



Many fine specimens of ivory tusks are to be found in the exhibit of the Brunswick-Balke-Collender Company. Some of these are quite straight while others are spiral and twisted. A pair from Zanzibar measure 8 feet 4 inches and 8 feet 5 inches respectively in length, and they are remarkably fine mates.

Grand Rapids, Mich., prides itself upon being a furniture center of the earth. There are at present sixty-two furniture factories in that city, and seventeen of them combined and made up a novel exhibit in the Manufactures and Liberal Arts building. This exhibit has been of great service to the American public, but more especially so to the foreigners at the Exposition, both because of the fine quality of the workmanship and the reasonable prices.

One of the most attractive sections of the space occupied by this exhibit is a corner fitted up as a sleeping room with five pieces, each made of bird's eye maple. The set is valued at \$1,000, and is made up of contributions from four manufacturers. There is a good deal of hand carving on this and most of the other furniture, which attracted the admiration of the French workmen. The many pieces of furniture made of mahogany show that this wood retains its popularity. There are several elaborate folding beds of old San Domingo mahogany. One of these is elaborately trimmed with gold-plated brass ornaments, and comprises, besides a folding bed, a wardrobe, writing desk, chest of drawers, etc. It is valued at \$2,500. One room fitted up as a dining room is furnished with a dining table and chairs to match, sideboard and side table of rich mahogany, all in colonial style. Another room is fitted up as a sleeping apartment with four elaborately carved mahogany pieces, which are valued at \$1,400. Most of the furniture is designed on French lines, but is Americanized, as it has strength and solidity added to it, and there is a great variety of designs, as these factories change their styles twice every year—January and July. The furniture shown in this exhibit was taken from the stock manufactured during the period between January and July last. It is now, however, out of date, new patterns having superseded them.

The only comparatively cheap furniture is the furnishing of a sleeping apartment with a set of three pieces of curly birch. This wood is becoming very popular.

Guatemala gives an excellent idea in its building of the type of houses occupied by the wealthier classes in this and other republics at the South. In the interior court of the building is a fountain and a large display of orchids and other tropical plants. The exhibit is surprisingly large and varied, and is classified in different rooms under the heads of agricultural and natural products, geology, fauna, flora, liberal arts and manufactures. The display of birds and animals is excellent, and in the department of natural products coffee and cabinet woods are the most attractive features. Coffee is sold in a little pavilion adjoining this building, in order to make it popular in this country.

Colombia exhibits more aboriginal antiquities of both pottery and metal work than the other southern republic. There is also shown in the building of this government a collection of insects and brightly colored butterflies. The handiwork of the native Indians is well shown by many specimens of carved wood, wax figures, etc., illustrating traits in every-day life among these natives.

The exhibit made in the department of manufactures in the British section of the Palace of Manufactures and Liberal Arts is interesting. Nearly all the well known manufacturers of high grade china make displays that are not excelled, if equaled, by anything in their line at the Exposition. The display of Royal Worcester ware is very complete and comprises many beautiful vases, dining sets, lamps, etc. The largest piece of this ware ever made is a vase very graceful in design and richly ornamented, and valued at \$6,000. The display of Cauldon china has attracted particular interest, particularly the set of a dozen plates called the "Evangeline" set, each plate having painted in its center a picture executed by Boullemier, representing an incident told in this poem of Longfellow's, so that the set practically recites the poem. The price of this set is \$2,000. These plates have probably been sought out more than any other special work in the exhibit of china. The Shakespeare vase is another popular piece. It stands three feet high, and on the base are four figures representing "Comedy," "Tragedy," "History" and

"Poetry." The vase is elaborately ornamented. There are eight panels, a Shakespearian heroine being painted on each panel. This painting is also the work of Boullemier. Still another work by the same artist is the Columbus vase. Doulton, Coalport, Minton, Wedgwood and other well known wares are also represented. A Lambeth vase most elaborately designed, six feet three inches high, is one of the striking pieces. This piece was purchased by the Gaekwar of Baroda. In the Wedgwood exhibit are many beautiful specimens of *pate surpate* ware and reproductions of the famous Jubilee vase presented to Queen Victoria in 1887.

There is a notable display of reproductions of Irish antique art metal work. Many of these pieces date back from a thousand to fifteen hundred years, and would be considered not only fine but decidedly artistic in the present day, with all the advantages that the progress of the intervening centuries have brought. Among the most interesting things of this display is the collection of gelts, which are the oldest weapons known in history next to stone weapons. These are made of an alloy of bronze. There is also a remarkable well made iron bell called the Bell of St. Patrick, which is believed to be the oldest relic of Christian iron workers.

In the division of household decorations the display of embossed and tapestry wall paper and other draperies is excellent, and as a combination of the various exhibits in this division, there is shown a reproduction of the Hatfield banquet hall. This room is exceedingly rich in antique and carved oak, tapestries, and other old reproductions. In the section of floor coverings, several rugs are shown which represent an amount of handwork which is quite beyond the comprehension of an American. The choicest of these is a small rug which occupies a glass case by itself. This rug is made of silk and each square inch contains over two hundred stitches, each stitch being tied separately by hand. The entire rug represents 400,000 such stitches. It required twenty-eight miles of the finest silk thread to complete this work. Another fabric equally as incomprehensible in the amount of handwork it represents is the finest piece of linen ever made. It is most delicate fabric and contains six thousand threads in the width of thirty-six inches. But in the display of Irish lace is a piece of handwork much more delicate in appearance and which apparently required more skill in making than either this linen or the rug. This lace is made of the finest thread of two-ply Shetland wool. It is two yards and a half square, weighs two ounces and a quarter and contains about eleven thousand yards of the two-ply thread or twelve miles of single yarn.

The display of fine arms made by British manufacturers is a very popular resort to men and especially to Westerners. Well known makes of shot guns and rifles are exhibited, and there are models large and small showing the action of several makes of guns, also illustrating the working of some of the new hammerless guns, shell extractors, etc. In the Greener exhibit are the latest Martini-Henry rifles, also other rifles, including double barreled elephant rifles and the new regulation 0.303 repeating rifle. The size of the elephant rifles and the fact that they have such large bores and that they shoot shells is an endless source of comment. A still larger gun shown in this section is the Greener whaling gun. It has been used for many years in the British whaling service for shooting whales. Its limit of range is about six hundred yards.

A fish hook manufacturer displays in an adjoining exhibit a lot of hooks so fine in size and light in weight that 500,000 of them weigh only 22.77 ounces avoirdupois. In this exhibit there are also fish hooks of all sizes and for all uses as well as all kinds of flies. In this section wire is made into fish hooks and needles. The full operation of making the needle from the coil of wire to the finished article is shown, and is extremely interesting.

In a modest display of druggist supplies is shown the medicine chest that Stanley took with him on his last trip through Africa. It comprises a solidly built wooden box incased in an outer box of tin. There are forty bottles in the box, each bottle in the box being labeled. The various tabloids remain now just as they were when the case was brought home by the explorer, except that pieces of cotton are stuffed in each bottle to prevent the tabloids from being broken by any jar. Accompanying this box is a little covered pamphlet bearing the words "Traveler's Medical Guide, H. M. Stanley." On the inside to the cover of the box is a little case containing a full outfit of surgical instruments.

Of the exhibits made by the colonies of Great Britain in the Manufactures and Arts building, the most attractive and interesting is that of India. The gem of the exhibit is an India room constructed almost entirely of teak wood, elaborately carved. The interior is finished with the same completeness that the exterior is, so far as the carving is concerned, and the ceiling is laid off with panels, while the cornice is very heavy carving in teak. The furniture and draperies are also

of oriental manufacture. Considerable teak carving is also shown in the other spaces occupied by India. The larger part of the exhibits however are of Benares ware, carved ivory and sandal wood, cutchwork in solid silver, Bombay Delhi, and Jaypore pottery.

In the Ceylon exhibit is a pagoda of octagonal design after the manner of Cingalese ecclesiastical architecture. The posts of this pagoda are of ebony, satin wood and jak wood, elaborately carved in oriental style. There is also an exhibit of native cutlery, metal work, basket work, etc.

The exhibit of cooking stoves in the German exhibit would bear close study and observation by American stove manufacturers, so far as appearance is concerned. Some of the American made stoves are very elaborate in the ornamenting in the iron casting and in nickel plated trimmings, but the German stoves are finer in effect, more artistic and more attractive by the use of tiles in place of iron.

The second week in October brought a most remarkable attendance at the Exposition. During seven days there were 2,121,794 paid admissions. This falls but a little short of the entire attendance of either the months of June or July, and is nearly one million more than the attendance during May.

The banquet tendered the representatives of all the foreign nations and states represented at the Exposition was held in Music Hall, October 11, and was the greatest social event since the Exposition opened. Covers were laid for 450 and the hall was profusely decorated with flags of all nations, while all national airs and other distinctive music was provided throughout the evening. The galleries of the hall were occupied by ladies. Thousands of palms, roses, and other decorative plants and flowers transformed the hall into a bower of verdure and color. This banquet was purely unofficial, although it was tendered the representatives by those who have been active in creating and managing the Exposition.

Homes and Remains of the Cliff Dwellers.

BY H. C. HOVZY.

A rugged mass of staff, building paper, and sheet iron stands near the Anthropological building at the World's Fair, painted in imitation of red sandstone, and with beetling ledges and strange surroundings. A sign tells us that this is the Cliff Dwellers' exhibit; and we learn, on inquiry, that it stands where it does with the approval of Prof. F. W. Putnam, chief the Department of Ethnology. The structure is designed to represent a Colorado land-mark, known as "Battle Rock," but called "Spirit Rock" by the Utes and Navajoes. Here dwelt cliff men, whose singular habitations are found by thousands, though long tenantless, not only in Colorado, but also in Utah, Arizona, and New Mexico. According to Schwatka, similar abodes are still occupied in Mexico; but the more recent researches of Lommholtz show them to have belonged to a different and later style of architecture. Attempts have been made, with good success, to reproduce the cliff dwellings on a small scale, by Messrs. Jackson & Holmes, and casts are for sale by Mr. Ward, of Rochester.

It was reserved for Mr. H. Jay Smith, of Minneapolis, aided by the liberality of Mr. C. D. Hazard, of the same city, to develop the idea on a surprising scale and with much accuracy. On meeting Mr. Frank Cushing, the white Zuni chief, I asked his opinion of their cliff dwellers' exhibit. His emphatic reply was: "It is magnificent, both in conception and development; and its museum is unquestionably genuine and very representative." Probably there is no better judge of such matters than he. More than one hundred thousand persons have visited this quaint exhibit; some of them men of science, but mostly people from the common walks of life, who probably took their first lessons in anthropology and archæology from the intelligent and obliging guides.

The structure now described is 200 feet long and 65 feet high. In inclosures around it are kept domesticated wampiti, deer, mountain sheep, and other animals peculiar to the region. Precipitous trails wind over the hill, and at all hours of the day may be seen people climbing afoot or riding on the sure-footed burros kept for service. In the crevices of the quasi rocks cacti, sage brush and yucca plants maintain a struggle for existence. On each side of the entrance are ruins of estufas, through one of which we are admitted on paying the small sum requisite for maintaining the exhibit. What an abrupt transition from the brilliant displays of modern art and manufacture to these ancient forms of human life.

At the head of the canyon stands the Cliff Palace, reproduced on a scale of one-tenth the actual size. The model is 43 feet long; hence we infer the original to be 430 feet in length. The village (for such it is, rather than a palace) contains on the ground floor 127 rooms; but it is thought that there must have once been as many as 600 in all the stories. Some of these are round and others square, and they are of various sizes. Some were doubtless temples, others watch towers and others granaries. But most of them were

(Continued on page 279.)

Notes from the World's Columbian Exposition.
(Continued from page 275.)

plainly habitations for separate families thus grouped into a community numbering perhaps 1,200 souls. One cannot help wondering what chance the boys and girls of such a cliff city would have for playing around its formidable ramparts, or what opportunity lovers might have for moonlight strolls. The theory is that the walls were built up solid from the floor of the shallow cave to the overhanging ledge. The masonry, though rude, is excellent. No tools of iron were used, and the mortar was laid on by hand, yet those walls have stood for centuries.

As we advance we pass on our right the Square Tower House, four stories high, though originally from seven to ten. It was built, like all these structures, many hundred feet above the foot of the cliff; and there its people lived as a peaceful community ages before French flats or Chicago tenement houses were thought of. The Balcony House opposite shows how the stories were separated by cedar beams, whose projecting ends were used to support porches overhanging the tremendous gorge below. The houses had doors and windows, and did not seem to have adopted, generally at least, the pueblo style of mounting by outside ladders. We saw ladders, however, in the collection. The stone doors were also shown, and the wooden loops and staples by which they were hinged. There are models of the High House and other fortifications. These names, it should be observed, were not used by the occupants, but were given by the roving cowboys or wandering tourists. The necessities of the exhibit bring the dwellings into proximity to each other, though the guides are careful to say that in fact they stand many miles apart. Some were found in the Mancos canyon, others in the McElme canyon, others again scattered over the Mesa Verde, or up and down the Montezuma valley. The cliff dwellings that I visited in Arizona were altogether of limestone; but those of this region were of red sandstone. Almost my only criticism on this exhibit is that while the cliffs are made to represent red sandstone the dwellings appear to be of limestone. On inquiring of Mr. H. L. Paquin, the artist who did the modeling, I was told that he had intended to be as exact as possible, but it seemed desirable for artistic effect to show a contrast in color. Usually the guides explain this fact.

Entering a grotto on our right, we find that it is merely to display in a novel and striking way numerous fine, large paintings by Mr. Alexis Fournier. These pictures are fitted into alcoves and lighted from above by electric lamps. Mirrors in the opposite wall multiply the seeming number of the views, and also give them the appearance of standing forth from the actual canyons amid the singularly soft, pure atmosphere of Colorado. Besides reproducing thus the dwellings already seen in model, the artist shows the Spruce Tree House, through whose ruins grew a tree with 167 rings; the Ruined Castle; the Long House, extending for 625 feet; and the She House (so named by a lady who had read Rider Haggard's novels), where was found a mummy in a remarkable state of preservation, and which is among the curiosities shown in another room.

Returning to the main canyon, we next inspect excellent reproductions of estufas of nearly the actual size of the originals. These sacred edifices were for tribal and ceremonial uses, sheltered the sacred fires, were entered by T-shaped doors, through which none but men were admitted. The largest shown had six recesses. The arrangements for heat and ventilation were on most approved scientific principles. A cold air duct let in the pure outside air. The fire was kindled nearly in the middle of the room. A stone screen was so adjusted as to compel the flame and smoke to curl over its top in order to escape through the flues in the wall behind it.

Full-sized models of the rock tombs were next shown, where the mummies were found among weapons, trinkets, and garments, under thick layers of dust, which, as it was said, was so poisonous as to make it necessary for the diggers to protect their nostrils with sponges while excavating. The extraordinary preservation of these remains and other contents both of the graves and estufas is due to their sheltered location, where, for centuries, they were never wet by rain, touched by frost, nor scorched by the sun. The paths by which the old inhabitants approached their dwellings, perched from 500 to 900 feet above the valley below, must always have been steep and difficult, and they are now worn away by the action of the elements.

The pioneers of the work of exploration, so far as this region is concerned, were Mr. B. K. Wetherell, his four sons, and his son-in-law, Mr. Mason. These, though ranchmen, were persons of a good education; and when they discovered the Cliff Palace while hunting stray cattle, they knew the value of the find. For the last five years these hardy men have devoted their whole time to explorations in Colorado, at first independently and more recently under the direction of the State.

The original collection made by the Wetherells, and two smaller ones since made by them, were purchased

and added to the results of the H. Jay Smith exploring party. All these are shown in a long hall entered from the canyon already described and lighted by electricity. The museum boasts more than 2,000 relics, all from cliff dwellings.

And here particular mention should be made of the splendid display of similar objects from the same region, in the Colorado exhibit, in the adjoining Anthropological building, mostly gathered by the Wetherells and Messrs. McLoyd and Graham, and under the personal care of Mr. A. F. Wilmarth, who represents the interests of the State, and to whom the writer is indebted for valuable assistance in the line of reliable information. In company with Prof. F. W. Putnam, Mr. Frank Cushing, and other scientific gentlemen, we spent many hours in examining the contents of both museums, and were satisfied of their unquestionable genuineness and inestimable value. As I am writing for the general public and not to support any individual interests, I feel constrained to say that the entire collection, including more than 4,000 specimens, and the finest of its kind in the world, should, on some fair plan, be secured by the State of Colorado, which should also control future similar collections.

In referring, as I shall do now, to the contents of these two museums, no attempt will be made to indicate in which of the two the specimens mentioned were seen, for they serve to illustrate the same region precisely and ought finally to be united under one management. It will, furthermore, be out of the question for me to do more than to designate a few of the more important objects seen, without trying to exhaust the entire catalogue of curiosities, every one of which has its history and its lesson to teach.

Of course there were metates and rollers for grinding corn, and mortars and pestles for pounding acorns and grain. There were axes with and without handles, war clubs, hammers and mauls. The arrow tips, spear heads and knives were made of a great variety of materials, *e. g.*, flint, chert, quartz, jasper, slate, diorite, and petrified wood. Wooden arrow heads were also noticed, some of which were tipped with flint. Some celts were rude and others polished, some sharp and slender, and others blunt and clumsy. There were whetstones for sharpening dull tools. There were bone knives, marrow scoops, daggers, pickers, needles, and awls. I saw a large ceremonial dagger that must have come from California. There were chalcedony scrapers for dressing hides, and flint knives with wooden handles. Numerous farming implements were shown, and also curious turkey crooks for catching the turkeys which they had domesticated and trained to come at their whistle. All kinds of charms and toys were to be seen, also elaborate ceremonial headdresses, necklaces of perforated snail shells, bone beads, etc. I noticed shuttle cocks, buzz wheels, and other means of amusement. Mr. Cushing read to our satisfaction several hieroglyphic tablets found among the relics, all being prayers for rain.

Hundreds of sandals were displayed, and the slate forms or lasts on which they were shaped—although it is a query if these slates were not really tools for moulding pottery. One sandal was of raw hide; others of yucca leaves, whole or split; and others again of fine cloth. Some sandals were fitted with loops and cords for lacing. Delicate patterns were wrought on others, either in colors or in raised figure of exquisite workmanship. There were sand shoes to be worn in deep shifting sand, after the fashion of snow shoes. We saw baby-boards for carrying papooses; fire sticks for kindling fire by friction, and bags of tinder for making the task more easy; wicker cylinders full of rock salt; purses of cloth and of buckskin; knitted bags, socks and needle-cases. It has sometimes been doubted if these ancient people had textile fabrics except those made from the yucca flax. But I saw the cotton seeds, the carded cotton, cotton on the spindle, in the ball and skein, cotton wicks in the lamps, and as many as a hundred pieces of cotton cloth, some plain and others figured. Parts of looms were shown. Wonderful fabrics of feather cloth were numerous, made by first weaving a coarse foundation of yucca cord, and then intertwining artistically the feathers of turkeys and other birds. Fur cloth was also made in the same way.

And then the pottery! Hundreds of ollas, bowls, mugs, pitchers, ladles, kettles with lids, vases of every pattern, lamps single and double, large and small, coarse and fine, plain and decorated after classic and oriental style, made one wonder if he were inspecting American relics or those from India, Greece, or Egypt. I saw one lovely vase inlaid with squares of mother of pearl. Others were painted red. There were paint pots and glue pots and vessels filled with pitch. Most of the pottery showed signs of use; but occasionally vessels were found as fresh and bright as if made yesterday. Some of the embellishments were of rare beauty. And it is essential for us to remember that these people had no knowledge of the potter's wheel. These articles were all shaped by hand or by slate tools. There was much coil pottery, some specimens being great jars holding from five to ten gallons. These were built up by long strips of clay crinkled

and coiled one upon another. Many other vases were "slip-enameled" both within and without.

In some of the ollas, and also in leather pouches and cloth sacks, were found quantities of corn, six different kinds being noted; also beans, pumpkin seeds, grass-seed, and seed of the portulacca. Experiments made by Mr. Wilmarth and others failed to make these grow. But Mr. Cushing told me that he succeeded in sprouting corn from more southern cliff dwellings. I was also informed that Baron Nordenskiold, of Norway, took specimens home with him and succeeded in effecting their germination by the aid of electricity. The failure in other cases may have been due to the fact that the germs had been destroyed by heat, cold, alkali, or by the attacks of insects.

But *who* were the people that cultivated these grains, ground the corn and made it into bread? Who wove and wore these ancient garments, admired these trinkets, handled these tools, fought with these weapons and worshiped in these estufas? Hundreds of mummies made silent but impressive answer. These were the cliff dwellers themselves. And they were a noble race! The skulls set in long rows behind the glass door were uniformly well shaped, except for the slight flattening by the baby-board, which was applied to the back of the head instead of the forehead. The care with which the living were attended was proved by our finding several padded crutches and surgical instruments in the museums; and the veneration for the dead was shown by the pains with which they were dressed for their long repose. Each body was placed with its arms crossed on the breast, and the knees drawn up to the chest, then wrapped in a large winding sheet of cotton cloth, next in a costly robe of feather cloth, and finally in matting of grass, reeds or willow twigs. The burial was in a tomb, along with the treasures that had been most prized in life. How strange it seems that tall warriors, matrons, graceful youth, and even tiny infants, after having been peacefully interred for ages, should now have been exhumed, freed from their cerements, and shelved for inspection at Chicago!

The framework of these people was usually perfect. The flesh was dried, like that of the Egyptian mummies they resemble, only being due to desiccation instead of embalming. I noticed that the teeth were remarkably sound, not more than five or six in the entire collection showing any sign of decay. The hair was soft and abundant, varying in color from a light brown to jet black, and occasionally to gray. Possibly these lighter hues were due to bleaching by ammonia or alkali.

We noticed among these withered human remains one most pathetic sight—a woman with her babe in her arms. Around the infant's neck was a tightly drawn rope, evidently made of the mother's own hair. The story thus suggested was that the woman having died a natural death, her child was ceremonially strangled to save it from starvation, or else in order that the mother and child might pass on to the spirit-land in company. Those ancient people had their tragedies and their festivals, their joys and sorrows, much as we do now; but for them life's banquet ended long ago!

How long ago? Who can tell? When we ask after their age, we at once embark on a sea of speculation. They do not seem to have had any knowledge of the metals, except as they used the ores for pigments; and this may be regarded as an indication of high antiquity. The stories told me as to the finding of bronze bells among their ruins are traceable to discoveries in Casa Grande and Los Muertes. Yet for my part I cannot regard all cliff dwellers as contemporaries. They were men of enterprise and commerce, as we have tried to show from the remarkable variety we have seen in their relics. Mr. Cushing told me that he had found living Zunis whose great-grand-parents were born and lived in cliff houses. Hence, doubtless, there were cliff men who witnessed the Spanish conquest, and who may even have been disciples of the apostolic Franciscans that bore the cross wherever their military comrades carried the sword. The cross appears in the ancient symbolism of the cliffs, not only in the form of the mysterious suastica, but in the form of the Grecian and the Maltese cross. Yet this fact should not be pressed too far, for there are other ways to account for the presence of the sacred emblem, which it is well known antedated the Christian era.

Many points of resemblance are to be seen between the cliff dwellers and the modern Pueblo Indians, and the evidence is strong that the latter are the direct, though remote, descendants of the former. The best authorities fix one thousand years as the minimum and three thousand years as the maximum period that has elapsed since the cliff dwellers played their part as a distinct race; although their descendants have, from time to time, under stress of danger or for other reasons, reverted for a season to the old habitations. Yet we cannot deny that it is surprising—even astounding—that such relics as have been now described should have been kept intact so long, and in such an admirable state of preservation. Regarded from any point of view, the exhibit and accompanying museums of the cliff dwellers, at the World's Fair, are wonderful.