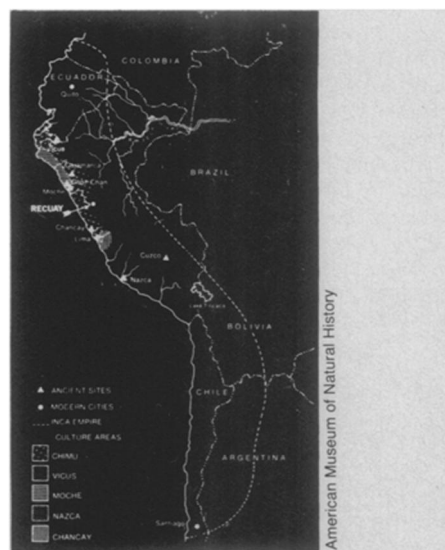


Golden Clues to the Mystery of the Andes

If the known history of the New World were written with one page for each year since the rise of civilization here, out of some 2,000 to 3,000 pages, all except the last 500 or so would be blank. But the illustrations would be magnificent. This mystery, this magnificence, has now been made more widely accessible to Americans through the most extensive exhibit of pre-Columbian gold ever to travel here.

Currently showing at the California Academy of Sciences in San Francisco, the exhibit has come to the United States from the Museo Oro del Peru, under the auspices of the Peruvian government. It has already toured New York and Chicago and will go next to Detroit and possibly other cities.



Moche pot in the form of a realistic portrait, a unique form in the New World.

A current exhibit of Peruvian treasures offers Americans their best glimpse yet of several ancient, enigmatic civilizations

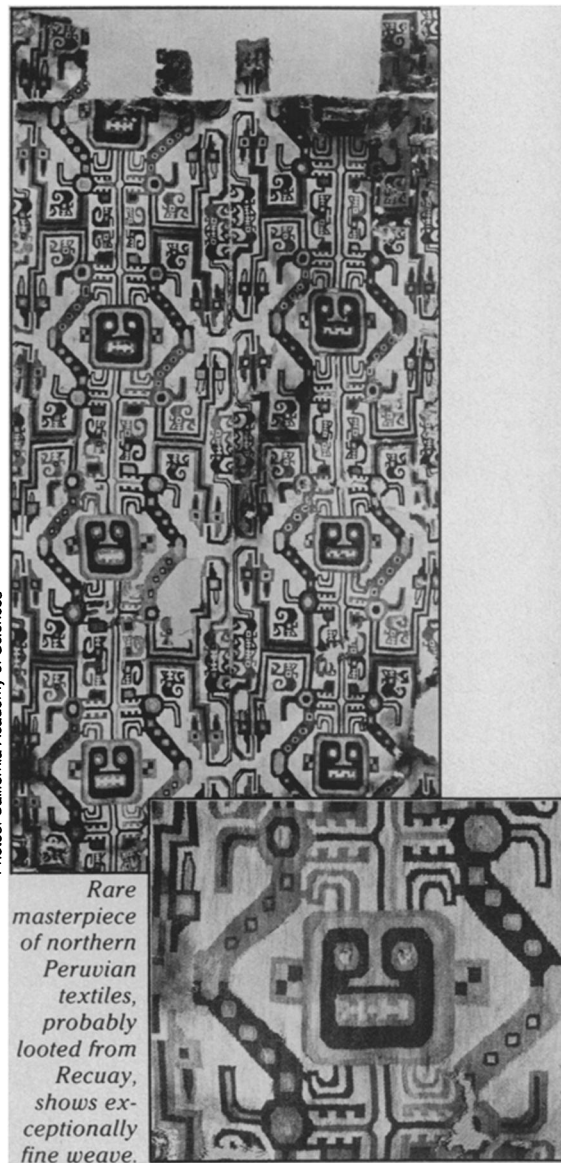
BY JOHN H. DOUGLAS

Since the time of the Spanish conquest, in 1532, early Peruvian civilization has usually been associated with the vast Inca empire the Spaniards found. Ironically, the Incas themselves were also lately established military conquerors, who had been in power for less than a century and whose art was largely the product of captive craftsmen from older civilizations. With the aid of guns, trickery, religion and smallpox, the Spanish quickly obliterated even the memory of the Inca empire and its predecessors. Then they began melting the golden art works into formless ingots as fast as slave labor and a frontier technology would allow.

That some artifacts survived to join a 20th century tour is an accident of history related to the steps by which civilization arose in this area in the first place. The conquistadores were more greedy than thorough: They never realized that the roots of the highland civilization they were plundering lay in remote areas of the Pacific coast. From under those coastal sands, in one of the driest deserts on earth, come most of these remaining treasures and fragments of the story of the people who made them.

Current research on the origins of Peruvian civilization, summarized for SCIENCE NEWS by Christopher Donnan, director of UCLA's Museum of Cultural History, centers on the unique circumstances by which scattered villages merged into larger population centers capable of supporting division of labor by classes, including craftsmen. These centers apparently did not arise with the development of agriculture, as in the Old World, he says, but rather grew up in the third millennium B.C. along the coast, based on an unusually abundant maritime harvest. (The currents off Peru still support perhaps the greatest concentration of ocean life anywhere on earth.)

When agriculture finally was developed by these coastal desert dwellers, they used water of rivers flowing from the Andes to irrigate their crops. How much interchange these coastal people had with their highland neighbors is still unknown, but until the rise of the Inca, coastal society seems to have remained more advanced. Indeed, one of the largest current land reclamation projects in the world is an



Photos: California Academy of Sciences

attempt to reopen just one of the ancient irrigation canals on the Peruvian coast.

From the earliest times, these ancient societies adopted a set of institutions very different from those common throughout the Old World. Perhaps the most important difference was the use of labor exchange instead of money—a practice that still exists on the village level throughout the region. Taxes, for example, were paid as portions of a crop or as a period of work for the state. These taxes, in turn, allowed the state to support the administrative class and the craftsmen that were gathered into principal cities. The system worked so well that only an elaborate counting technique—not abstract mathematics or written records—was necessary.

As a result, practically all we know about the various states that rose and fell in South America for three millenia comes from their art. Although this record is an exciting one in its variety, technical accomplishment and creativity, not enough artifacts have been found undisturbed to allow archeologists a chance to piece together a consistent story. The desert sands, particularly, have yielded well-preserved specimens of gold, cloth and pottery, but an incredible 99 percent of the treasure has been recovered by looting. What the Spaniards did not destroy, modern grave robbers have torn away from any meaningful context.

From the scant archeological data and a painstaking analysis of motifs and techniques evident in the available artifacts, four major regions can be distinguished as locations for thriving centers of art. One of the earliest cultural traditions, called the Vicus, was located on the far northern coast of Peru and seems to have disappeared as a separate entity more than a thousand years ago. The first discovery of this culture was apparently made by looters in the early 1960s, and very little is known about the period. Similarly, few works in the current exhibit represent the highland culture of the Incas, because of early Spanish looting. That leaves roughly the northern and southern halves of the Peruvian coast as sources for the majority of surviving goods and the locations of the other two major artistic traditions.

The southern coastal region is the site of a particularly durable artistic tradition, stretching back to the earliest days of gold working and reaching a long plateau of achievement during the so-called Nazca period, from about 200 B.C. to 700 A.D. Nazca art is typical of early Peruvian "corporate styles" that resulted when artists were supported directly by the state, which in turn dictated how their work was to be done. The gold mask on the cover, for example, probably reflects some symbolism important to the state religion of the time, and it would probably have been used in some state ceremony, say the burial of an important official.

The most famous of the Nazca artistic accomplishments, however, are huge line drawings created by raking gravel on the desert plain. (The weathered stones are dark on one side, light on the other.) Some of the markings are simple geometric figures, with straight lines that may extend more than 20 miles; others are smaller drawings of birds, spiders and even a killer whale.

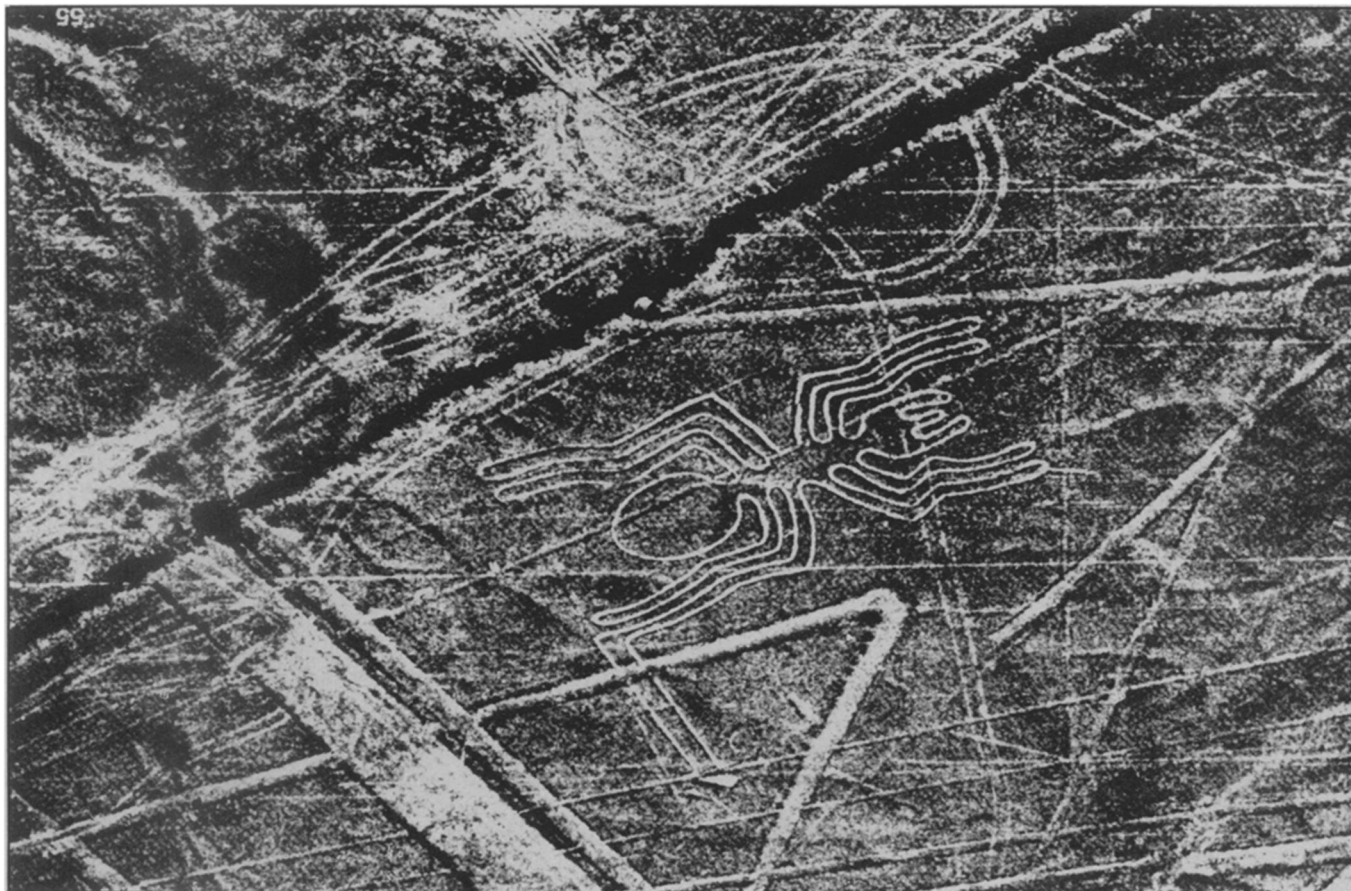
Unfortunately, the best-known interpretation of these markings is that of the popular author Erich von Däniken, who writes that extraterrestrial beings used the site as an "improvised airfield for their spacecraft." A lack of archeological data and the haughty silence of the scientific community have helped von Däniken sell such speculations in 35 languages with total book sales approaching 35 million copies.

Simpler explanations seem more plausible, although more research is needed to choose among them. In 1975, author-adventurer Jim Woodman demonstrated that the ancient inhabitants of the Nazca plain could have built a hot-air balloon to direct the work, using their finely woven textiles and a gondola of reeds from Lake Titicaca. Others have speculated that the figures were drawn using a giant grid.

However, University of California anthropologist Lawrence Dawson told SCIENCE NEWS that evidence collected at the site indicates an even simpler method of laying out the figures was probably used. Along the straight lines, he says, are stations where stakes were apparently driven into the ground, about a mile apart. The stakes could have been aligned with each other by eye and then a cord stretched by surveyors to lay out the lines in the same way one sets out a row of carrots in a garden. From his own observation, Dawson says, he believes the smaller animal figures could have been drawn without any mechanical aid. The subjects of these smaller drawings are also common motifs in Nazca pottery and textiles.

The river valleys of the southern Peruvian coast are rather small and never supported large populations. The continuity and uniqueness of their arts reflect the remoteness and independence of their inhabitants. The northern coast, however, was far more cosmopolitan. With fertile valleys and bustling cities, the region's

Mysterious Nazca desert drawings, including figure of a spider.





Tumi ceremonial knife and gold cup in the Chimu style of northern Peruvian coast.

wealth became the great prize of the conquering Incas, who swooped down from the mountains. Its artistic achievements served as a source and standard for the new empire.

Little is known about the nature or extent of the early state that apparently ruled much of this region, but from about 100 B.C. to A.D. 700 a corporate artistic style called Moche is common through much of the area. Perhaps the outstanding highlight of this cultural flowering is the group of pottery vessels representing individual portraits with a realism unique in the ancient New World. Moche artisans also developed gold-working techniques of considerable complexity, including hammering and engraving over wooden forms, annealing, gold-overlay, welding and soldering. A miniature ceramic model of a Moche smelter shows clearly how metalworkers blew through long tubes to produce a flame hot enough to refine ores or mix the various constituents of a desired alloy.

Around the eighth century A.D. the Moche style declined, presumably because of the waning fortunes of its parent state, to be replaced by a style called Chimu. This style was associated with the rise of the Chimor empire, centered at the coastal city of Chan Chan. Eventually, the empire's extent was second only to that of the Incas, who conquered Chimor in the mid 1400s. At the time of this conquest, the splendor of Chan Chan made the Inca capital at Cuzco "look like a rude village of peasant farmers," according to Field Museum assistant curator Michael E. Mosely, who wrote the informative guide to the gold exhibit.

The treasures of Chimor suggest a life rich with ceremony and even celebration. Of the Chimu artifacts shown here, we have no way of knowing the exact purpose of the elaborately sculpted *tumi* knife with

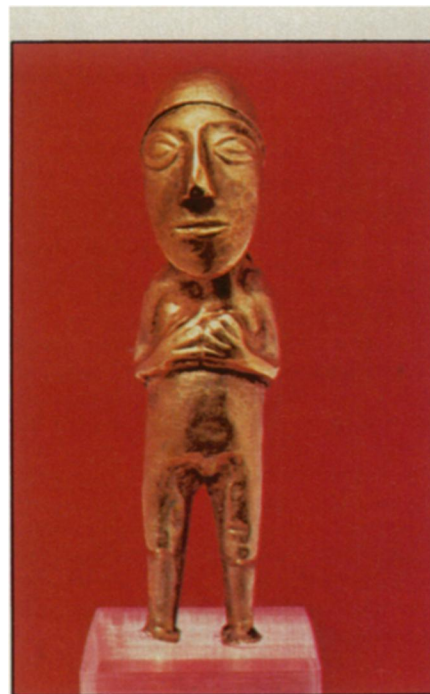
its crescent blade, but the soft gold would have been virtually useless for any but ceremonial function. Of the ample golden cup, however, evidence suggests that Chimor noblemen quaffed their maize beer with a gusto equal to that of their Renaissance European contemporaries. The story of how such a rich treasure was preserved for so many centuries is less happy: When a Chimor emperor died, his tomb was fashioned from the palace he had occupied during his reign—including a mass burial of servants to support him.

To complement the touring gold exhibit, the California Academy of Sciences is presenting a special display of Peruvian

textiles from its own collection, emphasizing the technical accomplishment of the ancient weavers. The fabrics from coastal regions have survived remarkably well, due to the dryness, and they include examples of almost every major category of textile structure. Using mainly simple looms formed by stretching longitudinal (warp) threads between the weaver's body and a post, the women of many ancient Peruvian cultures created clothing and ceremonial banners featuring complex designs and exceptionally tight weave. For the average Andean peasant, a well-woven poncho and a plug of coca leaves to chew on are still about all that make life bearable in the cold mountain air.

If these treasures of gold, tapestries and ceramics offer a tantalizing glimpse of a unique civilization suddenly halted in mid-career, they also raise a host of frustrating questions for the student of past cultures. Why, since succeeding kingdoms rose and fell by violent conquest, did the ancient Peruvians not use their technology to better military advantage? In the Old World, the development of bronze and iron ages rested largely on the use of these metals for slashing weapons, such as swords. Yet the Peruvians seem to have preferred cruder weapons, although they could easily have produced bronze swords and had imported a few bows and arrows for hunting. And what of the arts themselves — why should elegance and creativity have become so prized in societies lacking so many of the accomplishments associated with the other cradles of civilization?

We may never know, and the visitor to this exhibition can only share the archeologist's frustration in gazing at such a dazzling, enigmatic treasure. □



Inca figurine: one of the few to escape the smelters of early conquistadores.



Ceremonial banner with intricate design formed of horizontal (weft) threads.