

OUR COMIC SECTION

Along the Concrete



Hidden City of the Incas



Mountain Valley in the Machu Picchu Region.

(Prepared by the National Geographic Society, Washington, D. C.)

ONE of the most remarkable accomplishments in uncovering the secrets of the past in the Western hemisphere was the discovery a few years ago of Machu Picchu, hidden refuge city of the Incas, in the mountain fastnesses of Peru. The discovery was made by an expedition sent out by the National Geographic Society and Yale University under the leadership of Prof. Hiram Bingham, now United States senator from Connecticut.

There is no part of the world which offers to the scientific explorer a more attractive field than the highlands of Peru and Bolivia.

In the first place, this region contains the vestiges of the most ancient and most advanced culture in South America. These remains consist in part of the ruins of roads and aqueducts; walls and terraces, fortresses, towns and cities. Besides the works of the ancient engineers and architects, there are the fragmentary remains of the ancient metallurgists, potters, and weavers. Here and there in old burial caves may be found specimens of bronze and silver ornaments, tools and utensils. Originally there was considerable gold to be found; but four centuries of treasure seekers have left so little in the way of precious metals for the modern explorer that he must have other objects in view or he will be sadly disappointed.

The larger part of the population of this lofty American Tibet today is composed of non-Spanish speaking Indians. Their commonest language is Quechua or Quichua.

The historical geography of the Andes of Peru and Bolivia offers a series of problems of intense interest. These include the origin of the ancient cities, such as Tiahuanaco, Cuzco, and Machu Picchu; the relation of the different types of architecture, including the monolithic, the adobe, and the rubble; the question of the migration of races, the spread of the ancient civilization, and the sequence of cultures, besides a thousand and one queries as to the manners and customs, government, religion, and philosophy of these illiterate but very skillful engineers and soldiers, the Incas, and their predecessors, the "Megalithic Folk."

Had System of Highways.

Machu Picchu was first found after a climb over mountain ridges and along sheer cliffs. Later the remains of old highways were found. It thus appears that the builders of Machu Picchu had an elaborate system of highways throughout this little known and almost unexplored country which lies between the Urubamba valley and the Apurimac. This region was once densely populated, and Machu Picchu was its capital. There are no other ruins in the region that approach the hidden city in magnificence, although there are a great many whose architecture bears a striking resemblance to the less important buildings in Machu Picchu itself.

Study of the remains found at Machu Picchu indicate that we have here an essentially Inca city, using the term Inca in its most reasonable sense—that is, to designate the tribes and nations that occupied the major part of the central Andes from earliest times down to the Spanish conquest.

Lack of timber, the prevalence of heavy rains during part of the year, and the ease with which stone might be procured early led to the development of stone as a building material. Strength and permanence were secured through the keying together of irregular blocks. The upper and lower surface of these stones were frequently convex or concave, the convexity of one stone approximating the concavity of the adjoining stone.

In constructing their walls the pure arch was not evolved. They developed several ingenious devices such as "lock-holes" for fastening the bar back of a door; "ring-stones," which were inserted in the gables to enable the roofing beams to be tied on; projecting stone cylinders, which could be used as points to which to tie the roof and keep it from blowing off. The ancient builders also provided for ventilation and drainage.

Although the buildings are extremely well built, there is no cement or mortar in the masonry, and there is

no means of preventing the roots of forest trees from penetrating the walls and eventually tearing them all down. In several cases gigantic trees were found perched on the very tips of the gable ends of small and beautifully constructed houses. It was difficult to cut down and get such trees out of the way without seriously damaging the house walls.

City of Refuge.

Machu Picchu was essentially a city of refuge. It is perched on a mountain top in the most inaccessible corner of the most inaccessible section of the Urubamba river. Apparently there is no part of the Andes that has been better defended by nature.

A stupendous canyon, where the principal rock is granite and where the precipices are frequently over 1,000 feet sheer, presents difficulties of attack and facilities for defense second to none. Here on a narrow ridge, flanked on all sides by precipitous or nearly precipitous slopes, a highly civilized people—artistic, inventive, and capable of sustained endeavor—at some time in the remote past built themselves a city of refuge.

Since they had no iron or steel tools—only stone hammers—its construction must have cost many generations, if not centuries, of effort.

Across the ridge, and defending the builders from attack on the side of the main mountain range, they constructed two walls. One of them, constituting the outer line of defense, leads from precipice to precipice, utilizing as best it can the natural steepness of the hill.

Beyond this, and on top of the mountain called Machu Picchu, which overlooks the valley from the very summit of one of the most stupendous precipices in the canyon, is constructed a signal station, from which the approach of an enemy could be instantly communicated to the city below. Within the outer wall they constructed an extensive series of agricultural terraces, stone lined and averaging about eight feet high. Between these and the city is a steep, dry moat and the inner wall.

When the members of an attacking force had safely negotiated the precipitous and easily defended sides of the moat, they would still find themselves outside the inner defenses of the city, which consisted of a wall from fifteen to twenty feet high, composed of the largest stones that could be found in the vicinity—many of them huge boulders weighing many tons. This wall is carried straight across the ridge from one precipitous side to the other. These defenses are on the south side of the city.

On the north side, on the narrow ridge connecting the city with Huayna Picchu, strong defensive terraces were strategically placed so as to render nil the danger of an attack on this side.

Construction of the Houses.

On entering the city, perhaps the first characteristic that strikes one is that a large majority of the houses were a story and a half in height, with gable ends, and that these gable ends are marked by cylindrical blocks projecting out from the house in such a way as to suggest the idea of the ends of the rafters. The wooden rafters have all disappeared, but the ring-stones to which they were tied may still be seen.

The next most conspicuous feature of Machu Picchu is the quantity of stairways, there being over 100, large and small, within the city. Some of them have more than 150 steps, while others have but three or four. In some cases each step is a single block of stone 3 or 4 feet wide. In others the entire stairway—six, eight, or ten steps, as the case might be—was cut out of a single granite boulder.

The largest level space in the city was carefully graded and terraced, so as to be used for agricultural purposes, on the products of which the inhabitants could fall back for a time in case of a siege.

It seems probable that one reason why the city was deserted was a change in climate, resulting in scarcity of water supply. At the present time there are only three small springs on the mountain side, and in the dry season these could barely furnish water enough for cooking and drinking purposes for 40 or 50 people.

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Optimist Points Out

Silver Lining to Cloud

Barney Oldfield, the famous automobilist, said on disembarking at New York from his European tour:

"We are capturing more and more of the European automobile trade. In London, Paris, everywhere, you see thousands of American automobiles. Some people say that our trade is going to suffer in Europe now on account of hard times and so on, but for many reasons I don't accept that view. I'm an optimist there."

"The fact is, I'm an optimist everywhere. All things, I claim, have their bright side."

"Take, for instance, the old saying that few people practice what they preach. That is very sad, of course, but how much sadder it would be if we all preached what we practice!"

Boy of Ten Busy Criminal

Police officials of New Brighton, N. Z., are searching for a ten-year-old boy, who was a model pupil during the daytime and a cracksmen at night. After he was arrested and had confessed to 22 crimes, including 7 of breaking into and entering stores, he disappeared.

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