Low down in the corner, near the door of

Ptahhetep's chamber, where the customary scene of a fracas among the boatmen is depicted, we see in the last boat our artist seated—"his beloved and truly artist, Ptahankhni."

A charming point of epigraphy, useful as indicating the extreme reliance we may place on the forms of hieroglyphics of the ancient kingdom is afforded by the chamber of Ikhet-hetep. The pyramid sign in this tomb is nearly always represented with two horizontal lines drawn through it, about one-fifth from the base and one third from the top. A painted example gives the reason. Here the lower portion is painted in imitation of granite, and this custom of laying some of the lower courses in this stone is to be seen—in fact, only a few miles from here—in the German excavations at Abusir. Perhaps the base of the pyramid, with its sloping sides, represents the artificial or artificially shaped mound or platform which the same excavations so admirably exhibit. The hieroglyph is the more interesting that the pyramid in question that of Assa has not yet been identified. So that the copyist may be in time able to give a helpful hint to the excavator.

KARNAK. The renovation of this the grandest of all ruins now extant goes hopefully forward, and reflects credit upon the archaeological department of the Egyptian government. I am glad to say this, because M. Amélineau's account of his discoveries at Abydos reveal a carelessness that is intolerable, the fellahs having had free access to the historic mounds, containing the sacrificial jars and other objects dating back 5000 B. C. The famous impending column has been raised to its due dignity and the architecture above it replaced. It is said that the methods of the ancient Egyptians were followed; a sand-hill was made as a scaffold, and upon its slope the single parts of the shaft were drawn down to be reunited. Seven hundred men did the pulling! In a nook of the temple were found blocks which belonged to a now destroyed building of the great Queen Hatsa, whose obelisk still dominates much of those marvelous ruins. The sculptures upon the blocks depicted the funeral of the queen and some of the events of her reign.

SIWAH. An exploring tour to the Oasis of Jupiter Ammon, in the Libyan desert, at a place called Siwah, has been made by Herr Grunan of the German army. He ascertained that but few of the remains of the temple of Ammon now exist. As but a quarter of a century ago the ruins were well preserved, here is another instance of the destruction of the monuments of Egypt by man for greed or mischief. In this temple Alexander the Great was proclaimed a son of Jupiter, and probably the inscriptions were of value, as well as interest.

THE NATIONAL OFFICE. I wish to make this explanation, especially respecting the "spolia opima" of our work, by quoting from our last circular:

First—The Egypt Exploration Fund has two offices—one in London, and its national office for America, in Boston.

Second—There is no "Boston Branch" of the Fund (see last Annual Report), because the office in Boston represents neither Boston, nor Massachusetts, nor even New England, but is our one national office.

Third—A few independent and local organizations secure subscriptions and forward them in part or whole to London direct; but such local bodies are not integrally of the Fund, nor co-ordinate with the Society whose office is in Boston. Their affiliation and efforts should stimulate local interest and increase local support.

Fourth—All subscriptions through the national office in Boston are credited to the *exact locality* in the United States from which they come—the address of each subscriber being sent to London—and antiquities are now sent direct from London to our local museums *pro rata* of the subscriptions received. Therefore neither local pride nor a local museum need be the cause for a subscriber to send his subscription to a local organization rather than to the national office in Boston.

Fifth—It should be remembered that the national office *alone* has all the records (since 1883) and data which are always useful, and often necessary, in ordering books, answering inquiries, etc., etc. This ensures accuracy. There is constant communication, too, between the offices in London and Boston. It should not be forgotten, also, that it is *patriotic* and wise to maintain our cohesion or unity in America, and not to fragmentize ourselves into independent local organizations. So large is our country, so grand our cause, that the local organizations in Archaeology and Egyptology have each a *special* and splendid opportunity or mission for enlisting support. The Fund, too, through its national office, has still its *general* and splendid mission, and now a noble one—that of preserving our unity, our American unity, in advancing the cause we all have at heart.

CANNON BALLS FOUND ON ANCIENT VILLAGE SITES IN MISSISSIPPI.

Editor of THE AMERICAN ANTIQUARIAN:

I write a few lines in regard to the above-mentioned subject. I know three places in Mississippi, where cannon shot have been plowed up, causing persons in the vicinity, not well informed in State history, to suppose that battles had occurred there between the whites and Indians. The three places referred to are—A village site on the west bank of the Tombigbee, a few miles east of West Point, a village site on the south side of Line Creek in Oktibbeha County, eight miles northeast of Starkville, and a village site, a few miles northeast of Philadelphia in Neshoba County. As to the latter place, if I understand my informant correctly, it was the site of the Choctaw town of Kofitalana. This Kofitalana relic was found prior to our inter-state war. As to the localities of the other two relics, which were found since the war, no troops of either army ever marched, camped, or fought at or near either place, so they can be neither Federal or Confederate relics.

The obvious solution of the mystery is this—These relics were picked up by Indians at the old abandoned French or Spanish forts in Alabama or Mississippi, brought home to their villages and used as hammers for cracking nuts, or as pestles for the shallow stone mortars, or, perhaps, used for both purposes. This would account for the presence at places where we know no Indian battles were ever fought. H. S. HAYWARD.

JERUSALEM EXPLORATIONS,

BY SELAH MERRILL, LL. D.

For three years, closing with the summer of 1897, the Palestine Exploration Fund (English) made excavations on the south and east slopes of Mount Zion, extending their work on the southeast as far as the Pool of Siloam, in the hope, mainly, of tracing the south wall of ancient Jerusalem. Many bits, sometimes large sections of walls were uncovered, also gateways, streets, scraped rocks, many cisterns, pieces of columns, capitals, and carved work, such as one might expect to find in a place where the debris of city after city had been accumulating for four thousand years. In those parts, the slopes of the hill are steep, hence whatever buildings or walls were from time to time destroyed would only tend to make the confusion greater in any remains now existing. The explorer's task is not easy, and is reward is seldom a generous one, for no matter how much ground is dug over, how many shafts sunk, and tunnels driven far below the surface of the ground, the public are interested only in the actual results achieved.

In the present case, it has been very difficult to classify properly the objects that have been brought to light, or to fit the general facts thus ascertained into the history of the ancient city. It is, therefore, no criticism of the faithful work of the explorers to say that the additions made to our knowledge of the walls of the city on the south side are slight. Pieces of walls have been found, built of stones varying in size and workmanship, but to what age they belong, or who constructed them, it is difficult to determine.

Some interesting, so-called "stairs" were found leading from the Temple area down toward the Pool of Siloam; these, however, should not be thought of as the massive flights of steps leading up to some great public building, but as an inclined street with "steps" at considerable intervals. I believe it is not claimed that these are very ancient, still they may possibly illustrate the words in Neh. iii., 15: "The stairs that go down from the city of David."

For many years it has been known that, in Roman times, when the emperors had a fad for making a "straightstreet" throughout the principal cities in this part of the East, there was a street running north and south through Jerusalem, beginning at the Damascus gate and terminating at some point on the south side of the city. This street followed, nearly, the present street which runs south from the Damascus gate, first through the Moslem bazaars, and beyond them what is now known as "Jew street." It is thought that the portion of this

"straight" street which led south from the present city wall has been recovered.

It has been ascertained, also, that in the time of Herod and of our Lord, the Pool of Siloam was surrounded by a spacious and beautiful arcade, which was roofed in by massive slabs of stone, and that stone seats were provided for the visitors. Remains of a church, dating from about A. D. 500, have likewise been recovered near the Pool of Siloam.

What is surprising, is that in all this digging, only a very few ancient coins were found, and those of no special value in helping us to assign dates.

Since the issue of a new Firman to the Fund last autumn, the time of which is limited to two years, and the region or space where excavations can be made is likewise limited to a very small area, the society has been at work at Tell Zachariyah on the plain south of the railway station called Deir Aban. Fred. J. Bliss, Ph. D., son of the well-known Dr. Daniel Bliss, of Beirut, is in charge of the work, and he is assisted by Mr. Macalister, who furnishes all plans, sketches, photographs and drawings. The exterior walls, built of rather small stones, of an old castle have been exposed, and the explorers have found, also, a series of very curious rock-cut chambers, and some interesting bits of terra cotta, but nothing sufficient to determine the age of the mound or its remains. The party are at present at work at Tell es Sañ, which many suppose to be the site of the Philistine city of Gath. Both these mounds may easily be found by finding Askalon on the coast and running the eye a little north of east toward the hills, the two places are not far from each other. If Tell-es-Sañ is really the site of Gath, it is not unreasonable to look for important results.

BILL WILLIAMS

Bill Williams, from whom the famous "Bill Williams Mountain" was named, was, according to Mr. W. W. Curtis, the correspondent of the "Chicago Record," a Methodist preacher, and originally went out to the frontier as a missionary. He traveled extensively among the various tribes of Indians on the plains and in the mountains, from the Kiowas and the Kaws of the Missouri valley to the Apaches and Moaves of the southwest. When sojourning with any particular tribe he adopted its customs and manners, and when he grew tired of them he would seek others and live as they lived. In that way he became familiar with nearly every Indian tribe in the southwest, and also imbibed many of their notions and superstitions. He possessed a wonderful gift for acquiring languages, and could speak almost every dialect. He translated the bible into several languages, and was very useful to other missionaries, but he gradually fell from grace, and became more famous as a hunter and trapper than as a missionary. It is said that

he was better acquainted with the topography of the plains and the mountains than any other man, except Jim Bridger, but Gen. Fremont severely criticised Bill's ability as a guide and accused him of errors that came very near sacrificing the lives of his entire expedition.

Nearly every old mountaineer, however, throws the blame on the other side, and contends that if Gen. Fremont had taken Bill Williams' advice he would never have run into the death trap where he lost all of his animals, instruments, records and several of his men. They explain that Fremont insisted upon following the Arkansas river to its source, although Williams explained to him that it was impracticable. Williams remained with him as a guide. The party was caught in one of the most terrible snowstorms that was ever known. The men were compelled to abandon their horses and mules, which perished, and their instruments and all their records, and Williams led them back to Taos nearer dead than alive. This controversy lasted for several generations. Williams always disclaimed responsibility for the expedition, and threw the blame upon Gen. Fremont. The latter, on the other hand, declared that Williams was responsible for leading the party into such a desperate situation.

Although Williams lived the greater part of his life with Indians in their tepees, adopted their habits and customs, and practically became one of them, he was nevertheless a victim of their hatred of the whites and was shot by an Apache down in Arizona along some time in the '60s.

NOTES AND NEWS ABOUT MUSEUMS.

SOUTH KENSINGTON MUSEUM. - The foundations of a new building designed to contain the art and industrial collections have been laid. The sum of £300,000 has been appropriated to the new building.

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THE UNIVERSITY OF PENNSYLVANIA. A party of explorers who have recently returned from Borneo with collections for the above University, are about to start for Burmah and expect to make archaeological and ethnological collections. Mr. A. C. Harrison, Jr., W. H. Furness and Dr. H. H. Hiller constitute the party.

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THE FIELD COLUMBIAN MUSEUM. - The accessions to the museum consist mainly of articles which represent the customs and myths of the Hopi, together with a few more specimens of pottery from the shell heaps of Georgia. Rev. Mr. Voth, a missionary among the Hopis, is at present engaged in arranging the collection from that region, and in making screens and

altars which will illustrate the dances and other ceremonies. The pottery from Georgia contains some unique pottery trowels, made concave to mould the outside and containing patterns on the side for stamps.

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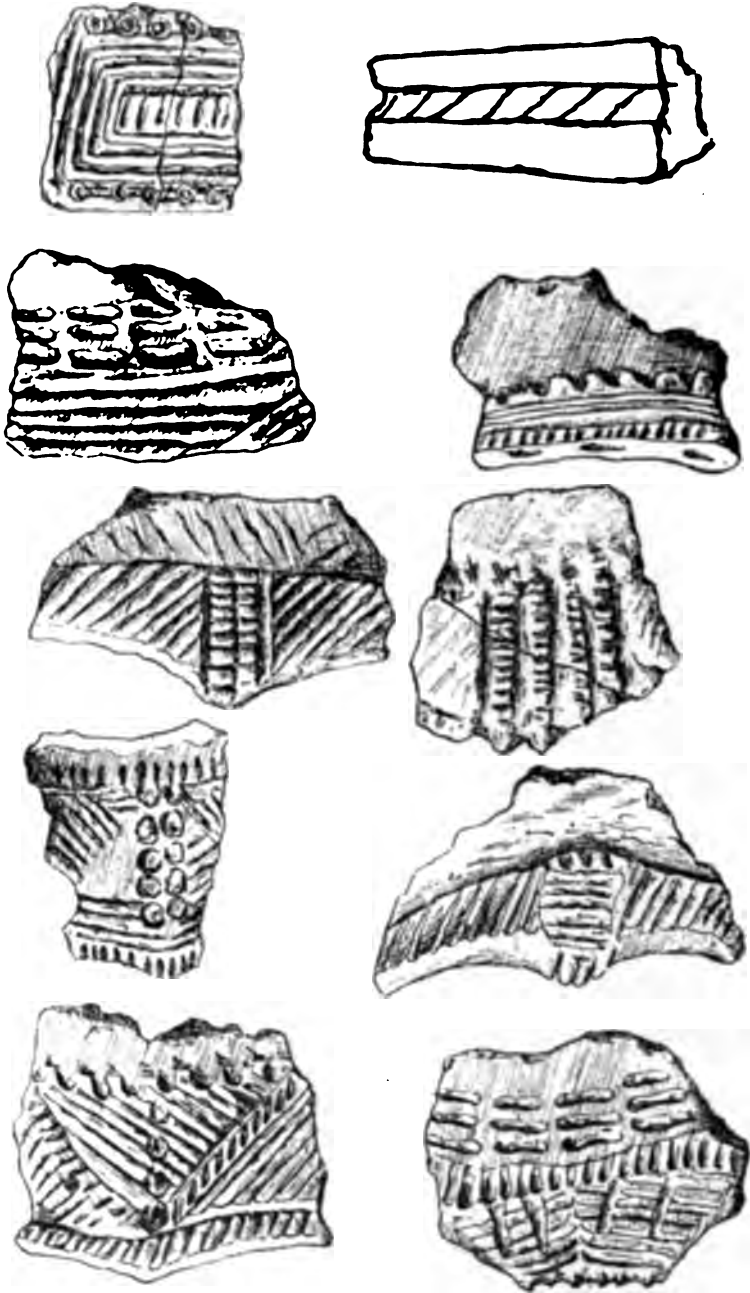
THE INTERNATIONAL FOLK-LORE SOCIETY.— An all-day session of this society was held in Walker Museum on the 25th of May. Interesting papers were read. The evening session was occupied by a musical recital of the songs of the Dakotas, which had been gathered by the famous Bright Eyes and set to music by Professor Eames of the University of Nebraska. The officers elected for the ensuing year are: Dr. Paul Carus, president; Prof. F. Starr, vice-president, and Mrs. Helen M. Bassett, secretary.

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DR. DANIEL G. BRINTON, professor of American Archaeology and Linguistics in the University of Pennsylvania, has presented to the University his collection of works and manuscripts relating to the aboriginal languages of North and South America. The collection represents the accumulation of twenty five years, and embraces about 2,500 volumes, in addition to about 200 volumes of bound and indexed pamphlets bearing on the ethnology of the American Indians. Many of the manuscripts are unique. A number of the printed volumes are rare and of considerable bibliographical importance. The collection of works on the hieroglyphic writing, of the natives of this country, embraces nearly every publication on the subject. The special feature of the library is that it covers the whole American field—North, Central and South—and was formed for the special purpose of comparative study.

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"**THE ANTIQUARIANS**" are some three hundred women of artistic tastes, interested—as the name implies—in the antique. This includes everything of artistic merit. A dozen years ago the society existed under the name of the "Society of Decorative Art," and was the first society devoted to art works in Chicago. Later it was affiliated with the Art Institute, and "The Antiquarians" was adopted as the name. The north wing of the Art Institute has been assigned to the collection of the society, and here the treasures are displayed—laces, tapestries, ecclesiastical vestments, old furniture, embroideries, old French fans of the empire, Chinese, Japanese and East Indian carvings. In addition to the large collection belonging to the society, members and outside collectors sometimes loan articles for display for different lengths of time. The tapestries of the Louke collection, bought when the display was made here, are considered the society's choicest treasures.



POTTERY FROM CANADA, WITH NEW YORK PATTERNS.



HUNTING KNIVES.

loaned by W. F. Stone and S. Stone.

The knives which are figured in the plates on the left are of the same pattern as those which are shown on the right. They illustrate the difference between the Stone Age and the Metal Age. Knives of this pattern have been found in Canada.

The very fragile knives on the preceding page are from Canada. They contain the same patterns as those seen in New York State.

EDITORIAL

MEGALITHIC MONUMENTS AND MYTHOLOGY.

The descriptions of stone circles, dolmens and other megalithic structures which have been given in the last few numbers make it appropriate that we should review the different classes, and give some account and, if possible, an explanation of the traditions, folklore, stories, myths and customs which are connected with them. It will be understood that the great centre of these monuments is found in Brittany and in the north of Europe, and here they have been subject to the most thorough investigation.

I. It is, however, in their distribution and classification that we are especially interested. They are scattered over the whole globe—in the north of Europe; in Scotland, Ireland, Denmark, Sweden; in North Africa, Algeria, Palestine and various parts of Syria; also on the southeast coast of Africa, at Mashonaland, and in various parts of India; they are found, also, in Japan and the islands in the centre of the Pacific Ocean, the Caroline Islands, the Ellice Islands, the Easter Islands, and even in South America, especially in Peru. They are not all of the same character, for some are mere standing stones without any architectural character, except such as any monument or headstone or grave post or obelisk may possess. Others are in the shape of massive walls, which are built up out of rude, undressed stones and are commonly called cyclopean walls. Still others are in the shape of houses, both conical and square and resemble the lake dwellings in their shape, but are built of stone. Still others have the character of towers, and are supposed to be fortresses. Others were probably used as temples and tombs, and had a large amount of symbolism connected with them.

(1.) In reviewing these structures, we shall take the standing stones first, for these are the rudest. They are of several classes, and may be divided as follows: (a) The alignments, which are so common in France. They are supposed to be the grave stones which mark the field of battle, and yet they are connected with cromlechs and dolmens and must be regarded as among the most ancient of the stone monuments. (b) The avenues which are so common in Great Britain, are there connected with stone circles, and resemble the alignments, but must be classed by themselves. These are very curious and a great deal of folklore is connected with them. (c) The cromlechs and stone circles which are so numerous in England, and which

are supposed to indicate the prevalence of sun-worship there, form a very interesting class. There is a vast amount of folklore connected with them and a great deal of speculation is still practised. The theory that they were built by the Druids is the most popular, and, perhaps, the most plausible of any that has been thus far held. It is at least persistent, and has been renewed within the past few years.

(2.) The Cyclopean walls, which are so numerous in Greece, may be mentioned next. These are regarded as architectural structures, though they are very rude. They are especially interesting because of the myths which have given to them a name which has become classic. The walls are of three kinds, which, according to Tsountas, the chief archæologist of Greece and the successor of Schliemann, may be described as follows: (a) The walls which have undressed stones piled together without any order, resembling very much a common stone fence. (b) The second order employs great hewn stones, placed in horizontal courses, but with break-joints. This is called "ashlar masonry." (c) A third order is the so-called polygonal, which employs stones carefully hewn into polygons with unequal sides, and so closely joined that there are no gaps and, consequently, no bonding with small stones or mortar.

(3) The dolmens are the most numerous and, perhaps, the most interesting. These are generally regarded as burial places. (a) Some of them are built up with three or four rude, undressed blocks and have a massive stone on the top, serving as a roof, possibly as a place of sacrifice. (b) Others are built up with slabs, forming a rectangular chamber with a flat roof and a square doorway, the doorway being furnished with a pier and a lintel. They resemble houses, and have more architectural character than any before mentioned. (c) The megalithic structures in the Caroline Islands, which have been described by Mr. F. W. Christian, resemble in many respects the dolmens, though they are made out of immense blocks of trachyte, ranging in length from fifteen to thirty feet, and are three to seven feet in thickness, and are piled up like the logs in a log-house, with a single square opening for a door. (d) The dolmens of Japan resemble those of Europe, but are generally covered with earth, having roofs of stone, and are really mounds and dolmens combined, furnished with several openings. They are supposed to have been graves. (e) There are structures in the Easter Islands which might be classed with the dolmens of Europe; some of these are mere foundations of platforms, designed to support the massive statues which were placed as guardians to the island, and which always looked out to sea and are plainly visible to navigators who approach the islands. There are, also, ancient houses at Orango in these islands which are made out of stone slabs and covered with earth, and have doorways formed

from placing other stone slabs as upright posts with lintels across the top. The platforms are, here, the most interesting of the structures, for they present cyclopean walls which might be compared with the rectangular masonry of Troy and Greece.

(4) The conical huts, which are so numerous in Great Britain, should be mentioned next. These have been described by Mr. A. L. Lewis and others, and are regarded as very ancient. They are called "Pict houses." They have a great variety of shapes and are very numerous. Mr. Lewis speaks of them as having hearths and seats and doorways protected by projecting walls and covered with earth. There are others which are grouped into small clusters, with several rooms in a single house, the roofs resembling the cones of a pottery kiln. Some of them are occupied even at the present day. It is supposed that they derived their shape from the huts and that they ultimately developed into the treasure-houses, for the treasure-houses have the same conical form.

(5) Towers are to be mentioned next. These are more modern in their appearance, and are not always classed with megalithic structures. They are fortresses and look-outs and lighthouses, and are very widely distributed. Those which are situated in Sardinia are the best known, though the brochs of Scotland are, perhaps, the most mysterious. The towers at Mashonaland, which have been described by Mr. J. W. Bent, are also very curious. The towers in the Philippine Islands have become known within a few years; but those in the Easter Islands are known only to a few. These are called observation towers, and have a rude stone hut adjoining, making them resemble the modern lighthouse.

II. The most interesting peculiarity of these ancient monuments is that so much mythology or folk-lore is connected with them and that so many even now depend upon it in accounting for their origin and use, as well as for the names which have been given them. We may say that this folk-lore is not confined to any one country or age, but is a common inheritance and is almost universal in its prevalence. There is, to be sure, a great variety to the tales and myths, for the Greeks have one set of myths which have to do with the towers and tombs; the Celts and Saxons have others, which are always associated with the cromlechs, dolmens and alignments found in France, Scotland and England; the Russians have another set which are connected with the Kurganes or tombs of their country; the Chinese have another set of tales which account to them for the dragon ornament and many-storied pagodos with which their architecture abounds; the South Sea Islands have another series which explain their ancient structures, as do those of the Peruvians and the Japanese explain the peculiar monuments with which these lands abound.

These myths do not account for the monuments, and have not any particular scientific value, except as they suggest the law of association and show how ideas are always associated with material forms among all classes, even among the most intelligent and especially so among the simple and the unintelligent. These tales and myths are so many and varied, that it would require a large volume to describe them and, in fact, many volumes have been written concerning them. All that we can do is merely to refer to them, and say that these stories mark a stage of archaeological and architectural progress; just as others do, a certain stage of astronomical progress, and still others do a stage of historical progress.

The majority of the tales resemble the fables of Esop and the stories of the Arabian Nights, and yet they are instructive, for they show the character of the age in which they originated, and of the people among whom they survive. They are the waifs of an unwritten literature, the fragments of a language which is only spoken, but they perpetuate names which have become noted and which are too well established to overthrow or reject. If scientific men use the names, it is because they are familiar and because they illustrate one peculiarity of the monuments.

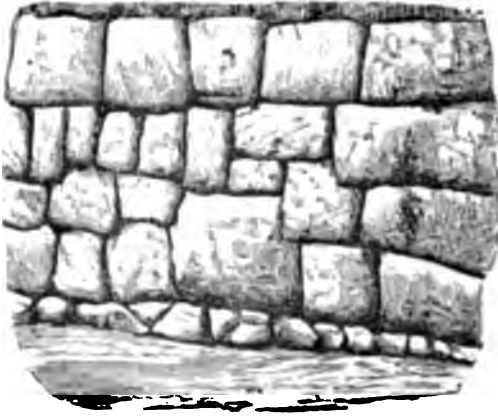
It will be noticed that the myths and legends always correspond to the religion which prevailed in the countries which contain the monuments, and yet it is impossible to tell which preceded the other, and so we are in doubt as to the age of either. Still, the names and the myths taken together mark the stages of thought, as the monuments mark stages of architecture, and the comparison of one with the other may be very suggestive and profitable. They are, in fact, an element which mark the beginning of architecture, which ought not to be despised.

No archaeologist would at the present time undertake to build a theory upon such foundations, any more than an astronomer would take astrology as the foundation of his science, or the geologist would the stories concerning the fossils for the foundation of his science; yet every one will realize how fascinating they once were, and how interesting they are even now. There is a practical advantage in them, also, in that they have served to make the monuments in a sense sacred, and have been the means of preserving them. It is, however, important that we should notice what the impressions were concerning the objects and use of these ancient monuments, for there was always something in the appearance of these structures which continued to suggest the story and make it perpetual.

Let us, then, turn to these folk tales; making our starting point with the ancient mythology of the Greeks and working from them to the more modern tales of the north and far west, but taking the monuments in order of their architectural pro-

gress. We take the Cyclopean architecture as an illustration of this thought.

The Cyclopeans were a race of people who were regarded by the Greeks as the priests and votaries of Uranus, who was supposed to have had an ancient temple at Corinth, which was little more than an altar, on which offerings were made to the



CYCLOPEAN WALL IN GREECE.

sun. They were also supposed to dwell near Mount Atna, and, perhaps, on this account the name came to be applied to walls which were made up of rocks heaped up without order, like the rocks in a mountain. The term is often applied to the towers which are common in Sardinia and the other regions about the Mediterranean, and a novel interpreta-

tion or explanation of it has been given. It is as follows: Polyphemus was one of the Cyclopean race. He was a musician, who lived in a cave and had only one eye. The fable was that the Cyclopeans had temples, at the top of which they preserved a perpetual fire. These mythical temples were afterward confounded with the towers which were so numerous. The common opinion was that the object of the round tower was to serve as a look out by day, and a light house at night, as well as a refuge for the people. It was easy to imagine the light at the top to be the eye of Polyphemus, and to give credence to the theory that the towers were all built by the Cyclopeans. The term afterward came to be applied to all rude walls which were built after a certain pattern, and the myth



MEGALITHICS IN PERU.

formed of slabs, of the same material, hewn like planks, and reaching from wall to wall; the very doors and window shutters are of stone, hung up on pivots, projecting above and below. Some of these ancient cities have from 2 to 500 houses still perfect, but not a man to dwell in them. These are called the giant cities of Bashan.*

There are other ancient structures in India which have myths and legends associated with them. These are more like the dolmens and cromlechs of the north of Europe than they are the giant cities of Palestine, but they constitute a class about which many traditions have gathered, without distinction, those of the Iron Age being mingled with those of the Bronze and Stone Ages, and all considered as the work of the gods or of the giant races. In England they are called Druidic monuments, and are supposed to have come from India, introduced by the Druids, who first lived in India and migrated there at an unknown date. In India, however, the same monuments are ascribed to the gods. In Greece, where pelagic buildings were erected, they were ascribed to the demigods. In Africa they are ascribed to the Phœnicians.

The monuments of Europe, especially those of France, England, Denmark and Sweden, have a great number of myths and tales connected with them; and the names given to them are often very suggestive, especially such names as "Arthur's Round Table," "Kit's Kotty House," "Long Meg and Her Daughters." The same is true of the dolmens of Japan, Peru and the Polynesian Islands, though these myths are not so well known.

III. The question now arises, as to the bearing of these myths and traditions on the age and origin of these monuments. In answer, we may say that a great change has taken place in the opinions of archaeologists within a few years. Formerly it was held that nearly all these monuments were the work of different races who had migrated from the far East, and that scarcely anything was indigenous. While the distinction of the three ages was fully recognized, many maintained that there was between the Paleolithic and the Neolithic epochs an extended hiatus, which was followed by the sudden appearance of a more highly developed civilization, brought in by a sea-faring and slowly migrating race from the East. Two waves of invasion are described, the first bringing in polished stone, the later introducing bronze relics, cereals, agriculture and the domestication of animals. Not even credit for the construction of the great stone dolmen-tombs was granted, for these were all ascribed to an invasion from the North or South, or some other direction.

The Phœnicians were, perhaps, antedated by the Dolmen-Builders, and even the Celtic priests, who are known by the mystical name of the Druids, were possibly anticipated by the unknown people; but by none was it believed that the indigen-

* See "The Giant Cities of Bashan," p. 60

ous race had been equal to the task of building the monuments.

Latterly, however, the belief has turned to the other extreme, for not only has the succession of architectural periods been recognized, but each has been ascribed to the unaided skill and growth of the indigenous races.

It was during the Neolithic Age that the domestication of animals occurred. During this age, also, the terrameres of Italy were erected. During the same age the dolmens of France and England, and even of Scandinavia, were erected. During that age the megalithic structures of Japan and Peru were also built. If there was an intrusion such as the traditions of Peru and of Polynesia describe, it only resulted in the advancing of the common people into builders, and in the appearance of a governing class; the sea being the medium by which the waves of population swept over the distant lands.

THE ARCHEOLOGY OF THE NORTHWEST COAST.

A very active and able body of men have arisen during the past few years on the Northwest coast, some of them residents of the State of Washington, others in British Columbia. The majority of these gentlemen hold strongly to the opinion that there was a contact between this continent and eastern Asiatic countries, and even with the islands in the central Pacific, in prehistoric times.

Among the arguments advanced, the most forcible, are those brought forth by our associates, the Hon. James Wickersham and Rev. Herbert H. Gowen, the one from a study of the laws and institutions of the Chinese, compared with the customs and symbols of the prehistoric Americans, the other from the study of linguistics and the comparison of the language of the Polynesians with the Sanscrit.

Gentlemen, who have visited the Pacific coast from the Atlantic, have come to the same conclusion, from the examination of relics, and the New York archaeologists, Dr. Boas and H. E. Smith agree with our associate, Prof. C. Hill Tout, in this respect. The gentlemen, who hold the opposite opinion and argue *ex cathedra*, are such as have never visited these coasts, but have become committed to the theory which they adopted years ago, and for the sake of consistency feel bound to support it. The result is that confidence is weakened and the scientists of the West and Northwest and the East are likely to array themselves into classes which are divided by geographical lines.

It is unfortunate that the Atlantic and the Pacific are so far apart, and that the centre has not had the authority or the prestige and the centripetal force that is needed to crystalize opinion or direct investigation. The day is not far off when such will be the case, and the work which has been done under a very peculiar circumstance shall come to the surface and make itself felt in all parts of the country.

NOTES

THE JESSUP EXPEDITION. H. I. Smith, who was engaged last year in exploring the regions of the Northwest, writes from the Pacific coast and is now on his way to the same regions and will continue exploring.



THE LETTERS OF W. W. CURTIS to the *Chicago Record* have given much information in reference to the Pueblo Indians and their unwillingness to enter schools, or adopt modern customs or faiths. It should be understood that there are two parties—the friendly, called "American Indians," and the "hostiles." The latter cling to old customs and are conservators of the ancient ceremonies.



DR. CARL LUMHOLTZ has for several years been traveling among the Sierra Madre Mountains and among the Tarahumari and the Tepehuane Indians, the former living in the southern part of Chihuahua, and the latter in Durango. He lived a year and a half among these tribes and then spent a half year among the isolated Huichole Indians, who number about 4,000, and are walled in among the mountains of the State of Jalisco. He has also spent some time among the superstitious and rather unfriendly Tarascan Indians of Michoacan. In the five years of his work in Mexico he has lived among ten tribes. He expects to publish a book entitled "Five Years among the Indians of the Sierra Madre." Among his large collections are nearly 2,000 photographs of the natives, their arts and customs.



THE SOCIAL ORGANIZATION AND SECRET SOCIETIES OF THE KWAKWIL INDIANS are described by Dr. Franz Boas in an article which occupies 320 pages in the Report of the United States National Museum for 1895. The account was written mainly by Mr. George Hunt of Ft. Rupert, B. C. There are some things in this account which surpass belief, such as the ghastly practice of taking the bodies of slaves and feeding upon them, even taking dead bodies and devouring the flesh. It is stated by those that live on the Northwest coast that this account is exaggerated. The secret societies certainly have great sway among these people. During the winter, their ceremonies form the chief occupation and engage most of their time. The calendar is changed to suit them. The ceremonies are reported with the utmost minuteness of detail.



ORIGINS OF THE INDIANS. Major J. W. Powell has an article in the *Zionist*, April, '98, which sets forth his old-authoritative opinion that the American races were autochthonous, or that they came in at an ancient geological age and developed here independently of all other races. Mr. James Wickersham, our associate, has published an able pamphlet in answer, in which he claims that there are many evidences of contact with China and other nations, and that the arts, customs, symbols and languages were much influenced by this contact. It is a fortunate circumstance that the gentlemen who are at a distance from the seat of authority, and at the

same time somewhat near the channels which connect the western and eastern shores of the continent have taken up this subject. The discussion will undoubtedly change the opinion of many, or at least throw additional light on the subject. Nothing can shut off debate when American scholars get interested in scientific subjects.



THE CALIFORNIA INDIANS have strange ideas of creation. Described briefly and by an Indian, the American myth is as follows: "There was a world before this one in which we are living at present; that was the world of the first people, who were different from us altogether. These people were very numerous, so numerous that if a count could be made of all the stars in the sky, all the feathers on birds, all the hairs and furs on animals, all the hairs of our own heads, they would not be so numerous as the first people. The people long lived in peace, but conflict set in and on cause of this, they were turned into the various kinds of creatures that are on the earth—beasts, birds, and reptiles. A change was effected in various ways. There were cases where the hero transformed enemies. In the Wintu system nearly all of the changes were effected by Oleibis. The word Oleibis means "dwelling on high." There is a story of a woman, which recalls Helen of Troy, also of Sedit and his two brothers, who were the same as the coyote and turkey buzzard. There are several myths from the Yumas, who were neighbors of the Wintus. They relate to various animals, also the finding of fire and the first haunts of the world.



SCANDINAVIAN RUNES IN AMERICA. A sensation was started among the literary men and historians of Chicago and vicinity, a few months ago, by the news that a stone had been found in Minnesota containing Scandinavian Runes. The news was startling because of the distance from the sea coast and the known track of the early voyagers, but, inasmuch as the celebrated Welsh prince was reported to have reached the deep interior, and as various tribes of the far west had been supposed to be able to speak Welsh, it was quite natural to suppose that other northern tribes had been able to reach the Runes. The discussion went on and articles were written to prove that as early as 1322 a ship from England had reached Iceland in 1472, and that a vessel had reached a point 100 miles west of Cape Isabella in 1476. David Ingram made his way from Texas to Mexico and was rescued by a French ship on the St. Louis River, New Brunswick, in 1525. De Vaca returned from Florida to Mexico, and it was not impossible that Europeans could have been in Minnesota in 1322.

The Editor of THE AMERICAN ANTIQUARIAN happened to know that there was a woman in Minnesota, who 1700 years ago undertook to publish a translation and interpretation of the Pictish Rock inscription as a record of the Natchez, in its sojourn at Lake Umbagog, with lines between the pictures, and that parties in Michigan had discovered Pictish characters and letters, Egyptian hieroglyphics, and therefor, it is not to be wondered at, that he had the other taken, and waited for the next steamer's course. The name was soon over and the query was: "What's next?" The other is empty. The runes and buried Welsh princes have had their turn. What will be the next sensation?

REPORT OF FIELD WORK CARRIED ON IN THE MUSKINGUM, SCOTO AND OHIO VALLEYS DURING THE SEASON OF 1876, for the Ohio State Archaeological and Historical Society. By Warren K. Moorehead, Curator of the Society. Reprinted from Volume V. (1897), *American Publications Ohio State Archaeological and Historical Society*. Columbus, Ohio: Press of J. L. Granger, 1897.

Mr. Moorehead is a very industrious man. He was formerly custodian of the Ohio State Archaeological Society and conducted field work in Ashland County, along the Ohio River, and in Ross County. His report contains sixteen cuts representing mounds of that region, some of which are beautiful in shape. It also contains twenty-seven illustrations, the relics from the mounds.

REPORT OF THE COMMISSIONER OF EDUCATION FOR THE YEAR 1877-78, Volume I, containing Part I, Washington: Government Printing Office, 1878.

REPORT OF THE COMMISSIONER OF EDUCATION FOR THE YEAR 1877-78, Volume II, containing Parts II and III, Washington: Government Printing Office, 1878.

The first volume of this report treats of education in France, Germany, Denmark, Switzerland, and Greece, also commercial education, Sunday schools, land grant colleges, colleges, catholics, kindergartens.

The second volume treats of education in the United States, and in Alaska and Hawaii. It gives a statement of institutions, normal schools, schools for defective classes. The two volumes together embrace a vast amount of information and are very valuable.

REPORT OF THE UNITED STATES NATIONAL MUSEUM UNDER THE DIRECTION OF DR. SMITHSONIAN INSTITUTION, FOR THE YEAR ENDING MARCH 31, 1878

This report, which contains Dr. Egan's on the Folk of Indians, who live in the valley of the Amazon. It is a valuable addition to the work of Dr. W. H. Henshaw, and is published by the Smithsonian Institution, under the direction of Lewis G. Coates, Secretary of the Institution. The Institution is situated at Washington, D. C., and is the property of the Federal Government. The volume is published by the Smithsonian Institution, Washington, D. C., 1878.

COMMISSIONER OF THE LAND OFFICE, WASHINGTON
FIELD WORK AND RESEARCHES IN THE STATE OF TEXAS, BY THE
 SECRETARY OF THE LAND OFFICE, WASHINGTON, D. C., BY AUTHORITY OF
 LAW, M. C. BROWN, PRINTING OFFICE, WASHINGTON, D. C.

This report contains a valuable collection of specimens of the plants and animals of Texas, and is a valuable addition to the knowledge of the natural history of the State. It is published by the Land Office, Washington, D. C., and is a valuable reference work for the people of Texas.

COMMISSIONER OF THE LAND OFFICE, WASHINGTON
FIELD WORK AND RESEARCHES IN THE STATE OF TEXAS, BY THE

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MOUTH OF SHAFT IN THUNDER MOUNTAIN, ARIZONA.

THE

American Antiquarian

VOL. XXI. SEPTEMBER AND OCTOBER, 1899. No. 5.

TERRA-COTTA ANTIQUITIES FROM THE LAND OF THE INCAS.

BY A. F. BERLIN.

In the splendid collection of natural history objects and archaeological implements owned by the late Dr. T. W. Detwiler, of Bethlehem, Penn., are about 300 pieces of prehistoric ceramic ware, and other specimens of stone, etc., which were taken by him from tombs and burial caves, while on an exploring expedition, lasting nearly three years, in the states of Cauca and Antioquia, in the Republic of Colombia, South America, a section of which once belonged to the Inca Empire. When the illiterate Spanish adventurer, Francisco Pizarro, with his gang of murderous soldiers, and other followers, invaded the land of the Incas, it extended north and south along the Pacific coast of the South American Continent from near the second degree of north latitude to the thirty-seventh degree of south latitude.

The great historian, Prescott,* tells us that its breadth was never determined, and ignores the statements of the Spanish writer, Garcillasso de la Vega, who, in his "Commentarios Reales" (Libra, 1609), Parte 1, Lib. 1, Cap. 8, says that the empire of the Incas did not in its greatest breadth exceed 360 miles.

In the collection are many rare forms of vases, pitchers, bottles, bowls, jars, idols and whorls, any of which are worthy of separate description. This large and valuable gathering of easily-broken ware was safely transported long distances on the backs of mules, and by friendly natives, who, on account of good treatment, took much pride in safely delivering it on the coast.

Not so, however, with the custom inspectors, when it reached New York City. They, in their careless inspection of

* "Conquest of Peru," Vol. I, Part IV.

the ware, broke, cracked and otherwise injured many of the pieces, which, however, by careful manipulation were in many cases again nicely restored.

With it were also brought a number of golden objects which were discovered similarly, and which it will please the writer to describe in a future paper. The gem of the collection is a finely made circular vase, covered with a rusty brown paint, seven and one-quarter inches high, and six and one-quarter inches in diameter at its mouth, as well as at its base. Around the edge of its slightly outward curved rim, is marked a single incised line accompanied with short diagonal rays, or strokes, opposite each other on the vessel. Extending from base to rim are placed in strong relief two nude female forms, in a squatting position, with small ridges meant for arms folded across their breasts. Between the two female figures is placed, also in strong relief, on each side of the vase, a half-cylinder-like projection rounded at top, also extending from rim to base, six inches long, and two and one-quarter inches in width. These two prominences, as well as those of the human-like reliefs, were produced by pressure from the inside of the vessel when still in a plastic condition; then shaped and smoothed, which work was no doubt performed with the aid of smoothing stones. The writer has a number of these implements in his cabinet, which were found in Mississippi. A few are also contained in this collection of pottery.

Each leg of the human like figures has upon it, extending from side to side, below each knee, and at each of the ankles, two incised lines. The vase holds about three quarts of water. The writer has seen no prehistoric aboriginal vessel more artistically made.

Imagine an unevenly shaped loaf of Vienna bread, eight and three quarter inches long, four inches high at its opening, which is in the centre, and then also four inches wide, and the reader can form an idea of the shape of another vessel in the collection. This vase was once covered with a black paint, the greater part of which has disappeared. Its wide mouth, which is in the centre, has a diameter of three and one-half inches, and its neck has around it, for ornamentation, a single line of triangular depressions three quarters of an inch high. Opposite each other on the neck are fastened handles for lifting or suspension.

A small bowl, painted a brick red color, three inches high, and four and one half inches in diameter, is another noteworthy object. The upper part of this vessel is turned inward, forming a line about one inch broad. The bowl is divided into four almost equal triangular parts, by three parallel incised lines extending through its centre from one side of the opening to the other, each of which is covered with lozenge shaped depressions, many of which are one quarter of an inch deep. Around the inward bent edge, above and below, are also two parallel incisions, and through the centre is placed a single line of the

deep lozenge-shaped holes. One-quarter of an inch below the mouth, opposite each other, are placed single perforations, made for suspension. Very many of the vessels in this splendid collection are similarly perforated.

There is in this cabinet, an exaggerated, or one might say, a grotesque form of the human female, in a sitting position with outstretched legs. It is thirteen and one-half inches high, and that part of the object representing the face and head, which is square, and the body, are both six and one-half inches wide. The neck is a simple groove or depression, extending from side to side. The eyes are two simple incisions one and three-quarter inches long; as is also the mouth, which measures almost an inch in length. The nose is extremely prominent and curved, and what in the human nose would be termed the septum is perforated, which part, however, is unfortunately partly broken off. Many of the idols bear this perforation, and in some of them the rings, made of gold and copper, are still seen suspended. The ears are shown by two ring-like projections. The arms, which are short and clumsy, are in a position indicating that on them once rested another object, whatever it may have been. This is proven by the fact that through the palm of the left hand was forced a perforation. A cord, no doubt, was placed through it to secure firmly the object held. They are both ornamented on the upper side at the wrists and above the elbows with parallel and diagonal lines and dots. So, also, are the legs, at the ankles, and thighs. These are also large and without shape, and are four and one half inches long.

Another interesting piece of ware is a low lozenge-shaped bowl two and three-quarter inches high, fourteen and one-half inches long, and eight and one-half inches wide at the centre. The rim around the bowl, which extends on both sides of its wall, has an equal width of one-half inch. At each of the angles are to be seen three button-like projections, having the appearance of the eyes and beak of a predatory bird. For so large a vessel, its base is exceedingly small, measuring only three inches in diameter. The construction of the vessel is such, that if suddenly pushed to one side it will immediately return to its proper position; a broad base being, therefore, unnecessary.

A similar piece of pottery, without adornment, represents a nude female in a horizontal position, with short and uncouth outstretched legs, resting on a low, expanding, hollow base, four and one-half inches in diameter. It is four and one-half inches high. The opening of the bowl, the walls of which extend inwardly, measures six and one-quarter inches in both directions, and is two and three-quarter inches deep. From the head to the feet the length is eleven inches. Through the small and triangular-shaped head is a small perforation, extending from ear to ear. The arms are merely ridges, bent toward the rim, which is grasped by both hands, formed by small-

incised lines. There is a hollow space between the bowl proper and its base, and in this was placed, at the time of its manufacture, a small clay ball, which produces a rattling noise when it is handled. It was once covered with a light brown paint; but is now considerably blackened, caused, no doubt, by heat and fire. Its base, also, shows signs of usage. It is, indeed, a remarkable piece of pottery ware.

In the cabinet can also be seen the compound or double vessels, which were made with such perfection that they produced, when filled with a liquid, the air escaping through the opening left for that purpose, sounds at times very musical. These sounds sometimes imitated the voice of the animal represented by the principal part of the pot.

Another noteworthy vessel in the collection, is of oblong or shoe shape, without ornamentation, and has a rather large opening at one end. It is about six inches high and eight inches long. A number of these pots are figured by Dr. T. F. Branstord in his "Archæological Researches in Nicaragua," who there unearthed them from aboriginal graves. Many of them are of large size, and contained the remains of human beings. Dr. Berendt, an archæological explorer, thought that the peculiar shape of these oblong urns was due to their convenience for containing the human long bones; but the discovery of skeletons, which had been disarticulated, disproved this theory. E. G. Squier noticed their skull-like form; and a resemblance to the shape of the stomach has been suggested by Prof. Otis L. Mason. Dr. Branstord, after examining hundreds of specimens, inclines to the belief that the bird was the original type. (See page 59 of his interesting work.)

Here, also, is represented the gourd, in a pretty long-necked vessel, painted a light brown and the body covered with black geometrical figures containing light circular dots. It is eight inches high, the main part of the bottle being four and three-quarter inches high, and the neck four and one half inches long. Its body has a diameter of six inches.

So numerous and varied in design, as well as in ornamentation, are the many vessels contained in this magnificent collection, that to give a complete description of them would fill a volume of most interesting archæological reading.

The writer is certain his readers will be interested in the observations made on Peruvian pottery by the learned archæologist explorers and travellers, Mariano Edward Rivero and John James Von Tsch. II, in their "Peruvian Antiquities," page 275, which he reproduces

If we compare the principal parts of the plastic art among different nations, we shall see that, though the artists always intended to represent a whole figure, yet with an indexterity of skill and incorrect execution of the exact proportions they exaggerated the features of the parts. In the representation of man in the East we generally find in excess the head or some organ belonging to it; thus we observe in the Egyptian statues the eyes protruding from the sockets, and the face in profile, and in the Peruvian modelling

the nose and ears are above their natural size. Among the Egyptians, long figures predominate; among the Peruvians, short and bulky ones, and among them we find a greater want of proportions, than in those of many other nations which we have had occasion to examine. In the most ancient specimens of the Peruvians, the head always forms the principal part, and presents a marked appearance, indicating that the artist exhausted upon it all his skill; the body forms a deformed mass, and the extremities are appendages of the least importance, having sometimes only a tenth part of the correct proportions, as compared with the head. This is found as well in human figures as in animals.

All the skill of the Peruvian potters was laid out upon the manufacture of the Huacas, Conopas and sacred vessels which they placed with the corpses in sepulchres. The kitchen furniture and other vessels for domestic use are very simple, and without art. The material which they made use of, was colored clay and blackish earth, which they prepared so well, that it completely resisted fire, and did not absorb liquids. It seems that they did not burn the vessels, since the substance of these differed very materially from burnt clay, and, judging from appearances, they dried it in the sun, after having prepared and mixed it in a manner of which we are ignorant. Many are double, and it seems that they made them thus from preference. The double ones were made in such perfection that when they were filled with a liquid, the air escaping through the opening left for that purpose produced sounds at times very musical; these sounds sometimes imitated the voice of the animal which was represented by the principal part of the vessel; as in a beautiful specimen we have seen, which represents a cat which, upon receiving water through the upper opening, produces a sound similar to the mewling of that animal.

This nation of pottery-makers were well advanced in the progress of weaving woollen and cotton cloths. This is proven by the fact that the collection contains a number of clay cylinders and stamps, with which they painted upon their fabrics many pretty and graceful designs. Cotton and the coarser woollen cloths, of the llama and huanaco wool, were considered only for the common people, the wealth-producing class; while that of the vicuña was used for the Incas, and that of the alpacca for the nobles and princes. So fine and precious were some of the articles woven by these people that their Spanish oppressors sent them back to their country as fit only for the use of their king and nobles. Their beautifully made blankets adorned the bed of the Spanish king, Philip II., so we are told by the Spanish writer, Garcilasso de la Vega.

A design on one of the clay stamps above-mentioned is of the form of the much-written-about, mysterious symbol, the prehistoric Swastika, a cross of straight bars, all parts of equal thickness, crossing each other at right angles and causing four arms of equal parts, which at all the ends are bent, either to the right or left, at right angles. This cross being bent to the left is called the Suavastika, while that bent toward the right is termed the Swastika, at least so Prof. Max Müller would have us designate them. This symbol is the most ancient, and its beginning is unknown. It has been found in the oldest oriental countries, and both American continents have produced it. The theories pertaining to this mysterious symbol are many, and the writer is pleased to quote a number of them from Dr. Thomas Wilson's admirable work, "The Swastika," published in the Smithsonian Report for 1894, pages 770 and 771:

Many theories have been presented concerning the symbolism of the Swastika, its relation to ancient deities and its representation of certain qualities. In the estimation of certain writers, it has been respectively the emblem of *Zeno*, of *Baal*, of the sun, of the sun-god, of the sun-chariot, of *Agni*, the fire-god of India; of the rain-god, of the sky, the sky-god, and, finally, the deity of all deities, the great God, the Maker and Ruler of the Universe. It has also been held to symbolize light, or the god of light; of the forked lightning, and of water. It is believed by some to have been the oldest Aryan symbol. In the estimation of others, it represents *Brahma*, *Vishnu* and *Siva*—Creator, Preserver and Destroyer. It appears in the foot prints of *Buddha* engraved upon the solid rock on the mountains of *India*. It stood for the *Jupiter Tonans* and *Pluvius* of the Latins, and the *Thor* of the Scandinavians. * * * In the opinion of at least one author it had an intimate relation to the Lotus sign of Egypt and Persia. Some authors have attributed a phallic meaning to it; others have recognized it as representing the generative principle of mankind, making it the symbol of the female. Its appearance on the person of certain goddesses—*Artemis*, *Hera*, *Demeter*, *Astarte* and the Chaldean *Nana*, the leaden goddess from *Hissarlik*—has caused it to be claimed as a sign of fecundity. * * * * What seems to have been at all times an attribute of the Swastika, is its character as a charm or amulet; as a sign of benediction, blessing, long life, good fortune and good luck. This character has continued into modern times, and while the Swastika is recognized as a holy and sacred symbol by at least one Buddhist religious sect, it is still used by the common people of *India*, *China* and *Japan* as a sign of long life, good wishes and good fortune. Whatever else the sign Swastika may have stood for, and however many meanings it may have had, it was always ornamental. It may have been used with any or all the above significations, but it was always ornamental as well.

In addition to the foregoing, there were peculiar uses of this mysterious cross in certain localities. In *Italy*, on the hut urns in which the ashes of the dead are buried, in the *Swiss* lakes, stamped in the pottery; in *Scandinavia*, on the weapons, swords, etc., and in *Scotland* and *Ireland*, on the brooches and pins; in *America*, on the metates for grinding corn; the *Brazza* women wove it on the pottery fig leaf, the *Pueblo* Indian painted it on his dance rattle, while the *South American* Indian at the epoch of the mound building in *Arkansas* and *Missouri*, painted it in spiral form on his pottery; in *Tennessee*, he engraved it on the shell, and in *Ohio*, cut it in its plainest spiral form out of sheets of copper. So, also, among the modern Indians we find it employed on occasions of ceremony, as in the mountain-hut of the *Navajos*, and the war-chant of the *Kansas*; on the necklaces and ornaments, garters of the *Sao* women, and on the war shield of the *Esquimaux*. (Pages 751-752.)

Of equal interest in this fine collection of antiquities are the perforated spindle whorls, made of stone and terra-cotta, which are similar in form to the immense number excavated from the ancient cities of *Troy* by the late *Henry Schliemann*. A number of them are flat, circular discs made from stone, and the others are hollow and cone-shaped, and contain, in several instances, a small clay ball. All of them are ornamented with curious designs. Many contain the Greek cross —†—. Whether this design was meant only for ornamentation, or there was attached to it a symbolic meaning, is not for the writer to say. The over-zealous Spanish priests, however, when they reached *Mexico* with the adventurer *Cortez*, ordered to be destroyed immediately every thing on which this symbol was found. To them the introduction into an unknown country of this religious sign was the work of the arch fiend, who preceded them, and

who, in their minds, introduced it to confound their work of Christianization (?). These prehistoric implements have been found in every part of the world where the people were sufficiently advanced to make twisted threads or cords, and the people the Peruvians—from whose ancient graves, above noticed, these objects were taken, knew well how to weave cotton and wool into fine fabrics.

Says Dr. Wilson, on page 966 of his learned work:

The spindle-whorl was equally in use in Europe and Asia during the Neolithic Age as in the Bronze Age. It continued in use among the peasants in remote and outlying districts into modern times. During the Neolithic, or Polished Stone, Age its materials were stone and terra-cotta; during the Bronze Age they were almost exclusively terra-cotta. * * * Recently, a Gallo-Roman tomb was opened at Clermont-Ferrand, France, and found to contain the skeleton of a young woman, and with it her spindles and whorls.

The existence of spindle-whorls in distant and widely-separated countries affords a certain amount of presumptive evidence of migrations of peoples from one country to another; or of contact, or communication between them. If the people did not themselves migrate and settle the new country, taking the spindle whorls and other objects with them, then the spindle-whorl itself, or the knowledge of how to make and use it, must in some other way have gotten over into the new country.

THE TEMPLE AT ZAPOTECAS.

The temple itself was a magnificent piece of architecture. Beyond it on the broad area of the mountain top were the crumbling ruins of amphitheatres, palaces, and other public buildings. Streets and passageways were exactly as they had been during the long centuries since their desertion. Here on this terraced mountain, overlooking a great stretch of country at its foot, was found the lost capital of the Zapotecan nation, at one time probably the rulers over most of the other peoples of the continent, certainly their leaders in art, civilization and industry. The mountain on which the skeleton of this prehistoric metropolis was brought to view is marked on the Mexican government maps as Monte Alban. Its crowning wall is completely hidden by the surrounding growth of lofty trees, and it is so difficult of access that it has never been attacked, or even seriously thought of as a field for exploration. That there were ruins upon this summit was known before Mr. Saville's visit, but they were supposed to be only the remains of some Indian fortresses, instead of, as has been proved, the wreck of a stately and civilized city.

ABORIGINAL TURQUOISE MINING IN ARIZONA AND NEW MEXICO.

THE USE OF THE GEM AS EVIDENCE OF THE RACIAL UNITY OF
THE PREHISTORIC OCCUPANTS OF THE REGION, AND A
DISCUSSION OF THE IDENTIFICATION OF
CHALCHUIITE WITH TURQUOISE.

BY WILLIAM P. BLAKE, F. G. S.

[Read before the Arizona Archeological Association, December, 1891.]

Recent explorations for turquoise at Turquoise Mountain in Mohave County, Arizona, twenty miles from Kingman, show that mining operations were carried on there during the Stone Age. It is evident that the object of this mining was to secure a supply of chalcihuitl, or chalchuite, more generally known as turquoise. The outcropping rocks at this locality are seamed and veined with this gem so highly prized and generally used by the Aztecs and aboriginal tribes of this region and Mexico.

The ancient mining is made evident not alone by the ancient excavations in the form of trenches, cuts, and pits, now filled in with rubbish and overgrown with mezquite trees, but by an abundance of stone implements.

There are benches or terraces cut in the side of the mountain, where, apparently, the ancient miners lived, or camped, and probably sorted out the best pieces of chalchuite. In making an excavation upon one of these terraces, a pit or shaft was found by Mr. A. B. Frenzel, of New York, who has recently published a notice of the discovery in the columns of the *Engineering and Mining Journal of New York*, to which I am indebted for the accompanying illustrations* from photographs taken by Mr. Frenzel. These pictures show the mouth of the chief pit, or shaft, and a number of the stone hammers, or mauls, picked up nearby. The shaft was filled up with earth without stones, and apparently with the object of concealing it. It is well cut into the hard rock, and appears to have been made not only by pounding away the rock but, also, by the use of fire. There is also a cut, some twenty-five feet in length, extending into the side of the hill.

In cleaning out the openings a variety of implements were found, but mostly mauls, or stone hammers, of various sizes, from four or five inches to nine or ten inches in length, and weighing from four pounds to over fifteen pounds each. The

STONE HAMMERS FOUND IN SERRA NIÑI IN TIHOUCHE MOUNTAIN, ARIZONA.



great size and weight of some of these implements indicate great strength of the men who used the hammers. The photograph shows the general form of the hammers. In some of them the groove around the boulder (for boulders they probably originally were), made to receive the raw-hide band, or with handle, is about half the distance from end to end, or midway of the stone; but in others, it is cut nearer to one end than to the other, conforming in this respect to the general form of the stone axes of the Salt River Valley.

All the implements bear evidences of hard usage. But few of them are in a perfect state. Great flakes of the stone have been split off the sides, from the points or ends backwards toward the groove, and some are broken across. These implements closely resemble those found in the prehistoric pits and cuts upon the croppings of some of the copper bearing veins on the borders of Lake Superior.

Another locality of chalchuite in Arizona, which shows aboriginal workings, is in Cochise County, twenty miles east of Tombstone, on the eastern slope of the Dragoon Mountains, in the district known as Turquoise. Here there are large excavations and dumps giving conclusive evidence of extensive working.*

Chalchuite was also obtained across the Arizona line in New Mexico, not far from Silver City, in the Burro Mountains; but none of these localities compare, for extent, with the great excavations at Las Cerrillos, not far from Santa Fé, in New Mexico, which appears to have been one of the chief sources of the gem in Aztec times. Its extent and the over growth of trees indicate great antiquity for the chief excavations. There is, however, a tradition that in the year 1680, a large part of the mountain, which had been honey-combed by the long continued excavations of the aboriginal miners, caved in, burying many of the miners, and precipitating the uprising of the Indians and the explorations of the Spaniards. Modern explorations of this locality, by shafts and tunnels, have revealed caves, or subterranean chambers, made by the ancients.

In one of these chambers, the modern miners found a stone hammer with its handle attached. The weight of this hammer was thirteen and three tenth pounds. An account of this, and other results of the modern exploration of the Cerrillos locality, and of turquoise generally, may be found in the admirable book upon the "Gems and Precious Stones of North America," by George F. Kunz, pages 54-55. The first account of this Cerrillos locality, and the identification of chalchuitl of the Aztecs with turquoise was given by me in 1858, after my return from Santa

* See *Journal of the Proceedings of the American Antiquarian Society*, by William P. Bliss, *American Journal of Science*, II.

Fe, where I found this gem in use by the Pueblo Indians.*

Other localities of chalcuite are found in Mexico, and north of Arizona in Nevada. Enough has been cited to show that there were several localities, or sources, whence this stone was procured by ancient mining, and that these localities were far separated upon the great tableland of Anahuac or Ancient Mexico.

It is unnecessary to give all the evidence here of the high esteem in which the turquoise was held by the ancient inhabitants of this region. We know from the narrative of Bernal Diaz and the journals of the Coronado expedition, that it was in general use for personal adornment, and that it was most highly prized, and was an object of trade or commerce between the various tribes. It was also reported as in use at Cibola for the adornment of the portals of chiefs' houses, by inlaying. Thus, the Friar Marcos de Niza, in his reconnoissance in Sonora and northwards in search of the seven large cities of Cibola, was informed that he would there find the chief doorways ornamented with turquoise. On his way, he met Sonora Indians, returning from the north, who explained that they had been to Cibola to get turquoises and cow [buffalo] skins. Turquoises were suspended in their ears and noses, and they wore belts adorned with turquoises. At one village the chief men were adorned with collars of turquoise, while others were allowed to use them in their ears and noses only. When Castenada reached Tusayan, the people presented him with some turquoises. Mendoza, in his letter regarding the seven cities, says: "They have turquoises in quantity." Vasquez reported the use of turquoises in worship, as offerings to the gods, and he adds that generally they were poor ones. In Castenada's narrative mention is made of presents of turquoises to the devil by the inhabitants of Culiacan; and, also, that a certain clan of women were decorated with bracelets of fine turquoises.

In the celebrated Coronado expedition northwards from Mexico to Cibola, 1540-1542, the negro explorer Estevan, who went with the party, gave the good friars great trouble and anxiety by his greed in collecting turquoises and objects of value from the natives. Estevan appears to have been always ready to press on in advance, an explanation of which may probably be found in his desire to get the first pick of the gems. He was loaded with them on his arrival at the outposts of Cibola, where he was killed and his turquoises confiscated.†

In their journals, or narratives of exploration, we do not find

* The Chalcuitl of the Ancient Mexicans; Its Locality and Association, and Its Application, and Its Identity with Turquoise. "American Journal of Science," II, Vol. XXV, p. 106, March, 1853.

† For the full account of this expedition, and others, reference may be made to the translation of Castenada's Narrative. Report of the Bureau of Ethnology, Vol. XIV, Part I, p. 200.

any reference to the source or locality of the chalchuite. We may assume that such information was carefully withheld. The mines were considered as sacred to the followers of Montezuma. Kunz records,* on the authority of Major Hyde, who was exploring the Cerrillos locality in 1880, that the Pueblo Indians from Santo Domingo warned him that the mine was sacred, and that the turquoise [chalchuite] he was taking from it, must not go into the hands of those whose saviour was not Montezuma.

We have abundant evidence of the use of chalchuite for ornaments and decorative works by the ancient race of this great valley--the Salt River Valley of Arizona. Fragments of the gem chalchuite, or portions of the necklaces and pendants in the form of small, of long, tabular pellets, are found amongst other relics in the earth of the ruins. And other more important objects have been unearched here, and will be briefly noticed.

A few years ago, I was shown a marine shell from the ruins of this valley, which was encrusted with pitch, and a fine mosaic of tesseral of chalchuite. Kunz mentions and gives a figure of a similar object, found about ten miles from Tempe, Arizona. It was enclosed, or wrapped, in asbestos and placed in a decorated Zuni jar, thus indicating its source and the ancient communication with the Zunis. This unusual object was in the form of a toad, the sacred emblem of the Zuni people. The mosaic, composed of chalchuite and garnets, was arranged upon a foundation of shell, covered with black pitch. The colored figure given by Kunz† is very striking and satisfactory.

Mr. Frank H. Cushing, of the Hemenway Expedition, found in the same region a sculptured object, resembling a prairie dog in form, having eyes of turquoise.

There is in the British Museum, London, a human skull, completely overlaid with tesseral of chalchuite. This is believed to be the same specimen formerly in the museum of the late Mr. Henry Christy, a drawing of which was made by Waldeck, and was published by the French Government. A reproduction of this drawing was published by the late E. G. Squier, who, also, refers to a modern mask similarly encrusted. The eyeballs were made of nodules of iron pyrites, cut hemispherically and highly polished. I am not able to state the locality from which these large objects were obtained, but they were probably from Old Mexico.

The use and high valuation and esteem of chalchuite, or the turquoise, may thus be traced from the country of the Navajoes

* *Transactions of the New York Academy of Sciences*, 1881, p. 122.

† *Ibid.*, page 123. This treatise contains many other details and many valuable references to the various localities, and to the various kinds, or encrusted masks in the region.

† *Illustrations of the Ethnology of the Indians from Mexico and Central America*, by E. G. Squier, published by the Academy of Natural History of New York, New York, 1848, p. 246.

and Zuni in the northern part of Arizona, southwards into Old Mexico and beyond. The wide geographical distribution of the sources of the gem, and the fact that all the localities found by us have been anciently worked, indicate the universal desire to obtain it. These facts appear to me to be good evidence of the substantial unity of the races which formerly held sway from the Navajo and Zuni country to the capital of the Montezumas.

THE IDENTIFICATION OF CHALCHIHUITL WITH TURQUOISE

Before my visit to New Mexico in 1858, and the finding at Santa Fé of green turquoise in use for necklaces by some of the Pueblo Indians, the occurrence of turquoise in America had not been announced or known. Taking pains at that time to learn the name given to this stone by the Indians, I found that it was known to them as *char-chee-wee tee* (spelled phonetically), or as *chal-chi-hui-tee*. On consulting the narrative of Bernal Diaz, I found that certain highly-valued green stones corresponding in their external character to the turquoise were called *chalchihuitl* by the ancient Mexicans when visited by Cortes. I could not but recognize in this name the equivalent of that given by the Pueblo Indians of the north to the turquoise of the Cerrillos. But this identification has been questioned by the late E. G. Squier in the memoir already cited. He taking the view that the name *chalchihuitl*, *chalchihuitl*, or *chalchuite*, was intended to signify any green stone of uncommon value, notably jade or emerald. He says, "The word *chalchihuitl* is defined by Molina, in his "Vocabulario Mexicana (1571), to signify *esmeralda baja*, or an inferior kind of emerald." The precious emerald, or emerald proper, was called *quetzalitshi*, from *quetzal*, the name of a bird with brilliant green plumage, and *itshi*, stone.

There is nothing in Molina's definition militating against the identification of the word *chalchihuitl* with the turquoise of Mexico; more especially with the stones from near the surface, which are generally green. The old writers all discriminate between the *chalchuites* and the emerald, or *emeraldus*. Neither do I find in the other citations given by Squier, good reason to question my original identification of *chalchihuitl*, or *chalchuite*, with the green turquoise of New Mexico and other places. Squier applies the name to the series of carved specimens of the hard green stones, known to us as jade or nephrite, which he obtained from ancient ruins on the borders of Chiapas in Central America. Such relics are rare, and have not been found north of Mexico. They are sculptured objects and do not conform to the mention of gem-like stones in general use for personal ornament and decoration.

References made in Dana's "Mineralogy"* to this subject

* "Descriptive Mineralogy," Sixth Edition; 1892; page 371

note the conflict of opinions, as expressed by myself, by Squier and by Prof. Raphael Pumpelly. Thus Pumpelly, on his return from his explorations in China,* appears to identify the name chalchihuitl with the *jitsui*, or jade, of the Chinese, probably because he had seen the jade ornaments in Squier's collection called chalchihuitl by Squier; but he refers, also, to the inlaid mask in the collection of the Museum of Practical Geology, London, which is a mosaic of turquoise, and not of jade.

I am still of the opinion, after careful consideration of all the evidence to this date, that my original identification of chalchuite with turquoise was correct. However opinions may differ, the fact remains that the Pueblo Indians of to day apply the name to turquoise, and to turquoise only. If a Pueblo Indian of New Mexico or Arizona is asked for chalchuite, he produces green turquoise, and not emerald, jade or jasper, or other green stone.

It will be noted that I have modified the orthography of *chalchihuitl* to *chalchuite*, the latter being shorter and conforming to the usual terminal syllable of names of mineral species. It should, however, be pronounced *chal'che'we'te*.

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ASTROLOGY IN ASSYRIA.

It is announced that Mr. James A. Craig, Professor of Semitic Languages and Literature in the University of Michigan, has now in preparation and intends to publish an edition of the cuneiform texts which form the great Assyrian astrological corpus usually known as the "Illumination of Bel." Translations, analyses, notes and a vocabulary will form part of this edition, which promises to be one of importance, adding considerably to our knowledge of ancient Semitic religion in the valley of the Euphrates. These texts are founded on the tablets of Assur-bupal, which were written by his scribes for the magnificent library at Nineveh. Of these tablets about three hundred still exist in our day. They form one of the most important native authorities on astrological astronomy, omens and portents, and divination, since many of the prognostications which they contain date from the earliest period of Babylonian civilization. In this connection we may recall attention to a recent publication on "Assyrian and Babylonian Religious Texts," also edited by Professor Craig. In this case the translations and explanations are few and meager, the volume being intended primarily for the use of Assyrian scholars. No expense or luxury has been spared in the get up of this sumptuous volume, and it may be added what is of far greater importance, that Professor Craig's work of copying the many texts has been done with remarkable accuracy.

* See *Journal of the American Museum of Natural History*, 1891, p. 100, for a photograph of the mask.

PREHISTORIC IRRIGATION.

BY STEPHEN D. PEET PH. D.

We spoke in the last number of the agriculture which was practiced by the Cliff-Dwellers, and its effect upon their social condition and village life. We shall treat of the same subject in this number, but shall illustrate it by the irrigating contrivances which were especially useful to the Pueblos and to the tribes south and west of the Cliff-Dwellers.

I. Our first effort will be to show the connection between the irrigation practised by the Pueblos and their social condition. There was, perhaps, no influence so strong as this. It affected not only their social status, but their form of government, their style of architecture, their art, and everything which was important. It secured to them subsistence in the midst of an arid region. It brought about a permanence of settlement. It concentrated the people into large communities. The most notable advantage was that irrigation from the very beginning gave the people a strength which enabled them to overcome all the difficulties in their way, and to hold their position among the peoples of that region.

1. It seems strange that in this remote region and amid the unfavorable surroundings, that the Pueblos should have developed so thoroughly and kept themselves up to the high grade which they had reached. In the midst of an arid region, with a climate which seemed to be always unfavorable to agriculture; surrounded by mountains which kept the clouds from gathering, with rocks and mesas whose height was forbidding, with streams which had through countless ages worn deep channels in the rocks and now flowed at immense distances below the surface, with everything unfavorable, they presented at the time of the discovery a form of society and a mode of life which were totally unlike any other upon the face of the earth. How do we account for this?

It is a common opinion that man is everywhere influenced by his surroundings, and whatever grade of civilization he has reached has been owing to this circumstance. Here, however, there seems to be an exception, for, if any people were ever placed in unfavorable surroundings, it was the Pueblos. There were tribes in their midst, who remained in the wild state, and who continued the hunter-life, roaming over the hill tops and through the valleys as nomads; building their rude huts, which they easily took down and removed to new places; but this people from an early date led a peaceful sedentary life, built their many-storied houses, were organized into villages, made



their houses their castles, and made permanent homes, and in all respects presented a contrast to their enemies, who were constantly besieging them. Even when driven to the cliffs, and compelled to make their homes high up in the rocks, they maintained their superiority and kept up their grade of culture, refusing to yield to their enemies.

There were other tribes far to the east, who had occupied the Mississippi valley from time immemorial, and amid the abundance which was secured from the soil, and the ease with which subsistence was gained from the forest, had never reached any such a grade of progress, certainly never exhibited any such social condition. There were tribes to the west, who in the midst of the wonderful productiveness of the California fields and forests, were in the most abject state and were the lowest of the low. The only people who ever reached a higher grade than the Pueblos, were those who were situated in the southwest, and amid their peculiar surroundings had grown into partially civilized and well-organized nations. We look upon this people, whom we call the Pueblos, with a constant surprise, and wonder how it was that they should have become so conspicuous among their fellows.

Was this owing to their inheritance and because they belonged to a superior stock of people, or was it because under unfavorable circumstances, they were forced into a mode of life and compelled to choose an occupation which unconsciously resulted in their improvement and social progress? It is plain that the Pueblo culture was a child of adversity, and this, of itself, was the cause of their superiority, rather than any constitutional tendency or their inherited quality. As we study their sluggish nature and their ease-loving character, we are convinced that they were no more heroic than others. The only key to the solution of the problem, which we can discover, is the one which is found in their employment: It was agriculture by means of irrigation. This was a necessity, but it was one which brought its own reward; a misfortune which brought a fortune in return. Those who are studying sociological problems, may possibly learn a lesson from this. The employments of the people have as much to do with the peculiar condition of society as any one cause, and the social distinctions are always, even in modern times, the result of employment.

2 Let us consider for a moment the situation. We have already spoken of the great plateau on which the pueblos are situated, as being very peculiar in its character, and as having a great effect upon the architecture which appears here. The buildings were often imitative of the rocks, and the terraced roofs resembled those found in the sides of the mesas. We have spoken, also, of the aridity of the soil and the absolute necessity for irrigation on account of it. We have also referred to the religious customs of the people, and especially those customs which grew out of their desire for rain; their ceremonies all concentrated upon this thought, and their sacred

dramas were often personifications of the rain cloud. There is, however, one point which we desire to accentuate, and that is the resemblance between the Pueblos and those nations at the east, which so early arose to prominence because of their sedentary life and agricultural condition, and especially because they were able to overcome the difficulties with which they were surrounded.

3. We see the influence of agriculture, in the state of society which prevailed, for it raised the entire people to a higher plane. Notwithstanding the difference of their situation, the diversity of their language, the separation of the tribes, and the distances between their villages, their unity was complete, because of the fact that they were agriculturists, rather than hunters, and because in their agriculture they depended upon irrigation. They had to combine to build their irrigating ditches, and to keep them in repair; and were led by this to continue the same sedentary life which they had begun, and to



PUEBLO AL BALCONA.*

remain in the same region where they had first built their communistic houses, and perpetuate the same government which they had inherited from their fathers, as well as to keep up the religious practices which their ancestors observed before them. We can not say that it was an ethnic type which was perpetuated, nor an ethnic descent which produced either their style of architecture or their mode of life, though their social organization, especially their clan life, may be owing to these causes.

The radical difference between them and the tribes which surrounded them, was not in language or descent, but in employment. This is the thought which we desire to illustrate. The village life and the agricultural pursuits of the Pueblos are the chief causes which resulted in their high grade of civiliza-

*The arrangement of the buildings and the irrigation system in the ancient Pueblo, as illustrated in the photograph, is the same as that of the modern Pueblos in the Southwest.

tion. This is a thought which has impressed other minds, and has often been dwelt upon by other authors. Mr. Morgan, who is a great authority upon the social life of the American aborigines and has written one of the best books on ancient society, was impressed by the fact that the Pueblos reached so high a grade of civilization, and that they stood next to the civilized people who dwelt in the southwest provinces, and who were the builders of the ancient cities, many of which are now in ruins. He ascribes it largely to their village life and their social organizations, but recognizes agriculture, also, as one of the factors. He says:

The Yucatan and Central American Indians were, in their architecture, in advance of the remaining aborigines of North America. Next to them, probably, were the Aztecs, and some few tribes southward. Holding the



STORAGE HOUSE IN CANYON DEL MUERTO.*

third position, though not far behind, were the Village Indians of New Mexico. They all alike depended upon horticulture for subsistence, and cultivated by irrigation; cotton being superadded to the maize, beans, squashes, and tobacco, cultivated by the northern tribes. Their houses, with those previously described, represent together an original indigenous architecture which, with its diversities, sprang out of their necessities. Its fundamental communal type, is found not less clearly in the houses about to be described, and in the so called palace of Palenque, than in the long house of the Iroquois. An examination of the plan of the structures in New Mexico and Central America will tend to establish the truth of this proposition.

At the time of Coronado's expedition to capture the Seven Cities of Cibola, so called in the "Relations" of the period, the aborigines of New Mexico manufactured earthen vessels of large size and excellent workman-

* Storage houses, like the one represented in the cut, are common on the Rio de Chelly. The doors are large and wide to admit the carrying of corn stalks into them, as well as drying the corn. Such store houses were sometimes covered with plaster, imitating the color of the cliffs, for the purpose of concealment.

ship; wove cotton fabrics with spun thread; cultivated irrigated gardens; were armed with bows, arrows, and shields; wore deer-skins and buffalo-robes, and also cotton mantles, as external garments, and had domesticated the wild turkey.

What was true of the Cibolans in this respect, was doubtless true of the sedentary Indians in general. Each pueblo was an independent organization under a council of chiefs, except as several contiguous pueblos, speaking dialects of the same language, were confederated for mutual protection, of which the seven Cibolan pueblos, situated, probably, in the valley of the Rio Chaco, within an extent of twelve miles, afford a fair example. The degree of their advancement is more conspicuously shown in their house architecture. The supposition is reasonable that the Village Indians north of Mexico had attained their highest culture and development where these structures are found. They are similar in style and plan to the present occupied pueblos in New Mexico, but superior in construction, as stone is superior to adobe, or to cobble stone and mortar. They are also equal, if not superior in size and in extent of their accommodation, to any Indian pueblos ever constructed in North America. This fact gives additional interest to the ruins which are here to be considered. The finest structures of the Village Indians of New Mexico, and northward of its present boundary line, are found on the San Juan and its tributaries, unoccupied



RUINS OF PUEBLO ON THE RIO CHACO.

and in ruins. Even the regions in which they are principally situated are not now occupied by this class of Indians, but are roamed over by wild tribes of the Apaches and the Utes.

The most conspicuous cluster of the ruined and deserted pueblos are in the canyon, or valley, of the Rio Chaco. At the period of the highest prosperity the valley of Chaco must have possessed remarkable advantages for subsistence. The plain between the walls of the canyon was between half a mile and a mile in width, but the amount of water now passing through is small. It is dry, according to Lieutenant Simpson, the running stream was eight feet wide and a foot and a half deep, at one of the pueblos, where Mr. Jackson found no running water, and the valley entirely dry in the month of May, with the exception of pools of water in places and a reserve of surface water in the cracks at the top of the bluff. The condition of the region is shown by these two statements. During the rainy season in the summer, which is also the season of the growing crops, there is an abundance of water, while in the dry season it is confined to springs, pools, and reservoirs. From the number of pueblos in the valley, indicating a population of several hundred, the extent of the gardens within it must have yielded a large amount of subsistence, the climate being favorable to its growth and ripening.*

* The social organization of the Pueblos was closely con-

nected with their employment, and was almost a necessity under the circumstances. Property rights and titles and ownership in fee simple of land did not prevail in prehistoric times, but was a possessory right, which came from irrigation, and which was almost equal in its advantages. The limitations upon its alienation to an Indian from another tribe, or to a white man, did not lie in the absence of written titles or conveyances of land, but in the necessities of the case. There was no power to alienate an irrigating ditch, and there would be no value to the land where the ditch could not be kept up. "The ideas of the people respecting the ownership or the absolute title to land, with power to alienate to anyone else, were entirely above their conception of property and its uses." The occupation of a certain district was a right in itself, and was title enough. The inheritance was not that of children from father and mother, but of a tribe from its ancestry, and



CASAS GRANDES IN SONORA.*

from those who built the village to those who continued to live in it. The same is true with respect to irrigating ditches, and even in respect to the sections of the village garden. There was a social organization which secured this result.

The government was composed of the following persons, all of whom, except the first, were elected annually: First, a cacique or principal sachem; second, a governor or alcalde; third, a lieutenant governor; fourth, a war captain, and a lieutenant war captain; fifth, six fiscals or policemen. "The cacique," Mr. Miller says, "has the general control of all the officers in the performance of their duties, transacts the business of the pueblo with the surrounding whites, Indian agents, etc., and imposes reprimands or severer punishments upon delinquents. He is the keeper of the archives of the pueblo; for example, he has in his keeping the United States patent for the tract of four square leagues on which the pueblo stands, which was based upon the Spanish grant of 1689; also deeds of other purchased lands, adjoining the pueblo. He holds his office for life. At his death, the people elect his successor. The cacique may, before his death, name his suc-

* The cut shows the difference between the architecture of the ancient Pueblo tribes in Sonora and those in New Mexico and Colorado, especially in the absence of the court. Both belong to agricultural tribes.

cessor, but the nomination must be ratified by the people, represented by their principal men assembled in estufa." In this cacique may be recognized the sachem of the northern tribes, whose duties were purely of a civil character.*

In this simple government we have a fair sample, in substance and in spirit, of the ancient government of New Mexico. Each pueblo was an independent organization, under a council of chiefs, except as several pueblos were confederated for mutual protection. Through all this region there was one mode of house architecture, as there was substantially one mode of life. The country was of that character which would force them to herd together in villages. The very wildness of the region and its aridity required that there should be centres of population, which would constitute the homes of the clans, as well as the defenses of the people. Their subsistence being secured by means of irrigating the soil, they were naturally led to combine together, not only to build, but to keep in



GUATEMALA. AT CHOHEN ITZA, GUATEMALA.

repair and defend a canal, as well as to defend their rights to it. It is probable that the people were from an early date surrounded by wild tribes, and were subject to invasions and were compelled to make their permanent homes upon the mesas, or, if they made them in the valleys, to build them in such a way as to repel a sudden attack from a prowling foe. The fact, however, that modern pueblos are at a distance from the streams and out of reach of the floods, shows that the people regarded their safety as important even as their subsistence, the permanent homes being somewhat remote from the valleys, but their farming shelters being in the midst of the fields.

We see, then, that agriculture, and especially agriculture by irrigation, was a cause, as well as a product of the social

* See the account of the *Cacique* in the *Journal of the American Expedition to the Rio Grande*, by General Kearney, in the *Annals of the American Academy of Arts and Sciences*, vol. 1, p. 100.

advancement of the Pueblos. This is always the case with primitive society. It is a new era to any people when the field begins to yield its products, instead of the forest. The stream may furnish subsistence to wandering tribes, but when it is diverted from its course and carried in artificial channels, and made to irrigate the soil, it becomes another creature. It becomes a handmaid of civilization. It then leads the people unconsciously to fix their habitation by its side, and to remain permanently in their villages. The association of the Pueblo architecture with the art of irrigation, is the most natural thing in the world. Both came from the same causes, and involved the same mode of life. They came from the force of circumstances, but were alike useful to the people.

II. Let us turn to the various contrivances which were resorted to by the Pueblos for storing water and for irrigating the soil. These have attracted the attention of all the early explorers, and have also been objects of study by the later expeditions, and are now pretty well known. They show the skill of the people, and they illustrate their grade of culture and throw much light upon their social organization. They are especially interesting, because of the fact that white men have settled in the same region and were obliged to resort to some of the same means of irrigation in order to develop its resources, and provide against its difficulties. It is an old motto that "Necessity is the mother of invention," but the children are sometimes slow to learn the lesson. The Pueblos, however, were the children of Nature, and learned from experience to adapt themselves to Nature in all her varying moods. We do not know how early they began to practice irrigation, nor do we know the time when they began to build their communistic houses; but a fair supposition is that it was after they settled in the region, when they had learned of the scarcity of the water supply and the uncertainty of the rain. They were then led by the force of circumstances to resort to this means of securing subsistence. This probably occurred before the wild tribes entered the region, and, perhaps, before the caves were occupied. Some have supposed that the caves were their first abodes, and that the people gradually grew into the habit of building houses; first out of wood and bark, next out of adobe, and lastly out of stone, and that they in the meantime changed from nomads into agriculturists; but finding that ordinary agriculture was difficult to follow, on account of the lack of rain, were led by the force of circumstances to resort to irrigation.

We conclude that all these contrivances for storing water for irrigating the valleys, and for making the soil everywhere as productive as was possible in such an arid region, were original inventions which show the genius of the people. It is certainly, very interesting to go over the different parts of this great plateau, and see how the people provided against the

drought, and how carefully they studied the changes of nature, and developed her resources. Not one, but many ways were resorted to in making the soil productive. These will be seen as we proceed, but may be mentioned briefly: 1. The simplest plan was to depend upon the rain for the crops, and to make the springs supply the people for domestic purposes. There were no cattle or sheep, or herds of any kind, which required water, but the people needed a constant supply. The result was that the houses were placed near some spring where water was constant. The pueblos were also placed near springs and lakes. The Zuni pueblo was near a spring, which became sacred, and around which were sacred vessels which were covered with figures of the water-animals and were sacred to the



SACRED SPRING AT ZUNI

water divinities. This has been described by Lieut. Simpson and many other travelers. The springs which flowed out of the caves and from beneath the ledges, where the Cliff Dwellings were placed, have been described by Mr. Holmes, Mr. Jackson, Mr. Lewis W. Guncel, and by other explorers in that region.

2. It was probably owing to the fact that springs were so numerous among the mountain regions which bordered on the Pueblo territories on all sides, that they were chosen as the deities of various tribes, some of whom made their homes in caves, and others built their stone houses into the sides of the cliffs, and so may be called Cliff Dwellers. The most of these were agriculturists, though they depended upon the rain and ordinary cultivation rather than irrigation.

The best known Cliff-Dwellers are those situated to the north of the Pueblo territory in the San Juan valley, but others have been discovered among the mountains far to the south-west. These have been described by Mr. Carl Lumholtz, and already described, but we refer to them again, for they show the character of the Cliff-Dwellers generally.

Springs have been discovered in the Pueblo region, which were destroyed or killed by the people when they left the village in which they dwelt. They did this by filling them up. The springs were sometimes at a distance from the villages. Drinking water was carried by women in jars or urns placed on their heads, or carried in a net thrown over their shoulders. The village of Acoma was supplied in this way. It was perched on a high mesa, and all the water was carried up by the women.

Mr. Bandelier says:

The presence of ancient villages on the high mesas west of the Rio Grande, near Santa Fe, in places of difficult access, without communication with the river banks, need not surprise us. Here, the rainy season is tolerably regular. Indian corn would grow without artificial watering. Springs would supply the wants of the people.*

Dr T. M. Prudden says:

To one who has travelled much in the southwest plateau country, and knows not only just how dry it is, but, also, just how dry it is not, the residence of these early peoples in small, scattered communities along the now remote canyons and valleys, is neither surprising nor mysterious. There was warmth and shelter the year round, and for those who had learned to build, there were houses half made already by the cave walls and cliffs. It does not require very much food for bare existence, and a very small patch of corn suffices for a family. While springs and pools are rare, there are a good many places, in valleys apparently dry the summer through in which the seepage from the back country comes down some way in the hills, and furnishes moisture enough for a crop of corn. The beds of dry streams, also, where sand is plenty, are often moist beneath the surface †

3. Tanks have been discovered by explorers among the cliff dwellings. One of them was situated near the High House, seven hundred feet above the stream, just outside of the house. It was reached by passing out of the window or door in the side of the house, passing down by the aid of pegs to the water. Another was found in the Cañon De Chelly, at the end of the ledge on which was a village or cliff dwelling. This tank was filled with water, which was taken out of the stream below and drawn up by a rope, and poured into the tank. It was reached by passing along the narrow ledge, which led from it to the village or cluster of houses, and could not be destroyed by any prowling foe.

Mr. Bandelier speaks of tanks near Casa Grande; one with a depth of eight and one-half feet, which is surrounded by an embankment about eight or ten feet in length. He says:

* Bandelier's Final Report, Part II, page 16

† See Harper's Magazine, June, 1897.

Between Casa Grande and Florence the distance is nine miles. Several ancient irrigating ditches are seen on the road, some of which are quite deep. In one place I found an elliptical tank, almost as large as the one at Casa Grande and presenting a singular appearance. Lined water conduits are found at Tule, Arizona, and others at Casas Grandes in Sonora. The village of Tabira had four large artificial pools from which the people derived drinking water. The Pueblo Acoma subsists to-day upon the water collected into picturesque basins on the top of the rock, three hundred and fifty feet above the utterly dry valley. To such and similar devices the New Mexican villager had to resort, and it was a relief to him when he could nestle by the side of a permanent river, and raise beans and cala-bashes with the aid of primitive channels of irrigation. The tribes on the Rio Grande and people of Paos and Pecos enjoyed such privileges more than any of the other tribes. With them irrigation was easy, and frequent mention is made of it by the older writers.

3. There were reservoirs on the mesas, which were constructed by placing dams across the channels or water-spouts; leaving the low places to be filled with rain during the summer, or melted snow in the spring. There was a contrivance for supplying the wants of the village, which was very ingenious. It consisted of making a series of reservoirs, some of them above the village, some of them below, and causing the water to flow through the court, where it was used for domestic purposes, and afterward gathered into a pond and then distributed to the fields. One such existed at Pecos. Another was found at Querivira. Both have been described by Mr. Bendicher. The latter is represented in the cut.

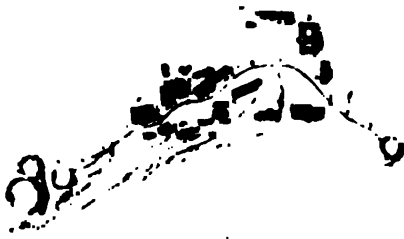


FIG. 1. RESERVOIR AT QUERIVIRA.

4. There were lakes in places, which furnished an abundant supply. There was a one like that at Walpi, which was visited by Mr. Stevenson, Prof. Taylor, and others. It was regarded as the home of the children, who were lost, but whose spirits were allowed to visit the Pueblo, at their sacred feasts and carry the sacred waters to the other children, who were gathered round the tables, and were permitted to drink from the bowls hung about them, with the priests, at the time of their imitation.

The lake of Monte and Walpi has been described. This was an artificial one, not a natural one, but was surrounded by a dam, in the same way which has many interesting artificial ones. The water of it must have furnished an abundant supply of water for the use of the people.

5. There were many canals, some of the people were built, and which supplied the wants of the people. Some were not used for irrigation, but for domestic purposes, and were used mainly for the use of the people. The canals were built by the people, and were used for irrigation.

lages scattered along the banks; all of them large, and once filled with a flourishing population. It was a rich valley, and was probably once filled with garden beds and fields of maize, which furnished an abundant subsistence. The valley was deserted probably before the advent of the white man, but was, perhaps, abandoned on account of the invasion of the savages.

7. The so-called garden beds or hanging gardens, which were built in terraces on the sides of the mesas, are very interesting. They remind us of the hanging gardens of the East, and of the terraces on the Alps, where grapes are raised, and the ancient ridges in Great Britain, which have excited so much curiosity among the archaeologists.*

Garden beds of a peculiar construction are found on the Sonora River in Arizona. They are described as follows by Mr. A. F. Bandelier:

Rows of boulders, such as could be picked up in the bed of the torrent, were laid on the ground parallel to one another, intersected by transverse rows at irregular angles, thus forming rectangular areas of various lengths. They look like rude dams laid across the course of the Arroyo. They were so laid in order to keep a certain expanse of ground free from the drift brought in by the streams, and to keep the floods from carrying away the crops. These contrivances belong to the kind of agricultural expedients by means of which the waters of the mountain torrents were made to serve for the irrigation of crops planted in their path.

Between Santiago and the foot of the Sierra Madre are dams and dykes which extend across the Arroyos. Between the dykes are more or less regular shaped plots of tillable land, called by the inhabitants "Labores," or tilled patches. Connected with these artificial garden beds are ruins of houses, which are small buildings containing from two to four rooms.

Mr. Carl Lumholtz speaks of the garden beds which are connected with the deserted pueblos and ancient cave dwellings of the Sierra Madre. He says:

Deserted pueblos, consisting of square stone houses, are frequently met with. They are generally found on the top of the hills and mountains, and are surrounded by fortifications in the shape of stone walls. The most interesting remains, however, are in the caves, which contain houses at times three stories high, with small windows and cross-like doors, in the ordinary conventional Indian way; even stone staircases are once in a while met with. Here and everywhere through the Sierra Madre, we found *terrazas*, or stone terraces, built across small valleys, evidently intended for agricultural purposes.

On every steep mountain side these extraordinary terraces of solid, large stones, constructed in the cyclopean style of masonry, arose to a height of fifteen, nay twenty feet. We observed them even at an altitude of 7,400 feet. At one point we counted eight of them within a space of 150 feet, the aborigines having gained, by the enormous amount of labor expended, 3,500 square feet of additional surface ground; in other words, they have made room for 500 or 600 "hills" of maize.

Small, enclosed gardens called "Farming Pueblos" are common, both at Zuni and among the Tusayans. The enclosing walls are generally made of stone, sometimes of stone in combination with stakes. Upright slabs of stone have been used

* See Bandelier's Report, Part II., page 17.

by the Pueblo-Builders to make walls, and by the Cliff-Dwellers to mark the graves.

Field shelters, made out of brush and branches, with raised platforms, were common among the Pueblos. These were mere make-shifts, and do not compare with the boulder sites, which are found associated with the irrigating ditches. These are to be distinguished from the corrals, which have been erected in recent times near the pueblos; specimens of which may be seen at Walpi, Pescado, and Ojo Caliente.*

8. Aqueducts are described by Mr. Bandelier as existing at Casa Grandes, as well as an extensive system of irrigation. The following is his description:

It is quite likely that the main portion of the field lay in the bottom near the river, where the land is very fertile and can be easily irrigated. The main irrigating ditch enters the ancient village from the northwest, and can be traced for a distance of two or three miles. It takes its origin about three miles from the ruins, at the foot of the higher slopes and near a copious stream. It looks, therefore, as if it had conducted the water from the spring to the settlement, for household purposes only. After passing a peculiar structure, it empties into a circular tank, the diameter of which is forty five feet, its depth five feet, and continues its course to another tank seventy two feet in diameter, with a rim three feet high and thirty nine feet wide; this tank is six feet deep in the centre. The acequia is best preserved on the terrace northwest of the ruins. There, its course is intercepted by gulches. It seems at a depth of about four feet below the present surface. A layer of calcareous concrete formed the bottom of a shallow trough, through which the water was conducted. This channel is about ten feet wide, and was carried with a steady and very gradual decline by means of artificial fillings, and probably by wooden channels, across intervening gulches.

Another acequia, fourteen feet wide, also slightly raised above the ground, shows four longitudinal rows of stone laid at intervals of four to six feet. It looks more like a road bed than a ditch. It seemed to me, as if both the channels had been connected, and as if they were but branches of the main line, running across the terraces, one designed to fill the two artificial basins near the ruins, the other entering the bottom. It seems clear that the inhabitants of the Casas Grandes had made considerable progression in irrigation, and that it at one time contained a population more dense than that of any part of the southwest. The ancient culture which flourished at Casa Grandes was similar to that which existed on the banks of the Gila and Sanado, but there was a marked advance over any other portion of the southwest, shown particularly in certain household utensils, the existence of stairways in the interior of houses, and in the method of the construction of irrigating ditches. Nevertheless, the strides made were not so important enough to raise the people to the level of the more southern tribes. The highest arts far is displayed in the few idols and fetiches, common to all the Nahua, Zapotecas, Mayas, etc. They seem to have reached an intermediate stage between them and the Pueblos, though nearer to the latter than the former.

III. The distribution of the irrigating ditches will be next considered. Irrigation was practised by nearly all the Pueblo tribes, those who were situated on the Rio Grande, on the Little Colorado on the Gila, on the Rio Verde, and possibly on the Chaco. The irrigating ditches have been recognized in nearly all of these valleys. In giving the description of these

* See page 275, for description of other such structures.

we shall quote the various parties who have visited the Pueblos. We shall begin with those of the Rio Grande.

Mr. Morgan refers to several localities where irrigation was practised, one of them at Taos, and the other at Mashongnavi on the Little Colorado. Of Taos he says:

It is situated upon Taos Creek at the western base of the Sierra Madre Range, which form the eastern border of the broad valley of the Rio Grande, into which the Taos stream runs. The two structures stand about twenty-five rods apart on opposite sides of the stream, facing each other. The present occupants of the pueblo, about four hundred, are divided between the two houses, and they are thrifty, industrious, and intelligent people. Upon the east side is a long adobe wall, connecting the two buildings, or rather protecting the open space between them. A corresponding wall doubtless closed the space on the opposite side, thus forming a large court between the buildings. The creek is bordered on both sides by ample fields or gardens, which are irrigated by canals drawing water from the streams. Lieutenant Ives observed gardens cultivated by irrigation on the sides of the bluffs. Between the two, the face of the bluff had been ingeniously converted into terraces. They were faced with neat



IRRIGATING DITCH ON THE RIO VERDE.

masonry, and contained gardens, each surrounded with a raised edge, so as to retain water upon the surface. Pipes from the reservoirs permitted them at any time to be irrigated.*

Mr. F. W. Hodge, who was connected with the Hemmingway expedition, speaks of the irrigating canals of southern Arizona as indicating a large Pueblo population and a high degree of advancement. He says:

It is safe to say that the principal canals constructed by the ancient inhabitants of the Salado valley alone, controlled the irrigation of at least 250,000 acres of land. The outlines of 150 miles of ditches could be easily traced. Their routes are effaced from the more open ground, but there were concretions which had been deposited along the banks, as "tamers of the waters." These, with the implements which had been dropped, were sufficient to show the line which had been followed. Near one of the thirty-

* "House and House-life," page 144.

six large communal structures—the ancient pueblo, De los Muertos—was a supply canal, the depth of which was about seven feet, and the width about thirty feet. This canal was divided into two beds, the lowest being about four feet wide, but the sides broadened until a bench was reached, which was three feet wide on either side; from these benches the banks continued broadening until they reached the brink. The bottom and sides of the canal were very hard, the supposition is that they had been plastered with adobe, and that brush fires had been made upon them till they were hardened.

It is noticed that nearly all the pueblos were situated, not near the river, but near the ends of the canals, showing that the builders were dependent upon the canals for subsistence. The means of transportation were furnished by the canals, so that countless boulders from the river bank had been carried ten or twelve miles to the vicinity of the pueblos. At a group of ruins, near Mesa City, the remains of an extensive irrigation system, the canal bed had been carried through a large knoll with inconceivable difficulty, in order to reach the tract of fertile land.

The ancient canal was utilized by the Mormons for fully three miles, with a saving of from \$20,000 to \$25,000. The pueblos of the Gila were generally larger than those of the Salado, irrigating canals were more extensive, with many hillside reservoirs, showing that an extensive population existed here. The sites of the ancient reservoirs were discovered. These were natural sinks, deepened by artificial means, and served the purpose of storage basins for surplus waters. One such was found to be a mile long and a half mile wide. The most of the valley lands were once covered with a network of irrigating ditches.

In the region of the Zumis, the canals have not been traced, though the supposition is that they cultivated the soil in the same way as the western tribes did. The description of the Zumi houses, furnished by historians, would indicate that they were on the summit of the mesas.*

Mr. Bandelier has also described the irrigating ditches in the valley of the Verde and elsewhere. This region has been described by Mr. Cosmos Mindeloff. He says:

The region which furnishes the best examples of irrigating ditches and the greater number of contrivances for irrigating the soil by this means, is that which is situated far to the west in the region of Limestone Creek and the Rio Verde which lies between the home of the Cliff Dwellers at the north, and the ancient and ruined villages on the Gila, and to the west of the elevated layers of the Mogons and Zumis. This seems to have been a migrating route of the Cliff Dwellers, and possibly may have been the result of tribes who were forced to the Pueblos. There are many stone villages, with the large boulder-stones and other signs of habitation scattered throughout the entire region.

The Rio Verde is a three-hundred-length mountain stream. Rising in the mountains and pouring bounding two great connected valleys north-west to Fort Huachuca, known as Big Chino valley and Williamson valley, both over a hundred miles from the sea, it discharges into Salt River about ten miles south of Mesa City, and about twenty-five miles west of Phoenix, at an elevation of about a hundred feet above the sea. The fall from Verde to Mesa is a distance of about sixty-two miles, but about two hundred feet. The whole distance of the river is about a hundred miles.

It is probable that the Rio Verde would be a good one for irrigation if there were time to dig it out properly, but on the west the river is bugged closely by a high and rugged range of mountains, and the water is so fast that the soil is sometimes so dry that it is difficult to grow anything, while steep and rugged sides by the river are so high that it is impossible to dig them out. The eastern side of the mountains is usually very fertile, and the soil is as fine as the western side, and the water is so fast that it is impossible to dig them out.

Mesa City, the ruins of the pueblo of the Rio Verde, are along the upper





portion of its course. Prescott is situated on Granite creek, one of the sources of the river, and along other tributaries, as far down as the southern end of the great valley in whose centre Verde is located, there are many scattered settlements; but from that point to McDowell there are hardly a dozen houses all told. This region is most rugged and forbidding. There are no roads, and few trails, and the latter are feebly marked and little used.

The former inhabitants of this region were an agricultural people, and their villages were always located either on or immediately adjacent to some area of tillable soil. This is true even of the cave lodges, which are often supposed to have been located solely with reference to facility of defense. Perched on the hills overlooking these bottoms, and sometimes located on the lower levels, there was once a number of large and important villages, while in the regions on the south, where the tillable areas are as a rule very much smaller, the settlements were with one exception, small and generally insignificant.

The irrigating ditches in the valley of the Verde are, perhaps, the most interesting of any, as they form a most important feature of the region, and are very conspicuous; in fact, the most conspicuous objects in the landscape. The age of these ditches is unknown, but they are old enough to have been affected by the changes of nature, and so may be ascribed to a geological age, though a very recent epoch in that age. They are connected with boulder sites and ancient ruins, which seem very ancient, but which were erected by the earlier Pueblo tribes, as temporary residences while working the fields.

The following is the description of one of these ditches given by Mr. Mindeleff:

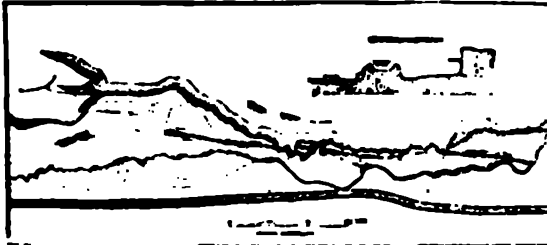
One of the finest examples of an aboriginal irrigating ditch that has come under the writer's notice, occurs about two miles below the mouth of Limestone creek, on the opposite or eastern side of the river. At this point there is a large area of fertile bottom land, now occupied by some half dozen ranches, known locally as the Lower Verde settlement. The ditch extends across the northern and western part of this area. The plate shows a portion of this ditch at a point about one eighth of a mile east of the river. Here the ditch is marked by a very shallow trough in the grass-covered bottom, bounded on either side by a low ridge of earth and pebbles. North of this point the ditch can not be traced, but here it is about forty feet above the river, and about ten feet above a modern (American) ditch. It is probable that the water was taken out of the river about two miles above this place, but the ditch was run on the sloping side of the mesa which has been recently washed out.

There is no reason to suppose that the ancient ditch did not irrigate nearly the whole area of bottom land. The ancient ditch is well marked by two clearly defined lines of pebbles and small boulders, as shown in the illustration. Probably these pebbles entered into its construction as the modern ditch, washed out at its head and abandoned more than a year ago, shows no trace of a similar marking.

A few feet west and south of the point shown in the cut the bottom land drops off by a low bench of three or four feet to a lower level or terrace, and this edge is marked for a distance of about a quarter of a mile by the remains of a stone wall or other analogous structure. This is located on the extreme edge of the upper bench, and it is marked on its higher side by a very small elevation. On the outer or lower side it is more clearly visible, as the stones of which the wall was composed are scattered over the slope marking the edge of the upper bench. At irregular intervals along the wall there are distinct rectangular areas about the size of an ancient pueblo room, i. e., about eight by ten and ten by twelve feet.

On February, 1891, there was an exceptional flood in the Verde river, the prolonged hard rain. The river in some places rose nearly twenty

feet, and at many points washed away its banks and changed the channel. The river rose on two occasions, during its first rise it cut away a considerable section of the bank, near a point known as Spanish Wash, about three and one half miles below Verde, exposing an ancient ditch. During its second rise it cut away still more of the bank and a part of the ancient ditch exposed a few days before. The river here makes a sharp bend and flows a little north of east. The modern American ditch, which supplied all the bottom lands of the Verde west of the river, was ruined in this



MAP OF ANCIENT DITCH

vicinity by the flood that uncovered the old ditch. The cut is a map of the ancient ditch drawn in the field, with contours a foot apart, and showing also a section, on a somewhat larger scale, drawn between the points A and B on the map. Plate A is a view of the ditch looking

westward across the point where it has been washed away, and plate B shows the eastern portion, where the ditch disappears under the bluff.

The bank of the river at this point consists of a low sandy beach, from ten to fifty feet wide, limited to the south by a vertical wall ten to twelve feet high and composed of sandy alluvial soil. This bank is the edge of the bottom land before referred to, and on top is a most flat and covered with a growth of mesquite, some of the trees reaching a diameter of more than three inches. The ancient ditch, which is shown on the map, runs along the top of the bluff skirting its edge. It is about fourteen feet above the river at its ordinary stage. The cut in the bluff is shown on the map by a line marked A-B. It was

observed that the largest of the oaks on the lower flat plain is three feet across the river at its ordinary stage, and its trunk extends over twenty yards to the west. The ditch is a straight line, and the trees do not grow in it. This shows the original cut, just what it turned out to be, and is a piece under the bluff.

As to the trees west of the main ditch, at the point where it passes under the bluff, there are trees of the same size, which show that the ditch is a straight line. The trees west of the ditch are of the same size, and the ditch is a straight line. The trees west of the ditch are of the same size, and the ditch is a straight line.

A view of the trees west of the main ditch, at the point where it passes under the bluff, there are trees of the same size, which show that the ditch is a straight line. The trees west of the ditch are of the same size, and the ditch is a straight line.



View of the ditch

westward of the north. The view shows the ditch cutting through a landscape, with a building visible in the distance. The ditch is a straight line, and the trees do not grow in it. This shows the original cut, just what it turned out to be, and is a piece under the bluff.



PLATE 1. CLIFF FACE, LOOKING EASTWARD, LOOKING EASTWARD

ditch were placed to day on the level of the ancient structure it would certainly be destroyed every spring. The water that flowed through the modern ditch was taken from the river at point about three miles farther northward, or just below Verde. The water for the ancient ditch must have taken out less than a mile above the southern end of the section shown in the map.

At first sight it would appear that the ancient ditch antedated the deposit of alluvial soil forming the bottom land at this point, and this hypothesis is supported by several facts of importance. It is said that ten years ago the bottom land, whose edge now forms the bluff referred to, extended some twenty five or thirty feet farther out, and that the river then flowed in a channel some 200 or 300 feet north of the present one. Be this as it may, the bottom land now presents a fairly continuous surface, from the banks of the river to the foothills that limit the valley on the west and south, and it is certain that this bottom land extended over the place occupied by the ancient ditch, nor is it to be supposed that the ancient ditches ended abruptly at the point where they now enter the bluff. The curves in the line of the ancient ditch might indicate that it was constructed along the slope of a hill, or on an uneven surface, as a deep excavation in fairly even ground would naturally be made in a straight line.

In conclusion, it should be noted, in support of the hypothesis that the ditch was built before the material composing the bluff was laid down, that immediately under the ditch there is a stratum of hard adobe-like earth, quite different from the sand above it and from the material of which the bluff is composed.

The hypothesis which accords best with the evidence now in hand, is that which assumes that the ditch was taken out of the river but a short distance above the point illustrated, and that it was built on the slope of a low hill or on a nearly flat undulating bottom land, before the material composing the present bottom or river terrace was deposited, and that the ditch, while it may be of considerable antiquity, is not necessarily more than a hundred or a hundred and fifty years old; in other words, we may reach a fairly definite determination of its minimum, but not of its maximum antiquity.

This description of the irrigation on the Rio Verde has been given in all its details and in the words of the explorer, that the reader may learn the character of the works and from it judge what their routes were. The enquiry which proves the most interesting is the one which relates to the age of the ditch. We have seen that Mr. Mindeleff considers the ditch to be comparatively modern— not over one hundred and fifty years old, but the recent discovery of an irrigating ditch in a region somewhat remote from this seems to controvert the opinion, or at least shows that there are ditches which are older, in fact so old as to be carried back to a geological period when the lava beds were in a state of formation.

The account of it is given in the *New York Tribune* and quoted in the *American Architect and Building News*. It is as follows:

Discoveries were made recently in the lava beds of New Mexico, some of which are situated eighteen miles west of Santa Fe, which prove that thousands of years ago there existed in New Mexico a system of reservoirs and irrigation canals that is unparalleled at this age. Under the lava, which covers hundreds of square miles, are found traces of cemented ditches and reservoirs that are marvels of civil engineering. Irrigation engineers have much to learn from the people, older than the Pueblo race, who inhabited New Mexico when the race from which Columbus sprang were still bar-

barians. The ancients provided against seepage by cementing the bottoms of their ditches wherever they are conducted across loose soils. Their ditches wound in and out at the base of mountain ranges, following the sinuosities of canyons and rounding points in such a manner as to catch all the storm water before it was absorbed by the loose sands at the mountains base. Reservoirs at convenient basins stored the water, which was led in cemented ditches across the loose soils to where it was needed for use. Chasms were crossed by viaducts, and wonderful engineering devices were used for the removal of silt that might be used as an aid to the fertility of loose and rocky soils otherwise valueless. Into some of the ditches lava has run, showing their great antiquity. Others are now covered with shifting sands, but enough are still visible in many places in New Mexico to enable the skilled engineer to understand the system which the prehistoric New Mexicans rendered so effective.

This discovery seems to indicate that the period in which the stone pueblos and the irrigating ditches were constructed was of much greater antiquity than has been supposed, for they show the character of the people who built the canals and used the water for irrigating their fields. It also gives us many hints as to the different places in which irrigation was practiced, as well as the different stages of progress through which the inhabitants passed. The very existence of these canals, or ditches, proves that the inhabitants had changed from the hunter life to the agricultural, and that with this change there had come an entirely different condition of society. The people were no longer nomads, wandering from place to place, without any settled home, but were sedentary and lived in permanent villages. No longer savages governed by every new impulse, but were organized into village communities, and were brought under a government suited to the village life.

The date at which this change occurred can not now be determined. If the report which has been quoted above is true and the facts are as they are stated, it must have been far back in prehistoric times, before any of the known wild tribes had invaded the region, and when the geological conditions were very different from what they are at present. Still, it is wise to hold our hands in suspense until the facts are fully known, and it shall be secured which shall prove that the conclusions are correct.

AN OLD KWANTHUM VILLAGE ITS PEOPLE AND ITS FALL.

BY ELLEN R. C. WEBBER.

On the north bank of the Frazer river, about twenty-five miles from its mouth, lies a long, narrow kitchen-midden, the old-time site of an ancient village. Its boundaries are readily defined; the soil of the midden being very black and loose, while that surrounding it is red and clay mixed. Then, too, the midden forms a hillock, or mound, a quarter of a mile, or more, in length, with an average width of one hundred feet, the depth of the midden soil varies, being greatest near the river bank, and least on the outskirts of the village site. Eleven, fifteen and twenty feet are the varying depths in the heart of the mound; while fewer inches would measure the deposit soil one hundred feet back from the river front, or at the ends of the village site.

The general direction of the mound lies east and west, the old-time village facing the river and the south, just as the village of Keatsey does to-day; the Keatsey which was founded when the Kwanthum village died.

The history of this mound, with its inhabitants of long ago, would no doubt prove interesting. Such gleanings as I have been able to gather I give in this sketch chaff and golden grain alike. I leave the reader to distinguish as pleases his individual taste the mystical line where legend fades and facts dawn dimly. For myself, I give the pages as they were given to me, and futher than this claim no responsibility as to the truthfulness of the statements made therein.

The mound, thirty years ago, was covered with giant fir and spruce, with an undergrowth of cottonwood, alder and hazel. If one can measure time by the growth of these great trees with their far-reaching roots, then the Indians do not overstate the age of their dead village.

"Six hundred years ago," says the old Indian, "this mound held a happy and prosperous population of more than six hundred people. They knew God and they had prophets, who, communing with God, in turn told the people his will, and the good people obeyed. He who disobeyed always reaped a just punishment. This God was white, and wore a long white dress. He appeared suddenly to the people many, many hundred years ago; before the world was drowned. He was alone. The people would not obey him; so he performed wonders, and then they obeyed. He whistled, and rocks appeared in the Frazer. He turned smooth water into rapids; he left the print

of his hand on the rocks; he turned wicked men to stone. One jealous Indian gave him poison to drink when he was thirsty, and he died; but when the Indians met an hour later to put away the dead body, lo! God had ascended to Heaven, and there was no body left. But he had taught the Indians to pray and to call him "Father."

The prophets were holy men and ruled the people. They fell asleep and God spoke to them in dreams, and through these dreams they obeyed God. When in the later days the white men came, they feared them, thinking they were gods like that other God; and they were friendly to them, accordingly. But when they proved to be wicked, and to be a dishonor to the Indian women, then they sometimes killed the white man. But at the time of the old village these later white men were unknown, so we need not enter into these questions here.

Our villagers lived, in summer weather, under shed like roofs, made of split cedar. Sometimes one end of the "lean to" rested on a big log, sometimes a pole frame supported it. Such cooking as was done required a water tight basket which was set into the ground and filled with water and the food to be cooked. Red hot rocks were dropped in, fished out and replaced by others, till the dinner was prepared. In the cold weather, the people moved into their "skabels," or native houses. These were made as follows. A hole was dug some feet in depth and thirty or more in circumference. Split cedar and poles were placed on end closely around this excavation, all leaning toward the centre, thus forming a cone shaped habitation, with a circular opening in the top. These sloping walls were next covered with brush, then with earth. A ladder this shape led from the roof to floor inside, and around the walls, two feet from the floor, ran a bench, which, covered with skins and furs, served for the family sleeping apartments. On the earth floor, in the centre directly beneath the opening in the roof, was a fire pit. Fire was started with a pointed stick, worn and rubbed by the fingers, or by a rapid rotary motion. They could die, now, as they did before, and I said that the men came from a cave to the sky with it.

To put the cedar for the roof, they used the shoulder blade of a deer, or even by the stone hammer. These old winter houses are still in use, in other extent, a number being in existence still. They are called "skewwaw holes" now, "skewwaw" meaning, "to walk in," hence a hole under the ground.

Various Indian toys were made at our village. One family made dolls, in three or four narrow points, a third knee, a rest of the body, and a head, the other part in witchcraft and in magic. They were made of wood. Some women wove baskets, some wove mats, and some made the hair of the mountain goat. Some made little wooden toys, and others wove toys from roots and barks, most being a specialty of the cradles

which swing on the mothers' backs. One or two were wise in the use of herbs and medicines, and devoted their time to the gathering of plants, barks and roots, and to the cure of diseases, natural and supernatural. Each craft descended from father to son, from mother to daughter, and was kept sacred to the one family. But all were fishermen. As the season drew near for the salmon to run up the rivers, watchers were sent out near to the mouth of the river, and as the fish were seen approaching the watchers ran with all speed toward the village, uttering a long, far-reaching cry, or call. This cry was caught and carried on to another watcher, who, in turn, sent it on to another, till in incredibly short space of time this living telegraph had carried the news to all the villages that the gift of God was approaching.

The first fish caught in each village or camping place was offered to God, by burning. A small portion of the entrails was placed in a bowl with the heart and taken by the medicine man as far out into the Frazer as he could wade, and there it was held aloft and burned. Were the first fish caught, to be eaten, the salmon would turn back and ascend the river no more that year, or some awful calamity would befall the person who had defrauded God. The fish were caught by nets and by spears. The spear was in use from the beginning; but God taught the people to make nets at his coming, and it was a fish-spear maker, who, jealous of the improved method and fearing that the people would do away with the spear for the net, gave the poisoned drink to God that killed him.

Pleasure intermixed freely with the toil of our people, who were then, as now, veritable children in their joyous anticipations of a "good time." Men, women and children joined in the long jaunts whose serious intention was the gathering of berries for winter use; or the digging of the "siwash potatoes," or lily bulbs found in profusion along the sloughs, on the meadows or in any swampy ground. These trips were prolonged picnics, and serious, indeed, must be the illness which could detain one in the village at these times. No fear of the enemy now, for no tribe would waste these pleasure times in warfare. The Indians, one and all, regard that man as a fool who would attend to serious affairs when there was opportunity for "fun," as they called it. Pleasure comes first, and a mother will carry her dying child to a gathering of the people; or take it out to the cranberry bogs, burying it there in its little dead-house, it need be, but never turning her back on the frolic. "There is a time to mourn," but it is not in the berry season.

The next great event for our old villagers was the bringing home of immense quantities of clams, which they valued highly as an article of diet, and spared neither time nor labor in obtaining them. The great canoes, some of which would hold fifteen men, while a few would carry twenty-five or thirty, were loaded with shellfish, and many trips were made; everyone who could go joining the excursion. These fish were brought to the

village, and the broken shell in the soil of the mound to-day bears silent testimony to the industry of the clam hunters.

As a rule the canoe makers used fallen trees for their work, but occasionally a tree was felled for the purpose. The process was slow and tedious; wet clay, fire, and stone tools being the agents employed. Five months were required to fell a good sized tree. Just before its last supports were burned away messengers were sent to friendly villages, and from far and near the people collected to see the tree fall. It was a great event, honored in the feasting, dancing and potlatching of the people.

But, see! as the sun looks down on our village, one bright morning, we observe before a skabil a generous pile of baskets, blankets, some dishes of fruit, and a few dried fish. This tells us that within that skabil dwells a maiden who is sought from her mother (not her father, observe) in marriage. Perhaps the girl's wishes are consulted. If she happens to favor a wealthier lover, and he seems inclined to woo, her wish is certainly complied with, and the presents are left outside all day. By this the lover knows that his suit is declined, and when the darkness hides his shame he comes and takes the gifts away. You may ask, how could the girl's mother know who had left the gifts? The baskets and the blankets would be of his mother's weaving, as a rule, these by a sort of personality in workmanship (as in our handwriting), tell from whence they came. But let us suppose the lover is accepted, then his gifts are taken in, but the old mother must not be too eager to accept the offerings; beyond this, she gives no sign. The next night brings more gifts before the home of the maiden, and if the mother is a little greedy, as she is liable to be, she still holds out for the third lot of gifts, which etopotte demands shall mean some good at each giving. If she should by her silent demands wish too much, she will look out one morning to find no gifts left. Then she knows the suit is out, and more bitter still, she may return what she has taken to the young man's mother, and take a few best and excellent stock amongst the village. This is true, and the only limits the greed of the mother will, on the third day, as a rule, goes to see the young man's mother. After that he goes to the home of the maiden, among the friends, and the villagers, and such visitors as have been invited, to be staying, to his own, or his mother's, home. It is his duty to give gifts to the people, the more he gives the more riches he has, and he will give against poverty, for it is a disgrace to be a poor man, and from his children, to return to be a poor man, or the lover, or to himself in old age equal to the poor man of the village.

After the maiden is wed with, not too great delay, comes the time when she must take her presents to her son-in-law. If she has given him the value of her gifts, and here is where she may regret the wife she has taken, and she will give upon her son. If she has not taken all that she has given, or so many, as her son

gave, she packs the young bride off to her mother's home once more. The husband has nothing to say about it; these are women's affairs, and they must settle it among themselves.

If a girl, of our old-time village, resolutely refused, on her own account, to wed a suitor, not pleasing to her, she died suddenly and mysteriously. Until she did so, the discarded suitor was in disgrace. He employed witchcraft to aid him in clearing his honor. These "witch charms" are too numerous to repeat in an article of this kind. To me they seem simple and harmless, but I am assured by Indian friends that I am mistaken, they were, and are yet, simply "awful!"

It was the custom of our villagers to bury their dead within an hour of death. They were in most cases placed in a tiny house raised on posts, but, if there was no house ready, or, if they were at a distance from the "dead houses," they were wrapped in skins and blankets and placed on pole platforms, high above the reach of animals, or in trees. With the dead were placed pipes, bowls, hammers, or such things as he made or might require to start life in the next world. Before the burial house was placed a stone or wooden figure to guard the dead from evil spirits. Often it was a wooden man, or "doctor"; or, again, it was the "Thunder bird," dreaded by all, which kept guard.

In each skabil hung a flat, thin stone, and when a child was born to that house, a hole was bored in this tablet. If too many girls babies were born, the surplus was put to death, lest there being no husband for her, she might bring dishonor to the tribe.

But not always were our villagers permitted to live and die in peace. The coast tribes were their most dreaded enemies, and particularly the Haidahs of Queen Charlotte Islands. For defence against these warriors, with whose canoes the river was often black, the villagers brought many canoe-loads of rocks from the foothills of the Pitt Mountains, a portion of the Coast Range, distant about ten miles across the prairies, known now as Pitt Meadows. These rocks, whose average size was that of an ordinary orange, were placed in piles along the river bank, which before the village was about fifteen feet above the river. Each pile was about shoulder high to a man, and a distance of seven or eight feet lay between one pile and another. These rocks were hurled at the canoes to prevent them landing before the village. As long as possible they were used to prevent the approach of the enemy, and served to save the arrows and to damage the canoes, as well as the heads of the paddlers. Other weapons were stone spear-heads lashed to long wooden poles, and used to hurl, or to thrust. Bone spear points, deeply bearded, were accounted sure death dealers, the flesh being so fearfully torn by them. Others were grooved to "let plenty blood run," one old man tells me. Then comes the "club" or "wand sword" some call it. This was tied to the wrist by a thong, and heavy was the blow it dealt. I found in

the mound, at Hammond, a skull evidently crushed by a club of this kind, the blow having been dealt just across the side of the head above the ear.

In many a battle had the village come off conquerors, but one day the enemy was led by a strategist of no mean order, and while the greater number of his canoes were sent up the river, the remainder paddled up the sloughs behind the village. The villagers stood by their rock piles, such women as were free aiding the men; the others, with the little children, hid in the woods. Fast flew the rocks, and love of life, home, and freedom strengthened the arm and steadied the aim. Many a canoe was split, and the river was hungry, so its occupants fought no more. But suddenly the cry of exultation burst from stranger throats in the rear, and from the strip of timber back of the village rushed the enemy upon the surprised villagers. Now all was confusion. Many were killed, and many women were taken slaves. A few escaped to the woods, where they remained in hiding for two or three days. Then, with the children, they came out, and with sad hearts they laid away their dead. But their enemies they buried deep in the earth, so that their souls might be held down by weight of earth, and never rise to the better world.

But misfortune followed the little band of survivors. In the swamp, near the village, lived a tearful dragon with saucer like eyes of fire and breath of steam. The village was apparently regaining its former strength, when this dragon awoke and breathed upon the children. Where his breath touched them sores broke out and they burned with heat [smallpox], and they died to feed this monster. And so the village was deserted, and never again would the Indians live on that spot.

To-day, the old Indians, in coming up the river, cross below Hammond to the other side, and paddle softly lest they should wake the dragon as he sleeps in the swamp. They say that he will be very hungry after so long a sleep, and woe to the tribe of that man who wakens them.

ARCHAEOLOGY IN NEW YORK.

BY W. M. BEAUCHAMP.

The publication of the New York State Bulletins on local archaeology has deepened and extended the interest in the subject, and elicited much information, as was hoped. They are necessarily preliminary treatises, but it was otherwise impossible to obtain any desired information. In no other way could collectors judge of the rarity or unique character of articles in their collections. In due time supplementary work should include all at first omitted, but subsequently obtained.

The response has been most gratifying. We have already many new articles for future illustration, and are continually adding to the number. A similar interest has been shown in the archaeological map of the State. Upwards of eighty plans of works and sites will be given in plates, and while there is much new matter, all that has ever been published in this way is included. Sites are arranged and described by counties, as a matter of convenience, but several are often grouped under one number, and emblems have been omitted on account of the size of the map. This is on a scale of twelve miles to the inch. More time and much travel, of course, might have greatly increased the numbers and descriptions. This map is merely for sites of towns, camps, and works. A smaller one will accompany it, approximately showing the situation and territorial bounds of the Indian nations of New York about A. D. 1600. On my own larger maps much more detail could be given. However, with all its imperfection, the map to be issued will be a good basis for future work.

Since the work commenced a great deal has been done in correspondence and examination. I have received beautiful fragmentary specimens of pottery of new types and ornaments. Some handsome vessels of clay have sharp and narrow protruding angles, much like the prows of our schooner, fifty years ago. Others have ornaments different from any I have yet seen. The Jefferson county conventional face on pottery holds good as a local type, and occurs abundantly. The later human faces and forms cover about the period I have indicated elsewhere.

A bulletin on implements of bone and horn should follow that with the map, and the material for this has more than doubled within the last two years. The use of bone combs has been carried back a little farther; several barbed and plain fish-hooks have been found; more Iroquois harpoons are to be seen, and the earlier double-barbed kinds have come to light abundantly on two or three sites. Beautiful examples of bone awls

and knives are now in hand, with perforated bones in many forms. Our knowledge of bone beads and larger tubes has been much enlarged, and there are many nondescript articles. Some good examples may be seen of the long and thin perforated needles, but they are often broken at the holes. Long bone whistles are as yet rare, with a lateral perforation, but the smaller ones, little worked, are frequent. The increase in the number of harpoons is more important, because few have heretofore been known.

There are some rare examples of shell ornaments to be illustrated, but mostly of rather recent make, few shells being used inland in New York at an early day. It is not generally known that shell gorgets were used there in the 17th century, and of considerable size. Beads of this material are both massive and very small, and New York has now the finest examples of wampum belts in existence, with an abundant literature on this subject. The wampum makers lived there, and belts and strings of wampum were used in the most liberal way. Beads occur of copper, stone, and clay, as well as of porcelain and glass.

I have been interested in the question of early copper articles. Nowhere abundant, they seem rarer north of the great lakes than in New York, where fine examples are found of many forms. Recent ones of brass occur on all the later Iroquois sites. There are some curious recent metallic pipes, of slender and massive forms.

While I am glad to get notes and figures of any articles of interest, those most desired for probable use are New York objects in bone, horn, shell, and metal. Should the series be continued, there may be speedy use for these.

I am much gratified with the *Archaeological Report of Ontario*, for 1878. Mr. Boyle has done a great service in securing so full an account of Iroquois dances, with songs and music. Something of the kind has been done in New York, but not so thoroughly, and the material gathered is in some danger of being lost. Canada and New York are so intimately related in such matters, that Mr. Boyle's work is directly in the interests of my native State.

Edw. S. Eastman.

Sir Henry Maine says further: "The first steps in the transition seem to be marked by the joint family of the Hindoos, by the house community of the Slavonians, and by the true village community as found in Russia. The Hindoo families are joint in food, in worship and estate, and are constantly engaged in the cultivation of the land. What holds them together is not the land, but consanguinity. In Russia the relationship is no longer to be found, but the Russian peasants really believe in the common ancestry. Accordingly, the arable lands are periodically redistributed."

"In comparing the two extant types of the village community, the common dwelling and the common table which belonged to the joint family and to the house community, are no longer to be found. The village is an assemblage of houses contained within narrow limits but composed of separate dwellings, each zealously guarded from the intrusion of a neighbor."

Here, then, we trace the origin of the pueblo life to the change from the nomadic state to the sedentary condition, in other words, from hunting to agriculture, though the consanguinity which prevailed in the earlier condition is retained in the later, either by artificial ties, such as totemism, or imaginary descent from a common ancestry. This is the theory advanced by those who have been studying the village community in such far-away lands as India, Russia, Slavonia, Germany, and northern Africa.

We find the germ of pueblo life and architecture to be contained in the village community, or, in other words, the clan village, which exists in its earliest stages among the nomads, but which is carried to a higher stage among the sedentary tribes, and which ultimately results in the ancient city. The village community was not transplanted, but grew up spontaneously from the organism which inhered with primitive society and appeared on the different continents. Many specimens of the village community are found in America, and the architecture is everywhere correlated to it.

Even the wild tribes which still inhabit the pueblo region, all live in villages and build their houses in clusters and are ruled by a single village chief. There are houses in Arizona, which were built of wattle work in rectangular form and arranged in rows about a central area, which constitute a village. There are others in Oregon, which were built in long rows of an irregular roof, with passageways between the houses.

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there were many that survived in the change from the wandering life to the permanent village community. In the first place, the round hut of the hunter gave place to the square rectangular house of the agriculturist, the stone being used

for wood and becoming an index of the new social status. The straggling village, composed of houses stretched along the side of the stream, or of the ditch, with a citadel in the centre, may have marked the intervening period. The straggling village gave place to the compact, terraced and many-storied pueblo. The ordinary spring, which flowed out from beneath the rocks and supplied the rude camp with drinking water, was supplanted by the spring which was walled up and was furnished with drinking vessels which were sacred to the water divinities and were covered with the symbols of a new religion. The religion of the people was also changed. While they retained their clan totems in the shape of animal images as fetiches, these no longer represented the divinities of the clans, but were supposed to be the divinities of the sky and ruled the different parts of the sky and the earth and the above and below. The priesthood of the bow was substituted for the medicine-man, and the offerings were made to the sun and moon and such Nature powers as wind and lightning, and especially the rain.

The domestic life of the people was also changed, for the women were no longer the chief providers for the household, nor were they the slaves of the men, but they had control of the household and dwelt with the children in apartments by themselves; the men having their assembling place with the secret societies in the kivas, which are most of them underground.

The provisions for defence were greatly changed. The rude stone circle on some isolated spot, which was used as an outlook, gave place to the lofty stone tower situated on the promontory, or the summit of the mesa. The mountain path gave place to the trail with supporting walls; the rude ladder, to the stone stairway, and the shrine, which was hidden away in a cave or the rocks, was supplanted by the kiva, which was full of the symbols of the creation and was used for the initiatory rites of the people. There are many other things which mark the change from the hunter state to the agricultural, and it is interesting to take these and follow up the study, but there is another subject which we need to pursue before we understand the change in all its bearings. The question is whether there are any connecting links which exhibit the transition from the wild life of the hunters to the sedentary life of the agriculturists, or any structures which show the different stages through which the people passed. In answer to this question, we will say that there are such links, though the difficulty is to find them and identify them, for in the majority of places they have been obscured by the later inventions and by the accumulations of time. There is, however, one locality in which the structures are very rude and show all stages of progress and where the relics seem to correspond, and which furnishes us an excellent field for this study. It is found in the western part of the Pueblo territory, which has long been deserted by the Pueblos and is not even claimed by the wild tribes. This dis-

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In the cavate lodges, window openings are not found; there is but one

opening. As a rule the doorways are wider at the top than at the bottom. This feature is shown in the cut in which the framing is extended up on one side only half the height of the opening, which is hollowed out to increase its width. The large opening on the right was caused by recent breaking out



STORAGE CIST.

of the wall. This is the counter part of the notched doorway, which is the standard type of the cliff ruins and had its origin in the time when the pueblo builders had no means other than blankets of temporarily closing door openings, and when all the supplies of the village were brought in on the backs of the inhabitants.

Storage cists are sometimes hewn out of the rocks in the exterior walls of the cliff, and partly enclosed by a rough, circular wall. An example of this kind is shown in the cut.

The most interesting structures in this region are the stone villages, quite a number of which have been described. One of them is represented in the plate. It is on the eastern side of the Verde, just below the mouth of Beaver Creek, opposite and a little above Verde.

It is one of the best examples of a large village located on a defensive site. Here, there is a group of eight cisters, extending half a mile up and down the river, and some of the cisters have walls six feet high to the length of eight or ten feet.

The ruins are situated on a knob, which forms a sort of promontory, or tower, of sand rising from a flat bench, the whole rising to the level of the river, then falling. These cisters are situated in the proper position on the site, which is a general view from the east, and they are the only ones on the hill. The number of settlements, some of them of considerable size, is large. There are many of them that are partly of the same type, and some are of a different type, and some are of a different type. The ruins are situated on a knob, which forms a sort of promontory, or tower, of sand rising from a flat bench, the whole rising to the level of the river, then falling.

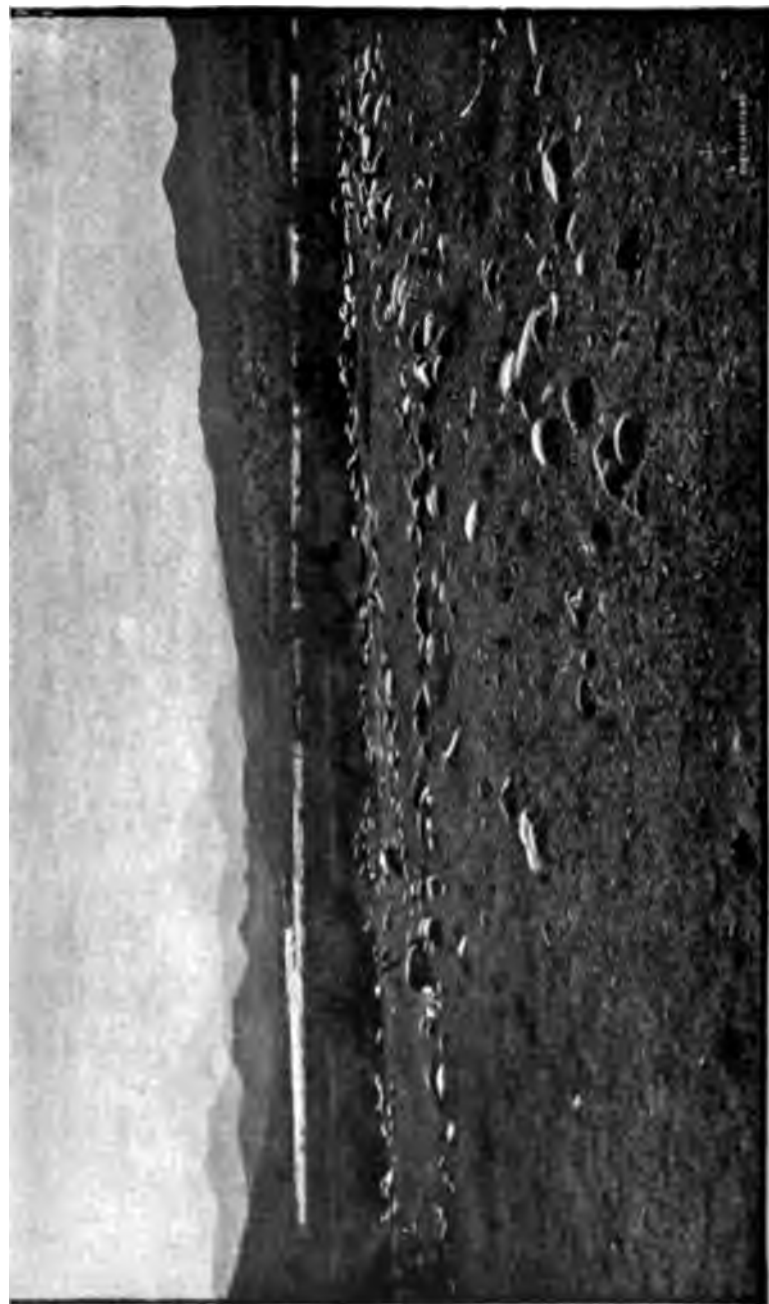


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RUINED VILLAGE ON THE RIO VERDE





BOULDER SITS ON THE MIDDLE

of flat boulders and slabs of limestone. There were about forty rooms. The village was of considerable size and was built up solidly, with no trace of an interior court.

Ruins of villages built of stone represent the highest degree of art in architecture obtained by the aborigines of the Verde Valley, and the best example of this class of ruins is found on the east side of the river, about a mile above the mouth of Limestone Creek. This is the largest ruin on the Verde.

It covers an area of about 450 feet square, or about five acres. It has some 225 rooms on the ground plan; most of the rooms were but one story in height, but the plan was similar in general character to Zuni. It was divided into a number of courts, around which were four well-defined clusters, the largest court was in the centre of the village, and within it a small, single room, which may have been a kiva or sacred chamber. The arrangement of the courts is suggestive of the continued growth of the pueblo by accretions from the outside; the smaller courts were in the middle of the ruins, and the larger courts were outside of these. Some of the rooms are quite large, but are oblong, showing that no roofing timbers longer than fifteen or twenty feet could be obtained, except only at points many miles distant. They were, therefore, limited to that length. The division into clusters indicates an aggregation of related gentes banded together for protection; also, a hostile pressure from the outside, and an occupancy extending over a considerable period of time. Absence of clearly-defined passage-ways to the interior of the village is noticeable.

We turn from these compact villages which were occupied by related gentes and are good specimens of pueblo architecture, to examine the boulder sites which are common in the same region, but which mark the opposite extreme in the history of pueblo architecture. They are very rude structures in themselves, and are scarcely worthy of notice, but as they mark a transition from the rude hut of the nomads to the stone structures of the agriculturist, and the transition from the original tree territory to landed estate, they prove very interesting.

All the villages in the valleys were originally occupied by agricultural communities, but were surrounded by a certain amount of land which was held in common by the village as its territory, and was cultivated by the people and its products shared in common. Where the villages were on mesas it was the custom, among the Pueblos, for the people to leave the village itself and move to some valley where the soil was rich, and there build farming shelters and spend the summer in cultivating the soil. The land, here, did not belong to individuals but to the community, and was free to all. Their only claim was that they occupied it from season to season and lived off from its products. The boulder sites indicate the spots where these farming shelters were erected, or possibly the places where garden-plats or corn-fields were situated. The interest which they possess consists in the fact that they present the rudest form of architecture, and, at the same time, the earliest stage of land ownership. If they mark the sites of temporary shelters, rather than of permanent villages, they were occupied by

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There were many traits involved in the change from the wandering life to the permanent village community. In the first place, the round hut of the hunter gave place to the square rectangular house of the agriculturist, the stone being used

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trict was one of the last to be explored, and is very important because of its bearing upon the history and antiquity of the Pueblos and the Cliff-Dwellers, as it is situated on the borders of the Pueblo territory and between the old habitat of the Cliff-Dwellers on the San Juan and that of the Pueblos who dwelt on the Gila and the Salado rivers, and possibly lay in the line of the migrations which occurred among the different tribes. It is a region full of ruins, all of which have been deserted and are now silent and desolate.

This region, comprising the valley of the Rio Verde in Arizona, and from Verde to the confluence with the Salt river, contains a great number of ruins, many of which seem to have been agricultural settlements, and so are especially worthy of notice. These were first mentioned by Mr. Leroux, who accompanied Lieut. Whipple's party as guide, in 1856; afterward described by Dr. W. J. Hoffman, who was connected with the Hayden Survey in 1876*, by Dr. E. A. Mearns, U. S. A., who was stationed for some years at Camp Verde, and by Cosmos Mundelett, who was connected with the Ethnological Bureau,†

The ruins of this region may be divided into several classes, which mentioned in the reverse order of their succession would be about as follows:—First, stone villages on bottom lands; second, stone villages on defensive sites, third, cavate lodges, fourth, boulder marked sites, fifth, cliff villages.

The first class resemble the Pueblos farther east, for they have courts in the interior surrounded by compact apartments. There is an occasional single room in the interior of the court which resembles a kiva also. Those of the second class are generally furnished with defensive walls, and are placed on sites where the ground falls away so suddenly that it is almost impossible to climb up without artificial aid. The cavate lodges are dug into the sides of a cliff at varying heights, sometimes making two rows, one above the other. They generally overlook areas of tillable land. They give every evidence of having been occupied, for they have door ways, fire-places, and separate rooms. The boulder sites are the rudest of all, so rude, in fact, that it is sometimes difficult to understand their objects. The masonry does not compare with the fine work done by the Cliff-dwellers and was so roughly and carelessly executed as to give little evidence of such details as the masonry of the Pueblos. The rough and unfinished surface, and the absence of mortar in many places, to use at hand rather than a mortar, are good evidence of the same ignorance on the part of the builders of many constructive devices. The boulder sites may be ranked at the lower end of the scale, the cavate lodges at the top of the scale, and the cliff villages in the middle or as intervening

* *Annals of the Survey of the West*, vol. 1, p. 107.

† *Journal of the Ethnological Society*, vol. 1, p. 107.

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Antelope altar, consistings of a sand mosaic, with a sand ridge at one end, into which are inserted eagle feathers, a medium bowl, bahos, two tiponis, etc., two rows of crooks on each side and other accessories. Fourth, A large sand mosaic, as made on the kiva floor, for the ceremony in which children are initiated into the Katsina orders. The mosaic will show Katsina figures, cloud symbols, feather offerings, and other symbolical figures.

GREEK ANTIQUITIES IN EGYPT. The finds of the Greek town, Oxyrhynchus, in Egypt, on Lake Moeris, are important. Here Messrs. Grenfell and Hunt came upon exceedingly valuable papyri inscribed with Greek characters. They are divided into three sections. First, portions of the New Testament; second, portions of the works of the Greek classics; third, private documents. Among the Greek classics are the following: Sophocles' Tragedies, the oldest extant manuscripts; Menander's Comedies, and portions of the Iliad and Odyssey; also, a metrical treatise on Homer's Iiad. Previous to these discoveries in Egypt, no book had come to light since the 16th century, at which time the Annals of Tacitus were found. Of Homer there was no authority earlier than the 10th century, and of Aeschylus and Sophocles not earlier than the 11th.

BABYLONIA. BABYLONIAN EXPEDITION OF THE UNIVERSITY OF PENNSYLVANIA. Dr. Heilprecht in the *Sunday School Times* states that the latest report received by the committee in Philadelphia from the members of the Babylonian expedition of the University of Pennsylvania is dated Nippur, April 1. The work at the temple hill, with its rich lower strata, so important for the earliest history of Babylonian civilization, will now be resumed at once. The first seven weeks of excavation up to April 1 have been very satisfactory. On the advice of the Philadelphia committee, new trenches were opened by Mr. Hayes on the southern side of the ancient city proper, which so far yielded more than 200 incised coniform tablets and fragments, a number of red tiles of baked clay, several fragments of a large unglazed clay cylinder, a number of seal cylinders, some terra cotta figurines, and bowls. Among the latter, one of a peculiarly beautiful form and ornamentation and a large number of nose, ear, and finger rings, anklets, bracelets, necklets, and silver beads and stones. Many specimens of the excavated vessels and bowls were taken from the tombs, 12 of which were opened and examined during these seven weeks.



Teutonic Type. NORWAY. Pure Blond.



Alpine Type. AUSTRIAN. Blue eyes, brown hair.



Mediterranean Type. PALERMO, Italy. Pure brunet.

THE THREE EUROPEAN RACIAL TYPES.

From "The Faces of Europe." Copyright, 1899, by D. Appleton & Co



DORDOGNE.



DORDOGNE.



FREDERIC LINES. Eyes and hair very dark.

CRO-MAGNON TYPES.

From "The Races of Europe," Copyright 1904, by H. H. Arnold & Co.

THE JOURNAL OF SEMITIC THEOLOGY for July has an excellent article on the Babylonian account of the fall compared to that of the Scriptures. This account makes the fall consist in sexual intercourse; but it is really not a falling down, but a falling up, as the temptation was to leave the beasts and find companionship with human beings. The two accounts are opposites, for in the Babylonian, Adam is told by Eve not to eat of the food of life, nor to drink of the water of life, and Adam obeys. In the Scripture, Adam disobeys. This shows that there were ancient myths which were used by the Babylonian and Scripture writers.

LE COURIER DU LIVRE CANADIEN, published monthly in French and English in Quebec. Raoul Renault, editor. Price \$2.00 per year. Devoted to Canadian history, archaeology, bibliography, numismatics, philately, and genealogy. The proprietor of this journal has kindly sent us a beautiful medal commemorative of the establishment of a museum and library, dated 1765 and 1877, also, a Civic Library inaugurated by H. T. Luffin, 1877. The medal and the journal show the interest taken in archaeological matters in the Province of Quebec.

HARPER'S MAGAZINE contains an interesting article by James Mooney on the Wichita Indians. He thinks that they are the people whom Coronado found in 1540, to whom he gave the name of Quivira. The number for August contains an article on 'Havah, the Unknown,' with splendid illustrations. One can find a complete issue without Harper's Magazine.

McGILL'S MIRROR has contained many valuable articles on the history of American Indians, on the soldier police of Central America, and on subjects as well as the interesting series on the 'Lost Land' now by Miss Ida M. Tarbell. The journal will prove very valuable to the American archaeologist.

THE LITERARY AND ARTISTICAL FORUM is one of our very best literary journals. It was very courteous in its notices of other journals and is very ably edited. We have often intended to translate some of the excellent articles which have appeared.

McGILL'S MIRROR has published Henry Mason Bain, D. C. L., a notice on the 'Lost Land' with Vol. I, No. 1, dated July, 1877. Boston Magazine, Vol. I, No. 1, which appeared last year, as to be a translation of the article in the *Literary Forum*.

The American Archaeological Society this year at Columbus, Ohio, has elected as President, F. H. C. Orton, president, Dr. J. G. Hays, secretary, and Dr. B. B. Thomas, local secretary.

THE LITERARY AND ARTISTICAL FORUM, No. 2, contains an interesting notice on 'The Lost Land' by Charles Deane, and also 'Beyrouth in Scythia' by W. G. Bowdoin.

sical traits of the races of Europe. He devotes a chapter to the head form; another to complexion, and another to the stature, and then classifies the European races, making three, each one possessing a history of its own and, to a certain extent, a geographical territory—the north of Europe is the home of the Teutonic race; the centre of Europe, the home of the Alpine race, and the south of Europe, that of the so-called Mediterranean race.

Thus he makes the distinctions geographical, rather than ethnological, and yet he avoids the postulate that the environment was the chief cause of the race peculiarities. The physical surroundings had an influence, but there is, also, an influence of heredity, which is to be traced back to pre-historic times. We have to do with the Cromagnon race, which was perhaps paleolithic, also, with the Teutonic race, which is connected with the bronze age; the Alpine race, which can be traced back to the neolithic age. In western and southern Europe there was an entirely indigenous culture gradually evolved during the later stone age, though there were two waves of invasion, the first bringing polished stone; the other one, bronze. A system of writing seems to have been invented as far back as the stone age.

As to the modern races—Basques, Britons, and Scandinavians—the author discusses each in turn, though he does not solve the problem of the origin of any one of them. The Basque Provinces are situated in the south of France, where broad heads are numerous. These people derive a romantic interest from the persistence with which they maintain their primitive character, their peculiar political organization, and their language. The Teutonic race differs decidedly from the Basque, both in history and physical characteristics.

MEMOIRS OF THE AMERICAN MUSEUM OF NATURAL HISTORY. Vol. II. I. Anthropology. II. The Jesup North Pacific Expedition. III. Archaeology of Lytton, British Columbia. By Harlan I. Smith; May 25, 1897.

This is a valuable contribution to the archaeology of the Northwest coast and one which brings out the characteristics of the stone and bone relics. The cuts are numerous and the descriptions are excellent. There are two plates which represent the location of village sites, which were examined. The author has had experience in digging the mounds, and so is qualified to do the work.

WHO'S WHO IN AMERICA. A BIOGRAPHICAL DICTIONARY OF LIVING MEN AND WOMEN OF THE UNITED STATES (1899-1900). Edited by John W. Leonard. Chicago: A. N. Marquis Co., Publishers.

This is a valuable hand-book on American biography. One which will be appreciated by every person who wants to know "who's who." The book contains autobiographical sketches of over 8,000 living men and women, all of whom have made a reputation and are worthy of notice. The book is entirely worthy of confidence, as the publishers have been very judicious in the selection of the persons whose life work should be recorded.

THE WINTER SOLSTICE CEREMONY AT WALPI. By J. Walter Fewkes. Reprinted from the *American Anthropologist*, Vol. II.

The author speaks of the totems as partly animal, partly vegetable, and partly astral.

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*THE SCIENCE OF INTELECTION OF THE UNITED STATES
BEFORE THE SENATE IN SENATE HEARINGS AND SOME TIME DE
HEARINGS OF THE UNITED STATES GEOLOGICAL SURVEY*

TRUTH AND ERROR

OR

The Science of Intellection.

BY E. W. POWELL

PHILADELPHIA: J. B. LIPPINCOTT COMPANY, 1904.

Important to Psychologists and Students of the Philosophy of Science.

The Science of Intellection is a new and original work, the author of which, E. W. Powell, is a philosopher of the highest order. The work is a treatise on the science of intellection, and is a masterpiece of logic and philosophy. It is a work of great importance, and one which should be read by all who are interested in the science of intellection. The work is a masterpiece of logic and philosophy, and is a work of great importance, and one which should be read by all who are interested in the science of intellection. The work is a masterpiece of logic and philosophy, and is a work of great importance, and one which should be read by all who are interested in the science of intellection.

OUR
AMERICAN
INDIANS



THE
American Antiquarian

VOL. XXI. NOVEMBER AND DECEMBER 1899.

No. 6.

A PLEA FOR THE POOR "DIGGER."

BY THE REV. FATHER A. G. MORICE.

'With the exception of the Patagonian, the Digger Indian ranks lowest in the scale of humanity.'

Such is the opening sentence of an interesting paper on "The Digger Indian and His 'Cry,'" by Ellen C. Weber, which appeared in the September number of the *Archaeologist* (page 230). On the point of joining issue with the fair essayist, I must confess that I know very little about the so-called Digger, certainly not any more than is to be found in current Anno graphical literature. I have not had the good fortune of seeing what Mr. F. C. Porter wrote, nor the comments which his remarks occasioned. But what I do know of several tribes belonging to the great Déné* family of the North, added to the very facts which I glean from the first mentioned article, makes me confidently to challenge the appropriateness of its initial statement.

In the first place, I must be allowed to remark that, treating of such questions, we use our race as a standard whereby to condemn those of aliens. The food of the Digger has won for him a celebrity which is far from enviable, and has contributed not a little to those occasional outbursts of disgust which sound as a protest that we should have such a wretched brother in Adam. His *menu*, or at least some of it, is certainly most repulsive to the Aryan palate; but, before condemning him, I am tempted to say to his detractors: *Medice, cura teipsum*. The lady author of the article in question speaks of raw oysters and implicitly compares them, with an air of superiority, with the worms eaten by the Digger. To be frank, and at the risk of appearing uncivilized, I declare that I can not see much reason for a choice. This

* For the benefit of such readers as have not seen my previous writings, I may state that by Déné I mean that aboriginal family mis-called Athapascan by others.

is at best but a question of tastes, and we know that *de gustibus non est disputandum*. Then we should not forget the unfathomable mysteries of the Chinese culinary art; nor the cotelettes of dog, the nests of salangase, etc., which are relished in the East by highly civilized people. But the Chinese and all the oriental nations are not to be mentioned in the same breath with whites, will perhaps object a reader. I might take exception to that distinction. I will content myself with remarking that Paris is usually classed among civilized communities; nay, many Frenchmen there are who, following in the lead of Victor Hugo, modestly believe that city to be the very center of civilization. Now who will tell of the thousands of frogs that are eaten there in a single day? All this, I repeat, is but a matter of taste and can in no wise afford material for ethnic comparisons.

Another circumstance which militates against the fair name of the aborigine nick named Digger, is the fact that most of his congeners of the Shoshonean stock occupy relatively high places in the estimation of the American sociologist. Comparisons present themselves unbidden to the mind, and the poor Digger can not but suffer thereby.

I now revert to the statement quoted at the beginning of this article: "With the exception of the Patagonian, the Digger Indian ranks lowest in the scale of humanity." Who should rank lowest in the scale of humanity, but he who is nearest to the brute? Now, civilization is the gauge of the distance covered in that road that leads away from the brute. Therefore the above assertion is tantamount to saying that the Digger is the second least civilized of human creatures. But what is civilization? I open the Standard Dictionary and I see that it is "a condition of human communities characterized by political and social organization and order, advancement in knowledge, refinement and the arts," and from the same source I learn that, according to Guizot, "civilization is an improved condition of man resulting from the establishment of social order in place of the individual independence and lawlessness of the savage and barbarous life." Now since the people that are the least civilized stand lowest in the scale of humanity, I feel quite certain that the Digger Indians occupy therein a place much higher than assigned them by the lady essayist to whose statement I venture to take exception. They are indubitably more civilized than some of the Dine tribes which I have made my life study. I need to prove this, by the very terms of her own article, deprecatively as they are.

As regards political and social organization which is the main criterion of civilization, Ellen C. Weber states that she once attended the mourning for a chief and she adds that, owing to the so abundant of the deceased Indians had gathered from all points and that contrary to custom even the men joined in

the direful chorus of lamentations. From this I deduce two important facts: First, the so-called Diggers have chiefs, and, secondly, those chiefs are granted more consideration than simple commoners. Now, what do we see among the Sékamais Indians, a tribe of Dénés whose habitat lies mainly on the western slope of the Rocky Mountains in northern British Columbia? Among them there is not the slightest vestige of social organization; they have no chief, no headmen of any sort; they recognize absolutely no authority but their own individual whims; they have no communities, no villages, no permanent or quasi-permanent habitations, and, in that respect, they are not distinguished from the brutes in quest of which they constantly roam over mount and vale.

Besides, the very "Cry" of the Digger, the offerings and ceremonies connected with the festivities in honor of long-departed fellow men testify, not only to his belief in a future life, but to his lasting respect for the dead and to his craving for their ultimate welfare. A community that honors the dead has already made long strides in the road that leads away from the brute. Among the Sékamais, as death approaches, the few boughs that constitute the shelter used by the family as a temporary residence are thrown down on the moribund, the band moves away, and the care of his last moments and of his sepulture is left to the tender mercies of the grizzly and of the coyote. Such, at least, was the original custom of the tribe. Hereafter there was no "Cry," no offerings or memorial ceremonies of any kind.

"The Digger takes a lesson from the squirrel," writes our lady essayist, "and stores away nuts—hazel, pine, and acorns—for his winter's food. He also dries bushels of grasshoppers and mandrone and manganita berries." The Sékamais is much less provident. Berries there are on his mountains which are dried and preserved by the neighboring tribes, but the Sékamais will generally have nothing but venison. As long as it lasts, he is happy and contented. He then eats and stuffs himself to sleep, though he knows full well that he and his family will afterwards have to pass long and weary days without food. With him the animal appetite is stronger than the restrictions suggested by the mind. In that respect again, he is far behind the much abused Digger.

Now more, in the way the latter begs, which is so graphically described by the writer of the article under review, I would fain see a trait of superiority. Begging, among the northern Dénés, is rendered by two words—*tasso* and *ta dazni*—which express widely different actions. The first is the begging of the white man, of the tramp and of the professional beggar. There are many tribes of redskins that are above such degradation. The second word, *ta dazni*, denotes the mental desire of assistance,

expressed by mere bodily presence, the silent request for material help, or simply the expectation of aid which is regarded as possible, though not certain. This is in no way degrading. It is, on the contrary, a witness to the self-respect of the individual who, fully aware of his own needs, is yet too much of a man to ask for the goods of his fellow creature. Such is the begging of the Digger. Many whites there are who could take lessons from him. In that respect again, he is vastly superior to the Sekamais and other eastern Dènes, who will formally beg from the whites with the manifestations of the most abject servility, though they will ordinarily be more reserved among people of their own blood and rank.

Now as to the arts, which are secondary signs of civilization. Our essayist is rather reticent on that point, probably for good reasons, but even here I easily find an unmistakable token of the inferiority of the Sekamais as compared with the Digger. The latter, we are told, "weave their baskets from bark and rootlets," and we are further informed that these "are all water-tight." Not so bad, I should think, for him who, "with the exception of the Patagonian * * * ranks lowest in the scale of humanity." That much could certainly not be said of the Sekamais, who is totally innocent of the least attempt at basket weaving. His own poor substitute for a basket, is a rough vessel of birch bark folded up and simply stitched into shape. His southern neighbor, as well as the Coast Indians that live within the same latitude, all weave regular root baskets; but the Skémais is not up to that art.

Even C. Weber is not quite sure whether the Diggers have any stone pipes, though she avers that she once "had in a collection of articles of Digger-pestles, of white stone, resembling water." Now I am quite positive that the Sekamais never had a kind of pipe, whatever.

It is true that the anecdotal of the Diggers having built a raft, to be used for the mooring of fish, suggests a point of superiority over the Sekamais, who never made anything like a fence, raft, or boat.

There is not, which I think we are warranted in concluding that we may fairly claim as our own the statement that "with the exception of the Patagonian, the Digger Indian ranks lowest in the scale of humanity."

The same is true of the poor opinion entertained by anthropologists as to the Diggers, the Patagonian or Fuegian Diggers, and the now extinct Eskimo tribes. Of the same opinion is the London ethnologist, Dr. Virchow, who, in the report of the "Ethnological Society," any where found in America, says that the Eskimo, he remarks that "the

Fuegians are generally quoted as a people on the lowest round of the ladder of culture."* In the first place, I will observe that no Sékamais' skull has ever, that I know, been measured scientifically, and should any of my present readers have seen what I have written of these aborigines in my former essays, he will remember that their physique is indeed of a rather low order. And I must be allowed to declare my conviction that craniology, considered as a criterion of mental development, is very far from infallible. Cranial characteristics are not invariable, even within the same race. They are liable to get modified to a wonderful extent by environment, education, etc.

Cranial measurements are valued chiefly as affording a clue to the weight of the brain, which is supposed to be in proportion to the amount of intelligence enjoyed by the individual. Now the brain of the Swiss Lake Dwellers was larger than that of the modern Swiss, and the brains of the Auvergnat and of the Breton—the two provincial races of France regarded as the lowest from a psychological standpoint—surpass the brain of the Parisian.† It is said that the average weight of the brain in the white race is 1,424 grams for men. Yet the brain of Broca, the anatomist, weighed but 1,400 grams; that of Hermann, the philologist, 1,358 grams, and that of Gambetta only 1,160 grams; while that of the only Fuegian which Kollman could weigh while fresh amounted, with the *pia mater*, to 1,403 grams. Where is the inferiority of the Patagonian? It is contended by many that in the particular furrows of and windings of the brain lies the real difference between cultured and savage subjects. Now Seitz concluded a minute description of those characteristics as studied in several Fuegian brains by asking: "Where are the signs of inferior formation in these Fuegians?"‡

Pending a satisfactory answer to these queries, I close this plea for the poor Digger.

* The *Américan Review*, p. 122.

† *Journal of Anthropology*, by Rev. J. Chalmers, New York, 1877, p. 195.

‡ *Zeitschrift für Naturwissenschaften*, 1877, 188, p. 271.

ARCHAEOLOGY IN NEW YORK.

BY W. M. BEAUCHAMP.

The illustrated bulletins on New York archaeology have had a good effect in producing clearer ideas of the relations of one part of the Empire State to another. They have also brought out relics of aboriginal art whose value was not understood before, the owners not knowing whether they were rare or not. It was impossible to cover the whole field at once, but it was thought a preliminary survey would be the best way of preparing for one more comprehensive. The result is that new material is continually coming to light, and many things have already been reported whose existence here was unsuspected.

As the work of preparing these bulletins and of adding to the State collection, depends now on an annual appropriation, which is never large, it is impossible to say what will be done at any future time. Three have been issued describing articles of chipped and polished stone and earthenware. A fourth is now in the printer's hands, which will contain a map of some size with numbered aboriginal sites of all kinds, and descriptive notes. A smaller map will show the aboriginal occupation about 1700. This bulletin will also contain all published plans of forts, with a considerable number never before in print. As there will be some delay in issuing this, and as new material is all the time coming in, some additions may yet be made to that now prepared. Some counties will be very fully described; others have not had all the attention they should. Even in this imperfect state, it will be a valuable contribution to our knowledge, and a good foundation for more thorough work. Much of the material you all have seen but of which this has been done now.

Following the publication of this I am now employing my leisure hours in a critical revision of the shell articles of New York, in which comparative studies of shells will have a prominent place. I have had the honor of appointment for studying this branch of the subject on the part of the State when it was suggested, instead of on that which will be expected to prepare next. A number of water marks of the same character are noted, and the uses and meanings of them are being described.

Mr. A. G. Rehnold has been successful in using the small means at his disposal in making a collection of arrowheads, which is already rich in many ways. It is a valuable addition to the collection of the Iroquois wooden tools, and the only one of the kind in the country. Mrs. Cony has prepared a list of the collection of Iroquois silver ornaments, some of which are of a kind and quality rival what she has seen elsewhere. The finest wampum collection on record are now at

Albany. The usual width is seven rows, but one of these is of fifty, and another of forty five rows. Two of the large grooved boulders are in the corridors, and there is a good supply of pipes and other well-known things. Some shell and bone articles are of high interest.

It is but a few years since Dr. Rau issued his "Prehistoric Fishing," and at that time bone harpoons were very rare in the East. I have figured scores of them from two sites in the last two years, and they have been found on several others. A barbed bone fish-hook, terminating his series of hooks, was then the only one I had seen. I have since had in my hands nearly half a score more, all but one from New York; while fine bone implements of other kinds I have seen in abundance. It is marvelous to see the high polish of some long bone awls, when taken out of the ashes, where they had lain for over three centuries.

I recently made a trip to Jefferson County, apparently the early home of the Onondagas. The pottery there is fine and characteristic. Very frequent are three large indentations or rings, enclosed by lines, and suggestive of the human face, which quickly followed among the Iroquois, on the angles of vessels. Another kind had protuberances on the outside, produced by indentations within. Some of the projecting rims reach out very far. The decoration is often very beautiful, and I regret that I had not seen some specimens before my bulletin on earthenware was issued. It is abundant in some places in fragments, but nearly perfect vessels sometimes occur. This trip resulted in another important discovery. Two kinds of bone harpoons are found in New York. One is usually large, and has one or more barbs on one side; these are found on the earlier historic Iroquois sites, and their age and nationality are thus on record. The other class embraces smaller harpoons, with barbs on both sides and sometimes pointed at both ends, and these have mostly been found at two fishing places, occupied by many visitors. There was nothing to show definitely their age or nationality. The presumption was that they were quite old. In Jefferson County I found them associated with fine pottery in two places, and one of these at least was unmixed, and probably the other. The other bone articles were like those of the Iroquois, and the pottery seemed related to their earlier days. It is curious that while much of the pottery on these two sites was beautifully decorated, the pipes were mostly plain and rude. As one of these places was at the end of a short portage, the relics there may not have been unmixed. At the other, a barbed bone fish-hook was found, lacking the usual terminal knob, but having two notches on the shank. It is the first I have seen with this feature.

The rarity of stone articles there, is striking. Five of us dug all day in one place, securing pottery and bone, and I found the single flint arrow then obtained, a surface find at that, through

the result of previous digging. On another day, we did not obtain one. In quite extensive collections the same paucity appears, though I heard of many picked up from time to time. I remember but a single broken perforator of stone, in several days' examination of collections, and not a local scraper. In a minor degree, this is somewhat characteristic of Iroquois sites also. I have never seen a flint drill or scraper which came from an unmixed Iroquois village site, and arrows are small and very few. I am inclined to think they used the blunt wooden arrow a good deal, as they do yet, and that many arrows were tipped with bone. Certainly they lost but few stone arrow heads about their houses.

While in Buffalo last spring, my attention was called to some rare serrated scrapers from an Iroquois village site. They were never found in fireplaces there, but in refuse heaps down the edge of the bank, and seemed the result of a previous occupation, going into the general dump. In another case, some were found associated with pottery on a small camp, but pottery is not an invariable test of Iroquois occupation in New York. Its absence would indicate another people, its presence might prove little.

I was gratified to find in every Jefferson County collection some of the double-edged, arrow form slate knives. They had attracted little attention, but tended to confirm my ideas on their northeastern and, possibly, Eskimo origin. Some of the half-circular women's knives may also be seen. One southern shell appeared, perforated and partly polished. Shells of *Unionia* *gibberula* showed one source of food. This species was the most used by the Iroquois. Two pharyngeals of the drum fish I have seen in Jefferson County, with the paved teeth of that genus. One or two tooth met my eye. Farther south, at Oneida Lake, was a fine implement made from a walrus tusk, and another hook and line made of wood. Worked bear's teeth are not rare, perforated for use as fish suspension, or cut sharply and smoothly across the middle at half way and worked into a sharp point. The teeth of other animals are frequent, and the beaver's tooth is common to all collections.

There are many articles of bone, some of which are of the distinctive shape produced by the Europeans, as the barbed fish-hooks, and the arrow heads, and the arrow shafts, symmetrical; two birds, two or three, and a few other articles, but sometimes great diversity in shape, and loss of symmetry. Bone carving is not so common as that of stone, and the articles of bone are quite plain. They are not so numerous as articles of stone, and are often broken at the point of use, and are not so well finished. They will have an important place in the collection.

There are many articles of stone, and a great deal of them are of course. They

were used but little until about the end of the 17th century, bronze having been the earlier fashion. Silver ornaments are fast disappearing, and the New York State Museum is to be congratulated on having secured so many through Mrs. Converse. These comprise beautiful head bands, bracelets, ear-rings, and brooches. I have a large number, collected during the last twenty years, and smile complacently at my double-armed crosses when I read about their great antiquity. Mine were worn by Indians whom I have known, and were bought from them. The ear-rings are often very beautiful, and the brooches are in great variety. Masonic emblems, stars, disks, double hearts and lyres, crowns, and birds' heads are among these. They were worn merely as ornaments, without regard to the design. Originating with Europeans the trade was afterwards taken up by the Indians, and there was a silversmith on every New York reservation. I have seen a complete kit of tools and patterns used by them. In my younger days the Iroquois wore these silver ornaments profusely. Now they are hard to procure. Of late some of the simpler patterns have been revived for use by our own people, and I often see designs in silver not long since confined to our Indians.

Articles of striped slate are quite frequent on both sides of Lake Erie and Lake Ontario, perhaps more so than in any part of the land. There is scarcely an article of this kind in Ohio, which cannot be duplicated in New York or Canada, so that particular kinds need not be described. While stone tubes are often found of this material, another New York tube is rarer. Mr. Schoolcraft first reported the long stone tubes with a small orifice at one end. These were from Grave Creek. Prof. G. A. Perkins next found them on the east shore of Lake Champlain. The third instance was that of Mr. S. L. Frey, of Palatine Bridge, and the fourth came to my notice at Otisco Lake, N. Y. They are of quite a different character from the shorter ones.

There is an encouraging outlook for a good collection of articles of native copper. Many have been destroyed, or have been taken away, but I have records and figures of many of these, and a goodly number remain. Indeed fine forms are continually turning up, until most known varieties are already well represented here. The largest I have known weighed $5\frac{1}{2}$ pounds, and I can any day see one of more than half that weight. There are later copper articles, or more strictly brass or bronze, belonging to the Colonial period, some of which are of much interest. Triangular arrows, fish-hooks, and ornaments are among these, and they are frequent on recent sites. To recent sites also belong all the small council wampum, and, in fact, most articles of shell, though a very few are earlier. The definite age which can be assigned to many Iroquois villages and forts has become a valuable factor in determining the precise period in which

some of the articles were made and when they were used.

In no one thing can the New York State Museum pride itself more than on its valuable collection of wampum belts. When Mr. Holmes wrote his valuable paper on aboriginal shell art, he lamented the fact that wampum belts appeared in none of the great collections of the land. In 1898, the Iroquois voluntarily deposited their few remaining belts in the New York State Museum, and it has been enriched by others. There is not much strung wampum, but I have an ample supply of this, sufficient to carry on any modern council, and am still more fortunate in knowing how to use it. I expect soon to attend an Iroquois condolence or mourning council, all of whose ceremonies are connected with wampum. These I have seen before, but my opportunities will be greater now. It is proper to say that no one has done more than Mrs. Harriet Maxwell Converse to secure these belts, and some would never have been obtained, but for her efforts. To her is mainly due the large collection of wooden masks, as well. She has thrown herself heartily into the work with excellent results.

Could one person's time be given entirely to this for a limited period even a vast deal more could be accomplished. It already involves some travel and a great deal of correspondence, but the active workers are not all known, still less united in a common work. These should be reached. On the other hand, many are now working intelligently and towards a common end. The wide circulation of the bulletins does something towards this—we can anticipate a great deal more when the State provides a place for the care and study of these treasures of the past.

THE CLIFF DWELLERS AND THE WILD TRIBES.

BY STEPHEN D. PEET, PH. D.

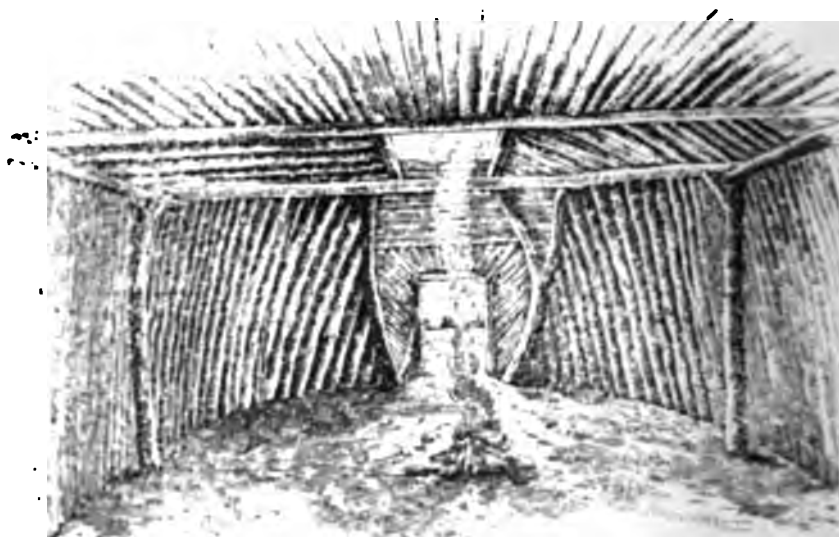
We now turn to consider the relation of the Cliff Dwellers and the Pueblos to the wild tribes. There are several questions which arise at the outset. They are as follows: First, Can we say that any of the wild tribes of to-day are actually survivors of the Cliff Dwellers? Second, if not, can they be shown to belong to another stock, and one always antagonistic to the Pueblo tribes? Third, if they belong to the same stock, how do we account for the great change in the religious customs, mythology, symbolism, art, architecture, tribal organization, and government?

These questions are important on account of their bearing upon the science of sociology, and their answer will furnish a basis for new theories as to the beginnings of society and the origin of customs and habits which have come down to historic times. That there is an intimate relation between the savage and his environment will not be disputed. Nature enters into and becomes part of the life of a savage, to an extent which we can hardly conceive. A change of physical environment does not produce an immediate change in the man, or in his arts, but in time, such must inevitably result.

It is a favorite theory with some of the recent explorers, that the Pueblos sprang from nomadic tribes which drifted into the country, fell into their mode of life, and adopted their singular style of architecture, solely as a result of environment, and in proof of this, the following arguments are used: First, that the whole pueblo country is covered with remains of single rooms and groups of rooms, put up to meet some immediate necessity, and all kinds of structures which show the transition from the single rooms to the large pueblo with its aggregation of many rooms, the single room being the unit of pueblo construction. Second, that the presence of circular chambers, called estufas, in the groups of rectangular rooms, which in their construction still retain some of the very elements which are found in the rude huts which are still occupied by the wild tribes. It is owing to their religious connection that the form has been preserved to day, carrying with it the record of the time when the people lived in round chambers or huts. This is the argument used by Mr. F. H. Cushing, who maintains that the columns, or piers, in the estufas are but the survivals of the posts which support the roof and sides of the wooden hut, or hogan, which are still common and are shown in the cut on the next page. Third, the local origin of pueblo architecture is favored by the fact that

stone, as material, is everywhere present, while wood is very scarce, in the pueblo territory, and is actually easier to build into structures than wood. A long period of time must have elapsed between the erection of the first rude huts and the building of the many storied pueblos, but we can imagine that the presence of hostile tribes would drive the people together and force them to build their houses in the shape of a fortress. Moreover, the necessity of digging irrigating ditches and keeping them in repair would favor the continuance of the pueblo life, even after the hostility had ceased.

Now, this position of the explorers who have studied the pueblos certainly deserves consideration, and perhaps will be



accepted by every reader, but there are certain facts which need to be recalled before a final conclusion can be reached, and to this point we shall call attention.

It is noted that there is a very great difference between the material and construction of the wall of the Pueblo, and that of the Indian's hut, and the very different history.

We learn from the Spanish historians that several of these tribes were destroyed by the Spaniards, and were following the same course of life by the time the Spaniards came in them in the three hundred years which have passed. The location of these tribes can be learned from the study of the linguistic map

prepared by Major J. W. Powell.* They came into this region at an unknown date, and have followed the same mode of life which they do to-day, namely that of nomads and hunters. Each of these tribes has its own habitat, though they frequently wander beyond its limits, and carry on a warfare with other tribes.

The Navajos were on their reservation, which was situated on the San Juan at the point where the four territories—Colorado, New Mexico, Utah and Arizona—unite, the reservation taking a part from each of these territories. The Utes are in the neighborhood of the Navajos, but situated a little to the west of them. The Apaches are a very fierce and warlike people, who do not seem to have had any fixed habitation, but roamed over the entire region; sometimes on the Rio Grande; sometimes on the Rio Gila,

and again dwelt on the rivers in Texas. The Comanches were and still are situated at the southeast of the Apaches. The Mojaves are in the same region. The Shoshones belong to a stock which



MAP OF THE PUEBLO TRIBES AND LOCATION OF THE PUEBLOS †

now covers the whole of Nevada, Oregon, Idaho, Colorado, and Texas, but have never penetrated the Pueblo region. The Yumas are California Indians, who dwelt on the borders of the Pueblo territory, but rarely entered it. All of these tribes were hunters and, with the exception of the Pimas, were never agriculturalists. They show in their social condition, as well as in their habit and mode of life, that

* Major Powell says that nearly the entire mountainous part of Colorado was held by the Arapahoes; the eastern part being held by the Arapahoes; southeastern part by the Cheyennes and the Kiowas. The Kiowan has extended farther east into Texas. He says of the Shoshones that they were situated to the south by the Colorado River, but to the southwest they pushed across the mountains to the Pacific. The Athapascan was the most northerly tribe. They occupied the mountains of British Columbia and Alaska, and were divided into three branches—northern, central, and western or Pacific. The southern group includes the Navajos, the Apaches, and the Utes. The number about 32,000. The Navajos, since known to history, have occupied the San Juan River in northern New Mexico, Arizona, Colorado, and Utah. The great body of the tribes of this family inhabited the peninsula of Lower California. The Utes had only a small representation in southern Arizona.

† The location of the Pueblo tribes is shown by the map, which was prepared by Mr. Oscar Hayden on his first exploration in 1846, and was published in Peter B. Widener's "Narrative and Journal of the Expedition to the Rio Grande, and was incorporated by Mr. Justin Winsor in his "Narrative and Journal of the Expedition to the Rio Grande." This map was designed to show the provinces which were occupied by the different tribes at the time of the discovery by the Spaniards.

they had an entirely different origin from the Pueblos, and that their history was in the greatest contrast. Their languages confirm this conclusion. The languages of the Pueblos are said by Mr. A. S. Gatschet to be very similar, and, in fact, dialectic variations of the same stamp, which sprung from a mother language, but differed largely from the language of the nomadic and hunter tribes. Mr. Gatschet divided the language of the Pueblos into four families. The first included the inhabitants of Isleta, Tewa, Jemez, Pecos, Taos, and Santa Clara, called the Tchuia; the second language is spoken in the villages of Acoma, Laguna, and Santa Domingo; the third, the Zuni language, which was confined to the Zuni villages, and the fourth, the Moqui language, spoken in six villages in Arizona. The isolated geographical location of the inhabited mesas, which were sur-



FIG. 1. A. S. GATSCHEP.

rounded by the desert to the south, and drained by the various streams which flow in the mountains to the north, served to keep the Pueblos apart for a long time, and left the people free to live in their institutions, and to lead a life uninterrupted.

How long the Rio Grande and upon the Colorado and its tributaries, the inhabitants to the north, and the deserts to the south, and yet they followed their peculiar mode of life, and continued to develop the resources of the country, struggling with the elements of the climate and soil, until they conquered, having gained the secret of success by their own experience. They created the material which grew into a grade of civilization which never to be surpassed by any wild tribe. The important question as to the countries which were the former seats of the Pueblo tribes before they settled here, cannot be solved from purely linguistic data, as even archaeology and

ethnology fail to furnish sufficient evidence. Ethnology refuses to remove the veil which envelops the mystery. Affinities have been claimed with the Aztecs and Central American tongues, but are too scanty to prove common origin. The wild tribes which have been described differ so much from them, both in language and in customs and habits, that they are acknowledged to be derived from entirely different stock. It is easier to trace the identity of Pueblos with the Cliff-Dwellers, than that of either of these with the wild tribes, for the contrasts appear as soon as we begin to study the language and customs. Proximity of territory is certainly not sufficient to prove identity of origin. The Apaches, Comanches, and the Utes still dwell in the region which has been considered the habitat of the Pueblos. The Navajos live in the very midst of the cliff dwellings, but they do



MODERN PUEBLO POTTERY.

not claim that either they or their ancestors ever built these dwellings, though the Utes have a few traditions as to the abandonment of the cliff dwellings, and to the course which the people took when they migrated to the southward.

The over placement of the two races, which was recognized by the early explorers, seems to have continued up to the present day, but has only served to obscure the former condition and threatened to blot out the history of the Cliff-Dwellers altogether. The conviction, however, seems to be growing that there were two great races—one earlier, and the other later; one from the north, and the other from the south. The two met here, like the great heaving tides from the ocean of living beings, which throbbled with the pulsations which would not cease, and heaved to and fro, forever beating against the shores. The earth, like a sleeping giant, remained passive, while the strokes of nature and

art sought to wake it to life, as the Scandinavian god Thor did the sleeping giant, by his hammer. The caves, like the mythical glove, were open and uninhabited until the visitor from unknown lands entered them. Time wrestled with the powers of nature like the god Thor contended and overcame the giant. The drinking horn which connected with the great ocean could not be drained. There were hidden resources, of which man had not dreamed. The wild tribes came out of the untamed forests and never learned the secrets that were hidden here. They never dispelled the charm, or solved the mystery. It took the Pueblos a long time to learn the secret, and much patience was required before they understood the moods of their mother earth.

A war-like race and a migratory people could not and would not coax the soil to yield its products. They might worship the gods of the mountains, and might be led by the divinities who were heroes, born on the summits where the clouds meet; they might pass from house to house, through the many-colored doors which separate the clouds—they might find lodges in the valleys where there was a sleeping body, and by a charm given to them by the divinity, recover the manhood which was prostrate, and clothe themselves with a power which was lost, and come forth as warriors.



FIG. 1. THE TAPAHUMARIS.

The Pueblos were a different people from the beginning. They were prehistoric, and strange and mighty. Women had a great influence among the Pueblos. They were not permitted to enter the estufas, nor did they count for official or social matters, but in their homes they were supreme, and the men were exclusively under their care. The children were at a certain age initiated into the clan to which they belonged, and with great ceremony, and received their position in the clan. The men were empowered to bestow position and authority on their juniors, by breathing the breath of life into them. The people who were empowered to pray and call of rain. The boys were, however, initiated into the secret

societies whose emblem they saw in their dreams, after they had fasted long and gained their second sight.

The Pueblo life was so different from that of an ordinary Indian, that we cannot understand them until we rid ourselves of our prejudices and enter into sympathy with their peculiar notions. We need to climb up the steep trails to reach the summit of the mesas, and look away to the mountains in the distance, to realize how much they were influenced in their inner fibre by the scenery. Even the Cliff-Dwellers seem to have been influenced by scenery. Their houses were built on the steep and inaccessible cliffs, and had the least possible degree of convenience to water, but there was that in their surroundings, which made them superior to their enemies. They were generally at peace among themselves, and when surrounded by dangers, followed industrious pursuits and cherished their love of art.

II. We see the contrast between the Pueblos and the wild tribes in the specimens of art which have been preserved; their



LOOM USED BY THE TARAHUMARIS.

basketry is often woven into graceful shapes and decorated with many beautiful patterns. Their pottery differed from that of the wild Indians in nearly every re-

spect, and especially in the symbols, which are represented in it. Some of these symbols are very modern, for they represent domestic animals which were introduced by white men; but others present patterns, geometrical figures, symbols, and ornaments, which a trained eye had learned to recognize in nature. They represented the mountains, by terraces; the sky, by arches; the winds, by coils and spiral lines; clouds, by stepped figures; the sun, by a disc; the moon, by a crescent; the lightning, by the serpent; the rain, by perpendicular lines; the rainbow, by different colors; the water, by certain animals; the air, by birds; the earth, by horizontal lines; the four points of the compass, by crosses, and the gods which preside over the four quarters of the sky, by fishes in the shape of animals. They covered themselves with marks, which represented the dark creatures of the earth, and were very mysterious. These were calculated to inspire the children and all spectators with terror. They covered their faces with masks, and hid the supernatural beings behind a screen which was full of emblems of the nature powers. If there was anything mysterious in nature, they borrowed it to put into their masks. Their clothing was covered with symbols.

Every little figure which they wove into their garments was a symbol. Their sashes, their kilts, their scarfs and necklaces, their greaves, their bracelets, wands, baskets, and bags, their headgear and every article which they wore was symbolic. The motions of the dancers, the steps and attitudes which they took, even the grotesque and accidental ways in which they acted out their thoughts and beliefs were significant. The pouring of water on processions as they passed, and the tricks which they played on one another, were burlesque symbols.

Some of the wild tribes had symbols and ornaments which were similar to those of the Pueblos. The Navajos were especially successful in making sand paintings, and were able to give a significance to every part. They had a mythology of their own, which is very beautiful. The Navajos have many myths which show an inherent nobility, and seem to have caught some inspiration from the mountains.

It will be acknowledged that some of the wild tribes are skillful in weaving and pottery. There are no better blankets than those which are woven by the Navajos. The Tarahumaris, who have been oppressed, and may be regarded as the most impoverished of any of the tribes of the south, are especially skillful in weaving belts. They use a very primitive loom, which can be transported from place to place. In weaving, they generally resort to the shade of some tree, and spend the time in trimming the belts with gay colors and various patterns. The following is the description of this people given by Mr. Humboldt.

The Tarahumaris are intelligent and industrious. They plant corn upon the banks of the Barranca de San Mateo, and when the rain begins in October they sow the seeds of wheat and maize. They harvest first wheat, and then maize, the wheat being the commonest. They cultivate corn, beans, and other vegetables, and produce

very good wine. Their gardens are fertile, and they raise good crops. They are very fond of their sports, and they imitate the motions of the birds and animals which they see. They look upon plants and animals as deities, and they worship them, as if they were gods, by means of offerings and sacrifices. They have many superstitions peculiar to them, and they believe in the existence of evil spirits, which are common to all the nations of the continent.

The Tarahumaris are very skillful in weaving belts, and clothing on parchment, and they are also very skillful in pottery, and its decoration. They are very fond of their sports, and they imitate the motions of the birds and animals which they see. The people are very intelligent and industrious, and they have a remarkable knowledge of the natural history of their country.

This is also true with the Tarahumaris, and exemplified in the primitive form of the forked line symbolism. The symbols of the Tarahumaris are the same as those of the Pueblos. The forked line not only indicates a certain deity, such as a serpent with the forked tongue, or the water which is sacred, but is according to the form in which it appears. As a snake, it assumes the form of a

double staircase, imitating the cumulus clouds which rise from the earth to the sky; or a group of arches, emitting rain streaks and lightning darts. As streams, or water, resting or flowing on the surface, are represented by the snake, the snake with horns and without the rattle; so the rains, by the water serpent, distinct from Shrug, the rattlesnake. The Tzitz Shrug is the spirit of the watery element, the horn is its head-dress or symbol of spiritual power. The entire symbolism of the Queres is derived very plainly from natural phenomena. The spiral, double or single, in curves or angular lines, stands for the whirlwind; the cross, for the stars in general, and the white cross and the red cross, for the morning and evening stars, respectively; the tracks of the pheasant (called road-runners), arranged in a circle, form a magic ring around the object or person they surround; here, as well as at Zuni, certain animals symbolize certain regions or cardinal points. There are local shades in their symbolism that constitute differences: thus the colors attributed to the six sacramental regions by the Queres, are not the same as those attributed by the Tehuas or the Zunis.

The pictography of the wild tribes did not equal that of the Pueblos, and contained no such symbolism; nor were there such devices in the graves, as are found near the pueblos. Dr. J. Walter Fewkes has recently made discoveries which illustrate this point. These discoveries were made at Hamolabi, one of the ancient Tusayan villages. The following is his description:

The great collections of prehistoric objects which were taken at Hamolabi, came from the necropolis, or burial place, which is most wonderful in its revelation of the character of ancient life. The cemeteries were situated just outside of the town, only a few feet from the outer wall. Almost every grave was indicated by a flat stone slab,* which stood upright or lay above a skeleton. Some of these stones were perforated with round, oval, or square holes. The habit of placing mortuary votive offerings seems to have been almost universal, for almost every grave excavated contained one or more objects of pottery, stone implements, ceremonial paraphernalia, valuable ornaments were left on the bodies of the dead. The large number of vessels belonged to the red and black, and black and white varieties,† identical with those said to be characteristic of the Cliff-Dwellers, showing that the ancient Pueblo villages made the same kind of pottery, and adorned it in the same way.

The pictographic decorations of Hamolabi pottery, which can be identified, are few in number. The figures of birds predominate; in one instance was a figure of a spider in a food basin, it had the four pairs of legs, globular body, and prominent mandibles; on the outer rim of the bowl was a figure of the sun, similar to that made on the floors of the sacred rooms, or *kivas*, in the celebration of ceremonies. In modern mythology, the spider woman is associated with the sun. She is an earth goddess, the bride of the sun, and the mother of the twin war gods. The symbol of the sun is depicted on the pottery; also, on the altar screens of the "palulakonti" or serpent-sun ceremony.

* The white remains of the graves which were found by Mr. Holmes on the mesas, near the mouth of the Colorado, in the Grand Canyon. They have already been described.

† The black and white ware is the most abundant kind among the cliff-houses, though it is not confined to them. This indicates that the occupation of cliff-dwellings of the Mesa Verde and adjacent pueblos was contemporaneous.

around the courts in which the kivas were situated, or in long lines, with passage-ways* between them, and usually with a wall surrounding them. As to the characteristics which are shown by the pueblos, we may notice the following elements: 1st, the walls; 2nd, the terraces; 3rd, the balconies in front of the terraces; 4th, the apartments and the doors into them; 5th, the courts which were enclosed by the walls; 6th, the kivas within the courts; 7th, the gateways through the walls; 8th, the walls which surrounded the entire village, making a separate enclosure; 9th, the inner rooms, or apartments, above the terrace; 10th, the store-rooms below the terrace; 11th, the towers, which were frequently placed outside of the pueblos; 12th, the garden plats and farms near the pueblos; 13th, the springs and sacred wells; 14th, the shrines, which were sometimes placed a distance on the hill tops; 15th, the trails and stairways which led up to the mesas; 16th, the irrigating canals. All of these elements are found in the ruins of the ancient pueblos, showing that there was a great uniformity of pueblo architecture everywhere. What is more, the same elements are found in the cliff-dwellings.

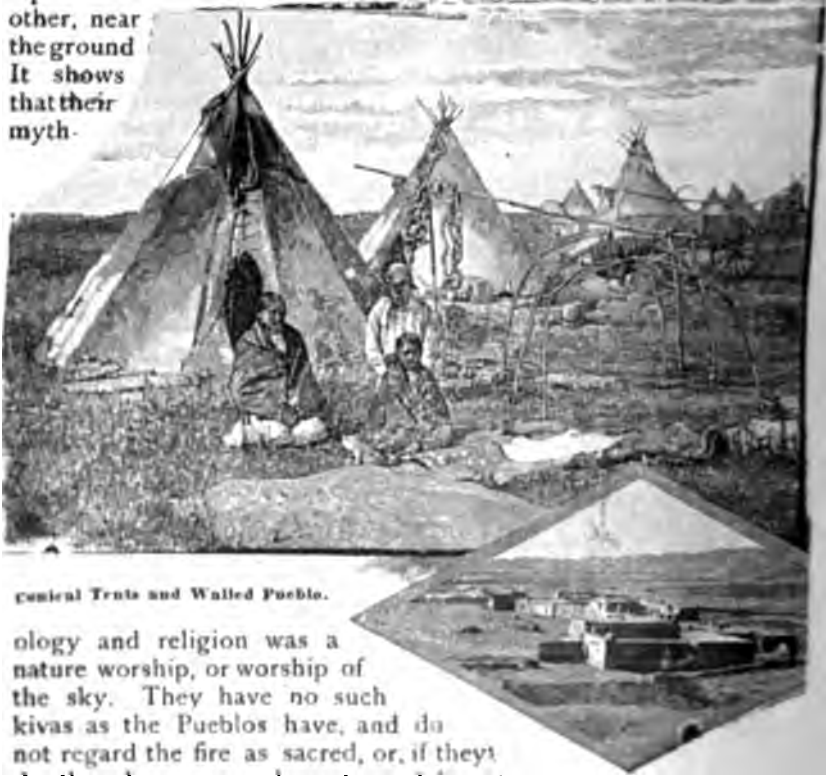
The wild tribes differ from the Pueblos, and among themselves as to the manner of erecting their tents or tepees. A Pima house is round, like a bee-hive; four posts supporting a rough frame of boards or branches, form the basis of this structure. Long, bent poles are so placed as to meet above this rude platform, to which they are tied. Hoops encircle the bows, and hold them laterally. Over this skeleton, earth is placed. Sometimes a layer of grass or brush is first applied to the frame. The whole is nothing else but one of the well-known "dirt roofs" that can be seen in any part of New Mexico, with the difference, however, that the dirt roof of the pueblo rests on a wall of stones or mud (adobe), whereas the Pimas' roof rests on the ground and forms a compact cupola.

The Navajoes and Apaches build their tepees or wigwams in conical form. They insert poles into the ground in a circular form and draw them in to the top, bind them together, and cover

* In the village of Oraibi the passages were nearly all perfectly straight. The houses were arranged in parallel rows. In Shumo-pavi the houses were arranged about a hollow square, in which there was an entrance only at one corner. The terraces sloped toward this court. In Mazonkasi there were three such hollow squares, with a single entrance to each, the great rooms with houses being arranged in parallel rows, with transverse rows across the middle of each. In Pinedo and in Neutza, which are old villages, the houses are arranged about a large, irregular court and form an elliptical figure, with several openings through the middle to the interior. In Neutza the village is in the form of a crescent, with a block of buildings between the houses. In Kintze the buildings are arranged in the form of an irregular circle, the court in the centre, which is drained by a sink in the mesa, but there are excavations in the court which are designed for the storing of water. In the Zuni village there is a very large court. All of the buildings are arranged around this, forming great blocks of which the stories rise above one another, the highest story being in the centre, thus forming a sort of irregular pyramid. The passage-ways between the buildings are long and narrow, and are all straight. The pueblos on the Rio Grande are generally compact and isolated, and are all built on the open. There are very few enclosures or courts within them. The area of the site built at a point having no special advantage for defence, convenience to irrigation, or fertile soil, has apparently led to the selection of the site. This has subjected them, as to the same influences that at an earlier date produced the carefully walled fortress pueblos of the valleys, where the defensive efficiency was due to well-planned and constructed buildings.

the whole with a skin; leaving a hole at the top for the escape of the smoke, though their winter houses are built more like the dirt houses of the Pimas, but differ from them in that the door projects something like a dormer window, and has blankets of different colors hanging in front. The Navajoes have the singular custom of painting the roof of their sacred tent or hut with the semblance of a humanized rainbow, the arch covering the top, but the feet and legs are upon one side, the arms and head upon the

other, near the ground. It shows that their myth-



Conical Tents and Walled Pueblo.

ology and religion was a nature worship, or worship of the sky. They have no such kivas as the Pueblos have, and do not regard the fire as sacred, or, if they do, they have no such custom of burning over it as the Pueblos have. Their sacred tent is not divided into lodges, and has no such thing as a spittoon, or place of emergence. The cut illustrates the points mentioned above.

The architecture of all of the Cliff Dwellers and Pueblos was exhibited not only in the houses which they built, but in the contrivances which they adapted for securing a subsistence in the midst of their inaccessible surroundings. Among these contrivances we may mention the terraces, which were built on the sides of the cliff, and which were used as garden beds. All of the explorers were struck with admiration. Mr. Nord and his companions first met a Navajo Indian. He says:

A little south of Step House, the talus slope was divided by low stone walls, built, one above the other, into level terraces, evidently designed for garden plats, the same as Bendelier found on the Gila, which resemble the hill-side terraces, in the vine-producing districts of southern Europe.

It is evident that when the stone buildings were erected, the people ranked higher in culture than the nomadic Indians. They had permanent blocks laid in secured great agriculturists. domiciles made with great skill, in roughly-dressed regular courses. In architecture they had proficiency. Other remains show that they were agriculturists. The examination of objects found in the ruins, wit- skill in the art of pottery.

Lieut. Ives speaks of the terraces and



reservoirs near the Moqui pueblos. He says:

I discovered, with a spy-glass, two of the Moquis towns, eight or ten miles distant, upon the summit of a high bluff overhanging the valley. They were built close to the edge of the precipice, and, being the same color as the mesa, it would have been difficult to dis-

tinguish them, even with a glass, but for the vertical and horizontal lines of the walls and buildings. The outlines of the closely-packed structures rose, in the distance, like the towers and battlements of a castle, and their commanding position enhanced the picturesque effect. When the darkness fell, camp-fires—probably those of the Moquis herdsmen—could be seen scattered along the further side of the valley. On either side the bluffs were cut into terraces, and laid out into gardens, which were irrigated from an upper reservoir. The whole reflected great credit upon the Moquis' ingenuity and skill in the department of engineering. The walls of the terraces and reservoirs were of partly-dressed stone, well and strongly built, and the irrigating pipes conveniently

arranged. The little gardens were neatly laid out. The walls of the terraces are kept in good condition and preservation. The stone and earth for their construction they carry in blankets upon their shoulders from the valley below.

The most remarkable specimens of terraced hills are those in the Sierra Madre in Mexico. The following is the description given by Mr. Lumholtz:

This Sierra Madre region is very rich in remains of a long-ago-vanished race of people, of whom history as yet knows nothing. Deserted pueblos, containing square stone houses, are frequently met with. They are generally found on top of the hills and mountains, and are sometimes surrounded by fortifications in the shape of stone walls. Isolated houses, made of stone and clay, and plastered, so that they look white at a distance, are also found and the Mexicans call them Casas Blancas.

The most interesting remains are, however, in the caves, which contain groups of houses, sometimes three stories high. Trincheras, or stone terraces, are built across nearly every little valley—ten to twenty in number in some of them—evidently for agricultural purposes. On very steep mountain sides, these terraces were astonishing structures, fifteen, and even twenty, feet high, and of great solid stones, in the cyclopean style of masonry.

The defensive architecture of the Pueblos is a most distinctive and prominent feature. Thus, some of the recent explorers and those who are connected with the Ethnological Bureau, have unannounced, and have maintained that there were no fortresses, but they are inconsistent with themselves. Mr. Mindeleff says:

Fortresses, or other purely defensive structures, form a type which is entirely unknown in the present region. The reason is simple: military art, as a distinct art, was developed in a stage of culture higher than that attained by the ancient pueblo builders. It is true, that within the limits of the present region, fortresses are found which, from their character, and the character of the surrounding country, have been merely described as fortresses, their defensive character notwithstanding, that the adaptability of these structures to the requirements of a purely defensive art. Numerous examples are to be met with, and it is not unlikely that they would double the defensive value of the site, and the importance of the water, the ancient builders having secured the greatest adaptation to the natural advantages of the situation.

The fact that some of the ruins of the old pueblo builders in choosing the site of their habitations, were access to some area of tillable soil, and that the water was brought to the site of the village, and was available for irrigation, is not to be overlooked. But this requirement was considered to be of less importance than adaptability to defense, for the latter was attained by the very nature of the situation. These adaptations are true even of the same pueblos, situated on the edge of the Sierra Madre, and of many of the pueblos of the present day, however, in the southern portion of the United States. In the case of the pueblo builders there was no military art, or rather, the military art was not advanced to purely defensive structures, such as fortresses, which would have made the site of defense never reached any other purpose, and that the use of such a naturally defended site for a village, was not a result of the natural improvement of the site.

Thus, in utter and disagreement with the testimony of the Spanish explorers. The following is the description given by Castaneda. He says:

Certain houses are used as fortresses; they are higher than the others and set up above them, like towers, and there are embrasures and loop-holes in them for defending the roofs and different stories, because, like the other villages, they do not have streets, and the flat roofs are all of a height and are used in common. The

roofs have to be reached first, and those upper houses are the means of defending them. It began to snow on us there, and the force took refuge under the wings of the village, which extend out like balconies with wooden pillars beneath, because they generally use ladders to go up to those balconies, since they do not have any doors below.



TWIN TOWER IN RUIN CANYON.

The following is his description of Pecos, or Cicuye, the village which the Comanches, a wild tribe, had besieged, but had been unable to capture on account of its strength:

Cicuye is a village of nearly five hundred warriors, who are feared throughout that country. It is square, situated on a rock, with a large court or yard in the middle, containing the estufas. The houses are made like four stories high, they can go over the top of the whole village without there being a street to hinder.

There are corridors going all round it at the first two stories, by which one can go round the whole village. These are like outside balconies, and they are unable to protect themselves under these. The houses do not have doors below, but they use ladders, which can be fitted with straw wedges, and so go up to the corridors, which are in the inside of the village. As the doors of the houses open in the corridor of that story, the corridor serves as a street. The houses that open on the plain are right back of those that open on the cliff, and in time of war they are behind those behind them.



SQUARE TOWER IN RUIN CANYON.

The village is enclosed by a wall of stone. There is a spring of water inside, which they are able to divert. The people of this village boast that no one has been able to conquer them, and that they conquer whatever villages they wish.

This quotation shows that the Pueblos were at this time beset by the wild tribes, and were obliged to dwell in fortified villages. The same is proved by the cliff dwellings farther north, especially by those which have been recently discovered in Ruin Cañon, and are described in *Popular Science* for April, 1879, by Mr. W. K. Moorehead. Cuts illustrating them have been kindly loaned us, and are furnished here. The following description is his

The canyon that contains the ruins does not average more than seventy feet in depth. It is not very wide, yet a wilder place can scarcely be imagined, great crags of sandstone jut out on either side; masses of rock have tumbled into the gorge below; a dense growth of sage bush covers the bottom; while the topmost ledges hang for many yards over the cliff forming natural caves. The inhabitants took advantage of the inaccessible nature of the gorge, and have built four kinds of structures. First, large towers, with very thick walls, placed upon commanding positions, second, small pueblos, built so as to be protected by the towers, third, cave dwellings or cave-villages, which consisted of one or more walls enclosing a



MAP OF RUIN CAÑON.

natural caverns in the rock, fourth, small shelters or hollow castles, the bunkers being the inner wall, and part of the elevation, while circular walls were built on the exterior side, thus making with the hollow two or three rooms resembling caves. One of the towers had the remains of a tower on top.

The first tower is slightly larger than the two others named. The tower has four openings, being square in plan, the wall is sixteen feet high, and half a dozen feet across the base, and the tower rounded. The rock upon which it stands is twenty feet high, and is thirty-eight feet in length. There are port holes, three on the sides, and a number on all sides. There are four rooms in the tower, and the greatest one. The other tower is twenty-one feet in height, two feet in diameter, and the walls fourteen or fifteen thick, the greatest opening is thirty-four feet in height, and is separate from the rest of the tower, the width it is divided into two parts, upon the greater part of the tower there are port holes in the tower, and a number of them are small, and are about a foot in width, and a few feet high, and are used for ventilation. Stronger higher towers, and are very common in the canyon. There was but one entrance to the tower, and the opening was very small, and toward the canyon and the outside of the tower, and the entrance was the occupants could

draw in, while the enemies would be obliged to scale the cliff. The rafters in all the towers are in the last stages of decay. The masonry is excellent, sandstone averaging 14 x 5 x 4 inches has been used in the construction.

When one considers that all these thousands of blocks were hewn out by stone tools, fashioned into buildings by primitive masons, that arches, doorways, windows, and port-holes were accurately, neatly, and substantially constructed, one must accord the builders a degree of architectural skill reached only in other lands by people who had the use of metal.

Hollow Boulder (C) stands in the valley at the junction of the upper canyons. It is thirty-nine feet long, and twenty feet high.* Beneath the boulder is a hollow cave, which is walled and divided into two rooms. There are the ruins of a tower on top of it. A square tower (D) stands upon the topmost ledge, where the canyon forks. The entrance faces the canyon. There are no windows, but twenty port holes in the walls. The entrance is three or four feet from the edge of the canyon. It commands the unprotected boulder, shrine, or dwelling below. The square tower (G) is the tallest tower standing. It was built upon a boulder ten feet high,



A MASHONGNAVI WOMAN.



A MASHONGNAVI GIRL.

sixteen feet wide, and twenty feet long. It originally had four stories, three of which are now standing. There are no port-holes in the lower story, a number in the second, and very many in the third. The fourth story commands the plain above. The doorway is T shaped. The tower tapers at the top. It was designed for defence. Should the enemy succeed in eluding the other towers, they would be unable to pass this in safety. It will be seen from the map that the ruins are all bunched together at the head of the canyon. It seems to have been a preferred spot for dwellings, and, consequently, a very vital point to be defended. Here were two caves, marked K and J on the map, tower G splendidly commands both of these. One of these was 150 feet in length, and twenty feet in height, and contained a large compartment dwelling of nine rooms, which covered an extent of about sixty feet in length, fourteen feet in height, and sixteen feet in depth. Upon the summit mesa, extending back from the edge is a good-sized pueblo in ruins, protected by two buildings which have numerous port holes †

* This boulder has been called a shrine, as it contained pictographs.

† Mr. Louis W. Gueckel has spoken of several other cliff-villages in the same region. One is called Giants' Cave; another, Monarch Cave; another Hawk's Nest Cave.

The dwellings *t*, *m* and *n* are the most important ruins in the entire canyon, and show the best architectural skill. They are situated directly upon the edge of the cliff. One of these is circular toward the east. There are port holes pointing directly downward, so that a man standing at the base could be shot by those above. Tower *p* is on the point where the canyon divides. It stands on a high boulder and commands an important position. Tower *o* stands on a high boulder about half-way down the side of the canyon. *R* is a good sized compartment house, having six rooms, two stories in height, on the edge of the cliff. Castle *v* is a strong compartment house, built upon a huge boulder, separated from the cliff by a narrow thirty feet in width and twenty-five feet deep.*

The contest between the wild tribes and the Pueblos is also shown by the ruined hill top forts, on the Rio Verde. These have been described by Dr. J. W. Fewkes, as follows:

These fortunate hill tops are abundant in the neighborhood of the Red



SAVA.

Rocks. One of the best examples is a fortification which crowns the summit of a mesa at Oak Creek. Here the whole top, which is level, is surrounded by a wall at its edge. The ascent is impossible, save at one point where the trail is defended by a circular bastion. They believe that these structures are fortified retreats, similar to the *atncherias* of Sonora, and those of the Sierra Madre and the Magdalena Valley.

The defenses of this region are very interesting on account of their proximity to the boulder sites, pueblos, hill top forts, and other structures, and because they are situated outside of the region which

was strictly Pueblo territory. A north and south line, running a little west of the Texas boundary, would separate the inhabited pueblos, the most of which are still built after the fashion of a

* See also the account of the ruins of the tower U, on the Rio Verde, in the same volume, and the village, or *atncheria*, of the same name, in the same volume. These were great fortified structures, built on high boulders.

fortress—from the ancient ruins on the Rio Verde. The hill-top-forts show that even this region was invaded by the wild tribes, and was abandoned because of their continued presence.

IV. The contrast between the Pueblos and the wild tribes is manifest not only in their works and relics, but especially in their dress and physical appearance. We shall, therefore, call attention to them.

The wild tribes remain in about the same condition that they were before the time of the Discovery, and are separated from the Pueblos by two or three periods of progress. Their clothing shows the difference between them. The wild tribes generally went nearly naked, but the Pueblos were thoroughly clothed, except when engaged in their religious ceremonies.

Imitation is a faculty which is common with all Indian tribes, and there is no doubt that the wild tribes and Pueblos alike borrowed many customs and forms of art from those who were at a distance. Still the modern Pueblos have passed from the age of stone into the age of iron, without the use of copper or bronze; but the antiquated plough, the two-wheeled cart, the clumsy iron ox, the imperfect saw are now found among them. In place of the wooden stick, they use the hoe in planting. They also use the chisel and auger in place of the fire-drill. They raise wheat, barley, melons, apples, pears, peaches, and grapes; own cattle, sheep, domestic dogs and cats. They use wool for their garments, and use the old musket, powder and lead instead of the bow and arrow; but they are still in a state of transition from stone to metal. Their pottery is not as elaborate and as full of symbolism as centuries ago. It contains figures and ornaments, which are evidently borrowed from the white man, mingled with others which were inherited from their fathers.



APACHE RUNNERS.

The cuts show the contrast between the Indian tribes. In one group we have a Sioux warrior, a Navajo, and a Ute dressed in modern costumes, showing the effect of contact with the whites; but the spears and arrows show their original weapons. In another case, the Pueblo woman is dressed in modern costume, but she shows more taste and neatness of apparel. The usual custom or style of wearing the hair is shown in the picture of the girl. The picture of the Apache runners shows the form of the hunter Indian, as compared with the Pueblos.

The wild tribes differed among themselves; but the Pueblos were everywhere the same. The Navajoes cultivated by irrigation and lived in log-cabins, while their cousins, the Apaches, moved to and fro, subsisting on the chase, and on murder and rapine. The Yumas in Central Chihuahua were village Indians, whereas those of New Mexico lived in a condition little better than that of the tribes of the Plain. On the other hand, the tribes on the Rio Grande irrigated their lands, while the tribes on the so called "Méjano"—those who inhabited the village of Tabira and its neighboring settlements, who were strictly Pueblos—depended upon the annual precipitation for their crops, and upon tanks for their drinking water.

Many of the Apaches dress in skins, or with a blanket around the waist, the remainder being left completely nude. They paint their faces or bodies with lines of black and white, which are symbolic of the nature powers. They are tall and straight, usually with black eyes. Their hair is coarse and black. Their dances are such as were common in prehistoric times; they still continue the scalp dance, and occasionally the deer-dance, in which the performer wears a deer mask with its antlers and does the jumping and high-stepping, imitating the motions of the deer. Some of them live in caves, and scarcely plant or raise anything, but subsist mainly by hunting. They have a conception of the four cardinal points as mystic regions, and a folk lore which differs entirely from that of the Pueblos. Their burial customs differ. The dead body is neither burned nor entombed. It is enclosed by a rude hut or bower built of rubble or stone, the weapons placed beside the body. Pottery vessels are perforated or broken, "killed," as the saying is. Ornaments, trinkets, and plumes are added to the other articles that shall accompany the departed one to the happy hunting ground.

NOTES ON THE INDIANS OF WASHINGTON.

BY JAMES WICKERSHAM.

The Washington State Philological Society is devoted to the study of languages: the department of American languages was organized for the purpose of procuring vocabularies, studying the structure, and thus to some extent preserving the native languages of the State. Printed schedules will be furnished to those students who will aid in gathering this material; the schedules will belong to the society; the vocabularies will be studied, compared, printed, and thus preserved, to the end that these rapidly disappearing tongues may not be lost.

It is well at the beginning that the members of this department to know who these nations were and what region they occupied, we may more satisfactorily do our work of recording and preserving the dialects, if we know something of their location and history. We will feel more at ease if we are introduced to some of the explorers, travelers, and philologists, who have heretofore visited the tribes; and we will be more careful of our work, if we examine the very respectable labors of those who have preceded us in the field which we are organized to explore. The first requisite for the successful completion of a task of this kind, is to acquire a fair idea of its scope and character. What nations are we to study? Where do they reside? What were their names and history? What languages did they speak, and to what distant tongues were they allied? What philologists have examined their languages, and where may we find standard guides in our labors? A general view of the whole subject embracing these points will certainly aid us in gathering and preserving the Indian languages of our State without wandering too far away from the paths followed by those Americanists who have gone this way before us. We take this view, not that we must blindly follow their trails, but that we may recognize them when found, and may not unwisely lead off into the wilderness.

The earliest Spanish, English, and American explorers did no more than mention the existence of the native tribes along the sea coasts of our State, without giving us any information touching either their names or languages. Our first authentic information comes from the journals of Lewis and Clark, who wintered in 1805-6 at the mouth of the Columbia River. They came into the State from the east, and thence down the great river to its mouth, visiting and becoming somewhat acquainted with all the tribes of the State, except those on Puget Sound and northward. They noted the use of different languages, and located and gave name to most of the tribes who lived on or were known along the Columbia River. While they printed no vocabularies in their journals, they gave us a very interesting description of the manners and customs of the tribes and

however, can understand his Chinook jargon sermons, and all join in singing the same jargon hymns, although, otherwise they are unable to converse.

Seven separate stock languages were originally spoken within the present limits of the state of Washington, viz.: (1) The Wakashan, spoken by the Makah bands at Cape Flattery. Formerly there were seven or eight villages of these people at Neah Bay, Cape Flattery, and Cape Osette; they are now congregated at Neah Bay, Waatch, and Osette; they spoke a language closely related to that used on the west coast of Vancouver's Island, and came from that quarter. (2) The Salishan, is the most widely spoken stock of the State, extending from the Cour d'Alene and Spokane on east, to the Quinault and Quillayute on the west; it was spoken by the Clallams and Lummi on the north, and the Chehalis and Cowlitz on the south, it was the language of the Puget Sound tribes. (3) The Chinookan was spoken at the mouth of the Columbia River and on Shoal-water Bay; it was one of the first coast languages known to the early explorers and fur-traders, and became the base of the trade jargon; the Chinooks flattened the forehead, and that tribe was the center of that custom. (4) The Shahaptian was the language of the Nez Perce, the Palouse, the Klickitat, and the Yakima; upon the appearance of the white man, it was fast moving southward, and had already reached the headwaters of the Multnomah. (5) The Waulatpu included the Cayuse tribe near Walla Walla, and a small but now extinct tribe in Oregon. (6) The Chimakuan stock takes its name from the subtribe which lived on the Quimper peninsula, south of Port Townsend. The Quillayutes lived on the Pacific beach at La Push, at the mouth of the Quillayute River, and the Hoh subtribe at the mouth of the Hoh River, belongs to this stock. There are but few Quillayutes and Hoh left, and yet fewer of the original Chimakum; the latter may be sought for in the Chimakuan valley, south of Port Townsend, or around the Indian camps at Port Ludlow or Port Gamble. This stock and the subtribe Kwahioqua of the Athapascan, deserve most prompt and careful study, for the present generation is their last. (7) The Athapascan, spoken by a small tribe on the Boistort and Pe-ell prairies on the headwaters of the Chehalis and Willopah Rivers. This tribe has greatly interested me, for the stock from which it sprang is spread throughout the Yukon valley, and reaches from the Arctic Ocean to Mexico; from the Pacific to Hudson Bay. The Umpquas of Oregon, the Navajos, and the dreaded Apaches of Arizona and Mexico belong to it. The presence of this offshoot in our territory was first noticed by Horatio Hale, the philologist of the Wilkes expedition, in 1841, who gave to the tribe the name Kwahioqua; I am told its affinity with the language spoken by the Klatskanes who resided on Wapatoo Island, on the south side of the Columbia River. Hale gave a short vocabulary of the Klatskana, but I do not find a specimen of the Kwahioqua.

In 1855, however, George Gibbs wrote about two hundred words of the Kwakwaka, which, under the name of Willopah, seems to be the only vocabulary now existing of this dialect. Two or three years ago, Major Powell, chief of the Bureau of Ethnology, sent me a copy of this vocabulary, and I instituted inquiry for any one who could speak it. George Leschi, who is probably the most competent Indian linguist in this State, informed me that one Yuckton, near the Chehalis reservation, could speak it, and we visited this old man this spring. After an explanation we were surprised and delighted to find not only that he could talk it, but that he and his father, Skoo-koo-mah, were the persons from whom Gibbs obtained his vocabulary in 1855. With a copy of Gibbs' vocabulary in my hand, I soon proved to my satisfaction that this old man was the identical person he pretended to be, for he gave me the same words, and failed to remember those lacking in the Gibbs' manuscript. I found three persons (and there are no more) who can speak the Kwakwaka, while I found but one who talked the Klatskama dialect. No pains ought to be spared to preserve the Kwakwaka, and as much information as possible concerning the tribe.

Upon my suggestion, Prof. Harlan I. Smith, acting for the American Museum of Natural History of New York, has already cast the features of old Yuckton, the last man of the Kwakwaka, of whom Hale says, "they are bold, hardy, wild, and savage." Gibbs was informed by an old Indian that the Klatskama, "formerly owned the prairies on the Tsahalis at the mouth of the Skokumchuck where Centralia and Rochester now stand, but, on the failure of game, left the country, crossed the Columbia River and occupied the mountains to the south." From the circumstances of a count of this migration given by both old Yuckton and the Klatskama woman, I am inclined to credit the assertion and look upon these people as offshoots of the Athapascans inhabiting the upper Frazer River. Maria the Klatskama woman also told me that her people intermarried with the companions of O'Brien, who also belonged to the Athapascans.

Generally the Indian languages of our Indians' language, the Kwakwaka, on the contrary, is of great value. I was surprised at this fact, after an examination of the Gibbs' vocabulary disclosed that there could be no mistake as to its presence as plainly as in the English.

From information, other than that of Hale and Hide Tolmie and that of Lewis and Beck, and by other students, Major Powell has prepared a map, which is in the Seventh Annual Report of the Bureau of Ethnology, a large map, showing the area of the Kwakwaka, and the Chehalis of Washington. The map will be a valuable addition to our knowledge of the State, and it is to be regretted that the few persons speaking each dialect have not been secured. It is offered as an aid to students, who may be interested in the material for study.

TRIBE	STOCK	WHERE FOUND.
Cathlamet.	Chinookan.	Columbia River, Bay Center, Shoalwater Bay.
Calispel, Cayuse.	Salishan. Waiilatpuan.	Colville Reservation. Yakima, Grand Ronde and Umatilla Reservations.
Chehalis.	Salishan.	Chehalis, Puyallup or Nisqually Reservations.
Chimakum.	Chimakuan.	Chimakum Valley, Port Ludlow, Quillayute, Port Gamble, and Hoh River.
Clallam.	Salishan.	Skokomish or Snohomish Reservation, Port Townsend.
Claslet.	Wakashan.	Neah Bay.
Clatsop.	Chinookan.	Bay Center, Shoalwater Bay.
Cour d'Alene or Skitswish.	Salishan.	Colville Reservation, Cour d'Alene Lake, and Spokane.
Colville.	Salishan.	Colville Reservation.
Cowlitz.	Salishan.	Toledo, Cowlitz, and Nisqually Res.
Dwamish.	Salishan.	Black River, Port Madison, and Tulalip Reservation.
Etakmur.	Salishan.	Lummi, Port Madison, Snohomish, and Tulalip.
Georgetown.	Salishan.	Shoalwater Bay.
Gig Harbor.	Salishan.	Nisqually and Puyallup Reser'ns.
Grays Harbor.	Salishan.	Quinnault, Chehalis, Puyallup Res.
Hoh.	Chimakuan.	Mouth of Hoh River, and Quillayute Reservation
Hoopam.	Salishan.	Grays Harbor, Puyallup, and Chehalis Reservations.
Humtumps.	Salishan.	Grays Harbor, Puyallup, or Chehalis Reservation.
Kalispelm.	Salishan.	Colville Reservation.
Kamiltpah.	Shahaptian.	Yakima Reservation
Kinkane (Okanagan).	Salishan.	Colville Reservation.
Klisset.	Wakashan.	Neah Bay.
Klickitat.	Shahaptian.	Yakima, Puyallup, and Upper Cowlitz River.
Klimquit.	Shahaptian.	Yakima Reservation
Kowassaye.	Salishan.	Yakima Reservation.
Kwahioqua.	Athapascan.	Near Rochester, Thurston Co.; Nisqually Reservation.
Lake Okanagan.	Salishan.	Colville Reservation
Lummi.	Salishan.	Lummi Island, Snohomish, and Whatcom.
Mikah.	Wakashan.	Neah Bay and Osette.
Methow.	Salishan.	Colville and Yakima Reservation, Columbia River
Montesano.	Salishan.	Chehalis and Puyallup Reservation.
Moses Band.	Salishan.	Colville Reservation
Muckleshoot.	Salishan.	Muckleshoot and Puyallup Res.
Mud Bay.	Salishan.	Mud Bay, near Olympia.
Nespelem.	Salishan.	Colville Reservation.
Nez Perce.	Shahaptian.	Nez Perce and Yakima Reservation.
Nooksack.	Salishan.	Lummi, Nooksack River.
Nisqually.	Salishan.	Nisqually, Chehalis, Puyallup Res
Ocheltone.	Shahaptian.	Yakima Reservation.
Okanagan.	Shahaptian.	Colville Reservation.
Osette.	Wakashan.	Cape Osette, Neah Bay.
Owampah (Willopah).	Athapascan.	Near Rochester, Thurston Co.; Nisqually Reservation, Bay Center.

desire to aid in gathering material; and it is hoped that by the next annual meeting we may have collected such lists and other material, as will encourage us in a renewed attempt to preserve the dialects of the tribes that preceded us in the possession of the splendid state of Washington. In the name of this society, you are requested to lend your aid in gathering the languages, traditions, and archaeology of these tribes, upon the express promise that all such work shall belong to the society and to the public, and that every student employed shall have full and fair credit for work done.

PREHISTORIC MAN IN SOUTHEASTERN INDIANA.

BY H. CLAY MILLER.

Between Pittsburg, Pa., and Cairo in Illinois, and along the tributaries of the Ohio River, as well as on both sides of that stream, there evidently dwelt, before the coming of the white man, multitudes of people of another race. This locality must have been near the center of population, as it is of ours at the present day. Their territory, judging by the remains, included the valley of the Ohio, from the Allegheny Mountains on the east to the Mississippi, and extended from the Cumberland Mountains on the south to the northern lakes. The aborigines who inhabited this region were probably the most advanced of all the Indians this side of Mexico and Arizona. They had communication with all parts of the country from ocean to ocean, they were very skillful artisans; and, as is the case with the present race, this was one of the centers of their widespread trade and commerce. But they have vanished, and are gone to that great beyond, from whence no traveler has ever returned, and all that we know of them has been learned from their remains that have survived the decay of time.

Much idle and futile speculation has been indulged in regarding the origin of primitive Americans. Were they the lost tribes of Israel? Were they King Solomon's argonauts, who came to our California Ophir in search of gold silver, and precious stones? Or did they find their way here from Siberia by Behring Strait and the Aleutian Islands? I am sure I do not know, and will leave the solution of these questions to other students of science and of man.

My attention was first called to the study of archaeology in the summer of 1877, and my first exploration was made during that year, in what was then known as the Holmes' mound, situated on the farm, in this (Dearborn) county, formerly owned by James Holmes, near the Ohio River, half a mile south of Lougheny Creek. This creek derives its name from Col. Lougheny, who was defeated near it, in the early settlement of this country, by the celebrated chief, Brant, on the 25th of August, 1781.

My first find was a small stone pipe, which I found inside of a human skull. This pipe was carved out of hard black rock, and with the human bones and skull were many beads made of sea shells, among which was one small, perfect conch shell, and near by was a paint cup, in which was a ball of cannel coal or shale, and an earthenware bottle, made of baked clay intermixed with pounded mussel shells. This mound was near an ancient cemetery and village site, comprising some fifteen or twenty acres, which I found to be a very interesting field for archaeological study. The surface finds of relics at this place have been varied and numerous, consisting of pipes, discoidal stones, celts, arrow and spear points, and almost every variety of chipped flint implement made and used by primitive American aborigines, and some of them are of the finest specimens of early Indian art.

I have never found relics of much importance on the south, or Kentucky, side of the river, but on this (Indiana) side of the Ohio, I have explored several mounds, that proved very rich in remains of the prehistoric race. In this region almost every beautiful building spot now occupied by the white man's village, city, or country mansion, was formerly the village site or funeral place of the former occupants. As an instance of this fact, our prettiness, River View Cemetery was once the burial place of a bygone race, the artistic and elegant fountain near its center having been erected on an artificial mound of prehistoric date, and in excavating recent graves, the sexton has thrown out celts, grooved hammers and other stone implements from depths of from two and a half to six feet.

In the fine and fertile valley of Langhony Creek are many mounds, villages, tents, and burial places that, when fully explored may give us many valuable relics of the early inhabitants, and the celebrated Hopewell group, so graphically described by Prof. Warren K. Moorehead. A mile northwest of Hartford in the old Champaign county, is a mound, on Mr. Wilber's farm, and about thirty feet in diameter, particularly worthy of a note and notice. When built, this mound stood on the northern bank of Langhony Creek, but it is now some distance from the stream, as the river has since changed its course at this point very materially. On opening this ordinary mound, the following objects were found, some in an agglomeration, and some in separate chambers, one above the other, and in some cases, as far as they could be seen, in one to seven individual cists, and in some cases, as well as of adults, some of the bones of children were mingled together in the same cist. The bones were of various appearances, to give a general description of the same. The upper cists were very small, and contained the bones of infants, dressed, over what appeared to be a garment, and were securely covered. The bones of the lower cists, in the opinion of Mr. Wilber, were of the white race, and were found, James Kittle, in October, 1872. We found the skeletons in all positions, some

laid with the face downward; others with the face upward, and many having the bones all jumbled together, as though they had been gathered up after the flesh on them had all disappeared and thrown in the stone graves in a heap. Near the top of the mound in a stone enclosure, ten feet in length by three feet wide, were seven skeletons of adults laid together with some regularity. With these we recovered two incisor teeth of the bear and ten of the wolf, each perforated at the base; several small beads, made from mussel shells, and one soapstone pipe decorated at the top.

FORMOSA.

BY A. S. GATSCHET.

Formosa Island has recently been visited twice and described in a graphic German style by Dr. Albrecht Wirth; though he remained on this fertile isle only a few months, his relation is brimful of new and interesting observations. He intended to give a historic sketch only, but this was impossible without founding it upon a topographic and ethnographic basis which is in many points resting on linguistic inquiry ("*Geschichte Formosa's bis Anfang, 1898*," von Albrecht Wirth. Carl George; Bonn, 1898. Octavo, pp. 188).

Formosa lies in the China Sea, extends from 22° to 25° north latitude, and has pretty near the shape of a huge banana. The cordillera in the middle parts of Formosa, about 4,000 feet high, is of volcanic origin, and the eruptive powers are but slumbering, not extinct. Its territory has been separated from China by irruption of the salt sea in *recent* geological epochs only, and forty fathoms is the average depth of the Straits of Tokien. In its northern parts the climate is variable, windy and unhealthy, but the south has an equable temperature conducive to health, and allowing many inhabitants to become centenarians. Many different races have settled on the island long before the advent of the white man, and some portions of the centre have never been explored yet, on account of the truculent savagery of the inhabitants. These are Melanesian, Malay and Negrito tribes, Mongolic and dwarf nations; the author locates them carefully and sketches their history as far as traceable. Later on the invasion of Hollanders plays an important part; more formidable was that of the Chinese, for where this people have settled in numbers and ingrafted itself, it is impossible to remove them again. Through the late war with China the insular kingdom of Japan has wrested the domination of Formosa from China, but the Chinese-Mongols will stay there and hardly be superseded by Japanese immigration. With the events of that war and the peace concluded at Shimonoseki Wirth's interesting volume comes to an end.

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From information gathered by Gallatin and Hale, Tolmie and Carls, by Ellis and Decker, by other students, Major Powell has prepared an atlas for the Seventh Annual Report of the Bureau of Ethnology, a linguistic map, showing the areas where the different languages of Washington. The map, which shows the territory of each tribe in the State, is at present in the hands of the geologists where persons seeking each tribe's territory may find it. It is offered as an aid to students, who may require material for study:

TRIBE	STOCK	WHERE FOUND.
Cathlamet.	Chinookan.	Columbia River, Bay Center, Shoalwater Bay.
Calispel,	Salishan.	Colville Reservation.
Cayuse,	Wailatpuan.	Yakima, Grand Ronde and Umatilla Reservations.
Chehalis,	Salishan.	Chehalis, Puyallup or Nisqually Reservations.
Chimakum,	Chimakuan.	Chimakum Valley, Port Ludlow, Quillayute, Port Gamble, and Hoh River.
Clallam,	Salishan.	Skokomish or Snohomish Reservation, Port Townsend.
Clatsop,	Wakashan.	Neah Bay.
Colville,	Chinookan.	Bay Center, Shoalwater Bay.
Cour d'Alene or Skitswish,	Salishan.	Colville Reservation, Cour d'Alene Lake, and Spokane.
Cowlitz,	Salishan.	Colville Reservation.
Dwamish,	Salishan.	Toledo, Cowlitz, and Nisqually Res. Black River, Port Madison, and Tulalip Reservation.
Elakmur,	Salishan.	Lummi, Port Madison, Snohomish, and Tulalip.
Georgetown,	Salishan.	Shoalwater Bay.
Gig Harbor,	Salishan.	Nisqually and Puyallup Reser'ns.
Grays Harbor,	Salishan.	Quinault, Chehalis, Puyallup Res.
Hoh,	Chimakuan.	Mouth of Hoh River, and Quillayute Reservation.
Hoquiam,	Salishan.	Grays Harbor, Puyallup, and Chehalis Reservations.
Hamulips,	Salishan.	Grays Harbor, Puyallup, or Chehalis Reservation.
Kalispelm,	Salishan.	Colville Reservation.
Kamiltpah,	Shahaptian.	Yakima Reservation
Kinikane (Okanagan),	Salishan.	Colville Reservation.
Klisset,	Wakashan.	Neah Bay.
Klickitat,	Shahaptian.	Yakima, Puyallup, and Upper Cowlitz River.
Klimquit,	Shahaptian.	Yakima Reservation.
Kowwassave,	Salishan.	Yakima Reservation
Kwalhioqua,	Athapascan.	Near Rochester, Thurston Co.; Nisqually Reservation.
Lake Okanagan,	Salishan.	Colville Reservation.
Lummi,	Salishan.	Lummi Island, Snohomish, and Whatcom.
Makah,	Wakashan.	Neah Bay and Osette.
Methow,	Salishan.	Colville and Yakima Reservation, Columbia River
Montesano,	Salishan.	Chehalis and Puyallup Reservation.
Mosses Band,	Salishan.	Colville Reservation
Muckleshoot,	Salishan.	Muckleshoot and Puyallup Res.
Mud Bay,	Salishan.	Mud Bay, near Olympia.
Nespelem,	Salishan.	Colville Reservation.
Nez Perce,	Shahaptian.	Nez Perce and Yakima Reservation.
Nooksack,	Salishan.	Lummi, Nooksack River.
Nisqually,	Salishan.	Nisqually, Chehalis, Puyallup Res
Ocheltow,	Shahaptian.	Yakima Reservation.
Okanagan,	Shahaptian.	Colville Reservation.
Osette,	Wakashan.	Cape Osette, Neah Bay.
Owampah (Willopah),	Athapascan.	Near Rochester, Thurston Co.; Nisqually Reservation, Bay Center.

has no doubt that all are hand-made. Various materials are employed, some being comparatively soft, such as alabaster, limestone or serpentine; others very hard, such as porphyries and diorite. Beauty of color has been considered as well as grace of form, several vases being very remarkable in this respect. The pottery is light in color, with ornamentation rudely painted in a dull red. This sometimes is merely a pattern, at others a boat is represented, or animals; the designs now and again suggesting that here we have the original model of the earliest pottery found at Camirus in Rhodes.

METALLURGY.—Other relics exhibited illustrate the progress of metallurgy. The casting of copper—apparently, the making of bronze—was known in prehistoric times, but a couple of rude vases of hammered copper have been found, which probably belong to the second dynasty, thus showing that even then no great skill had been attained in metal working. These discoveries, together with those of the last two or three years, have practically opened another volume of Egyptian history. They indicate the growth of indigenous arts and the gradual passage from an age of stone, when much skill was shown in dealing with intractable materials, to the better known one of bronze. They prove that, at a very early date, gold was used for ornamental purposes, with pearl shell, amethyst, agate and lapis lazuli. Thus the history of an early civilization in Egypt—perhaps the most ancient in the world—has been discovered, and the hints which it affords may illuminate the dark places of other countries.

LITVIAN SETTLEMENTS.—An important result of the past season's work has been the discovery of the Litvian settlements in Egypt, the date of which is about 2200 B. C., towards the close of the Twelfth Dynasty. For some time pottery and other relics have been turned up, which, though believed to be about that age, did not correspond with the ordinary Egyptian work. Last winter, in examining a cemetery containing over a hundred graves, the objects have been found abundantly. The method of interment was peculiar, the bodies being buried in a contracted position, in graves about four feet across and two deep, on which a sort of Litvian pottery, common to Litvian grave people. The pottery is generally found at the bottom of the grave, and it bears a marked resemblance to the Litvian types than to that which is commonly found in Egypt from the Twelfth to the Fourteenth Dynasty. The bones were those of goats and oxen, with numerous fragments of bones of birds, with red and black spots, the bones of the feet of the oxen, which might be suspended from the wall.

A list of the objects exhibited in the recent exhibition in London, together with a paper given by the Egyptian Explora-

tion Fund has created extraordinary interest. I regret that space will allow me to call attention here to a single fragment only, under the above title. This week's mail brings the particulars, not yet published to the world.

The papyrus is a detailed list of the winners in all the thirteen events that formed the famous Olympian games during a period of nearly seven years. Both the annotators of Pindar and the sketches of Pausanias, the antiquarian, give us the dates of isolated victories; but, in this papyrus, we have, *for the first time*, a complete list of the events in one olympiad; besides the account for nearly another olympiad.

But this is not all. The list chances to cover the time when Pindar and Biccolyhides were composing odes, now extant, in honor of the Olympian victors. Hence the list furnishes independent testimony for the accurate dating of these famous odes.

Greek plastic art is supplied with historical evidence. Pausanias gives us the names of certain sculptors (as well as of victors) at Olympia. Some of the inscribed pedestals, excavated by the German scholars at Olympia, confirm what Pausanias states; and now this papyrus enables us to date, to a year, both the victory and the statues. This list of Olympian victors, including an elaborate commentary, will appear in the second volume of the Græco-Roman Branch of the Fund.

GOLD AND ITS HISTORY.

[*In Extract.*]

BY CHARLES E. PEEL.

S. W. McCallie, assistant geologist, Geological Survey of Georgia, has an interesting article on the history of gold in Bulletin No. 4, of the Geological Survey of Georgia. Probably the oldest written account of gold occurs in the second chapter of *Genesis*, where it is spoken of as occurring along the river Pison, a stream which flows from the Garden of Eden. Many allusions to gold occur in the Old Testament, from which it is learned that it was extensively used by the Jews in adorning the robes of their priests and decorating their places of worship. The amount of gold used in decorating Solomon's Temple has been valued at \$250,000,000.

The source of this gold has been recently asserted to be the rich gold deposits now being worked in South Africa, but this is only conjecture. However, recent explorations of these gold fields by John Hays Hammond, have shown that they were worked by the ancient inhabitants of the country many centuries ago. Old workings extend along the outcrop of the gold reefs for more than three hundred miles in Mashonaland and Matabeleland. The work consists of open pits from twenty-

five to fifty feet deep, and several hundred yards in length. Excavations by Theodore Bent, while exploring the ruins of the ancient cities of Zimbabwe in Mashonaland, disclosed the remains of numerous furnaces, crucibles, and casting molds, the handiwork of some prehistoric race familiar with gold and the various modes of extracting it from the ores. Within historic times, gold was discovered by the Boers and travelers in the Transvaal as early as 1854, but extensive mining did not begin until 1878.

The unearthing of gold vessels from the buried cities of Egypt and the remains of ancient works in the gold fields of western Asia, show that the inhabitants of these countries were familiar with the precious metal and mined it more or less extensively hundreds of years before the Christian era. In India gold mining appears to be as old as its civilization. The remains of prehistoric works are found in many of the provinces. The early workings seem to have been placers only. It has been suggested by Pampelly that the gold fields of India were the source of the fabulous wealth of Croesus.

In Egypt, gold mines have been worked for centuries, the early workings being placers. How early is unknown. In China, gold occurs in more or less abundance in nearly all the provinces, but nothing is said in regard to the early mining of gold in that country. The gold deposits of Great Britain were known to the Romans, and they have been worked irregularly for several hundred years. In Italy, gold was mined quite extensively by the Romans prior to the Christian era. In Russia, gold mining first began in 1771, reached its maximum in 1838, and has been on the decline since then. In Australia, gold was discovered by a surveyor in 1851, but was not mined until about 1857. In South America, the first mines were discovered by the Spaniards in Columbia in 1537. The mines of Brazil were discovered as early as 1577, but were not worked for more than a century afterwards. The early workings were confined chiefly to the alluvial deposits along the various streams of the interior of Minas Geraes. The gold deposits of this country were first worked continuously since 1537, and probably have ever since yielded gold in all forms, and Australia have been the most productive fields in the world. In North America, gold was first discovered in the eastern portion of the United States. It was first worked by the Indians and used by them in many of their religious ceremonies. There is little evidence to show that they were engaged in mining operations to any extent.

The first mention of the occurrence of the occurrence of gold in the western part of the continent is in the chronicles of Amerigo Vesputri, in 1492. He states that Ponce de Leon discovered gold in the Florida territory of that youth along the coast of Florida. He also states that the natives that he had seen were engaged in mining and possessed large quantities

of gold. As the barbarians knew but little of metals, it has been suggested that this statement might refer to copper or some other mineral in more general use. The first conclusive evidence of the occurrence of gold in the southern states was a small amount of gold obtained by Diego Miruelo, a Spanish sea captain, in trading with the Indians on the coast of Florida about three years after the explorations of Ponce de Leon.

In 1528, Pamphilo de Narvaez, who had been appointed governor of Florida, arrived at Tampa Bay with a large armed force for the purpose of subduing the country of the supposed Montezuma. No sooner had the expedition landed and taken up the march into the interior, than the Indians, who were anxious to rid themselves of the cruel invaders, exhibited numerous trinkets made of gold, and at the same time pointed northward, where they reported the yellow metal to be found in great abundance in the Apalachian country. After many weeks of toil and hardship, after traversing the swamps of western Florida, the Spanish general arrived at a miserable Indian village of forty small cabins, which he was told was Apalacha, but a diligent search in the surrounding country revealed no gold.

De Soto landed at Tampa Bay in June, 1539, and for three years or more traversed the southern states, but did not find the precious metal in satisfactory quantities. Dr. Charles C. Jones says: "Influenced by the representations made by the returned soldiers of De Soto's expedition of the quantity of gold, silver and pearls existing in the province of Coosa, Luis de Velasco despatched his general, Tristram de Luna, to open communication with Coosa by the way of Pensacola Bay. Three hundred Spanish soldiers of this expedition equipped with mining tools, penetrated to the valley of Coosa, and passed the summer of 1570 in northern Georgia and the adjacent region."

Aside from the various reports of the Spaniards, the first authentic account of the occurrence of gold in the southern states, appears in Jefferson's "Notes on Virginia," published in 1772, where he speaks of a piece of ore found below the falls of the Rappahannock River weighing four pounds. In 1799, a nugget weighing seventeen pounds was discovered on the Reed plantation in Cabarrus county, North Carolina. Some time after this discovery other nuggets were found, one of which is said to have weighed twenty-eight pounds. North Carolina then became a regular gold producer, and yielded all of the native gold coined in the United States until 1827, the total amount being \$110,000. In 1829, South Carolina made the first deposit at the Mint. During the same year, gold was discovered in Georgia. In 1830, gold was discovered in Alabama. In 1841, placer deposits on Coco Creek, Tennessee, were made known. In 1842, gold is said to have been found in Maryland, but the United States Mint shows no returns from this State until 1868. The first discovery of gold made in Georgia, was

made on Duke's Creek in what is now White County. A few months after the announcement of this discovery, hundreds of miners were busily engaged on various streams throughout the section. Governor Gilmer, in a letter dated May 6, 1830, says: "I am in doubt as to what ought to be done with the gold diggers. They with their various attendants make up between six and ten thousand persons. They occupy the country between the Chestatee and Etowah Rivers, near the mountains; gold being found in the greatest quantity deposited in the small streams which flow into these rivers."

In June, 1831, Governor Gilmer, issued a proclamation prohibiting gold mining in north Georgia, which was then known as the Cherokee country. The United States Mint was established at Dahlonega in 1838, and was continued in operation until 1841, coming over six million dollars' worth of metal. It is estimated that something like sixteen million dollars' worth of gold has been produced in the state of Georgia since its first discovery.

CORRESPONDENCE.

THE HISTORY OF THE EDDA.

EDITOR OF THE AMERICAN ANTIQUARIAN.

MY DEAR SIR, Replying to your letter in which you say that my "History of the German Language" is authority for the remark that there was "no grammatical study" of the Teutonic tongues, until it was undertaken by the brothers Grimm, you will find that what I have written is, "The grammatical study of the Teutonic languages, in a truly scientific spirit dates from the Grimms." This is something quite different from even a systematic study. As you well know, a study may be pursued systematically on an entirely false basis. German was taught with some degree of system from the time of the Crusades to our own days.

As you are interested in the Edda I tell you that I can not give you any information. Most of the books pertaining thereto are in the hands of the University of Leipzig, which was the best place to have looked for them, and I am unable, but it has to be said that the University of Leipzig has the manuscript of the Edda, and that the University of Copenhagen has the type, written in the Edda script, and that the University of Copenhagen has the oldest manuscript of the Edda, and that the University of Copenhagen is the only place where the Edda is printed. The University of Copenhagen has the Edda printed in the beginning of the 18th century, and that the University of Copenhagen has the Edda printed in the beginning of the 18th century, and that the University of Copenhagen has the Edda printed in the beginning of the 18th century. The "codex" of the Edda is in the hands of the University of the same city,

contains one new saga. This elder Edda was wholly unknown until Bishop Sveinsson, about 1640, rediscovered it, as Columbus rediscovered America, suggested a name for it and presented the manuscript to Frederic III., King of Denmark.

Most of the sagas are older than the migration of the Norsemen to Iceland, and at least one is believed to go back, in its present form, to the eighth century. Its contents are probably older by two or three centuries. All of them are thought to have been written down between this date and the year 1200. I suppose it was regarded as settled that, about the year 980, Eric the Red discovered Greenland by sailing westward from Iceland, and that he had established a colony there which subsequently attained a certain measure of prosperity. I suppose, further, that it is admitted by all scholars that Herjulfson, on a voyage undertaken a few years later from Iceland to the new colony, was driven out of his course by stress of weather and saw the New World; still further, that Eric's son Leif, about the year 1000, discovered parts of the coast of New England. I do not see how there can be any doubt as to the intercourse between Norway and Greenland for two or three centuries after the first discovery of the latter. If we remember that the first colonists settled on the west coast of Greenland, it is a natural and safe inference, even if there were no direct evidence to that effect, that the mainland of North America would not long remain undiscovered.

To designate the coast even so far south as northeast "Vineland," seems a misnomer, under the present conditions; but not more so than to name a country lying much farther north "Greenland." Nor is it at all antecedently improbable that the daring sea-rovers of Norway should venture so far westward on an unknown sea. The voyage from Iceland was clearly a more venturesome undertaking, than that from Iceland to Greenland. And we have no reason to suppose that the heathen vikings were deterred from braving the terrors of an unknown sea by the scruples that agitated the breast of the superstitious Spaniards on the frail craft of Columbus. C. W. SUPER.

University, Athens, Ohio.

CIRCLES IN GREAT BRITAIN.

EDITOR OF THE AMERICAN ANTIQUARIAN:

MY Dear Sir, I have been this year on a rapid scamper through Scotland, chiefly to see the principal stone circles there—Stennis in Orkney, Callernish in Lewis, Clava (3) and another near Inverness, and a small one in the island of Arran. I had already been to some in Aberdeenshire in 1885, and have pointed out the great local difference between them and the English circles. What I have seen this year makes me feel still more strongly the diversity and localisation of types of these monuments; implying in some cases a different object,

imagery and Babylonian and Assyrian symbolism is certain. It will not seem far fetched to you, if you read "La Source Divine et Generale" by Abbé Boerdais, in the "Receuil de Travaux," vol. xxi, p. 177 (1890). Therein he shows the link between "the River of Life" and Babylonian Cylinders, especially page 100 noting a cylinder showing the Tree of Life with the River on either side of it; see Revelation 22:2. Note, also, what he says as to the Sacred Tree with two springs, or streams, beside it on another cylinder, and the curious parallel between Revelation 22:1, "Clear as Crystal," and the "Hymn to the Sacred Tree" at Eridu, "whose root was of white crystal."

Gunchel, in "Schopfung and Chaos," pp. 381 to 397, connects the 12th chapter of Revelation and Babylonian symbolism.

I believe we have not yet got the Mesopotamian myth of the dragon vomiting water in a cuneiform text, but I think there must have been one, and I hope it will be found.

JOSEPH OFFORD.

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THE STORY OF THE FALL

"Adam and Eve in Babylonian Literature," is the title of a contribution by Prof. Jastrow of the University of Pennsylvania, in the recent number of the American Journal of Semitic Languages and Literature. The author, after referring to the famous Babylonian Cylinder with two-seated figures and a tree between them, discusses a passage of the Gilgamish Epic, in which he sees, in the episode of Eabani and Ukhat, a close resemblance to the Biblical story of Adam and Eve, asserting that the Biblical and Babylonian tales "embody some of the traditions belonging to the period when man lived in close association with animals."

Dr. Jastrow maintains that, though the Assyrian tablet belonging to the Creation series was pronounced by George Smith to be a parallel to the Biblical account of the fall of man, he thinks it refers to Marduk, the conqueror of Tiamat.

The most novel and interesting view is the one brought out by Dr. Jastrow in connection with Eabani, the Babylonian "wild man of the woods," who goes about naked, his body covered with hair and with long flowing locks, and lives and consorts with the animals and is the "first man." This primitive man is enticed by Ukhat, who comes to the place where the cattle gather and exposes her attractions to his gaze, and Eabani falls a victim to her fascination. After six days and seven nights he returns to his cattle, but they turn away from him, greatly to his discomforture. ED.

It is fortunate that so many excursions have been taken by young people during the past few years, and that the railroads have furnished inducements for many to go across the mountains to the Pacific coast. Only two years ago the Young People's Society of Christian Endeavor, drew great numbers of enthusiastic persons across the continent, and gave them a

GRAND CANYON OF THE COLORADO.



sense of the vastness and richness of our domain, which they could not have secured in any other way. This year the National Teachers' Educational Convention drew another class, and the Editorial Association still another, to the Pacific coast.

The railroad authorities are doing a good work in scattering their illustrated guides, as by this means the American people



COURTESY OF THE SANTA FE RAILROAD CO.
TRAIL AMONG THE MOUNTAINS OF ARIZONA.



Reproduced from Powell's "Canyon of the Colorado"
A CANYON IN ARIZONA.

the effect of scenery. The ingrained habit of thought is, after all, as important to consider as the external influence. There are those who dwell among the mountains who are as low and degraded and narrow as human beings can well be; but there are others who are sturdy, brave, and strong, and will become heroes. There are also those in the broad valleys who, under the same influences, are mercenary, hard, and calculating and have apparently no rich thought or feeling. What impulses they have are animal and almost brutish; but there are others who rise above their employments and feel the sense of their own superiority, and come ultimately to be the rulers of men.

This is one of the mysteries of society. How is it that some vibrate toward the low, and others toward high things, even in the same family circle and under the same circumstances? Children show the same feelings, tastes, prejudices, and talents as their parents. They imbibe their disposition from them and from their habitual associates. There is a body of traditions, beliefs, customs, laws, habits, and associations which arise in every community, and which surround every individual. The hereditary transmission and influence, rather than scenery, will account for the differences in character. The Englishman differs from the Frenchman, the German from the Italian, the American from the Chinaman, the Irishman from the Indian, and we say it is because their national traits are preserved; but what are these traits, except repetitions of the associations of the past. The traditions have been handed down from generations, and habits have been transmitted and customs have been inherited which are as distinctive of nationalities as their language.

There is a constant tendency to vibrate back to these. The Indian may be converted to the white man's faith, assume the white man's dress, and adopt his civilization, but the tendency is inevitable for him to turn back to the superstitions and habits, which have been transmitted from the earliest period, if the employment of the past, as well as the scenery of the present remain the same. If there is a complete change of social surroundings and of occupation, there will be often a change of character, which could not come from the change of scenery alone. Horace says, "We may change our skies, but we do not change ourselves." There are unseen forces at work within the human mind, and these are more effective than those which are seen.

There is a great deal said now-a-days about the influence of environment, as if society was a molten mass, which has to be run into a mold and come out bearing the permanent marks of its surroundings. But who does not know that the influence of one upon another, and especially the influence of ancestry, is far more effective in molding human character than any material surroundings. These will lift one out of the trammels which come from employment and association, and make the

ordinary man transmit even the noblest traits which have been presented before him, by those whom he has admired. This is the lesson of history, and it seems to contradict that of archaeology; but there are mountains in the human character, as well as in the works of creation, and the god-like may come to us from either source, if we have grace to receive it.

We would not deny the plain fact that nations are influenced by material scenes and surroundings. The Scotch, Welsh, and



Swiss nations certainly manifest this, for they are hardy and strong as the mountains among which they live. It is in their fibre to be different from others. The Scandinavians, Swedes, and Norwegians also show in their character the influence of climate and scenery. The Italian, on the other hand, shows the influences of

the sunny skies and the changing sea. The Egyptians were a luxurious people, as were also the Assyrians. The islands of the sea are full of sensual, ease-loving nations, and notwithstanding the great massing of populations, they have a character which conforms to the climate.

We, in this nation, are receiving the representatives of these diverse people. We have received those from the north of Europe, and have thought that we were benefited by their

presence; but the fact that the southern people have gone to the southwest, and the swiftness with which they have proceeded, has caused us to realize that we are receiving a new and different element.

It is not only the fact that we are receiving a new and different element, but the fact that we are receiving it in such large numbers, and that we are receiving it in such a rapid and comprehensive manner, that we are beginning to feel that we are receiving a new and different element.

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the Hudson shows that we are rapidly becoming conquerors on the sea, as well as on the land. Our navy vies with that of the English after it has exterminated that of the Spanish. Our flag is respected more than ever before. Japan and China, Polynesia, Russia and India realize that in the West a great nation has arisen, and the question with them is whether the oriental civilization or the occidental civilization shall be paramount.

In the deep interior, a city has arisen which is making itself felt. The influence of the great men, who have visited this city, was plainly and emphatically elevating; for order and sobriety and respect characterized the people, and there was also an ambition awakened and a national pride, which can not fail to have a great effect. The evening display brought out the diverse elements of the population. The most peculiar and distinctive costumes were shown in the spectacular scene. First American, German, Belgian, Swiss, Scotch, Armenian, Syrian, and, finally, the Chinese with all the outre and strange images in great numbers; and yet amid it all, the presence of our President and the great military heroes and political leaders, not only of our own government, but of our sister republic and Canada. All these events bring us, as a nation, to a wider comprehension of the wonderful expanse of our continent and the opportunity of this nation.

May we not conclude that there is an inspiration from all these—from the scenery, from ancestry, from our history, and especially from the freedom of our government and the growth of our institutions and our country.

INTERNATIONAL CONGRESS OF PREHISTORIC ARCHAEOLOGY.

At the meeting of Italian Naturalists held at Spezia in 1865, the matter of an International Congress of Prehistoric Archaeology was broached. The idea met with favor. Organization was effected and arrangements were made for a first session at Neufchatel the following year.

The congress was called to order on the 22d of August, 1866, and continued four days. It was the first of a series of meetings, which for interest, importance, and brilliancy have never been surpassed and rarely equalled. At these congresses held, at the most important cities of Europe, at irregular intervals, the vital questions of the science have been propounded and discussed, men of a common interest have been brought into contact and have formed lasting friendships, and interest in and support of archaeological study have been stimulated throughout Europe.

Desor was president of the meeting at Neufchatel. Naturally, a local turn was given to the papers and discussions. The Presi-

session that popular ovation to the scientific guests became conspicuous.

This feature, of public importance of the congress, formed a prominent part of the succeeding five sessions. Count Gozadini presided over the fifth congress, which was held at Bologna, Italy, opening October 1, 1871. Among many discussions those dealing with Austrian Lake Dwellings, Italian Terre-mares, and the Bronze Age were notable. The *Grotte des Colombes* was visited as an example of a cavern occupied by man in the latter part of the Palaeolithic Epoch. Modena, and the typical terre-mare of Montale in its vicinity, were visited. The necropolis at Marzabotta and La Certosa were objects of delightful excursions. Everywhere most careful preparations had been made; excavations had been begun and were carried on before the eyes of the visitors, who were able to thus learn the exact conditions. Ravenna, with interesting historical monuments, was visited. In connection with the congress, Prof. Capellini had organized an extensive Exposition of Italian Archæology.

The eminent d'Onalius d'Halloy, ninety years of age, but still vigorous in body and mind, presided over the congress at Brussels, which began August 22, 1872. Dupont discoursed upon ancient man in Belgium, and described his cave researches. Under his direction visits were made to the famous caves of Frontal and Naulette. A trip was also made to the great flint quarries and work-shops of Neolithic man at Spiennes. At this meeting the Abbe Bourgeois represented his Tertiary man evidences from Thenay, and begged a final verdict. Discussion ensued; opinion was divided, but the weight of authority appeared against the Abbe's claims.

The congress at Stockholm, opening August 7, 1874, surpassed all predecessors in the magnificence of the entertainment offered the guests. The number in attendance was very great; nearly two hundred Frenchmen alone were present. More than fifty lakes, from various countries, were among the members. Fully eight days were devoted to meetings and excursions. At the opening session Hans Hildebrand sketched the work done in Sweden in archæology. Quaternary man does not seem to have lived in Sweden; the Neolithic, Bronze, and Iron Ages are well represented. Questions of early trade, of the traffic in amber, and of domestic animals in prehistoric times, were discussed. An excursion was made to Upsala, to examine the great tumuli. A delightful feature of this visit was the attention shown the guests by the students of the University. An excursion to the Island of Björko gave opportunity to examine buried ruins of a prehistoric late Iron Age city. The King accompanied this excursion. He also extended to the congress at its closing, a magnificent farewell festival.

Brilliant as was the Stockholm meeting, it was surpassed by

that at Buda Pesth, which opened September 4, 1876. Among its features was an Exposition of Archæology where more than 31,000 specimens, carefully selected from public and private collections, were systematically arranged; an excellent illustrated catalogue was supplied the members. The archæology of the region is quite peculiar. There is almost a true "Copper Age" in Hungary. Some of the local bronze types—such as curious animal figures—and gold ornaments are particularly interesting. Pulsky was president. Of local papers: "Progress of Prehistoric Archæology in Hungary," "The Oldest Traces of Man in Austria," "Obsidian in Hungary," and "The Age of Copper," commanded attention. Of the general discussions, that by Broca—"Prehistoric Trepanation"—has become classical. The origin of the *Zigeuner* (gypsies) was discussed. The excursions were exceptionally interesting, not only because they were to necropolis of somewhat peculiar type, but also because of the crowds of peasants, in native customs and representing ethnic types, who everywhere formed a retinue to the congress. Native dances and popular sports proved as attractive to the guests, as the elaborate plans of entertainment carried out by the management and the government.

Last of the brilliant series, and by no means least, was the congress of Leiden the ninth, beginning September 28, 1880, and lasting several days. The King, the Queen, and the King's eldest son, were present, partly in the meetings and royal—truly royal—entertainment and festal occasions. The most important discussions were—"Tertiary Man at Otta," and "Kitchen-Middens at Leiden." The discussion of prehistoric cannibalism, though somewhat highly interesting. Among the excursions were those to Otta, where remains were found apparently tertiary, and to Maastricht, where the curious kitchen-middens, *afwaschings*, and to the *afwaschings*, curious constructions of the river, and in the pouch of the terrace, *afwaschings*, and in the *afwaschings*. The sentiment of the congress, was a general conviction that the flints found at Otta were tertiary, and that the tertiary beds of the *afwaschings*.

The success of the series of congresses had been too successful to be repeated in the same manner. Stockholm, Buda-Pesth, Leiden, and Paris, were too heavy a burden to equal them. A new congress was held at Leiden, but of entertainment. As the project of a new congress was before the Committee of Arrangements, the *afwaschings* report, showed a new activity. Interest was increased and arrangements were perfected for the next congress. The Municipality of Paris received the honor of the next congress. M. de la Bédollière was president. In his opening address he called for a continuation of the congresses. He suggested that a more modest and less

expensive entertainment, would be gladly welcomed by the members. Three days of this congress were devoted to the discussion of geological questions. The claimed Tertiary finds of Otta and Thenay were again brought up, but met little encouragement. Piette's remarkable explorations, at Mas d'Azil, of Quaternary cave deposits were presented. A lively debate regarding the interpretation of Schliemann's discoveries took place. Prince Roland Bonaparte entertained the congress at a reception. "Buffalo Bill's" Sioux Indians delighted the whole congress with an exhibition of native dances and a demonstration of Indian sign language.

Arrangements were promptly made for the next session to be held in Moscow. It bade fair to equal its predecessors; more than six hundred intending members were enrolled. The outbreak of cholera produced demoralization, and almost led to abandonment. The congress opened August 13, 1893, under the patronage of the Grand Duke Sergi. Prince Galitzin was president. One hundred Russians and thirty foreigners were in attendance. Among the latter was Halil Edhem Bey, a delegate from Turkey. The welcome to the guests was hearty, and festivals, banquets, and diversions were arranged in their honor. No preceding congress surpassed it in the importance of its papers and discussions. Virchow outlined the work to be done. Forty-two papers were read: On the "Geology of the Glacial Period," "Prehistoric Archaeology," and "Physical Anthropology." Of especial value were the many papers on local—Russia, Caucasus, Russian Asia—topics. Nikitine, Bogdanov, and Chantre presented papers of permanent importance. International Committees were appointed to consider an agreement on nomenclature and methods, in anthropometry, craniometry, and ethnology. An important feature of the congress was the Archaeological Exposition of specimens from Russia and Russian Asia, arranged by Count Ouvaroff. At the closing session, held August 20, the Czar, Alexander III., gave to the two (Zoology and Prehistoric Archaeology) congresses which had been in session, the sum of 60,000 francs, 14,000 of which was for the establishment of a prize which was to be awarded annually and to alternate from year to year between the two bodies. The Prehistoric Archaeology Congress itself took steps to establish a prize to be given at its meetings, to commemorate the patronage of the session by the Grand Duke Sergi.

It was hoped that a meeting would be held in 1896, at either Constantinople, Athens, or Bucharest. These hopes were not realized, and the year passed without a congress. To all appearances the movement was dead. But now the Organizing Committee has again acted. The Twelfth International Congress of Anthropology and Prehistoric Archaeology will meet in Paris in 1899.

during the present season there have been uncovered an average of more than forty per day. About one-fourth part of these are in perfect condition, while but comparatively few are so mutilated as to conceal their general contents. During four months the mounds on the southwestern side of the city proper were examined, and besides tablets, the excavations yielded eighteen inscribed steles and prisms, fifteen bronze bowls, four bronze mirrors, a large number of jars and vases, silver and bronze finger rings, nose and ear-rings, bracelets and anklets, seal cylinders, stone and clay images, and other objects of interest. There were also uncovered buildings, walls, water courses, and a new arch.

We now quote from the account of the discoveries given by Professor H. V. Hilprecht. He says: "Experience has shown that the upper strata of the mounds yield less numerous and important finds than are met with in the deeper trenches. Consequently, a large mass of sand and earth will have to be removed before the expected rich results will be reached. But even these upper layers, in which, among other things, the remains of the post-Christian Jewish settlements are hidden, are by no means bare of valuable finds. At a depth of eight feet below the surface, near the crown of a hill, were discovered five inscribed Hebrew bowls of about A. D. 700 and two other bowls partly covered with Hebrew characters, and containing a skull fully inscribed with a Hebrew legend. The skull fell in pieces, but all the parts were carefully saved. Similar skulls are preserved in the British and Royal Prussian Museums. A few more inscribed Hebrew bowls were gathered from neighboring trenches.

"Among the other results obtained during the month of June we may mention sixty one perfect and a large number of imperfect cuneiform tablets, two fragments of clay cylinders of the Neo-Babylonian period, six seal cylinders, four thin glass bottles, one of especially beautiful form and color, resembling in shape somewhat an army canteen; two so-called tear bottles in glass, four Sassanian lamps, and a large knife, twelve and a half inches long with a wooden handle. Of especial interest is a silver coin of Athens and a fragment of inscribed diorite, which belongs to the third pre-Christian millennium. The latter evidently found its way into the upper strata incidentally at a much later time, when the lower ground was disturbed, possibly in connection with a burial. One hundred and twenty-eight graves were opened during the same month. In one of them two sheets of gold, diamond-shaped, were found, belonging to a Neo-Babylonian lady buried there.

"The number of graves opened and examined during the four months is 411. Of these, ninety-four contained plain or ornamented slipper-shaped coffins, twenty-seven bath-tub-shaped, twenty-three in the form of a box, four so-called bread-tray coffins, four caldrons, twenty-four caskets, all made of poorly baked clay. In 182 cases the bodies had been placed in large urns, jars, or vats, twenty graves were constructed of unbaked brick, ten of burned brick, in thirty-one cases the burials had been made in loose earth.

Interesting and instructive in more than one way are the human remains found in these graves. Twelve tombs contained two skeletons each, three were occupied by three skeletons each, in one were found four, and in another even forty-three skeletons. Two hundred and eighty-three graves contained skeletons of adults, fifty-four of infants, eighty-two of youths; in other tombs the human remains had almost completely disappeared or crumbled into a small heap of dust.

He will do no regular work without pay in advance. His word can not be depended upon. He feigns friendship, but has no loyalty. He never reveals anger, but will with the most profound calmness avenge himself by waiting patiently the opportunity to use his bowie knife with effect."

The reasoning of a native and of a European differ so largely, that the mental impulse of the two races must ever clash. No number of years of intercourse will arouse in the native breast a perceptible sympathy to the white race. He is momentarily obedient, but is averse to subjection. The domesticated Tagalog native has made greater advance towards civilization; he has a sociable genial nature and is very hospitable. He bears misfortune with the greatest indifference, and is the most tractable of all people; he never insists upon doing his own way, but strives to do as he is told. So long as he gets his food and fair treatment, he is content to act as general utility man, but he knows the duties of no occupation efficiently. Neither of the races has any idea of organization on a large scale, hence a successful revolution is not possible, if confined to the purely indigenous population unaided by others.

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RACE PREJUDICES IN THE PHILIPPINES. The preceding quotation from Foreman's book makes an article which appeared in the August number of *The Popular Science Monthly* doubly important. This article is by Ferdinand Blumentritt, who represents that the better class of Filipinos have formed a very unfavorable opinion of the white race, as unfavorable, perhaps, as we have of the worst class of the Filipinos.

It is not a prejudice against color, such as we have against the black men here; or physical traits, such as many Americans have against the Negritos; but against habits, disposition, and mental attitude of the whites.

"The school statistics show the Filipinos to be superior to the Spanish. The motive of the natives against the self conceit of the whites has been making itself felt for twenty years."

"The European and American whites have not made a good impression on the colored Filipinos. The Philippine creoles feel as one with their colored brethren."

Now, these two extracts must give pause to any hasty judgment. On one side we might think the people too low to be fit for freedom, and on the other, too intelligent to be subjected to our dominion; but between the two we may conclude that our great work is to disarm prejudice and view the people in a true light, and then read our duty in the facts as they come out. If there are debaucheries and excesses among the whites, which surprise the Filipinos, we may well listen to the motto "Physician heal thyself."

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PROFESSOR PUTNAM'S ADDRESS. Professor Putnam has taken the ground that there was a diversity in the population of America in prehistoric times. He bases his opinion upon several hypotheses. First, the skulls are different, as there is an Eskimo type, a so called Indian type, a northwestern brachycephalic, a southwestern dolichocephalic, a Toltec, Antillean, ancient Brazilian, Fuegian and pre-Inca type. Second, the art is diverse. The art of the brachycephalic people extends from northern Mexico to the Mississippi and Ohio valleys; disappears in the Alleghanies, spreads southward to Mexico and Honduras, and vanishes in South America. The earthworks of the Ohio valley form an important part of this art, and show the difference between these southern tribes and the northern tribes, who were called by some Red Indians. Third, languages. The existence of more than a hundred and fifty different languages, suggests a diversity of origin. Fourth, the antiquity of man on the continent dates back to the Quaternary times, and to the Paleolithic Age, but there were later accessions during Neolithic times.

These are mere hints, but Prof. Putnam puts the points before us so clearly and positively, that they must have force, and this side of the subject will, after so many years, finally gain a hearing. The authority of names can not longer hold the discussion back, though the facts must be carefully examined, if the position is to be maintained.

A HISTORY OF THE GERMAN LANGUAGE. By Charles W. Super, A. M., Ph. D.; President of the Ohio University. Columbus, Ohio: Harris & Adair, 1893.

The first mention of the Germans was by Pythias 340 B. C., he called them Teutonics of the Cythian stock. Sweden has been regarded by some as their original home, but Finnish antiquities are found in almost every part of Sweden, and a natural supposition is that they were driven north of it by the Germans. In Caesar's time the Rhine was the boundary between the Germans and the Celts. On the east they were shut in by the Slavs; the boundary on the south was the Hercynian Forest. A tribe of the Germans north and west of the Danube made an alliance with Perseus, King of Macedonia, against the Romans, later they were in the service of Mithridates, King of Pontus. In the third and fourth century, they were on the Rhine, with Worms as the capital; here the legends of the Niebelungens find them.

Of the great family of languages designated as the Indo-European there are nine different groups. In the west the Celtic, spoken by the people in Scotland, Wales, Ireland, and France. The oldest works of the Welsh dialect date from the eighth century. The Slavic is the most easterly, and is the principal language of Russia, the Polish, Bohemian, Servian, and Bulgarian. It is spoken by ninety millions of people. The Greek and Latin are branches of the Indo-European. The Germanic group embraces German, Dutch, English, Danish, and Swedish, and contains the most important works in literature, science, and all the arts. The oldest specimen of literature is in the Meso Gothic dialect. It dates from the close of the fourth century and consists of the translation of the Bible by Ulfilas. From this on to the eleventh century we meet with religious poems, translations of the Bible, liturgies, and sermons.

The rise of Protestantism was favorable to German. Before that, books were printed in the Latin language. Luther had a great influence upon the German language. As to grammar, it appears that all the nations were backward. The first Greek grammar was composed about half a century B. C., and the first grammatical study of the German dates from the days of Grimm. The written language embraces the Swedish, the Norwegian, the Danish, and the Icelandic; all of which are Scandinavian. There are no manuscripts in these languages of earlier date than the twelfth century. Neither have we access to the most important branch of the German language in its primitive unity. We have no means of knowing when the Visi-Goths separated from their brethren, nor where this separation took place. Neither is it possible to ascertain the extent of territory covered by the various languages during the first centuries of our era, before the time when the first literary monuments begin. In that proto-historic period the Germanic tribes were a mass that was almost constantly in motion. At the period from which we possess manuscripts written in German proper, the various branches of the original tongue diverge considerably from each other, and likewise from the Gothic. The Anglo Saxon was the speech of the Anglo Saxons and Jutes, and is called English and dates to the conquest of Hengist and Horsa. The oldest German poetry consists of fragments of the song of Hildebrand his alliterated verse dates to the ninth century.

MAXIMILIAN IN MEXICO. A WOMAN'S REMINISCENCES OF THE FRENCH INTERVENTION 1862-1867. By Sara Yorke Stevenson, Sc. D. New York: The Century Co.

This is a very charming book, and one which brings the tragic scenes of Maximilian's life and death vividly before the reader. The writer was, when a young lady, familiar with the notabilities of France, and seemed to know the true motives which actuated Napoleon III. in sending armies to Mexico. Her brother was murdered in Mexico, and she took the long and dangerous voyage and went into the midst of the scenes of danger in consequence of this untoward event. She was familiar with all the movements of the different armies in Mexico, and gives a description of many of the generals. The final fate of Maximilian was a sad one. Anyone who takes this volume in hand is sure to read it through, as it is very fascinating.

RUINS OF THE SAGA TIME. BEING AN ACCOUNT OF TRAVELS AND EXPLORATIONS IN ICELAND IN THE SUMMER OF 1825. By Thorsteinn Erlingsson, on behalf of Miss Cornelia Horsford, Cambridge, Mass. U. S. A. London: David Null, 270 Strand, W. C.

THE RULERS OF THE SEA. By Edmond Neukomm. Illustrated by G. Bonx and L. Bennett. Boston: Estes & Lauriat.

THE VOYAGES OF THE CABOTS. LATEST PHASES OF THE CONTROVERSY. By Samuel Edward Dawson, Lit. D. From the Transactions of the Royal Society of Canada. Ottawa: James Hope & Co. Toronto: The Copp Clark Co.

CABOT'S DISCOVERY OF NORTH AMERICA. By C. E. Weare. J. B. Lippincott Co.

The various books which have been written upon the voyages of the Norsemen and explorations of the Cabots are necessarily founded upon very uncertain data. Every effort has been made to strike upon a solid foundation, but somehow the facts are so obscure and difficult to ascertain, that no book can be fully relied upon. Miss Horsford has expended considerable money to ascertain about the remains of the Norsemen in Iceland and by that means identify the ruins which her father discovered near Waterford, Mass. The especial benefit brought out by the publication, is that it gives to us an idea of what the houses of so-called "farmers" of the Norsemen were, and in what respects they differ from modern houses.

As to the Cabots it may be said that they have not left any material token of their presence, and we must rely altogether upon tradition, rather than upon any definite proof, for locating the spot where they made their landfall, though the latter remains may assist us. The celebration of the four hundredth anniversary of the landing of John Cabot and the planting of the English flag in the western world was an act of justice. This landfall occurred upon Cape Farewell, located in the year 1497 as on the east coast of the island of Newfoundland, located then on the coast of northern Labrador. The subject was raised in the Royal Society of Canada in 1896, and the controversy was soon raised sharp over the question whether the landfall was made by Norse and not John Cabot, as distinguished by the name of the island. There are two localities on the North coast of Newfoundland, Cape St. John, and the other, at the tip of the island, Cape Farewell. Judge Browe holds to Cape Farewell, and the late Dr. Huxley, of the Geological Survey of Newfoundland, also holds to Cape Farewell. Dr. Huxley adheres to Cape Farewell, and holds to the west passage. The theory of the west passage is that the Cabots sailed to Cape Farewell in the year 1497, and that they sailed westward for a period of six years. It appears that the Cabots sailed to Cape Farewell, and that they sailed southwest, and some of the explorations of the Cabots, and fall to the westward of Cape Farewell, and some along the coast of Labrador, and some along the coast of Newfoundland, near Cape St. Peter's.

THE EARLY HISTORY OF THE STATE OF NEW YORK. By John Jay. Edited by John Jay. Boston: Lee and Shepard.

THE HISTORY OF NEW ENGLAND. By John Jay. Edited by John Jay. Boston: Lee and Shepard.

THE HISTORY OF NEW ENGLAND. By John Jay. Edited by John Jay. Boston: Lee and Shepard.

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EDITED AND PUBLISHED AT CHICAGO, ILL.

BI-MONTHLY. TERMS \$4.00 PER ANNUM.

SOLD AT

537 Madison Avenue, Chicago.

Kegan, Paul, Trench & Co., London.

Entered as Second-Class Matter at Chicago, Illinois

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The Cliff-Dwellers and Pueblos.

BY

Stephen D. Peet, Ph. D.

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A comparison is also made of the Cliff-Dwellers' relics, others to their social conditions, and still others to their agricultural arts, to the contrivances for irrigation, and to the various handicrafts. The contrast between the Cliff-Dwellings and the Pueblos which at present occupy the region.

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