

CHARLES-MARIE DE LA CONDAMINE'S REPORT ON INGAPIRCA
AND THE DEVELOPMENT OF SCIENTIFIC FIELD WORK
IN THE ANDES, 1735-1744

Monica Barnes
Cornell University
David Fleming
New York

Introduction

The archaeology of Ecuador deserves careful study with wide dissemination of results. However, much of the research which has been done in that country is often not fully accessible to scholars outside the Spanish-speaking world because this research has been published in sources of limited distribution. Furthermore, some work remains incomplete or perpetuates errors which have entered the literature. A case in point is studies of the great Inca and Cañari site of Ingapirca.

Ingapirca's architecture was first described in detail by the French scholar Charles-Marie de La Condamine in 1748, in a report which we have translated and published with this article. In some ways which are discussed below, La Condamine's account remains the best published description of the site's appearance. His plan and elevation are accurate enough to allow modern scholars to use them in reconstructing the site and its functions. However, his text has never been republished or commented upon in its entirety, and later copies of his figures contain serious omissions and inaccuracies. Therefore, we believe that our translation of La Condamine's complete original report into English, combined with high quality reproduction of his illustrations, will have considerable utility for modern students of Ecuadorian prehistory.

In the twentieth century we often ignore, misunderstand, misrepresent, or underrate the labors of our predecessors. There are many examples of work done in the seventeenth and eighteenth centuries by careful and dedicated observers which remain useful today. However, these are seldom consulted, except through the mediation of secondary sources, because they are written in languages, often Latin or Greek, that are not read by current practitioners; because modern scholars question their scientific utility; or because researchers believe that access to early editions would be difficult or impossible. The latter assumption is generally unwarranted because most libraries with important collections of rare works are willing to provide copies on film for the approximate cost of a modern printed book. Lack of familiarity with older work is regrettable, because in many cases the research carried out by earlier scholars provides first-hand experience with material that has since disappeared, or with people that have long been assimilated into the broader life of the countries in which they live. Furthermore, early research is often incompletely or inaccurately represented by twentieth century writers.

While classical scholars and students of the ancient Near East have long used the works of their predecessors as primary data sources and as providers

of valid interpretations,¹ social scientists working in South America have been reluctant to examine critically and use what would now be described as archaeological reports prepared two or three hundred years ago, with the exception of the purely historical and ethnohistorical portions. Twentieth century scholars have used the records left by nineteenth century travellers and investigators including Squier, Bandelier, and Raimondi, but scientific observations recorded before the travels of Alexander von Humboldt are not so often consulted.² In particular, both anglophone and hispanic writers rarely refer directly to the great mass of material dealing with the Pacific and South America in the eighteenth century compiled by a series of French explorers.³ Inspection and examination of what remains of such work will show whether observers compiled data meticulously and took pains to prevent personal bias from interfering with the recording and presentation of the evidence. In certain cases, there are corpora of "lost knowledge" which may profitably be compared with later work on these same subjects. The work of Charles-Marie de La Condamine provides one such instance.

Charles-Marie de La Condamine

Monsieur de La Condamine (1701-1774) was one of the more engaging figures of the mid-eighteenth century Enlightenment period of European history. He lived a long, active, and extremely productive life in the service of science.⁴

¹ An excellent example is the work carried out at the Achaemenid Persian capital city of Persepolis in south western Iran. The site was frequently visited and described by travellers from the seventeenth century A.D. onwards. The first account of the ruins there that was useful to scholars was prepared by Sir Robert Ker Porter at the beginning of the last century. Ker Porter was aware of previous visitors' accounts, and used them in preparing his descriptions of the standing remains. His work has been referred to in turn by most subsequent scholars writing on Persepolis. See Barnett (1972).

² A possible exception is detailed and accurate illustrations of Peruvian North Coast antiquities including excavated graves and detailed site plans made in the late eighteenth century by Martínez Compañón (1936).

³ See, for example, the accounts of exploration in the Pacific and South America written by Amadée-François Frézier (1716), Louis-Antoine de Bougainville (1771), and Jean-François de Galaup de La Pérouse (1797). The whole question of French exploration in the seventeenth and eighteenth centuries is examined by Broc (1975).

⁴ The best short general biography of La Condamine is found in Conlon (1967). Conlon describes the main points in La Condamine's very active life and shows that he was, truly, a martyr to the development of surgery in that he died of blood poisoning after insisting that he be the first person on whom a new operation for hernia be attempted. A biography in Spanish is provided by Larrea (1971). The Ecuadorian scientist Acosta Solis (1976: 56) informs his readers that he has written six articles on La Condamine's geodetic survey in Ecuador. Unfortunately, we have been unable to find a specific reference to any

Nevertheless, scholars who followed him have failed to take full advantage of his excellent cartographic work at the ruin of Ingapirca, perhaps because his original publication has become difficult of access.

La Condamine's historical importance to archaeologists rests upon the fact that he was, as far as we can determine, the earliest observer to have surveyed and analyzed a pre-Hispanic site in the Americas from the viewpoint of someone interested in historical interpretation.⁵ He recognized the need to augment verbal descriptions left by the chroniclers with carefully measured plans of standing remains (see [p. 435] of the translated text, below), and conversely used general discussions of Inca architecture to help interpret Inca sites.⁶ He also attempted to make conclusions about the antiquity of certain practices he encountered by examining linguistic evidence (see [p. 444] of the translated text). La Condamine studied only the structures at Ingapirca later named the "Castillo" by Ecuadorian scholars.⁷ He did not excavate, so all his conclusions are based on what was still standing when he saw the site in 1739. In addition, La Condamine appears not to have been aware of any pre-Inca occupation underlying or surrounding the monumental zone. We therefore focus this essay upon the Inca component of the site.

La Condamine was a member of the French expedition sent to South America in 1735^{8,9} to measure a degree of longitude at the equator in order to answer

of these articles.

⁵ La Condamine's Spanish colleagues, Jorge Juan y Santacilia and Antonio de Ulloa, also produced a plan and elevation of the ruins at Ingapirca. This was published by them in their account of the voyage (Juan and Ulloa 1752: 390 and Plates XIX-XX), but it is so different from La Condamine's renderings, and so at odds with all subsequent descriptions of the site, that to include this plan would actually be misleading. It is therefore surprising to find that Juan and Ulloa's plan is used on the cover of a recent volume dealing with Ingapirca (Jaramillo Paredes 1976) and is the only drawing of Ingapirca incorporated into J. Heriberto Rojas C.'s photographic essay and anthology of poetry inspired by the site (1979). For more on Juan and Ulloa's part in the expedition, see Note 10.

⁶ Useful summaries of 18th century knowledge of the Inca period can be found in Wedin (1966) and in the *Atlas Geographus* (1717).

⁷ This name, "El Castillo de Ingapirca", was made official by Ecuadorian *Acuerdo* No. 426, dated 15 March 1919 (Rojas C. 1979: 52-53).

⁸ This was the first officially encouraged penetration of Spanish America by a non-Spanish group. The favor shown to the French was due to the fact that the King of Spain was himself a Frenchman. Prior to the conclusion of the War of the Spanish Succession by the Treaty of Utrecht in 1713, the Spanish Crown had been extremely reluctant to allow formal entry into its New World possessions by non-Spaniards in any capacity. An important exception was made for merchants from Genoa, whose ships had a contract to carry African slaves to the Spanish possessions. It was the intention of Louis XIV of France to open

questions about the circumference and shape of the earth.¹⁰ He was a soldier trained as a surveyor and cartographer. He was also a shrewd and intelligent observer of the social scene in the viceroyalty of Peru, and his reports contain not only accounts of the scientific results of the expedition,¹¹ but also

the Spanish dominions to French influence. It was for this reason that he made the famous remark "Il n'y a plus de Pyrénées" ("There are no more Pyrenees" attributed to Louis by Voltaire in his *Siècle de Louis XIV*, ch. 28) when his grandson the Duke of Anjou became Philip V of Spain in 1700. Following the accession of Philip, the French gained the right to trade for ten years (1703-1713) in Spanish America, and were given the sole contract to import slaves. This exclusion was resented by English merchants, who felt correctly that they were being closed out of a very lucrative area. The Treaty of Utrecht created the Asiento agreement of 1713 which permitted one British ship to enter the "treaty ports" of Porto Bello, on the Isthmus of Panamá, and Vera Cruz at certain times of the year for trading purposes. The English also secured the right to import 4,800 slaves a year for thirty years into the Spanish possessions. The South Sea Company in London later established at least one trading base in Spanish America, at Panamá. La Condamine had dealings in 1737 with the manager there, Thomas Blechynden, and subsequently borrowed 60,000 livres from Blechynden in Lima. Abuses of the Asiento agreement by British merchants were among the causes of the War of Jenkins' Ear. See Note 66, below.

⁹ The controversy that lay behind the dispatch of expeditions to Peru and to Lappland involved a dispute between adherents of Cartesian mathematics on one hand, and Newtonian physics on the other, as the two systems related to the shape of the earth. In France in the first half of the eighteenth century there was a renewed and vigorous interest in putting ideas derived from pure mathematics to the test of geodetic survey (Lafuente and Delgado 1984; Greenberg 1987).

¹⁰ The two Spanish scholars and military experts Juan y Santacilia and Ulloa (1752) were sent out by the specific command of King Philip V to assist the French expedition. They had the additional task of reporting to the King on the actual state of Peru. Their confidential report has recently (1978) been published in a modern English edition by John TePaske. It was previously published with a sensational title by David Barry in London (1826), and helped to maintain the strength of the "Black Legend". Juan and Ulloa's overt report on the expedition was published in Spanish in 1748 and in French in 1752.

¹¹ La Condamine produced the article that is translated here, as well as a series of detailed publications that outlined the cartographic survey work of the expedition. The most important of these were *Rélation abrégée d'un voyage fait dans l'intérieur de l'Amérique méridionale*, published in Paris in 1745 (1745a) and translated into Spanish the same year (1745b), into Dutch the next (1746c), and into English in 1747 (1747); *La Figure de la terre déterminée par les observations de MM. de La Condamine et Bouguer*, Paris 1746; *Mesure de trois premiers degrés du méridien dans l'hémisphère austral*, Paris 1751 (1751b); and *Journal du voyage fait par ordre du roi à l'équateur*, Paris 1751 (1751c). La Condamine also wrote articles on "Guianne" and "Guayaquil" for Diderot's *Encyclopédie* (1782).

descriptions of the emerging political problems that were to lead eventually to the overthrow of Spanish rule in Latin America.¹² La Condamine was additionally in a position whose utility might not be immediately obvious: he was closer in time to the Incas than he is to our own period. Sometimes his observations and conclusions may seem remote to our way of thinking, but they were based on a proximity to material and memories that we cannot match. Such an advantageous position becomes clearest when examining his plans and drawings of the site. Certain features, including niches, have disappeared since La Condamine's time. A reconstruction of these, possible on the basis of La Condamine's plan and description, would aid the interpretations of present-day scholars.

It was in the course of his geodetic survey in the region of Cuenca that La Condamine visited and studied Ingapirca. His report on the appearance of the site, together with a plan and an elevation of the ruins and a discussion of the probable functions of the various parts of the central building as extant in 1739, was published in Berlin in 1748.¹³ As such, it was the first detailed account of the site.¹⁴ The translation which follows this essay, combined with our commentary, gives a clear indication of the value of La Condamine's work and the technical and intellectual level of archaeological inquiry possible in the earlier part of the Enlightenment.

¹² In 1739 La Condamine witnessed the murder of one of his colleagues in the Cuenca bull ring. He narrowly escaped being killed by members of the same mob. His account of this series of events is found in *Lettre à Madame. . . sur l'émuète populaire excitée en la ville de Cuenca, le 29 août 1739, contre les académiciens, et sur la mort du sieur Siniergues*, published in Paris in 1746 (1746b) and translated into Dutch during the same year (1746d). This document was one of the earliest non-Spanish accounts of popular disturbances in Latin America.

¹³ "Mémoire sur quelques anciens monumens du Perou, du tems des Incas." *Mémoires de l'Académie royale des Sciences et des Belles-Lettres du Berlin* Vol. 2 (1746, published 1748): 435-456. The copy we used is held by the History of Science Library in the John M. Olin Library of Cornell University, call number Hist Science AS 182 B504. Other copies of this journal are housed in major U.S. libraries listed in the Library of Congress National Union Catalog. It is also in the following European libraries: British Library; Bodleian Library, Oxford; Bibliothèque Nationale, Paris, among others.

¹⁴ The major subsequent work at Ingapirca is that of the Comisión del Castillo de Ingapirca del Museo Arqueológico del Banco Central del Ecuador, and that of the Spanish mission from the Universidad Complutense de Madrid in the 1970's (Alcina Franch 1974 (ms), 1975, 1975 (ms), 1976, 1977, 1978, 1978 (ms), 1979, 1980, 1981, 1983a; Almeida 1976 (ms); Cobo and Fresco [González] 1980; Cueva Jaramillo 1970 (ms), 1971; Escalera Urena and Barriuso Pérez 1978; Fresco González 1978, 1980, 1983, 1984, 1988; Fresco and Cobo 1978; Idrovo 1979 (ms); Idrovo and Almeida 1977; López y Sebastián (in prep.); Meyers 1976 (ms); Meyers and Cueva Jaramillo (in press); Misión Científica Española 1974 (ms), 1975 (ms); Rivera Dorado 1973); Varela 1980.

Gordon Hadden, Juan Cueva Jaramillo, Albert Meyers, José Alcina Franch, and Antonio Fresco González, excavators of Ingapirca, apparently did not have access to La Condamine's original publication, but only the epitome of it contained in the report on Ecuadorian ethnography, ethnohistory, and archaeology compiled by René Verneau and Paul Rivet in 1912. Consequently, translations into Spanish, and illustrations taken from La Condamine, including those which appear in Bedoya Maruri (1965a: 58-68, 1974, 1978) and in Fresco González (1983) are confined by the limits established by Verneau and Rivet.¹⁵ Verneau and Rivet reproduced most of La Condamine's description of the architecture of Ingapirca, but omitted almost all of his interpretative framework. Furthermore, Verneau and Rivet did not reproduce La Condamine's original illustration, but rather, redrew and renumbered the upper half of the plate which accompanies La Condamine's article. The horizontal elevation of the site's appearance in 1739 was left out, and the details of the numbers and horizontal placements of the interior niches in six of the seven rectilinear buildings, and along one wall of the large enclosure which La Condamine surveyed are virtually indistinguishable. With subsequent renderings, based upon Verneau and Rivet's redrawing of La Condamine's illustrations, a misrepresentation in the number of niches in the west wall of the "Cuerpo de Guardia" appeared along with distortions in both the proportions of the buildings, and the spaces between them (Bedoya Maruri 1965a: 59, Figura 8, pág. 91, Figura 13, 1978: 51, Figura 8; 72, Figura 12). In addition, La Condamine's plan attempted to show walls in various stages of repair, from fully standing to vestigial. In his drawing La Condamine used different shadings in what we assume is a deliberate effort to render the preservation of the standing walls. This careful drawing was not repeated by the later students of Ingapirca who reproduced or redrew his plan of the site, a factor which has contributed to some of the confusion in the reconstruction of the site. It is ironic that twentieth century scholars have depended so heavily upon Verneau and Rivet's version of La Condamine's illustrations, partly for the reason just mentioned, and partly because the volume which contains Verneau and Rivet's work is at least as rare a book as that number of the *Mémoires de l'Académie royale des Sciences et des Belles-Lettres du Berlin* in which La Condamine's original plan was published.¹⁶

¹⁵ An exception is Oberem (1980: 159), who reproduces a plan from the Archivo-Biblioteca Jacinto Jijón y Caamaño, evidently based upon La Condamine's rendition. Interior niches are clearly depicted on this plan, but some of La Condamine's distinctions of wall preservation are lost. Differences of numbering indicate that the plan reproduced by Oberem is neither the one which accompanied La Condamine's 1748 article, nor the redrawing of that plan which accompanies Verneau and Rivet's report.

¹⁶ We have located five copies of the Verneau and Rivet volume in the United States: at Berkeley, at the Library of Congress, at the Smithsonian, at Harvard, and at the American Academy of Sciences in Philadelphia.

Archaeological work at Ingapirca

The site of Ingapirca stands in southern Ecuador, about ten kilometers east of the city of Cañar and at 2°32' South, 78°52' West (Figure 1).¹⁷ Its altitude is 3163 meters above sea level and it is one kilometer east of the confluence of the Río Hato de la Virgen with the Río Ingapirca, which form part of the headwaters of the Río Cañar (Verneau and Rivet 1912: Carte IV)¹⁸ (Figure 3). Ingapirca lies in the mountain chain that separates the Cañar and Cuenca valleys in what was one of the last areas to be added to the Inca empire; in the colonial period, the region was in the Viceroyalty of Peru, as part of the Audiencia of Quito.

The site was not called Ingapirca before the Spaniards arrived. Its current name, which literally means "Inca Walls", is a generic term for any standing ruin of pre-colonial appearance whose identity is otherwise unknown. Ingapirca was most probably the site of Hatun Cañar, capital, in Inca times, of an important Cañari *curacazgo* known as Cañar Capac.¹⁹ The Hatun Cañar suggestion is confirmed in the *Relaciones geográficas de Indias* (Jiménez de la Espada 1897, Vol. I: 55, 158; Hyslop 1984: 20, figure 2.1).²⁰ The idea that the

¹⁷ As given by Ziólkowski and Sadowski (1984: 103). This measure of longitude is well off the Verneau and Rivet (1912: 82) measurement of 81°14' West, which was determined by French Army surveyors. The French Army measurement was made with the zero meridian at Paris, while the more recent Polish measurement was made from the now-internationally accepted Greenwich Meridian. On the Greenwich system, Paris is approximately 2°20' East: the difference between the two longitudes for Ingapirca is the same as the displacement resulting from the use of two different zero meridians. Bedoya Maruri (1965a: 37) gives the geographical coordinates as 2°20' S, 78°50' W. Alcina Franch (1975: 229) describes the archaeological zone of Ingapirca as extending from the río Silante and the Quebrada de Gulán or Gulansa to the present-day community of Ingapirca and to the confluence of the Quebrada de Santa Marta with the río Silante.

¹⁸ Billie Jean Isbell (pers. comm. 1987), drawing upon the work of Zuidema (1981), suggests that this location may have been important in sacrifices that involved flowing water. Foch and Krener (1978) discuss Cañari water control and social organization in the parish of Juncala.

¹⁹ This site is referred to by this name in Cabello de Balboa (1951: 320). Work by Collier and Murra (1943: 29), Fresco González and Cobo (1978), Idrovo Irigüen (1979) and Idrovo Irigüen and Almeida D. (1977), the latter two cited in Hyslop (1984: 21), suggests, on the basis of inhumations, that ancient Cañar was a ranked society. Hyslop (1984: 19) concludes that pre-Inca Cañari society had no unified political organization. The region was marked by small zones ruled by local chiefs; warfare was frequent, although in the face of external threats common action could be taken.

²⁰ Max Uhle (1923) excavated Tomebamba beneath modern Cuenca. A portion of the walls of Tomebamba is illustrated by Hyslop (1984: 33, figure 2.8) and by Oberem (1980: 269).

site was part of the great city of Tomebamba or Tumipampa, as suggested Cieza de León (1984 [1550]: Part 1, Ch. XLIV) in his *Crónica del Perú*,²¹ is not tenable. In fact, the site which Cieza visited was almost certainly Ingapirca, and he erred in calling it Tomebamba. Ingapirca was in the territory of the Cañari people, which extended as far south as the Jubones river at the time of Cañari contact with the Inca armies. As told by the various chroniclers, the Cañari were conquered by the Inca in a sanguinary series of campaigns begun by Tupac Yupanqui in about A.D. 1455 and not completed until nearly 40 years later by his son Huayna Capac.²² The imperial occupation of Ingapirca was very brief.

Ingapirca's local importance before Tawantinsuyu incorporated the northern regions is demonstrated by the presence there of some obviously pre-Inca structures in the monumental portion of the site, which Fresco González (1983: 209, 1988: 15-20) has described as Cañari. The archaeology of the Cañari is not well understood,²³ but the stratigraphy and the proximity of these walls to those of the Inca suggests that they preceded the unmistakably Inca walls by a very short time. In addition, their pattern as revealed by Fresco González's excavations matches the description (Collier and Murra 1943: 40-55, 70-72; Murra 1946: 799) of Cañari buildings as having two distinct designs: the chiefs'

²¹ A 16th century description of Tomebamba can also be found in vol. 82 of the New York Public Library's Obadiah Rich Collection of documents pertaining to Spanish America (New York Public Library 1550 ms).

²² As Murra (1946: 808) points out, this conquest terminated after the arrival of Columbus in the West Indies. The chroniclers Bernabé Cobo (1892-95 [1653]), Sarmiento de Gamboa (1960 [1572]), and Cabello de Balboa (1951 [1586]) discuss the Inca conquest of Ecuador. Plaza Schuller (1976) provides a modern account.

²³ Excavation and/or survey of various Cañari sites is described by Bennett (1946), Cobo and Fresco [González] (1980), Collier and Murra (1943), Cueva [Jaramillo] (1971), González Suárez (1878: 12-19, 21-31, 40-44; *Laminas II-IV*), Idrovo Irigüen (1979), and Max Uhle (1923). "Cashaloma" ("Cañari incáico") artifacts are illustrated by Jacinto Jijón y Caamaño (1952: 376-387 and figures 482-502), by Fresco (1988: 10, figures 6-7), and by Idrovo Irigüen and Almeida Durán (1977). Summaries of Cañari prehistory and history can be found in Alcina Franch (1986), in Iglesias (1964), in Meisch (1980), and in Matovelle (1921). The *Fase Tacalzhapa* of Porras Garcés and Piana Bruno (1976: 269-273) is equivalent to the Cañari phase of Betty Meggers and the Monjas-huayco and Huancarcuchu phases of Wendell Bennett as well as the Cashaloma phase of Max Uhle. Radiocarbon dates for Intihuaico produced by Prof. Scharpenseel of the Institut für Bodenkunde, Universität Bonn range from 690 ± 60 B.P. to 750 ± 70 B.P. One sample from Pilaloma yielded a date of 990 ± 60 B.P. while another produced the date of 1510 ± 80 B.P. (Meyers and Cueva [Jaramillo] in press). The Intihuaico dates are compatible with the idea of a Cañari occupation of the zone. Albert Meyers (n.d.) compares the prehistoric ceramics of Cañar and Azuay with those of northern Peru. An important basic ethnohistoric source on the Cañari is Jiménez de la Espada (1897: 154-195). Other ethnohistoric accounts of the Cañari are Alcina Franch (1980, 1986), Cordero Palacios (1981), Foch and Krener (1978), Iglesias (1977), and Rendón (1937).

structures were large rectangular houses with patios in front, built of irregular small round stones set with mud mortar, while the common people had round or oval houses with walls formed of upright posts, rather in the manner of European wattle and daub buildings. These structures were most unlike the finely dressed stone buildings that succeeded them: these are without doubt built in an imperial Inca style that faithfully showed the royal masons' love of excellent stonework for its own beauty.²⁴ The possible pre-Cañari occupation of the region is discussed by Alcina Franch (1975: 49), who believes that Ingapirca was inhabited since the Formative Period.

Although La Condamine's account is by far the best description of the site before the twentieth century, Monsieur de La Condamine was not the first writer to mention Ingapirca, at least in passing. The sixteenth century polemicist, Fray Bartolomé de las Casas, provides us with a general description of aboriginal Ecuadorian sun temples in his *Apologética Historia Sumaria*. Las Casas was eager to demonstrate the high degree of development of the Indians' spiritual, moral, and intellectual qualities through a catalogue of their accomplishments (Las Casas 1958 [c. 1550]: Libro III, Capítulo LVI, pp. 291-294). However, none of the temples listed by Las Casas can be positively equated with Ingapirca.

Cieza de León (1984 [1550]: Part I, Ch. XLIV) apparently visited Ingapirca, but confused it with Tomebamba. During the 1560's Juan Salazar de Villasante and his cohorts mined deep Cañari shaft tombs at Ingapirca. It is reported that objects of gold and of copper were found, including many examples of the non-utilitarian axes which served as money in the precolombian northern Andes.²⁵ The late sixteenth century "Relación de San Francisco Pulleusi de Azogue", part of the *Relaciones Geográficas de Indias*, provides an ambiguous description of what may be Ingapirca (Gallegas 1965).

At least one genuine and one false seventeenth century account mention Ingapirca. In the earlier part of the century Don Felipe Guamán Poma de Ayala (1987 [1615]: 1086 [1096] [page 1168]) described "Hatun Canaria" (Ingapirca) as an Ecuadorian "tanbo rreal" in a rather confused listing of the northern way stations written without benefit of personal knowledge. The Inca fortress in Cañari territory mentioned by Padre Bernabé Cobo (1893-5: Bk. II, Ch. 14) may be Ingapirca.

Francisco Coreal claims to have visited Ingapirca in 1692 and characterized it as a sun temple. The *Voyages de François Coreal aux Indes Occidentales contenant ce qu'il y a vu de plus remarquable pendant son séjour depuis 1666*

²⁴ Compare, for example, Ranney's photographs of Ingapirca (Hemming and Ranney 1982: 204, 207) with his photos of Vilcashuamán (ibid.: 184) and Huánuco (ibid.: 200). It is clear that, at least in architectural terms, Ingapirca was as fine a regional Inca center as either of the other two sites.

²⁵ Salomon (1987), drawing upon the 1565 *residencia* of *oidor* Lic. Juan de Salazar Villasante, a copy of which is in the Colección Vacas Galindo of the Dominican Convent in Quito (primera serie, Vols. 30-31). The original *residencia* is said to be in the Archivo General de Indias.

jusqu'en 1697 was first published in 1722. This book was allegedly written by a Spanish colonial subject and translated from an English original, but neither a Spanish nor an English language publication or manuscript has been identified. Coreal's *Voyages* are, in fact, a knock-off of the more reputable *Atlas Geographus or a compleat System of Geography (Ancient and Modern) for America*. . . . Volume V, which describes Ecuador, was published in 1717 (Adams 1958: 239-252). Both Coreal and the *Atlas Geographus* follow Cieza de León in mistakenly equating Tomebamba with what we know as Ingapirca, as is evident from the fact that the *Atlas* (1717: 237) gives a separate description of Cuenca. From Cieza de León (1984 [1550]: Part I, Ch. XLIV), Coreal (1722, Vol. 2: 63) takes the information that the walls of Ingapirca were decorated with carvings of quadrupeds, birds, and "toutes sortes de representations fantastiques." This detail brings to mind the low relief carvings at Huanuco Pampa (Morris and Thompson 1985: Plate IV, p. 68, Plate 25, p. 45, and Plate 29, p. 46; Hemming and Ranney 1982: 199, photo top right; Kauffmann Doig 1980: 780), at Vilcas-huamán (Gasparini and Margolies 1977: 121, illus. 109), at Cusco,²⁶ and at Soras (personal observation of the authors), but the carvings may have been Cañari style tenon heads, not Inca style portal decoration. Stone condor, llama, and snake heads have been found at Ingapirca, but not in their original architectural positions.²⁷

However, so far as we know, Charles-Marie de la Condamine was the first European to make accurate illustrations of Ingapirca, and to leave us a description that has value as a historical and archaeological record. In the course of a long (nine years), expensive (much of the money spent by the expedition was his own), and acrimonious (each of the three French and two Spanish scientists was sure of his own abilities and doubted those of his colleagues)²⁸ presence in the country, La Condamine and his companions had the opportunity to visit pre-Hispanic remains. La Condamine mentions that he

²⁶ One example from Cusco is the portal of the house of T. Benavente illustrated by Kauffmann Doig (1980: 666).

²⁷ Alcina Franch (1983) describes these *cabezas clavadas* in detail. See also Bedoya Maruri (1972: 140-141, figure 3, 1978: 84, figure 15); Cueva Jaramillo (1971: 218); Fresco González (1978: Lámina 2); Jaramillo Parades (1976: 115, foto 11); and Meyers and Cueva (Jaramillo) in press.

²⁸ Injured national pride also played a major part in the relations between the expedition members. Despite the royal backing secured by both groups, and the injunctions that required the French and the Spaniards to work as colleagues, there was little friendly sentiment between the two sets of scientists. This is most clearly shown in the events surrounding La Condamine's attempt to commemorate the French work in the region by setting up memorial pyramids dedicated to King Louis in Quito. After a great deal of extremely bitter argument and mutual name-calling, the French were allowed to erect their memorials, on condition that they referred to both the King of France and the King of Spain. See La Condamine's *Histoire des Pyramides de Quito*, Paris 1751 (1751a). We are informed by Edward Franquemont (pers. comm. 1987) that in modern Ecuador, pyramidal structures are still occasionally called "Condaminas".

looked at many tambos, although Ingapirca is the only ancient site known to have been mapped and published by him. Being trained surveyors and map-makers, La Condamine and his team were able to leave us with useful, as opposed to vague and fanciful, descriptions of what they saw. La Condamine and his French colleague Pierre Bouguer visited Ingapirca in May 1739 and produced a plan and elevation of the site that is still the most detailed to have been published (Figure 2). They concluded that the site functioned as a fortress of the Inca empire, whose purpose was to protect the imperial frontier.

Beginning with La Condamine, there have been at least six²⁹ separate interpretations of the functions of Ingapirca, each based on a first-hand study of the archaeological remains. It is Ingapirca's curious fate to have been studied repeatedly, but with no single accepted conclusion about its function arising from all of these examinations. The French and the Spanish were at least in agreement that the main structures at Ingapirca were some sort of fortress and palace complex. Juan and Ulloa showed that the design could be reconciled with then-current canons of European fortifications.³⁰ Joaquín de Merisaldo y Santiesteban (1894 [1765]: 65), a priest from Cuenca, visited the site in the middle of the eighteenth century and published a description in which he stated that not only were the remains those of a temple at which sacrifices were made for divine intercession, but that he could not see why Spanish travellers had described it as a fortress. In his view, Indian warfare did not require fortifications because arrows were the main weapons used.³¹ A little later in the eighteenth century, the prominent Ecuadorian cleric Velasco (1978 [1789]: 175) rendered the opinion that Ingapirca was a palace. Ingapirca and the Cañaris are mentioned in Alcedo's *Diccionario Geográfico de las Indias occidentales o América*, written in the 1780's. Alcedo (1967: 119-120, 212) gives a succinct description of the architecture of the site, probably drawing upon La Condamine and upon Juan and Ulloa.

At the turn of the 19th century, Alexander von Humboldt and his companion Aimé Bonpland visited Ingapirca. Unaware of La Condamine's work at the site, Humboldt executed two drawings and a plan of Ingapirca and also drew the related sites of Intihuyco and Ingachungana.³² Differences between La

²⁹ As a fortress, a temple, an observatory, a royal residence, a tambo, and a storehouse for tribute. See Rivera Dorado (1973: 237).

³⁰ We make this comment guardedly, given the inaccuracy of the Spanish plan and view of the site. It would be unkind to accuse the Spaniards of wilful distortion: it is more likely that they saw something which appeared familiar in an alien landscape and proceeded thence in their analysis.

³¹ We do not know whether Merisaldo y Santiesteban ever went to Cusco, but such a statement could not have been made by someone who had seen the fortress at Sacsayhuaman.

³² The illustrations of Ingapirca appear only in the folio edition of Von Humboldt's *Vues des Cordillères*. They are absent from the numerous quarto editions. A general view of Ingapirca is presented as Planche XVII "Monument Peruvien du Cañar" (Figure 6 in this article). A cropped version been

Condamine's rendering and those of Von Humboldt are discussed below. Von Humboldt agreed with the fortress interpretation.

In 1804 the Colombian astronomer, botanist, and patriot Francisco José de Caldas y Tenorio visited Ingapirca and wrote a brief description. Unfortunately Caldas (1912 [1808-1810]: 175-177; Bedoya Maruri 1978: 62-64) reports that the drawings he made of the site were lost before he could publish them. The next person to see the site and write about it was the Ecuadorian historian Manuel Villavicencio (1858: 436), whose account of 1858 endorses the notion of Ingapirca as a fortress, but also dismisses the existence of a reported tunnel from Ingapirca to Pomallacta, near Azuay. The Andes are supposedly riddled with tunnels, usually leading to some fantastic store of treasure if only one could find the entrances.³³ However, in this case there is actually some truth to the legend. Fresco González (1983: 209) found Cañari water channels and tunnels at Ingapirca³⁴ which might have given rise to the stories, and which may also have played a rôle in sacrificial rituals involving water, chicha, or blood³⁵ (Figure 3).

Another traveller who visited the site in the latter half of the nineteenth century was the physician S. Habel. Habel gave up his medical career to travel in Central and South America in the 1860's. He agreed that Ingapirca was a castle and noted that there were artificial baths on the site. Habel (1878: 53) supposed that various shaped stones scattered around the site were the debris from athletic games.

In 1887 Anatole Bamps published a short and derivative description of the famous site. In the 1890's the German cultural geographer Adolph Bastian (1878, 1878, 1889) incorporated Ingapirca into the itinerary of his extensive travels.³⁶ Bastian accepted the concept of the universal mind and believed that given similar environmental parameters, cultures would spontaneously develop similar

reproduced by Villavicencio (1853: opposite p. 437). Planche XX is a plan of the "Cuerpo de Guardia" and a view of the interior of the same building (Figure 7 in this article). This has been reproduced by González Suárez (1890-1903). Planche XVIII is the "Rocher d'Inti-Guaicu". Planche XIX is a rendering of "Ynca-Chungana du Jardin de l'Inca près de Canar." This has also been reproduced by Villavicencio (1853: opposite p. 437). Contrary to the assertion of Verneau and Rivet (1912: 83), Von Humboldt does not reproduce La Condamine's view.

³³ For example, see Alvarado Alvarino (c. 1978: 39-41); von Däniken (1972 *passim*).

³⁴ These water channels were known in the 18th century and thought to have been the only irrigation canals used in prehispanic Ecuador (Velasco 1978: 184).

³⁵ The ritual, social, and political significance of flowing water in Cusco has been explored by Sherbondy (1979).

³⁶ See the map at the end of Bastian (1878: vol. II).

traits. His travel helped him to formulate and test his ideas on cultural development.

Our understanding of Ingapirca was not made any clearer by the Ecuadorian scholar Federico González Suárez, whose 1904 account described Ingapirca as both a palace site and a temple and dismissed the fortress interpretation. However, González Suárez visited the site many times and seems to have changed his mind every time he went there. His account of 1878 described the site as a fortress (González Suárez 1878: 46), and his 1890 description lists Ingapirca as one of three Inca fortresses built in Ecuador (ibid.: 1890: 47-48 and note 5, p. 48). According to him, the others are at Achupallas in the province of the Paltas, and at Pomallacta.³⁷ In 1904, González Suárez, like von Humboldt before him, linked Ingapirca with the nearby carved rocks of Intihuayco and Ingachungana, each of which he considered to be solar sites; in particular, Ingachungana was an *intihuatana*.³⁸ His detailed description of Ingapirca proposed that the central building of the site was a chapel (*adoratorio*) whose major rooms would have contained sun images illuminated at all times of the day (González Suárez 1968 [1904]: 54, 1944 [1915]: 285 and note 34, 286-287 and note 35). This idea has subsequently been disproved by the observations and measurements of Ziólkowski and Sadowski (1988 ms) which show that direct rays of the sun would have reached the wall only at certain times of the year. However, Ziólkowski and Sadowski (1984) did confirm González Suárez's hypothesis that the Castillo was used to calculate the dates of solstices and equinoxes. Nevertheless, these scholars, on the basis of new measurements, later concluded that Ingapirca was used to mark the solstices, rather than the equinoxes (Ziólkowski and Sadowski 1988 ms). González Suárez's 1915 publication rejects his earlier palace hypothesis and suggests that the temple complex at Ingapirca included an *accllawasi*.

In the 1920's the Ecuadorian intellectual Tomás Vega Toral (1928a, 1928b) wrote a two-part monograph on Ingapirca, but did not add appreciably to our knowledge of the site. He urged that Ingapirca be preserved and provided fanciful drawings of the Castillo, supposedly based upon photographs in his possession (Vega Toral 1921).

The first major investigation of the site since its publication by La Condamine was also conducted by a French expedition. Between 1899 and 1906 the French Army carried out a detailed examination of the northern Andes, and made special reference to the geodesic work of La Condamine and his colleagues. Part of this wide-ranging expedition performed ethnographic and archaeological work, directed by René Verneau and Paul Rivet, and published by

³⁷ The fortresses of Pomallacta (Pomollata) and Achupallas are mentioned by Cabello de Balboa (1951 [1586]: 320). The former is also noted by Cieza de León (1984 [1550]: Part I, Ch. XLIII, p. 142). Hyslop (1984: 23) points out that there are several fortified mountain tops in the vicinity of Pomallacta and that a survey project would be necessary to understand their interrelationships. A general account of Andean forts can be found in Oberem (1968).

³⁸ Stated by Wolf (1892: Pt II, Ch. III, p. 245) to have been built of a local sandy tufa, as was Ingapirca.

them in 1912. In July of 1904 expedition members Capitaine Peyronel and Maréchal des Logis Damerval reperformed the surveys of La Condamine and confirmed the accuracy of the measurements he made in a plan drawn up by Capital Lallemand (Verneau and Rivet 1912: 85, Carte V). From this plan it is evident that the site had undergone further destruction since the visits of Humboldt and de Caldas. Verneau and Rivet (1912: 93 and note 1) defined Ingapirca as a fortified *tambo*,³⁹ thus neatly conflating two separate possibilities, and dismissed González Suárez's conception of it as a temple by stating he had confused the site with Tumipampa (Tomebamba). Certainly, the location of the site at the junction of two rivers and above the plain reminds one more of a castle than a church, but one must continually resist the temptation to describe the site in European terms.

There the matter unsatisfactorily stood until the middle of this century, in spite of the opinions rendered in the 1930's by Miguel J. Durán and Eugenio Larrabure y Unanue (Durán 1931a, 1931b; León 1983: I, pp. 89-94).⁴⁰ The last visitor to leave a written account of Ingapirca before excavations and restorations were undertaken was probably Jorge Salvador Lara. Salvador Lara made an excursion to Ingapirca on 25 June 1961 after celebrating the third anniversary of a supposed miracle which took place in Cañar. Salvador Lara contemplated the ideas that Ingapirca was a religious sanctuary, a fortress, a palace, and a solar observatory. In support of the last function, he pointed out that he found seven stones on the site which were between 1.20 and 1.50 m high, and from 25 to 30 cm at one end and from 20 to 25 cm at the other. According to a local informant, six or seven more had been removed to the local hacienda. Looting of the site for building materials had continued into this century (Salvador Lara 1964: 44-45). The tapered stones, which could not have served as sills or lintels, may have been *sukankas*, Inca astronomical markers.

In 1967 and 1968 Gordon Hadden of the Institute of Andean Research began new excavations and restorations at the site. These are still unpublished, although one of Hadden's plans is reproduced by the Ecuadorian, Colonel Angel Bedoya Maruri (1972: 137, figure 1), who also worked at Ingapirca and who published his findings in the 1970's. In 1970 Juan Cueva Jaramillo, assisted by Albert Meyers, Elizabeth Carmichael, Ann Kendall, Olaf Holm, and Hernán Crespo Toral, among others, identified the Cañari component of the site. Meyers and Cueva [Jaramillo] (in press), citing the great extent of the sector of the site referred to by the excavators as Pilaloma, and the absence of certain classes of artifacts there, give the opinion that Ingapirca was primarily a habitation site and an administrative center and that if ritual or military activities took place, they occurred in an area separate from Pilaloma.

Excavations at Ingapirca were again undertaken in 1974 and 1975 by the Misión Científica Española with José Alcina Franch as project director. Between 1978 and 1983 excavations were continued by Antonio Fresco González. The

³⁹ Hyslop (1984: 280, 282) agrees that Ingapirca incorporates *tambo* facilities.

⁴⁰ Durán recognized the pre-Inca component of Ingapirca, but attributed it to Tiahuanaco.

work of the 1970's and 80's has resulted in a stream of publications, theses, and preliminary reports about Ingapirca.⁴¹ It has brought a wealth of new information to light, but has still not completely solved the problem of the site's function. To the interpretations already discussed above, and in note 41, we may add the refinements proposed independently by Gasparini and Margolies (1977: 304) and by Alcina Franch (1977: 37)⁴² that the central portion was an Inca *ushnu*, perhaps built on a Cañari *pacarina*, or that of Skurdenis (1987: 65), who suggests that the site was a Cañari moon temple altered by the Incas to be a sun temple and observatory, probably following Garcilaso's (1967 [1609]: Libro VIII, Capítulo V) claim that the Incas suppressed Cañari moon veneration in favor of sun worship. Fresco González (1983: 211) accepts that the central portion of Ingapirca was a temple, but thinks that it was also an administrative center of the second rank in the time of Huayna Capac.

Ziółkowski and Sadowski (1982, 1984, 1985, 1988 ms), Isbell (pers. comm. 1987 and 1988; 1988 ms), and Hemming and Ranney (1982: 203) have prepared descriptions of the site's possible astronomical alignments, drawing upon the work of Tom Zuidema (especially 1981) and the early Spanish chroniclers including Garcilaso (1967 [1609]: Part 1, Bk. 2, Ch. 30). It has been suggested that the site was used to determine the equinoxes, the June solstice, and the passage of the sun through zenith and antizenith. As part of this question, Billie Jean Isbell suggests that the Incas had a concept of the equator. Any temple on or near the Equator would therefore have had major religious and ritual importance, and would have been built using the finest materials and masons available.

Ingapirca is more than two degrees south of the equator, and could not, therefore, have been the Inca equator temple, assuming there was one. However, Velasco, an eighteenth century source, reports that at Quito, on the top of the hill Panecillo and virtually at the equator, there was a rectilinear temple of well-worked stone which contained a pyramid and a great door opening to the east, which allowed the first rays of dawn to shine upon a gold image of the sun. Velasco thought that the temple was a preinca one refurbished by Huayna Capac. Two tall columns, described as gnomons, were used to observe the solstices. Twelve columns in the courtyard determined the months. These columns seem to have been *sukankas*, the poles by which Inca astronomical observations were made. The *conquistadores* toppled the columns, hoping to find treasure beneath. A round moon temple on San Juan Evangelista hill was part of Quito's conjunction of temple observatories. If the Incas indeed understood and

⁴¹ Alcina Franch (1975, 1976, 1977, 1978, 1979, 1981, 1983); Cobo and Fresco [González] (1980); Escalera Urena and Barriuso Pérez (1978); Fresco González (1978, 1980, 1983, 1984, 1988); Fresco González and Cobo (1978); Idrovo Irigüen (1979); Rivera Dorado (1973); Varela (1980); Ziółkowski and Sadowski (1984). More publications are promised (Alcina Franch 1977). See also the list of selected unpublished manuscripts at the end of our bibliography.

⁴² Alcina Franch (1978: 139-140) also proposed that the "La Condamine" section of the site was a tambo or an *accllawasi*.

marked the equator, it would have been at the Quitanean sun temple.⁴³ Perhaps Ingapirca was one of a series of temples which led up to the equator from the south.

Most of the persons who have analyzed this site and assigned it a particular function have not really given convincing reasons for their choices. The ascriptions have often not been argued through, and one has the impression that each person felt his choice was so clearly and intuitively the right one that it was not necessary to defend it. It is here that we encounter the preconceptions of the various scholars, along with the limits of their experiences. There has been a certain predisposition for persons with a particular non-archaeological background to see Ingapirca as a monument of their individual professions. For La Condamine and Juan and Ulloa, who were men trained as soldiers and military architects, and who had no previous experience of the alien world of the Andean civilizations, it is not surprising that they would see something they knew best in the ruins of Ingapirca.⁴⁴ To them, religious buildings looked like churches, or perhaps Graeco-Roman temples, and royal residences looked like those they knew from Europe: what was otherwise left in their "architectural syntax" was the European fortress, to which Ingapirca bore at least a passing resemblance. The same sort of external analysis of the site was performed by most later scholars prior to the twentieth century. Priests, for the most part, tended to see some form of religious structure due to the rigorous separation of various rooms and the skill of the manufacture, along with the relative isolation of the site. The astronomers who have examined the site and its surrounding mountains seem sure that the various dispositions of structures were intended to match alignments of stars and other celestial phenomena at various times of the year, so that whatever its other uses, the site held a group of astronomers. Archaeologists without religious, military, or scientific training have tended to equivocate by saying that Ingapirca probably had many purposes.

We think that the various functions that have been proposed give us the acceptable range of options for the site. Furthermore, we do not find it untenable to suggest that the site may have had multiple uses. The task is to define the main use or uses to which such an immense set of constructions was put. The Inca builders would not have expended so much time and effort to erect such imposing architecture without a definite idea of what they wanted it to do.

Our own inclination is to believe that Ingapirca, as the complete name chosen for the Ingapirca Commission of the Central Bank of Ecuador implies, was primarily some form of *fortress* that was part of the "control apparatus"

⁴³ Velasco's source was an unpublished account "Ritos y Ceremonias" by Fray Marcos de Niza (Velasco 1978 [1789]: 427). De Niza was also called Marcos da Nizza and was the same Franciscan who, as a young man, made a reconnaissance of what is now the American Southwest after the return of Alvar Nuñez Cabeza de Vaca (Hallenbeck [1987]).

⁴⁴ La Condamine admits that such an attitude was a bias of his: Translation [p. 445], second paragraph. However, he also saw the need to begin to look at evidence in its own terms: Translation [p. 450].

for the northward expansion of the Incas. We are brought back full circle to the proposals of La Condamine and his Spanish colleagues 250 years ago. What we know now of the Inca expansion into Ecuador suggests that such a fortress would have been quite necessary. Military use may have subordinated all other purposes and was probably the primary consideration of the imperial Inca planners. The fineness of the construction shows that there was some sense of a need for splendor to mirror the importance of the empire that built it. By analogy, this kind of deliberate show is often seen in imperial building--and the Incas were definitely "imperialists" in that they sought deliberately to impose their political control by military force over independent, self-contained, and unrelated peoples. In this connection, we believe that the site served as the army headquarters and residence of a senior, local administrator, responsible for managing a very turbulent part of the imperial frontier. This conclusion derives from what we know of the creation of the northern Inca empire: the expansion was a supremely military endeavor, vigorously opposed and sullenly accepted by the local inhabitants. The Inca rulers found it particularly necessary to use here their administrative practices of the transplantation of populations through the *mitimay* and *yanacuna* systems, in an attempt to control the countryside, both politically and ecologically.⁴⁵

However, the arguments for a religious significance of the site are also compelling. Its presence between two rivers is reminiscent of the placement of Cusco. Ingapirca's proximity to the Equator, and its alignments with the surrounding hills make a convincing case for a definite astronomical function. In order to avoid the trap that claimed previous commentators, we must conclude that in its latest configuration, Ingapirca was probably designed as a set of structures with both an "external" military function, to control and impress the conquered local peoples, and an "internal" astronomical and religious function, to satisfy imperial Inca desires.

The importance of La Condamine's work at Ingapirca

With the exception of taxonomy,⁴⁶ European scientific interest in Latin

⁴⁵ Hyslop (1984: 21) suggests that ". . . military operations for regions north of the Cañari territory were probably organized in or near Tomebamba, at least during Thupa Yupanki's rule and the early part of Huayna Qhapaq's administration." An account of a Cañari *mitimay* group moved out of their home territory into Pasco has been published by Espinoza Soriano (1975-76). Another group occupied Vilcashuamán (Biblioteca Nacional del Perú, ms B44, cited in Stern [1981: 468, note 15]). Miño Grijalva discusses the situation of Cañari *mitimay* and *yanacunas* in Cajamarca, Copacabana, Cajabamba, and Yucay (1978). Oberem and Hartmann (1979, 1981) discuss the rôle of the Cañari in Cusco during the sixteenth century. Oberem (1974-76) explores the rôle of the displaced Cañari in the Spanish conquest of the Andes.

⁴⁶ In 1705, Maria Sybilla Merian published an extensively illustrated account of her botanical work in Surinam in 1699-1701. This is the first known account of work by a European scientist in Latin America and is still valuable to the modern researcher. See Engle (1988).

America can properly be dated from the publication of the results of the Franco-Spanish expedition to northern Peru. It is clear that the gradual liberalization of foreign movement to and within the Spanish territories permitted long-term, reasonably dispassionate work by scholars from various disciplines. As a further example, La Condamine's return to France by way of the Amazon River in 1744 emphasized both the size and complexity of the South American continent (La Condamine 1745a, 1749b).

Ingapirca is one of the relatively few abandoned pre-Columbian sites in South America which has been extensively visited and described throughout the European presence (others include Tiahuanaco⁴⁷ and Chan Chan). In this it more closely resembles ancient Near Eastern sites such as Gizeh or Persepolis, which were seen and described by numerous travellers from many nations, and became part of the intellectual property of all educated persons of the period.⁴⁸

In the 1730's, La Condamine worked at the forefront of surveying technology. The measurement of the earth's circumference accomplished in large part by his team became the basis for the entire metric system (Hemming and Ranney 1982: 205). In a modest way, La Condamine was one of the pioneers of archaeological illustration. 1739 was just one year after the founding of the Society of Dilettanti, the group of antiquaries who sponsored the study and depiction of the ancient art and architecture of the Old World. It was also one year before the great Piranesi entered Rome for the first time and began his artistic studies of ancient Roman monuments (Bacou 1975: 7). La Condamine's achievement at Ingapirca is also put into historical perspective by the fact that the great Inca city of Cuzco, sometimes described in Peruvian touristic literature as "the archaeological capital of the Americas", was not mapped with surveying instruments until the 1820's, nearly a century after La Condamine left Ecuador.⁴⁹ Measured plans of many other important Andean sites were made for the first time in the 1860's by Ephraim George Squier. By the time that Squier, assisted by J. P. Davis, was able to make a plan of Sacsayhuamán, considerable

⁴⁷ The ruins at Tiahuanaco are mentioned in the *Atlas Geographus*, Vol. 5 (1717: 219). Thus superficial knowledge of them, at least, can be presumed to have entered upon European awareness in the early 18th century.

⁴⁸ Lists of the various persons who visited the site and described Ingapirca in their writings is found in Fresco (1984: 17-19), in Rojas C. (1979: 71), and in Vega Toral (1928). Wilhelm Reiss, Walther Sauer, and George Sheppard were geologists. Père Joseph Laporte (1801) and "M. & E" (1833) apparently did not personally visit the site, but rather, wrote about it using La Condamine as both a primary and a secondary source.

⁴⁹ This plan was published by the British Admiralty in 1848, based on observations made by Joseph Barclay Pentland in the 1820's and 30's (Fifer 1974: 173-181). In 1861 Federico Hohagen drew his "Plano Topográfico de la Ciudad del Cuzco" which appeared as Plate XXXIII of Mariano Felipe Paz Soldan's *Atlas Geográfico del Perú* (1865). Plate XXXIV of the same volume is a plan of Sacsayhuamán in relation to the rest of Cusco. However, La Condamine (1751c: 33, pl. III) published a measured plan of the city of Quito in 1751. Bayon (1972) and Markham (1886) discuss early maps of Cusco.

deterioration was evident (Squier 1877).⁵⁰ In the second decade of the nineteenth century a map of Nueva Granada still did not exist (G.O.M. 1942).

As we have seen, with the exception of von Humboldt's drawings, the plans and accounts of Ingapirca that were produced in the later eighteenth and through the nineteenth centuries relied heavily on La Condamine for all details of the site. It was not until this century that further independent work was carried out, by which time Ingapirca had suffered another two centuries of degradation by weather and looters. Reconstructions of the buildings have had to be based on illustrations prepared many years before, combined with excavation and laborious reassembly of stonework, much of which had been looted in the interim. The conclusion of most scholars who worked at Ingapirca recently is that La Condamine's plan and account of the remains are extremely accurate, although there have been disagreements with his conclusions as to the use of the site.

The clearest example of the manner in which access to La Condamine's original work could directly benefit later studies of Ingapirca is found in the research of Ziolkowski and Sadowski (1984: 123 and note 39). Here the value of La Condamine's proximity to the Inca period is immediately obvious, in that much more of the original structures of Ingapirca were still standing in 1739 than in the 1970's, and could be examined accurately and at leisure. In their note 9, the Polish astronomers mention that although its reconstruction is debatable, the main building (the "Castillo") undoubtedly had niches in its walls, and that these niches might have served some calendrical function, probably connected with agrarian ritual. However, because of the uncertainty in their minds about the number, size, and placement of niches, they were unable to take account of them in their reconstructions of astronomical alignments (ibid.: 112, figure 3) in spite of the fact that the importance of niches in this context has been demonstrated (Dearborn and Bell 1984). Had they had access to the original report on the site, or had they extracted as much information as possible from Verneau and Rivet's epitome, they and the excavators would have seen immediately that La Condamine not only discusses the location and size of these niches ([p. 448] of the translation), but illustrates them on his plan of the site (Figures 4 and 5). From La Condamine's description it is clear that the reconstruction of the eastern room proposed by Bedoya Maruri (1978: 72, figure 12) is in error. It had three niches in the wall facing the door (that is, facing the rising sun). However, the western room had four niches facing the door (that is, facing the setting sun) as the reconstruction supposes. This alternate placement of niches on either side of a wall is an Inca design feature which can also be observed on other Inca buildings.⁵¹ La Condamine reported that the niches were at breast height, roughly square, 15 to 16 (French) inches deep, a little taller than wide, and that they took the place of cupboards.

⁵⁰ The Squier and Davis plan of Sacsayhuamán is also reproduced in Markham (1886, Vol II: 521) and in Markham's edition of Garcilaso de la Vega (1869-71, Vol. II: 305).

⁵¹ See, for example, the "ancient buildings at the landing, island of Titicaca" illustrated by Squier (1877: 333).

However, it must be noted that von Humboldt's plan and interior view of the same building depicts four niches on either side of the central wall (Figure 6). Although this rendering is plausible, we are inclined to favor La Condamine's plan. In the first place, the site had suffered more than seventy years of looting between the La Condamine and the Humboldt visits. Von Humboldt reports that the family of his guide were among the culprits. Furthermore, Caldas (1942 [1808-1810]: 84) confirms that by 1804 the site had been largely destroyed. Von Humboldt may have been extrapolating a reconstruction from the better preserved of the central wall's two sides. We know that in other ways von Humboldt idealized his renderings. In his view of the Castillo he places a staircase parallel to the short axis of the oval, but we can see from various plans of excavations (e.g., Fresco 1988: 16, figure 2) that the arrangement was otherwise (Figure 7). In Von Humboldt's illustrations the rock cut sites of Intihuaico and Ingachungana are made much more symmetrical than they are in reality. Von Humboldt also shows two windows in each gable of the "Cuerpo de Guardia" where La Condamine only indicates one. However, since this part of the building was made from adobe it is possible that von Humboldt mistook erosion holes for deliberate fenestration.

In other respects von Humboldt's illustrations correspond with those of La Condamine, reinforcing our belief that careful consideration of the information provided to us by La Condamine would add to our knowledge of the corpus of Inca design and would augment the research of many twentieth century students of Inca architecture including Kendall (1985), Morris and Thompson (1985), and Niles (1987), to name just three.

La Condamine's essential contribution to the development of archaeology in the Andes was his demonstration that it was possible to combine a critical reading of the relevant historical texts with linguistic evidence and a careful examination and study of standing remains to produce a plausible interpretive synthesis. Without the initial work of scientists such as La Condamine, whose incidental labors in the midst of larger tasks provided direct inspiration to such important Andean scholars as Prescott,⁵² it is likely that later workers would not have been aware so soon of the entire extent of Inca imperial architecture.

Furthermore, La Condamine played an immensely important part in the development of the sciences of surveying, cartography, and geodesy, skills without which serious archaeological work in the Andes or elsewhere could not have been attempted. In doing so, La Condamine provided some of the first accurate terrestrial maps of western South America. Their sophistication and value are obvious when one compares the maps produced by La Condamine and printed by him in his accounts of his work in South America with contemporary and later Spanish maps, including those of Juan and Ulloa, of the same regions. There do not appear to have been any good maps of South America made after

⁵² We first learned of La Condamine's work from William Prescott. In his account of the Inca empire before the Spanish conquest (Prescott 1908: 44, note 2), Prescott referred to La Condamine in extremely complimentary tones, which shows that it is only in the last century or so that his original work has been "lost".

La Condamine's work until the voyages of von Humboldt and the end of the Spanish empire.⁵³

La Condamine revealed himself to be a highly intelligent and sympathetic observer. Subsequent work at Ingapirca has also shown that his work was extremely accurate where it could be checked, which makes one more comfortable with accepting descriptions of features such as wall niches which have since disappeared. He also provided important cartographic information, including compass declination, often not found on later maps. It is for these reasons that we regret the loss of La Condamine's documents relating to Cusco in the early eighteenth century, and we mourn with him the indifference that led to the destruction of gold objects kept for two hundred years in the Royal Treasury in Quito.

Note on the translation: La Condamine wrote in elegant French, described by one nineteenth century encyclopedia article as "simple et négligé". His style used a minimum of complicated constructions and technical phrasing. His only stylistic weakness was an excessive use of commas and subordinate clauses. Where there are technical or jargon words or phrases we have discussed them in the notes. We have tried to maintain the flavor of La Condamine's prose style, while rendering the text into modern English. We have also modernized La Condamine's spelling of proper names while retaining his capitalization. Page numbers in square brackets refer to the pagination of the original. Notes in boldface are La Condamine's original notes; notes in plain type are ours.

The translated report

Charles-Marie de La Condamine (1748 [1746]): "Report on some ancient monuments of Peru, from the time of the Incas."

[p. 435]

All the authors who have written about South America and the conquests of the Spaniards in the New World give us a good idea of the different buildings constructed by the Incas, former kings of Peru; of their temples of the sun and their palaces, of their fortresses, of their great roads and the *tambos*, or lodgings placed at regular distances, and intended to provide accommodation to these princes and their suites during their voyages from one end to the other of their domains. One may consult on this subject the original histories by Augustín Zarate, Pedro Cieza de León, López de Gómara, Herrera, Father Acosta, and Garcilaso de la Vega. The last two alone have spoken on the basis

⁵³ The series of maps of the various *intendencias* produced in the first decade of the 19th century were the earliest methodical and accurate maps made of large sections of Peru. See, for example, the map of the *Intendencia* of Guamanga made in 1803-1804 under the direction of D. Demetrio O'Higgins (*Archivo General de Indias ms*), where this primacy is stated in the map's rubric.

of being eye witnesses,⁵⁴ but they have left us no plan, nor any exact description, which could give us a fair idea of any of these monuments. Garcilaso, born in Peru of a Spanish captain and an Indian mother of Inca blood, is the one who goes into the greatest detail

[p.436]

about the Temple and Fortress of the City of Cusco, where he was born; however, he leaves many things to be desired, and, from another angle, one is tempted to believe that there is something to distrust in the evidence of an Author who, no matter how open and truthful he might appear, often allows to escape traits of a bias (from which no person may flatter himself to be exempt)⁵⁵ when there is question of his homeland. Additionally, Garcilaso left Peru when he was very young, wrote in Spain at the beginning of the last century at an advanced age, and reported what he had seen in his early youth. He could not have produced his description of the fortress of Cusco as it was before the coming of the Spaniards, except by following the reports of the natives of the country. He agrees that he saw it only in a demolished state, and that all that remains standing there is what the Spaniards could not destroy, along with some underground constructions. He asserts that from fear of being mistaken, he does not dare to report any measurements from memory; he even abstains from comment with regard to the famous Stone, called the "broken Stone",⁵⁶ of whose dimensions he was subsequently, and uselessly,

⁵⁴ This is not correct, because Cieza de León and Agustín de Zarate (Porrás Barrenechea 1962: 169-173) were also eyewitnesses to many of the things they describe in their books.

⁵⁵ This consciousness of human frailty was rare during the earlier part of the eighteenth century, but was acknowledged by the time of the later historians Edward Gibbon, Thomas Macaulay, and William Prescott.

⁵⁶ *Commentarios Reales de Garcilaso de la Vega*. Lib. VII. cap. XXVII, &c. This is the "piedra cansada" or "tired stone" found in Garcilaso's account, a rock outcrop near Cusco, that was known as Saicusca - Quechua *Sayk'usqay* "físicamente cansado" (physically tired), Herrero and Sánchez de Lozada (1983: 395); this is in Cochabamba dialect rather than Cusco, but the two are mutually intelligible. An account of the stone's ritual significance in Inca times has been published by Van de Guchte (1984). The confusion in La Condamine's text, where the stone is referred to as the "Pierre cassée" or "broken stone" [p. 436] rather than the title given to it by Garcilaso, is due to mistranslation of the Spanish by La Condamine. The importance of this is that it indicates that La Condamine was doing his own translation from the Spanish, rather than using a published French version. The French editions of Garcilaso (1704 and 1715, vol. 2: 255, Liv. VII Ch. xxix) have the following lines: ". . .Ce fut au temps de ce dernier que par un effort prodigeux, qui surpassa toute créance humaine, on transporta cette effroyable masse de Rocher, qu'on nomma *la Pierre fatiguée*. . .". The implication here is that La Condamine could not believe that a stone could have such a name, did not know Quechua, and did not have access to a Quechua dictionary when he wrote his article.

informed in letters he had written to Peru to his former fellow-students.⁵⁷ Following an ancient Indian tradition reported here by this same author, this enormous mass was drawn from the quarry fifteen leagues from Cusco, and transported by hand through mountains, across a great river, right up to the forecourt of the fortress of Cusco, where it remains. All this work was done with no other machines than ropes; more than twenty thousand men, of whom half pulled and the others pushed, were employed in this. All their efforts could not prevent the stone from escaping them while they were climbing a mountainside, and rolling to the base of the valley; in its fall down the mountainside it crushed three or four thousand Indians.

Without stopping for a story whose details could be exaggerated, one cannot deny from the sight of the different ruins one sees today in different parts of Peru that these people,

[p. 438] [Pagination thus in the original]

who in the opinion of all historians had neither the use of iron nor any knowledge of mechanics, had found the means by which to transport, raise, and assemble with much skill stones of a prodigious size and often an irregular shape. Father Acosta, an eye witness, assures us that these masses cannot be seen without astonishment, and is stated to have measured in the ruins of Tiahuanaco, a stone 38 feet long, eighteen across, and six in thickness, and that there were there many that were larger.⁵⁸

It is in Cusco, former capital of the kingdom of the Incas and the place where they held their court, that they have left the largest monuments of their power. This city is situated 110 leagues inland, about 13-1/2 degrees to the south of the Equator. In our voyage to the Equator, our operations for measuring degrees were extended no further than Cuenca,⁵⁹ three degrees from the Line; none of us had been to Cusco. In the private voyage that I made in 1737

⁵⁷ Garcilaso (1967 [1609]: Bk. 7, Ch. 27) says that he tried to get these dimensions from his fellow students, but that they sent him the measurements in the wrong units so that he could not use them: ". . .no ha sido la relación tan clara y distinta como yo lo pedía de los tamaños de las piedras mayores, que quisiera la medida por varas y ochavas, y no por brazas como me la enviaron. . ." The measures of length he mentions have been defined by the *Diccionario de la Lengua Española* (20th edition, Madrid 1984) as *brazas*: "medida de longitud, generalmente usada en la marina y equivalente a 2 varas ó 1.6718 metros"; and *varas*: "medida de longitud, dividida in tres pies ó cuatro palmas y equivalente a 835 milímetros y 9 décimas". The *ochava* was simply the eighth part of whatever was being described, in this case the vara; or here a measure of about 105 millimeters.

⁵⁸ This is from a passage quoted by Garcilaso (1967 [1609]: Bk. 7 Ch. 28), quoted in turn by La Condamine. The reference is to Acosta's (1590) *Historia natural y moral de Las Indias*, Bk. 6 Ch. 14.

⁵⁹ Read "Couenca" according to French orthography.

from Quito to Lima⁶⁰ I saw in many places along my route remains of these former Tambos, or royal hostels of which I have spoken above,⁶¹ and I passed in sight of the ruins of several ancient fortresses; but the object of my mission permitted no delay and did not allow me to stop to examine them. However, I had not yet lost the hope of being able during my stay in Lima to satisfy the desire I had to go to see the Ruins of the Fortress of Cusco; but the same reasons, and 180 leagues of bad roads, made me renounce this project. We also had occasion during the course of our work to see in the Province of Quito the vestiges of many royal roads from the times of the Incas.⁶² We also saw the remains of some ancient buildings among others in the place called Callo,⁶³ 12 leagues south of Quito and a little distance from the grand road, and some other ruins in various places. But the fortress of Cannar,⁶⁴ whose description I append here, is of all the monuments

[p. 439]

of the ancient Peruvians which have come to my knowledge that which appears to me to be the best preserved.

The other ancient structures in the Province of Quito, which are at least as famous as that of Cannar, are entirely destroyed; we looked in vain for the traces of the Palace of Caranquis, and for those of Tumipampa. As for the first, its name, however corrupted, is still preserved ten or twelve leagues north of Quito, and that is about all that remains. As for the second, not even the name remains. The Town of Cuenca was built by the Spaniards in the plain formerly called Tumipampa, and thence by corruption Tomebamba, and the memory of the Palace of that name is preserved only in the histories. This is true at least for that of Tumipampa, and that of Cannaris, which could not have been more than seven or eight leagues apart and which were not the same, as Herrera appears to confuse them, Decad. V. cap.1.⁶⁵

⁶⁰ To arrange for funds, while awaiting letters of credit from France. It was in the course of this voyage that La Condamine made a side trip to study the quinine tree, whose medicinal properties were already being appreciated by European doctors. See La Condamine (1740).

⁶¹ On [p. 435] of the French text.

⁶² Bedoya Maruri (1965: Lamina XVII), Hyslop (1984: figure 2.1, p. 20, p. 32) and Regal (1936: 79-84) report that the *Capac Ñan* or great (royal) road of the Incas passed through the site of Ingapirca.

⁶³ Pronounced "Caillo". Illustrated in Juan and Ulloa (1752: Pl. XVIII), although as with their illustration of Ingapirca, one must be prepared to doubt the accuracy of their rendition. This site has also been partially illustrated by von Humboldt (1813: Planche XXX).

⁶⁴ Pronounce this "Cagnar".

⁶⁵ What fortifies this conjecture is that it appears that the Historians of the conquests of Peru give a greater extent to the province which they call the "Cannaris", than that which is called today in the country the province of

I had considered publishing nothing about this since I did not have the description which I had been promised, accompanied by a plan and a view of the Ruins of the Fortress of Cusco. These papers, which I should have received by now, could possibly be in England, among the great numbers of letters that were seized on board three Ships returning from the South Sea.⁶⁶ I have had no news of them for two years, despite repeated solicitations to Mr. Folkes,

"Cannar". By this one understands no more than the neighboring territory to the town of that name inhabited by the Spaniards and with very few Indians to the north of Cuenca. This is a place where there is still today, ten leagues to the south west of this town, an ancient Indian settlement called "Cannari-pampa", that is to say, plain of the "Cannaris".

⁶⁶ This is one of the most tantalizing points raised by La Condamine in his entire article. La Condamine appears to have made two separate attempts to ship materials from Peru to Europe without success. The first was to send a trunk addressed to the French consul in Cadiz on 1 May 1737 (translation [p. 455]). It did not arrive. As for the second, it seems from the circumstances that he is referring to ships captured by the British in Commodore George Anson's round-the-world expedition (1740-1744). This expedition was originally planned to be a major operation of the so-called War of Jenkins' Ear between Britain and Spain, which quarrel merged into the War of the Austrian Succession (1740-48) between Britain on one hand and France and Spain on the other. It was during this war that the Royal Navy entered the Pacific in force for the first time and caused substantial damage and uncertainty along the entire coast. The British expedition arrived at the island of Juan Fernández, off the coast of Chile, in September 1741. The local Spanish authorities were convinced that the expedition had not survived the passage around Cape Horn, and had therefore taken few precautions against enemy shipping. In the course of the next three months the British expedition took several rich prizes; and captured, burned, and looted the coastal city of Paita in northern Peru. The most likely candidate for a ship carrying La Condamine's papers was the *Nuestra Señora de Dolores*, bound from Callao to Panama in October-November, 1741, and captured by H.M.S. *Gloucester* (Williams 1967: 113). The various other ships captured by the British fleet were sailing either from Callao to Valparaiso, or from Guayaquil to Callao, and are hence in our opinion less likely to have been carrying cargo intended for Europe. In 1743 Commodore Anson captured the Manila galleon and found he had taken the richest single prize ever seized by a British warship. The value of the treasure was put at £800,000 by the Admiralty, which can be compared with the Royal Navy's entire budget for 1745 of £2.81 million for some idea of its relative value (Heaps 1973: 253-254). The official account of the voyage was prepared by the expedition's chaplain, Richard Walter (1748). It was the regular practice of British ships to seize any papers they found in captured vessels for examination in London for information on the Spanish world, which was otherwise extremely scarce. It is not clear whether La Condamine's papers were in French or Spanish. The translators are undertaking a search in various British archives for these documents.

President of the Royal Society of London.⁶⁷ Notwithstanding that the Philosophical Societies take no part in the wars of Nations, they

[p. 440]

unfortunately feel the influences. Had I been able to recover these Memoirs, whose loss I regret today, the first tribute which I would pay would be to that illustrious Academy and would be the most fitting of those offered.

The Ruins whose plan I give here are situated at two degrees 32 minutes of south latitude. They are two leagues to the East of the town of Cannar and little distance from the great road from Quito to Cuenca, about seven leagues away and ten leagues by road to the North of this last Town. I understand there to be twenty leagues to the degree.

In order to visit this monument M. Bouguer⁶⁸ and I profited from one of those frequent intervals in which the measuring of our angles was perforce suspended due to our being plunged into a thick fog. We usually waited under a tent at the top of a mountain covered with snow, often for several weeks, for a ray of sunlight that would render our signals visible.

On the twentieth of May 1739, as we were going to set ourselves up on the summit of Bueran,⁶⁹ we noticed that the clouds were lifting to cover the heights of the mountains. We took this moment to visit the Castle of the Inca. The Fortress being described is not known in the community by any other name, and as is common here with all the other ancient Ruins the Indians call

⁶⁷ La Condamine was subsequently elected to a fellowship of The Royal Society of London and first visited the Society in 1763. His paper "*Declinationes quarundam Stellarum Australium primae et secundae magnitudinis, mense Julio 1738. Cum methodo inveniendi horam in mari noctu, ex aspectu Crucis australis.*" ("Declinations of certain southern stars of first and second magnitude, July 1738. With a means of finding the time from the night sky, from the aspect of the Southern Cross.") was read in London on 11 May 1749 and was published in the *Philosophical Transactions of the Royal Society* (La Condamine 1749). Although The Royal Society currently possesses two collections of the correspondence of Martin Folkes, neither contains any letters from La Condamine. The Wellcome Institute for the History of Medicine also has some of Folkes' correspondence, but no letters from La Condamine (pers. comm. from N.H. Robinson, Librarian of The Royal Society, 16 March 1988, their reference 874001.C802/NHR/JMW).

⁶⁸ Pierre Bouguer (1698-1758) was another leading mathematical and geographical figure of early eighteenth century France. He and La Condamine were frequently at odds on the expedition, but did manage to work together well enough to secure the desired results. Bouguer returned to France in 1743 and quickly began to produce a version of the expedition's work in South America. His *Rélation abrégée d'un voyage fait au Pérou* was published in 1744. See Lamontagne (1964).

⁶⁹ Pronounced "Boueran". This peak is in the Nudo de Curiquingua, altitude 3818 m, 8.5 km southwest of Ingapirca.

it by the general name Inca Pirca, that is to say, "walls of the Inca". These are situated on favorable ground on a rise at the angle formed by two ravines, of which one lies to the South South West, and the other the North West.

M. Bouguer and I took the principal measurements to make the plan of these Ruins. While constructing mine, I perceived that I was missing some of the dimensions. I returned a few days later to the site to take them, and to observe some directions with the Compass. I also drew the appearance of the Castle from a point of view

[p. 441]

on the flat land, at the base of the platform on the North side. When I came to take my measurements, I saw that someone was working at the demolition of what was best preserved there, to use the materials for a new building at the neighboring farm. One will not be surprised that there is so little regard for an ancient monument in a country where the Letters and Arts have made little progress, if one reflects that the same thing happens daily in Europe, even in those places where the Antiquities are the most respected.

I feel I have to warn the Reader that the description I am going to give of the Ruins near Cannar could well give an idea of the materials, of the form, and perhaps of the solidity of the Palaces and the Temples built by the Incas, but not of their magnificence, nor of their extent. In the Ruins of which there is question here there is no stone of a remarkable size, nor any room that is more than thirty feet long by fifteen to sixteen across, by comparison with those halls of two hundred paces by sixty of which the Spanish Historians speak. The testimony of Garcilaso cannot be called into question on the subject of four rooms he had seen in Cusco, and of which one, which has been converted into the Cathedral, easily contained 3000 persons. This Church has since been entirely rebuilt by the Spaniards, but many of the other ancient buildings listed by Garcilaso remain today in Cusco, in whole or in part, and the College of the Jesuits is one of them. As for those of Cannar, and for those in the region, the location of the place has contributed to this. One reads in the History of the Incas that the People called Cannaris, on whose territory this Fortress is built, resisted the arms of these Princes for a long time, and that the Conquest of this Province was one of those that cost them the most. They were able to build this Citadel there to assure their frontiers from that side, and hold their new subjects in check, since they were always ready to throw off the yoke. They had chosen as the place most suited to this project a plot of land naturally

[p. 442]

fortified by the meeting of two Rivers, of which one protected it on the side of the enemy. This stance [that is, on where to build Trans.] would not have permitted extension or making large buildings except in those places where the Incas had established the Seat of their Empire, or in those where they had long since asserted their domination. Besides, I will not describe here any save the Ruins that are the best preserved, and contiguous to the Fortress. One still

sees some other remains of ancient buildings⁷⁰ 100 to 150 *toises*⁷¹ from the Castle, but in such a poor state that they are not suitable for giving any idea of what they were formerly.

The Plan which I attach here of the Ruins near Cannar consists of the fortress proper and the nearest buildings, which were very likely the dwelling of the Prince.

The Fortress⁷² [Figure 2] consists in its present state of a *Terreplein*⁷³ (A B) made by hand, raised level to the height of 14, 15, and 18 feet above an unequal Ground. In the middle of this Terreplein there is a square lodgement, which very likely served for the Guard. The Terreplein, as well as the Platform which ends it, is eight *toises* across and twenty *toises* long; the two extremities (A B) are rounded, so that the shape is that of a very long oval, little or not

⁷⁰ These are most probably the remains near Ingapirca that are known as *Ingachungana*. This name is defined by van Volxem in his study of the meaning of the name as "arrodillero del Inca" or "place where the Inca kneels" (1879: 46); van Volxem assumes that this use of *chungana* is not linked to *chungana* "jugar" or "juego", which is the definition provided by Cordero (1955: 32). The second set of ruins is *Inga-* or *Intihuayco* (Quechua *wayk'o* "cañon, quebrada, torrento, 'oracón'"--Herrera and Sánchez de Lozada [1983: 546]).

⁷¹ A French nautical measure of length: six French feet or 6.4 English feet, roughly equivalent to the English fathom and about 1.95 meters.

⁷² Marginal note: Fig. 1 & Fig. 2. "Fig." in La Condamine's marginal notes refers to the various subdivisions of his plan and elevation of Ingapirca (Figure 2 in this article). The fullest discussion of the relationship of the buildings at Ingapirca to other Inca structures is found in Gasparini and Margolies (1977: 303-304).

⁷³ A *terreplein* was one of two things. The first was the horizontal part of a rampart or battery situated behind a parapet. The second was all earth packed between two masonry walls to serve as a terrace or roadway. The use of the term by La Condamine indicates that he intended the first definition. This is the first of a series of European fortification terms used by La Condamine, based broadly on the work of Marshal Sebastien le Prestre de Vauban in France at the end of the 17th century. Vauban's principal work on fortifications and siegecraft was not published until 1737 (Vauban 1737), but his notebooks had circulated in manuscript form throughout European military circles for many years before that, so that his ideas were well understood by men interested in siegecraft. As a trained French soldier and surveyor, La Condamine would have been familiar with the most modern theoretical works that dealt with the science of fortification. This is because more military effort went into designing fortifications or ways to attack them, than into map-making. In the early eighteenth century battles tended to be fought in familiar territory and over long periods, so that the detailed map-making skills developed later for imperial wars were not so necessary. It is therefore perfectly understandable that La Condamine would analyze the Inca structure in terms of the European models already known to him.

at all enlarged at the middle. The direction of its major Axis was from the East 6 degrees South, to the West 6 degrees North by the Compass, which declines about 8 degrees to the North East.⁷⁴

From the North Side, where the fortress is on a scarp, the terrace (E F) which holds up the Terreplein, has for its base a second terrace (G H) six feet across and from 15 to 16 feet in height above the meadow. All this enclosure is revetted by a wall at least three feet thick at the top of pieces of a sort of Granite, well quarried, perfectly well joined, without the least appearance of cement, and of which not a single one has given way to the present day. All the courses of Stones are exactly parallel, and of the same height;

[p. 443]

a particular circumstance at these ruins, and contrary to what I have noticed among those of Callo. The joints of the Stones would be imperceptible if their exterior surface were flat, but this is worked in relief. The anterior face of each stone (t, u)⁷⁵ is slightly convex or bulged out in the middle and cut on the bevel towards the edge, so that their joints form little channels or grooves which serve as ornament, a little like the separations of stones in the Pilasters of a Rustic order.⁷⁶ To give this regular and uniform convexity to all these Stones, and even to polish so perfectly the interior faces where they touch, what labor and industry would be required with even our instruments, among peoples who did not have any use of iron, and who could not work Stones harder than marble except with axes of Flint, nor smooth them save by rubbing them together?⁷⁷

One climbs to the Esplanade to the South and North of the Fortress by two ramps parallel to the length of the Terreplein.⁷⁸ The first (I K) abuts upon the middle, the second (L M) terminates about one quarter of the way along that platform. At the point at which (M) the ramp ends, there begins the lower terrace (G H) of which I have already spoken; this forms a false truss a *toise* wide, and covers all the rest of the northern face of the Fortress.

⁷⁴ That is, the angle between true north, measured along the Earth's axis, and the magnetic north pole was about eight degrees. The phenomenon of the movement of the magnetic north pole was already understood at the beginning of the eighteenth century. It was also known that the size of the deviation varied from place to place on the earth's surface and from time to time. The declination or "dip" was included in the information supplied on navigational charts.

⁷⁵ Marginal note: Fig. 3.

⁷⁶ This is the style of masonry known as *almohadillado* in Spanish. See Barnes (1986: 145) and references therein.

⁷⁷ A point reinforced by most observers of Inca buildings. See, for example, Hiram Bingham's work at Machu Picchu in 1912, where he found excellent masonry shaped with stone tools (Bingham 1913: 477).

⁷⁸ These ramps are actually partially buried staircases.

The almost square Building (C D), which I have supposed to have been intended for a Guardhouse, and to which I have given this name, is isolated and situated in the middle of the Esplanade. It is 24 feet long by 22 feet wide, and is partitioned along its length by a wall (N O) drawn from one gable end to the other, in two equal long and narrow rooms which have no communication. One enters them by two opposed doors (P Q) pierced through the middle of the largest faces of this set of buildings. They face the two semicircular extremities (A B) which form the ends of the platform.

[p. 444]

The walls of this Guardhouse are two and a half feet thick. They are much less well preserved than the revetment of the Terreplein. The point, or the part above the two gable ends, could be of modern construction because it is not in stone like the remainder, but in a kind of brick dried in the air which the Spaniards call Adobe.⁷⁹ They are made of great lumps of heavy earth mixed with a kind of straw or fine Rushes, called Ichou⁸⁰ in the language of Peru, and with which all the country's Moors and most of the Mountains are covered. The greatest number of houses in the Province of Quito as much in the Towns as in the Countryside, are built of this material. When the Adobes are well prepared, they become very hard and resist the injuries of the air very well; I have seen some that have been exposed for fifty years, whose sharp edges were not at all blunted.

I had believed that the Spaniards had brought its usage to America because they are common in Spain, and because the Spanish name Adobe has been adopted by the Indians. But I find in Garcilaso⁸¹ that this manner of building was common among the ancient Peruvians. What, it seems to me, decided the question is that they have a separate word in their language for this sort of mud brick. The Indians name it Tica;⁸² they also have a verb ticaní, to describe the action of making Adobes. One cannot therefore conclude with certainty that the upper part of the wall about which there is some question is of modern construction, simply because it is made of earth prepared thus. I did not pay it enough attention to assure myself of its antiquity by other marks; I simply remark that all the other walls of this monument are of stone, that they are all finished squarely, and that none has a window like the one (see fig. 2) in the upper part of the gable of the Guardhouse. This sole circumstance appears to

⁷⁹ Pronounced "Adobé". Confirmed by Verneau and Rivet (1912: 92 and Pl. II).

⁸⁰ "Itchou", in French orthography.

⁸¹ Garcilaso (1967 [1609]: Bk. 6 Ch. 4).

⁸² Quechua *Tika* "Pedazo de forma cuadrada, con peso de unas diez kilos, comúnmente llamado en nuestro medio 'sal en adobe'" (Herrero and Sánchez de Lozada [1983:446]). Modern usage of this word is therefore "a block of salt in the form of an adobe"; it may have been that La Condamine misunderstood a local Quechua term and assumed that the work *tika* was used for "adobe".

me to be sufficient to pronounce that this part of the building is not of the time of the Incas.⁸³

[p. 445]

Among all I have seen of the ancient buildings in America there is not a single window, and the same thing was confirmed to me by those that I had looked at and had seen in the Ruins of Cusco. It is true that the Indians use the word *Hoco*, taken from their language, to mean a window, but formerly this meant only a cupboard or niche cut in the wall, like those of which we will speak soon. To distinguish a window, they at first said *Cahuaruna Hoco*, that is to say, niche, or hole to look through.⁸⁴

Since it is impossible for us to prevent ourselves, even without our realizing it, from mentally adapting to our usages what we learn of strange customs, one will find it possibly extraordinary that Windows, which we consider such an essential feature for the comfort of a building, could be lacking from the home of a Sovereign. However, let us travel to those times in which men were beginning to build. A roof of leaves, a wall of branches, were their first shelter against the injuries of the air. The Peruvians were not that far removed from that period when the Spaniards conquered them: one may count only twelve generations from the time that Manco Capac, the first Inca, dragged the Indians

⁸³ Von Humboldt's opinion notwithstanding, this question cannot be decided with certainty. The twentieth century excavators did not address this particular set of constructions, and La Condamine is the only scholar to have provided a good elevation of the site before any restoration work was carried out. Gasparini and Margolies (1977: 304) state that adobe was used for the upper portion of the wall in the central building, but do not state whether their conclusion is based on observation or secondary information. Nor do they directly commit themselves to a date for the upper portion of the building, although they include this discussion in a section on Inca architecture. However, other examples of Inca buildings made of both stone and adobe are known. See, for example, the temple of Viracocha at Raqchi as illustrated by Hemming and Ranney (1982: 188-193) and by Gasparini and Margolies (1977: 243-263).

⁸⁴ Modern Cuzco/Cochabamba Quechua has the following: *Qhaway* "to look" and *T'oqo* "hole"; Herrero and Sánchez de Lozada (1983: 341, 486). *Qhawarina* also serves as a word for "window" - "that which is looked through". The word *hoco* recorded by La Condamine might be a phonetic rendition of the word *ukhu* "inside" (Herrero and Sánchez de Lozada [1983: 495, meaning 2]), so that the phrase he recorded as *cahuarcuna hoco* would mean something like "looking-inside things" (Professor Donald Solá, pers. comm. 8 July 1987). The suggestion was also made by Professor Lawrence Carpenter that *hoco* might be a back-formation from Spanish *hueco* "hollow, empty" (pers. comm. June, 1987). Santacruz Pachacuti used the word *hoco* to refer to sacred windows or openings from which Manco Capac Inga and his brothers and sisters emerged (Santacruz Pachacuti [1879: 206]). La Condamine is incorrect in regard to the nonexistence of windows in Inca architecture.

from Barbary.⁸⁵ The conjectures on the origins of a man so superior to others who appeared so suddenly in the midst of a savage People, would draw me too far away from my subject. However that may be, Manco Capac drew the Peruvians from the depths of the Forest, where they had lived scattered according to their own traditions; he gathered them into a Society, gave them Laws, and a tincture of some culture; he showed them how to dress themselves in cotton cloth, and in cloth made from the hair of vicuñas, how to cultivate the earth, and how to water it by Canals. There is question here only of Architecture. Let us see by what degrees it grew among them. Their new Sovereign taught them how to lodge themselves more comfortably; walls of earth succeeded the palisades; soon enough they learnt how to use stone, and they made surprising progress in this regard;

[p. 446]

but they have not always marched with an equal step, in this art as in others. One feels that the lack of iron and steel often stopped them; from time to time they fortunately surmounted this obstacle. Their talent for imitation has been well seconded by chance on several difficult occasions, as well as in more simple cases. It appears that like the Waterfalls which they saw carve themselves a bed in the Rocks, they sought out and found ways to do without iron for working the hardest stones; but these same people who worked Granite and drilled Emeralds never knew how to assemble a piece of carpentry by means of mortises, tenons, nails, or pegs. The Volcanoes and the Mines with which their country is filled could provide the spectacle of liquified metals, but although they succeeded in smelting gold and silver, and in casting them in molds, they were never aware of how to bake their bricks, nor their tiles, for which they had the materials. Often they were contented with what they found first, without looking for something better of which they had no idea. Those brilliant gold walls in the Palace of Cusco had roofs made of straw, from the testimony even of Garcilaso; woodwork without braces or cross-pieces was attached to the walls with ties of that species of rushes of which I have already spoken. The roofs of the houses were held up only on poles like our Army Tents, and sometimes, when the house was round, on a single pole placed in the center, like the Tents of the Turks. They did not push their knowledge of the art of building any further; their industry finished where their needs ended. Possibly

⁸⁵ La Condamine explicitly accepts Garcilaso's account (1967 [1609]: Bk. 6 Ch. 1) of the origins of the Incas. However, quite casually and very significantly, he shows that later seventeenth and early eighteenth century scholars were already thinking in terms of lineal social evolution and improvement. This is generally thought to have been the mark of the post-Darwinian thinkers of the nineteenth century, in particular Herbert Spencer (1967), Karl Marx (1977), Friedrich Engels (1940, 1972) and Lewis Henry Morgan (1964), who saw human development as an abstract sequence of clearly-defined stages that would lead to an inevitable conclusion. It is more likely to have been a development of Renaissance concepts of the improvability of man, that replaced the late Mediaeval notions of a static universe in which everything and everyone had a place ordained by God. For a detailed discussion of this slow but important evolution in European thought, see Hodgen (1964). For an outline of the implicitly evolutionary schema of Andean chroniclers Acosta, Poma de Ayala, and Calancha see Kubler (1984).

one would not have thought any further than they of raising houses with several stories, if one did not have the land on which to set up. In their buildings constructed on the ground floor, if one door did not give enough daylight it was simpler to make a second and a third, than to pierce windows without glass, which would have been for them nothing but doors

[p. 447]

with a very inconvenient sill. Still today in Algiers, in Tunis, in Tripoli on the Barbary Coast, in the Southern parts of Spain, in Lima, in Quito, at Cartagena, and in every part of Spanish America one sees rooms which take the whole of one side of a Court on the first level of a large and beautiful house, and which does not receive daylight save through a door pierced in the middle of a corridor. Can one be astonished after this by the fact that windows are not used by Peoples who never have houses of more than one story, and among whom glass was unknown before the arrival of Europeans?

In the corners of the walls of the Guardhouse the stones were not alternately headers and stretchers to make the links between the two walls as in our buildings; to take the place of these there were here long stones (1.2. fig. 5)⁸⁶ which crossed on the bias from one wall to the other. The parts engaged in the two walls are massive throughout their entire size, and worked like the other stones; but the strip which joins one wall to another is thinned and rounded, in the form of a cylinder a little more than the thickness of an arm.

There remain outside the corners from one place to another, in the Western of the two rooms which form the Guardhouse, six other cylindrical stones (3.4.5.6.7.8. fig. 5) which project a foot and a half from the wall at a right angle. They appear to have been destined for the hanging of Arms. All these stones were extremely hard, like those of the revetment; it is a kind of Granite,⁸⁷ of which there is no quarry nearby. One deduces that they were carried in from at least five to six leagues away, and following the tradition,

⁸⁶ Marginal note: Fig. 3. This use of a diagonal wall brace in wood, rather than stone, to hold together the angle of a wall has been noticed by the translators in an Inca rectangular building at the site of Iglesiachayoc, in Lucanas province, Ayacucho, Peru. See also Meddens (1983: 222).

⁸⁷ Von Humboldt disputes this, saying that Ingapirca is constructed of a porphyry with vitreous feldspar and hornblende inclusions, probably from the quarry of Labrashcarumi at the foot of Yanahurco. La Condamine, however, is referring only to the *pegs*, not the walls in which they were set. He gives no opinion as to the stone used for the walls. Professor Lacroix, a geologist to whom Verneau and Rivet submitted a sample of a construction stone from Ingapirca, rendered the opinion that it was made from an andesite tuff formed from andesite and rhomblende debris (Verneau and Rivet [1912: 93]). Meyers and Cueva J(aramillo) (in press) point out that although there is an ancient quarry at Labrashcarumi, it produced gray stones which were distinct from the greenish stones from which the Castillo of Ingapirca is built. Meyers and Cueva J(aramillo) believe that they located the quarry for the Castillo stones on the hacienda El Hato de la Virgen.

carried in the arms from hand to hand, such was the prodigious number of inhabitants.

Garcilaso describes with certainty an extraordinary fact which was called into doubt by Pedro Cieza de Leon, which is that the Temple of the Sun and the Palace I have already mentioned built by the Incas at Tumipampa, was built of stones carried from Cusco,

[p. 448]

which is over 500 Leagues away by road. However this may be, there is not in all the Ruins under discussion here any stone longer than those which form the Lintels of the doors, and which are at most six feet long. These Lintels must be one piece only in order to rest on the jambs, the Indians not having known the art of vaulting. The two doors (P Q) of the Guardhouse are three feet wide at the base and about a toise high; the jambs are not parallel, but come together a little towards the top.⁸⁸ There are in the two rooms by the entrances and in the thickness of the wall at breast height several hollows, or niches, square in form but a little taller than wide, about 15 to 16 inches deep; they took the place of Cupboards. I noticed nothing else there worthy of attention.

Beyond the Terreplein, on the West side, the terrain continues to be scarped, although it flattens out slightly; it is sustained all along its length by a terrace (R S) revetted with stones, like the big Terreplein, but 12 feet lower than the oval platform. This terrace is born at the Western end of the Terreplein; it advances at first sticking out (R) a few feet to the North,⁸⁹ as if to bar and close off the false truss (G H). From there it turns in a right angle to the West and is prolonged (R S) for 84 feet, forming a curtain wall, of which the Western end rests upon a sort of square bastion (S T) made of two flanks and a face. Beyond this bastion, there is nothing more than the remains of a simple wall, without any appearance of fortification. This wall always follows the highest part of the terrain, which flattens out little by little, and returns to the East by the South while making a semi circle (T V) and thereafter becomes once again parallel to the length of the Terreplein. This last part of the wall (V X)⁹⁰ still remains in its entirety; the rest of the enclosure is extremely irregular. The plan alone may give some idea of its circuit (X Y Z W & B).⁹¹

[p. 449]

In the present state the whole enclosure is divided into four corners. The remains of the first on the Eastern side are still fairly evident, its form (W & alpha [should be delta; trans.] gamma) is of a quadrilateral 80 feet long by 110. It appears to have been surrounded by a small group of isolated buildings,

⁸⁸ That is, the door is trapezoidal.

⁸⁹ Marginal note: Fig. 1 & Fig. 2.

⁹⁰ Marginal note: Fig. 1.

⁹¹ This is the area known by the Spanish excavation team as "La Condamine". See Fresco (1984: *passim*).

longer than wide, of which one may still see the foundations (W & sigma delta theta gamma).

The second Court (gamma delta lambda Z) is a little smaller, and without traces of any building.

In the third which is larger and of irregular shape (XYZ lambda LG) I noticed no other Ruins than those of a square room, placed at the Angle (lambda) by which one now enters this Court. But since the walls which close these three Courts are of modern construction, and since I found there no trace of ancient foundations other than those of the group of isolated buildings (gamma W & sigma gamma theta lambda), it is very possible and likely enough that these buildings were outside the actual enclosure of the Fortress and the area inhabited by the Inca. These were very likely the lodgings of the under Officers, or of those who least approached his person. One can do nothing with this save make vague conjectures; but there is nothing equivocal about the antiquity of the enclosing wall of the fourth Court (RTVX) which occupies the ground next to the Terreplein, to the South and the West. These walls are evidently as ancient as the buildings enclosed within their circumference; there is therefore good reason to believe that here were the true ruins of the Inca's dwelling, properly speaking. I say of the dwelling; for I hesitate to call Palace something which is noticeably different from what we usually mean by that term.

It is difficult to be able to give a fair idea of the extent and general effect of all these ruins when they form a unit, and to make use of conjectures, with the lack of illumination that one may draw

[p. 450]

from an inspection of the terrain. What remains today of this ancient Edifice is completely disfigured, the largest part is demolished, and its materials have been used for the buildings of tradesmen, into which the dwelling of a powerful Monarch has been transformed. Moreover the plan of a royal House, conceived after our ideas of Architecture, would be more likely to mislead us than guide us in our research. It must be remembered that the ancient Peruvians never had models of this type, that they had only nature as a guide, and that Vestibules, Porticos, Colonnades, Arcades, Vaults, and the multiplicity of rooms that serve for nothing but ostentation were unknown to them. They developed an Architecture that was very simple, fitted to the climate they lived in and to their needs and knowledge.

It appears that in their construction techniques, they never developed the set of rooms which communicate one with another, which we name apartments. One sees here no appearance of them; there are only rooms which are detached and separated from one another without any communication. Such are the six Rooms or Chambers (a,b,c,d,e,f) in the fourth Court; they are all together, better preserved than all the foregoing, and enclosed in the irregular enclosure (RSTVX) which I have already described to the South and the West of the Fortress. This and the curtain wall (R S) built up against the Terreplein (A B) and the bastion (S T) give cover to these six interior rooms, which remain for me to describe.

One reaches them by an alley or narrow gallery (g,h) of 17 to 18 *toises* in length by one *toise* in width. This gallery is parallel to the length of the Terreplein, and very close to the interior ramp (I K) by which one climbs to the Fortress platform on the South side. The Southern [actually, Northern; trans.] wall (g,i,h) of this gallery is well preserved, while the opposite is entirely demolished; one sees only

[p. 451]

by the gaps in the foundations of the gables of three Rooms (a,b,c) built up against this wall that it had two doors (r,s) which gave entry into the two small Courts which separated these three Rooms, or Guardhouse (a,b,c). The doorframes and lintels of the two doors (g,h) of the gallery were of a finer workmanship and better finished than those of the other doors; the joints of the stones there were imperceptible. In addition these doors were higher: instead of being six feet high, which is the normal height of the others, these were seven feet, nine inches high; which leads one to believe that these were destined for the passage of the Inca who, according to the reports of Historians, was carried in a litter on the shoulders of his subjects.

These two doors have another singular feature which distinguishes them. At the base of each frame, at the ground level on the inside, there are two holes two inches square, a little rounded at the top and a few inches apart.⁹² These two holes penetrate about half a foot into the thickness of the stone, and are joined together in its interior at a half foot from the exterior surface of the wall. Their horizontal plan has more or less the shape of a horseshoe.⁹³ When one realizes that this communication Channel is dug in the interior of the stone it would be much simpler and easier to believe that it is contrived between two stones in the thickness of the wall. The most accomplished stonemason in Europe, however skilled he might be, would without doubt be very perplexed at having to cut such a curved and regular channel (x y z) within the thickness of a block of granite, with all the aid of his art and the best tools of iron and steel.⁹⁴ It is therefore even harder to imagine how the ancient Peruvians succeeded here with axes of copper or of hard stone, such as one finds in the ancient tombs, or with other tools like them, and without set-squares, or compasses,

⁹² Marginal note: Fig. 3.

⁹³ Marginal note: Fig. 4.

⁹⁴ Such an interesting feature would surely command the attention of any archaeologist working at the site. However, we have been unable to find a discussion of this particular example of fine stoneworking in any of the published accounts of the architecture of Ingapirca (Bedoya Maruri [1978] and Fresco [1983]). This is particularly regrettable because there are few examples of workmanship this fine from Inca sites outside Cusco. As an idea, it must be compared with Bingham's suggested restoration of a gate closure at Machu Picchu which was much cruder (1913: 467).

[p.452]

according to Garcilaso. However that may be, we have seen in other ruins ornaments in this same granite which represent the muzzles of animals, whose pierced nostrils hold moveable rings of the same stone.

As for the use of these pierced holes which I have just described, being at the base of the frames of the doors of the gallery it is likely that they were used to close the doors and support hinges, of which no part has remained. Doubtless it was that these doors were raised and lowered like a drawbridge, and were attached by leather bands, or perhaps by metal chains. These chains or straps passed through the Channel cut into the rock, could be fastened to the lower part of the door, and could function as a hinge. The interior door (h) of the gallery gave entry into the last enclosure (RSTVXG), which I have called the fourth Court.

Of the six Chambers or Rooms which are enclosed in its circuit, two (d,c) are supported to the right and to the left by the walls of the gallery, and have their doors (k,l) like that (h) of the gallery turned towards the West. Two other rooms (e,f) with square returns which leave only narrow passages (l,m) between their angles, have their doors (n,o) the one turned to the East, and the other to the North. All these different parts of the main structure are neither parallel to one another nor at right angles. Each one, or at least most of them, have biases which show that they were made by eye, and without the aid of a square or the practical experience which serve to guide the least of our workers.

It is probable from the location of these four rooms that the first two (d,c) were destined for lodging domestic Officials, and those of the Prince's guard; the other two perhaps served as his private kitchen and his royal cellar, or at least

[p. 453]

they could have served as such. The art of Cooking was very limited among these People, to judge from the very small number of dishes which the Spaniards took over from the natives of that Country or of which the memory is preserved; peppers and salt served for all their seasoning. Their drinks of inca corn and of a few other fermented roots were more varied; they made from these some enervating liquors, and they have preserved the custom of making great use of them. Garcilaso reports that they ate little, and never drank at meals; but that after that of the morning, which was the largest, the rich men⁹⁵ made up for this by drinking until nightfall. One can say that it is only in this respect that the Indians of today prove, when they have the chance, that they have not degenerated from their ancestors.

As for the two sets of buildings (a,b) which are face to face in the innermost part of the Court and the most covered by the Fortress, these were without doubt the lodgings of the Inca and his women. What puts this beyond doubt are the doors (p,q) of these two rooms. These are like those of the gallery (g,b) with a height proportioned for the passage of a seated man,

⁹⁵ Marginal note: Lib. VI cap. I.

carried in a litter on the shoulders of other men. They are opposed and face one another, and they have within them holes like those of the entry doors of the gallery, so that consequently they shut in the same way, while no other door has the least sign of any closure. These two rooms are thirty feet long by fourteen wide, and are one foot narrower than the room (c) which I consider to have been the Guardroom. There are in the thickness of the walls, at breast height, nineteen niches six inches deep, as in the other rooms; they are like those of the Guardroom in the Fortress; there is nothing else there worthy of notice. The locals have told us only that

[p. 454]

there have been found there stone Basins with feet of the same material, that one suspects served as braziers.

I looked in vain for the exit of a supposed Tunnel, of which there was vague talk in the country, and which is said to have been built under the Castle. I found nothing but a collapse of earth and rocks caused by a waterfall in a cave to the West of the Fortress; and the steward of the farm built from the ruins of the Castle assured me that there was no Tunnel.

Such are the ruins of the Castle and Palace of Cannar, of which the Historians of Peru, among others Pedro de Cieza de León, report such marvels. He says, among other things, that it is impossible to describe the great riches one saw, the vases and vessels of gold and silver, the great numbers of costumes, covered with tiny grains of gold, finer than seed pearls, and which the Goldsmiths in Seville, according to Garcilaso, could not conceive of making. I have seen many small examples of this sort of workmanship; I have in my possession several of great delicacy, and I regret the loss of many others.

The same Garcilaso and other Spanish Authors also mention the baths, in which the taps and tubs were of gold and silver, the parterres, and the gardens of the Inca royal palaces, where one would see trees and flowers of gold imitating nature, ears of Corn of silver, of which the husks were of gold. Garcilaso adds that the Spaniards saw only one of these gardens on the Island of Puna where they disembarked, and that the others were destroyed by the Indians to keep their existence from their new masters. It is known that Francisco Pizarro chose as General for his lot in the Ransom of Atahualpa Inca, king of Quito, the gold chair of the Inca and the table of the same metal which was for his feet, from among that great mass of gold which filled a great room up to the height

[p. 455]

to which a man could reach.⁹⁶ It appears from what happened to all these riches that they esteemed the material more than the workmanship. One must not conclude that nothing deserved to be kept. If the Greeks had made only statues of gold and silver, it would be very likely that very few Greek Masterpieces would have come down to us. A few morsels, precious because of their material, have escaped over two centuries the danger of a change of form, either through ignorance or through the avidity of their owners. These can

⁹⁶ Garcilaso (1967 [1609]: Bk. 6 Ch. 2.

serve as a proof and a monument, if not to the skill of the Indians as sculptors, at least to a rare industry by which they overcame the lack of machines and tools of iron, and by whose lack the art of working the materials was made more difficult than for our craftsmen.

During my voyage to Lima I acquired several small Idols of silver and a cylindrical vase of the same material, about 8 or 9 inches tall and more than three across, with masks chiselled in relief. To judge from these pieces of work the Peruvians had not made great progress in design; that of the pieces was gross and not very correct; but the skill of the worker shone through the delicacy of the work. This vase was above all distinguished by its thinness; it could not have been a scarcity of silver which made for the sparing use of the material. It was as thin as two sheets of paper held together, and the sides of the vase were grafted squarely onto the base, at right angles, without any trace of solder. I have never had any news of this vase, nor of many other curious pieces which I sent from Lima on the first of May 1737 in the Frigate loaded with the rest of the funds from the Galleons of 1732, which sailed from Callao for Panama. The trunk was addressed to the French Consul in Cadiz, through the agency of the English Factors of the Asiento at Panama. I take the occasion which presents itself to make known the value

[p. 456]

of this piece of antiquity to those into whose hands it has fallen, the vase's lack of weight possibly having kept it from being melted.

Pedro Cieza de León, Francisco Lopez de Gomara, Augustín Zarate etc. report that the Royal Palaces of the Incas were panelled with sheets of gold and embellished with figures of the same metal, representing men, women, and animals, which were placed in the niches. They add that their workers could imitate perfectly in gold relief the grasses and plants, above all those that grew in the walls, and that they placed them there with so much skill that they seemed to have been born there. Without doubt they molded them, as with the figures of Rabbits, Mice, Lizards, Snakes, Butterflies etc. of which the same Historians speak.

During the whole of my stay in Quito, I had often heard speak of similar figures of Animals, Insects, and other massive Works in gold which were kept from curiosity for more than a Century in the Royal Treasury of that City, where some of us saw them. More pressing demands had always made me put aside the wish to satisfy my curiosity on this point, until 1741 when I went with the intention of studying these pieces at leisure. I learned that all of them had just been melted down into ingots, to make up the funds being sent to Cartagena, then being besieged by the English, and that there was no person curious enough to purchase a single one for its weight. The singular products of Nature and Art would soon cease to be rare, if there were men everywhere who were keen to recover them.

[End of the translation.]

Acknowledgments

We are very grateful to Professor Emeritus John V. Murra, of Cornell University, for his guidance in the planning of this article. We also thank Dr. Gerturde E. Dole for comments on Adolph Bastian's place in the history of anthropology. Important bibliographical suggestions have been made by Dr. Olaf Holm, Dirmuseo of the Museo del Banco Central, Guayaquil, by Dr. Roswith Hartmann of the Seminar für Völkerkunde, Universität Bonn, by Anne W. Tennant of the Denver Art Museum, by Dr. Frank Salomon of the University of Wisconsin, by Roy Reese of Cornell University, and by Dr. Dennis C. Landis, editor of *European Americana*. We are also indebted to two anonymous reviewers whose reading of the original text revealed many areas for improvement. The research underlying our introductory essay and the annotated translation draws upon the combined resources of the Archivo General de Indias, the Olin Library of Cornell University, The New York Public Library, the John Carter Brown Library and the John Hay Library at Brown University, the Butler Library of Columbia University, the Biblioteca de la Escuela de Estudios Hispano-americanos, Seville, and the library system of the University of California. We thank the staffs of these great collections for their gracious assistance.

References

(Note: Unpublished sources are listed in a separate section at the end of this bibliography and are signalled in the text by the designation "ms".)

Acosta, Joseph de

- 1590 *Historia natvral y moral delas Indias en que se tratan las cosas notables del cielo, y elementos, metales, plantas, y animales dellas: y los ritos, y ceremonias, leyes, y gouierno, y guerras de los Indios*. Sevilla: Iuan de Leon.

Acosta Solis, Misael

- 1976 *Investigadores de la Geografía y la Naturaleza de América tropical Viajeros cronistas e Investigadores con especial referencia al Ecuador*. Parte I. Quito: Biblioteca Ecuador, Publicación del Instituto Panamericano de Geografía e Historia, XI Asamblea General y Reuniones Panamericanas de Consulta CONEXAS, Sección Nacional del Ecuador. 1977.

Adams, Percy G.

- 1958 A Fake Eighteenth-Century Traveler: François Coreal. *The Newberry Library Bulletin* IV, no. 8 (April): 239-252.

Alcedo, Antonio de

- 1967 *Diccionario Geográfico de las Indias Occidentales o América*. Edición de d. Ciriaco Pérez-Bustamante. *Biblioteca de los Autores Españoles desde la Formación del Lenguaje hasta nuestros días. Continuación de la Colección Rivadeneira CCV-CCVI*. Madrid: Atlas. [1786-1789]

Alcina Franch, José

- 1975 Excavaciones arqueológicas en Ingapirca (Ecuador). *Mundo Hispánico* Año XXVIII, no. 328 (July): 46-51. Madrid.
- 1976 Excavaciones arqueológicas en Ingapirca. *Boletín Bibliográfico de Antropología Americana, Instituto Panamericano de Geografía e Historia* XXXVIII, no. 47. México.

(Alcina Franch, José)

- 1977 Investigaciones arqueológicas en Ingapirca (Cañar), Ecuador. *El Dorado* II/1: 36-39.
- 1978 Ingapirca: arquitectura y áreas de asentamiento. *Revista Española de Antropología Americana* XIII: 127-146. Facultad de Geografía e Historia, Universidad Complutense de Madrid, Departamento de Antropología y Etnología de América.
- 1979 Ingapirca: la pared del Inca. *Historia* 16, Año IV, no. 38: 121-28. Madrid.
- 1980 Tomebamba y el problema de los indios Cañaris de la Sierra Sur del Ecuador. In Homenaje al Prof. Enrique Marco Dorta, Tomo I, pp. 403-433. *Anuario de Estudios Americanos* 37. Sevilla.
- 1981 Fechas radiocarbónicas en la Arqueología del Ecuador. *Revista Española de Antropología Americana* XI: 95-101. Facultad de Geografía e Historia, Universidad Complutense de Madrid, Departamento de Antropología y Etnología de América.
- 1983 Las cabezas-clava de Ingapirca (Ecuador) "Gedenkschrift Walter Lehmann". Teil 3. *Indiana* 8: 229-42. Berlin: Ibero-Amerikanisches Institut; Preussischer Kulturbesitz.
- 1986 Los Indios Cañaris de la Sierra sur del Ecuador. *Miscelanea Antropológica Ecuatoriana* 6: 141-188.

Alvarado Alvarino, José

- c.1978 *Las antiguas tribus yaro-willkas y otras.*

Anonymous

- 1985 Modern computers, ancient skies. *Energy and technology review, Lawrence Livermore National Laboratory* October: 15-28.

Arriaga, Jesús

- 1922 *Apuntes de Arqueología Cañar.* Cuenca, Ecuador: Imprenta del Clero.

Atlas Geographus

- 1717 *Atlas Geographus or, a compleat System of Geography, (Ancient and Modern) for America. Containing What is of most Use in Bleau, Varenus, Cellarius, Cluverius, Luyte, Bandrand, Sanson, the Royal Commentaries of Peru, etc. . . .* Vol. V. Savoy: Eliz. Nutt for John Nicholson.

Bacou, Roseline

- 1975 *Piranesi Etchings and Drawings.* Boston: New York Graphic Society.

Bandelier, Adolph Francis Alphonse

- 1910 *The islands of Titicaca and Koati.* New York: Hispanic Society.

Bamps, Anatole

- 1887 *Tomebamba. Antiquité de l'Empire des Incas.* Louvain.

Barnes, Monica

- 1986 Representations of the Cosmos: a Comparison of the Church of San Cristóbal de Pampachiri with the Coricancha Drawing of Santacruz Pachacuti Yamqui Salcamaygua. In *Perspectives on Andean Prehistory and Protohistory*, edited by Daniel H. Sandweiss and D. Peter Kvietok, pp. 145-157. Ithaca: Cornell University Latin American Studies Program.

Barnett, Richard

- 1972 Sir Robert Ker Porter--Regency Artist and Traveller. *Iran* 10: 19-24.

Bastian, Adolph

- 1878- *Die culturländer des Alten Amerika.* Berlin: Weidmannsche Buch-
- 1889 handlung. 3 volumes (1878, 1878, 1889).

Bayon, Damián

- 1972 Las vistas antiguas del Cuzco en la Biblioteca Nacional de París. *XXXVIII Internationalen Amerikanistenkongres* (Stuttgart 1968); *Verhandlungen* 4: 239-246. Munich.

Bedoya Maruri, Angel Nicanor

- 1965a *Aspectos de la arqueología en la Región de Cañar*. Quito: Editorial Casa de la Cultura Ecuatoriana.
- 1965b ¿Cuál fue el destino de las construcciones arqueológicas de Ingapirca?". *Humanitas: Boletín Ecuatoriano de Antropología* 5, no. 2: 37-53. Quito: Museo Etnográfico e Instituto de Antropología de la Universidad Central, Sección del Instituto de Ciencias Naturales.
- 1969 Arqueología Humboldtiana--Ruinas de la arquitectura prehistórica Ecuatoriana: Viajes de Humboldt en abril-junio, julio y agosto de 1,802. *Flora* XII, No. 41-46: 167-181. Guayaquil.
- 1972 Monumento Incaico de Ingapirca en Cañar. *Revista Geográfica* 7: 133-149. Quito.
- 1974 *La arqueología en la region interandina de Ecuador*. Puebla, México: Editorial José M. Cajica, Jr., S.A.
- 1978 *La arqueología en la región interandina de Ecuador*. Quito: Editorial Casa de la Cultura Ecuatoriana.

Bennett, Wendell C.

- 1946 Excavations in the Cuenca Region, Ecuador. *Yale University Publications in Anthropology* 35. New Haven, Connecticut.

Bingham, Hiram

- 1913 In the Wonderland of Peru. The Work Accomplished by the Peruvian Expedition of 1912, under the Auspices of Yale University and the National Geographic Society. *The National Geographic Magazine* 24(4): 387-573.

Bougainville, Louis-Antoine de

- 1771 *Voyage autour du monde par la frégate du roi La Boudeuse et la flûte l'Etoile*. Paris.

Bouguer, Pierre

- 1744 *Rélation abrégée d'un voyage fait au Pérou*. Paris.

Broc, Numa

- 1975 *La géographie des Philosophes. Géographes et voyageurs français au XVIII^e siècle*. Association des publications près les Universités de Strasbourg--Fondation Baulig. Paris: Editions Ophrys.

Cabello de Balboa, Miguel

- 1951 *Miscelánea Antártica*. Part 3: Historia del Perú. Lima: Instituto de Etnología. [1586]

Caldas (y Tenorio), José Francisco de

- 1912 Viaje al sur de Quito. In Obras de Caldas. Recopiladas y publicadas por Eduardo Posada, pp. 133-180. *Biblioteca de Historia Nacional* IX. Bogotá: Imprenta Nacional. [1808-1810]

Casas, Bartolomé de las

- 1967 *Apologética Historia Sumaria. Cuanto a las qualidades, dispusciõn, descripciõn, cielo y suelo destas tierras, y condiciones naturales, policias, repúblicas, manera de vivir e costumbres de las gentes destas indias occidentales y meridionales cuyo imperio soberano pertenece a los reyes de castilla*. Edited by Edmundo O'Gorman. México: Universidad Nacional Autónoma de México, Instituto de Investigaciones Históricas. 2 volumes. [c. 1550]

Cieza de León, Pedro de

- 1984 *Crónica del Perú Primera Parte*. Lima: Pontifica Universidad Católica del Perú and Academia Nacional de Historia. [1550]

Cobo, Bernabé

- 1892- *Historia del Nuevo Mundo*. Seville: Sociedad Bibliófilos Andaluces.
1895 [1653]

Cobo, Wania and Antonio Fresco [González]

- 1980 Primeras consideraciones acerca de unas tumbas de Ingapirca, Ecuador. *Actas del primer Congreso Español de Antropología, 28 marzo a 2 de abril de 1977* II: 393-410.

Collier, Donald and John Murra

- 1943 Survey and Excavation in Southern Ecuador. *Anthropological Series of the Field Museum of Natural History* 35. Chicago.

Conlon, Pierre M.

- 1967 La Condamine the Inquisitive. *Studies on Voltaire and the Eighteenth Century*, edited by Theodore Besterman, vol. 55. Transactions of the Second International Congress on the Enlightenment I. Geneva: Institut et Musée Voltaire.

Cordero, Luis

- 1955 *Diccionario Quichua-Español Español-Quichua*. Quito: Casa de Cultura Ecuatoriana.

Cordero Palacios, Octavio

- 1981 El Azuay Histórico: Los Cañaris y los Inco-Cañaris. Edición ordenada por el H. Consejo Provincial del Azuay y su Departamento de Cultura. Cuenca, Ecuador: Editorial Amazonas, S.A.

Coreal, Francisco

- 1722 *Voyages de François Coreal aux Indes Occidentales, Contenant ce qu'il y a vu de plus remarquable pendant son séjour depuis 1666 jusqu'en 1697. Traduits de l'espagnol avec une Relation De la Guiane de Walter Raleigh & le Voyage de Narborough à la Mer du Sud par le Detroit de Magellan. Traduits de l'Anglais*. 3 volumes. Amsterdam: J. Frederic Bernard.

Cueva Jaramillo, Juan

- 1971 Descubrimientos arqueológicos en Ingapirca. *Revista de Antropología* 3: 215-226. Cuenca, Casa de Cultura Ecuatoriana del Nucleo del Azuay, Sección de Antropología.

Däniken, Erich von

- 1972 *The Gold of the Gods*. Trowbridge, Wiltshire: Redwood Press Limited.

Dearborn, David S.P. and Bernard Bell

- 1984 New Tools for Ancient Skies. *Archaeoastronomy* 7.

Diccionario de la Lengua Española

- 1984 *Diccionario de la Lengua Española*. Madrid: Real Academia Española.

Durán, Miguel J.

- 1931a La civilización Tiahuanacuense en Hatun-Cañar. Introducción Noción de la Cultura Tiahuanacuense. *Revista del Centro de Estudios Históricos y Geográficos* IV, No. 18: 190-202. Cuenca, Ecuador.

(Durán, Miguel J.)

- 1931b La civilización Tiahuanacuense (2). Segunda faz de Chordeleg. Epoca rica de Totemism. *Revista del Centro de Estudios Históricos y Geográficos* V, No. 19: 310-319. Cuenca, Ecuador.

Ecuador, República del

- 1979 *Mapa Geográfico*. Quito: Instituto Geográfico Militar.

Engels, Friedrich

1940 *Dialectics of Nature*. Translated and edited by Clemens Dutt. New York: International Publishers.

1972 *The Origins of the Family, Private Property and the State in the Light of the Researches of Lewis Henry Morgan*. Introduction and notes by Eleanor Burke Leacock. New York: International Publishers.

Engle, Margarita Mandrus

1988 Maria Sybilla Merian: 17th Century Jungle Scientist. *South American Explorer* 17 (May): 4-11.

Escalera Urena, Andrés y M^a Angeles Barriuso Pérez

1978 Estudio científico de los objetos de metal de Ingapirca (Ecuador). *Revista Española de Antropología Americana* 8: 19-47. Madrid.

Espinosa Soriano, Waldemar

1975- Los Mitmas Cañar en el Reino de Yaro (Pasco), Siglos XV y XVI.

1976 *Boletín del Instituto Riva-Agüero (Perú)*: 10: 63-82. Also in *Amerikanistische Studien/Estudios Americanistas*, Festschrift for Herman Trimborn I, edited by Roswith Hartmann and Udo Oberem (1978), pp. 153-162. *Collectanea Instituti Anthropos* 20. St. Augustin, West Germany.

Fifer, J. Valerie

1974 Report on Bolivia, 1827, by Joseph Barclay Pentland. *Camden Miscellany* XXV, Camden Fourth Series, Vol. 13: 169-267. London: Royal Historical Society and University College.

Foch, Neils and Eva Krener

1978 Los Cañaris del Ecuador y sus conceptos etnohistóricos sobre los Incas. In *Amerikanistische Studien/Estudios Americanistas*, Festschrift for Herman Trimborn I, edited by Roswith Hartmann and Udo Oberem, pp. 170-181. *Collectanea Instituti Anthropos* 20. St. Augustin, West Germany.

Fresco González, Antonio

1978 Ingapirca: arquitectura y área de asentamiento. *Revista Española de Antropología Americana* 13. Madrid.

1980 *Guía del complejo arqueológico y monumental de Ingapirca*. Cuenca, Ecuador: Museo Arqueológico y Galerías de Arte del Banco Central de Ecuador, Comisión del Castillo de Ingapirca.

1983 Arquitectura de Ingapirca (Cañar, Ecuador). *Miscelánea Antropológica Ecuatoriana* 3: 195-212.

1984 *La arqueología de Ingapirca (Ecuador)*. Costumbres funerarias, cerámica y otros materiales. Cuenca, Ecuador: Banco Central.

1988 Arquitectura Incaica de INGAPIRCA (Cañar, Ecuador). *Gaceta Arqueológica Andina* IV(15): 15-20. Lima: Instituto Andino de Estudios Arqueológicos.

Fresco González, Antonio and Wania Cobo

1978 Consideraciones etnohistóricas acerca de una tumba de pozo y cámara de Ingapirca (Ecuador). *Revista Española de Antropología Americana* 13: 147-161.

Frézier, Amadée-François

1716 *Relation du voyage de la mer du Sud, aux côtes du Chili et du Pérou, fait pendant les années 1712, 1713, et 1714*. Paris.

Gallegos, Gaspar de

- 1965 *Relación de San Francisco de Pelleusi de Azogue*. Pp. 274-278 of *Relación que enbió a mandar su Magestad se hiziese deste ciudad de Cuenca y de toda su provincia*. In *Relaciones geográficas de Indias: Perú II*, edited by Marco Jiménez de la Espada, pp. 265-290. *Biblioteca de Autores Españoles* 184. Madrid: Ediciones Atlas.

Garcilaso de La Vega, El Inca

- 1609 *Primera parte de los Comentarios Reales, qve tratan del origen de los Yncas, reyes qve fveron del Perv, de sv idolatría, leyes, y gouierno en paz y en guerra: de sus vidas y conquistas, y de todo lo que fue aquel Imperio y su República, antes que los Españoles passaran a el*. Lisbon.
- 1869- *Royal Commentaries of the Yncas*, edited by Sir Clements R. Markham.
- 1871 London: Hakluyt Society. [1609]
- 1967 *Comentarios Reales de los Incas*, edited by Ana Gerzenstein. Buenos Aires: Plus Ultra.
- 1704, *Les Commentaires royaux des Incas*. 2 volumes. Translated by Jean
- 1715 Baudoin. Amsterdam: De Kuyper (vol. 1) and Desbordes (vol. 2).

Gasparini, Graziano and Luise Margolies

- 1977 *Arquitectura Inka*. Caracas: Universidad Central de Venezuela.

G.O.M.

- 1942 *Caldas y el "Semanario"*. In *Semanario del Nuevo Reino de Granada*, by Francisco José de Caldas, Volume I, pp. 5-13. Bogotá: Editorial Minerva.

González Suárez, Federico

- 1878 *Estudio histórico sobre los Cañaris, antiguos habitantes de la provincia de Azuay en la República del Ecuador*. Quito: Imprenta del Clero, por José Guzman Almeida.
- 1890- *Historia general de la República del Ecuador*. Vol. 1: *Tiempos antiguos, ó el Ecuador antes de la Conquista*. *Atlas arqueológico*. Quito.
- 1944 *Notas arqueológicas*. In *Obras escogidas*. Prólogo y selecciones del Sr. Dn. Jacinto Jijón y Caamaño. *Clásicos Ecuatorianos X*. Quito: Ediciones del Instituto Cultural Ecuatoriano, Ministerio del Gobierno. [1915]
- 1968 *De prehistoria y de arqueología*. Cuenca, Ecuador: Universidad de Cuenca. [1904]

Greenberg, J.L.

- 1987 *The Measurement of the Earth*. *Annals of Science* 44: 289-295.

Habel, S.

- 1878 *The Sculpture of Santa Lucia Cosumalwhuapa in Guatemala. With an Account of Travels in Central America and on the Western Coast of South America*. *Smithsonian Contributions to Knowledge* XXII: Article III no. 269.

Hallenbeck, Clive

- 1987 *The Journey of Fray Marcos de Niza*. Dallas: Southern Methodist University Press.

Heaps, Leo

- 1973 *Log of the Centurion*. London: Hart-Davis McGibbon.

Hemming, John

- 1970 *The Conquest of the Incas*. London: Macmillan.

Hemming, John and Edward Ranney

- 1982 *Monuments of the Incas*. New York: New York Graphic Society/Little, Brown & Co.

- Herrero, Joaquín and Federico Sánchez de Lozada
 1983 *Diccionario Quechua. Estructura semántica del Quechua cochabambino*. Cochabamba, Bolivia: C.E.F. Co.
- Hodgen, Margaret T.
 1964 *Early Anthropology in the Sixteenth and Seventeenth Centuries*. Philadelphia: University of Pennsylvania Press.
- Humboldt, A(lexander) de (von)
 1813 *Voyage de Humboldt et Bonpland, Première Partie, Relation Historique. Atlas Pittoresque Vues des Cordillères et Monumens des Peuples Indigènes de l'Amérique*. Paris: Chez F. Schoell, de l'imprimerie de J. Smith.
- Hyslop, John
 1984 *The Inka Road System*. New York: Academic Press/Harcourt Brace Jovanovich.
- Idrovo Irigüen, Jaime and Napoleón Almeida D.
 1977a *La Cerámica en Ingapirca*. Cuenca: Publicación Oficial de la Comisión de Ingapirca, Consejo de Gobierno del Museo Arqueológico y Galerías de Arte del Banco Central del Ecuador.
 1977b Culebrillas en el contexto histórico-arqueológico del Cañar. *Pucara: Revista de la Facultad de Filosofía, Letras y Ciencias de la Educación* 1: 99-113. Cuenca: Universidad de Cuenca, Ecuador.
- Iglesias, Angel María
 1964 *Los aborígenes de Cañar*. Cuenca: El Carácter.
 1977 *Cañar, síntesis histórica*. Azogues, Ecuador: Ed. América.
- Jaramillo Paredes, M.
 1969 Ingapirca. *Revista de Antropología* (Diciembre) 1: 150-166. Cuenca: Sección de Antropología del Nucleo del Azuay de la Casa de la Cultura Ecuatoriana.
 1976 *Estudio histórico sobre Ingapirca*. Quito: Ediciones Universidad Católica.
- Jijón y Caamaño, Jacinto
 1929 Notas de Arqueología Cuzqueña. *Tirada especial de la Revista Dios y Patria*, nos. 22 y 23, Abril y Junio. Riobamba, Ecuador: Tipografía y Encuadernación "La Buena Prensa del Chimborazo".
 1952 *Antropología prehispánica del Ecuador*. Quito: La Prensa Católica.
- Jiménez de la Espada, Marcos
 1897 *Relaciones geográficas de Indias: Perú*. 3 volumes. Madrid: Ministerio de Fomento/Los Hijos de M.G. Hernández.
- Juan, Jorge and Antonio de Ulloa
 1752 *Voyage historique de l'Amérique méridionale fait par ordre du Roi d'Espagne par Don George Juan, Commandeur d'Aliaga dans l'Ordre de Malthe, et Commandant de la Compagne des Gentils-Hommes Gardes de la Marine, et par Don Antoine de Ulloa, Lieutenant de la même Compagnie, Tous deux Capitaines de Haut-Bord de l'Armée Navale du Roi d'Espagne, membres des Sociétés Royales de Londres & de Berlin, & Correspondans de l'Académie des Sciences de Paris. Et qui contient une Histoire des Yncas du Pérou, et les Observations Astronomiques & Physiques, faites pour déterminer la Figure & la Grandeur de la Terre*. Amsterdam et Leipzig: Chez Arkstée & Merkus.
 1826 *Noticias secretas de America sobre el estado naval, militar y político de los reynos del Perú y provincias de Quito, costas de Nueva Granada y Chile: gobierno y régimen particular de los pueblos de Indios: cruel*

(Juan, Jorge and Antonio de Ulloa)

opresión y extorsiones de sus corregidores y curas: abusos escandalosos introducidos entre estos habitantes por los misioneros: causas de su origen y motivos de su continuación por el espacio de tres siglos. David Barry, ed. London: R. Taylor. [1749]

- 1978 *Discourse and Political Reflections on the Kingdoms of Peru. . . Translation and edition of Noticias secretas de America, by John J. TePaske and Besse A. Clement.* Norman: University of Oklahoma Press. [1749]

Kauffmann Doig, Federico

- 1980 *Manual de arqueología peruana.* Lima: Ediciones Peisa.

Kendall, Ann

- 1985 *Aspects of Inca Architecture: Description, Function and Chronology BAR International Series 242.* 2 volumes. Oxford.

Kubler, George

- 1984 *Written Sources on Andean Cosmology.* In *Recent Studies in Andean Prehistory and Protohistory*, edited by D. Peter Kvietok and Daniel H. Sandweiss, pp. 197-207. Ithaca, New York: Cornell University Latin American Studies Program.

La Condamine, Charles-Marie de

- 1740 *Sur l'arbre de Quinquina. Mémoires de l'Académie royale des Sciences de Paris, Année 1738, vol. 51: 226-243.*
- 1745a *Rélation abrégée d'un voyage fait dans l'intérieur de l'Amérique méridionale.* Paris: Veuve de Pissot.
- 1745b *Extracto del diario de observaciones hechas en el viage de la provincia de Quito al Para, por el rio de las Amazonas. . Traducida del francés.* Amsterdam: J. Catuffe.
- 1746a *La Figure de la terre déterminée par les observations de MM. de La Condamine et Bouguer.* Paris.
- 1746b *Lettre à Madame. . . sur l'émuète populaire excitée en la ville de Cuenca, le 29 août 1739, contre les académiciens, et sur la mort du sieur Siniergues.* Paris.
- 1746c *Beknopt verhaal van een reyze in Zuid America van de Zuyd Zee aan de kusten van Brazil en Guiana, de rivier der Amazone afzakkende. . Uyt 't Frans vertaald.* Amsterdam.
- 1746d *Brief aan Mevrouw ***. Aangaande het oproer verwekt onder 't volk de stad Cuenca in Peru.* Amsterdam: D. Sligtenhorst.
- 1747 *A Succinct Abridgment of a Voyage Made within the Inland Parts of South-America.* London: E. Withers.
- 1748 *Mémoire sur quelques anciens monumens du Perou, du tems des Incas. Mémoires de l'Académie royale des Sciences et des Belles-Lettres du Berlin 2: 435-456.* [1746]
- 1749a *Declinationes quarundam Stellarum Australium primae et secundae magnitudinis, mense Julio 1738. Cum methodo inveniendi horam in mari noctu, ex aspectu Crucis australis. Philosophical Transactions of the Royal Society 46: 139-143.*
- 1749b *Voyage de la rivière des Amazones.* Paris.
- 1751a *Histoire des Pyramides de Quito.* Paris.
- 1751b *Mesure de trois premiers degrés du méridien dans l'hémisphère austral, tirée de Observaciones de M^{ra} de l'Académie Royale des Sciences, Envoyés par le Roi sous l'Equateur.* Paris: L'imprimerie royale.

(La Condamine, Charles-Marie de)

1751c *Journal du voyage fait par ordre du roi à l'équateur servant d'introduction historique al mesure des trois premiers degrés du méridien.* Paris: L'imprimerie royale.

1782 Arts. "Guayaquil" (p. 734) and "Guyane" (p. 805) in *Encyclopédie, ou Dictionnaire raisonné des sciences, des arts et des métiers par une société de gens de lettres. Mis en ordre & publié par M. DIDEROT; et quant à la partie mathématique, par M. D'ALEMBERT* Tome XVI. Lausanne and Berne: Sociétés typographiques.

Lafuente, Antonio and Antonio J. Delgado

1984 *La geometrización de la tierra: observaciones y resultados de la expedición geodésica hispano-francesa al virreinato del Perú (1735-1744). Cuadernos Galileo de Historia de la Ciencia* T. 3. Madrid: Consejo Superior de Investigaciones Científicas, Instituto "Arnau de Vilanova".

Lamontagne, R.

1964 *La vie et l'oeuvre de P. Bouguer.* Paris: P.U.F.

La Pérouse, Jean-François de Galaup, Comte de

1797 *Voyage de La Pérouse autour du monde, publié conformément au décret du 22 avril 1791, et rédigé par M. L.A. Millet-Mureau.* Paris: Imprimerie de la République, An V.

Laporte, père Joseph

1801 *El Viagero Universal o Noticia del Mundo Antiguo y Nuevo, Tomo XIII, Carta clxxxvi.* Translated by "P.E.E.P." (Pedro Estala). Madrid: Imprenta de Villalpando.

Larrabure y Unanue, Eugenio

1935 *Historia y Arqueología. Manuscritos y Publicaciones II.* Lima: Imprenta Americana.

Larrea, Carlos Manuel

1965 *La cultura incaística del Ecuador: Notas históricas y cronológicas. Publicación 25, Plan Piloto del Ecuador.* México, D.F.: Instituto Panamericano de Geografía e Historia.

1971 *Los Sabios Franceses de la Primera Misión Geodésica.* In *Notas de Prehistoria e Historia Ecuatoriana*, pp. 261-275. Quito: Corporación de Estudios y Publicaciones.

León, Luis A.

1983 *Compilación de Crónicas, Relatos y Descripciones de Cuenca y su Provincia, 2 partes.* Cuenca, Ecuador: Centro de Investigación y Cultura.

M. & E.

1833 *El Nuevo Viagero Universal en América ó sea Historia de viajes sobre la provincia y antiguo reino de Quito.* Barcelona: A. Bergnes y Compañía.

Markham, Sir Clements R.

1886 *Pizarro, and the Conquest and Settlement of Peru and Chile.* In *Narrative and Critical History of America*, edited by Justin Winsor, Vol. II, Chapter VIII, pp. 505-578. Boston and New York: Houghton Mifflin and Company.

Martínez Compañón, Baltasar Jaime

1936 *Trujillo del Perú A fines del Siglo XVIII.* Edición de Jesús Domínguez Bordona. Madrid: Patrimonio de la República, Biblioteca de Palacio. [late 18th century]

Marx, Karl

- 1977 *Selected Writings*. Edited by David McLellan. Oxford: Oxford University Press.

Matovelle, Julio

- 1921 Cuenca de Tomebamba: breve reseña histórica de la Provincia de este nombre en el antiguo Reino de Quito. *Publicaciones del "Centro de Estudios Históricos y Geográficos del Azuay."* Cuenca, Ecuador: Imprenta de la Universidad.

Meddens, Frank

- 1983 Investigations in the Chicha Valley, Peru, 1980. *Bulletin of the Institute of Archaeology, London* 18: 209-223. [1981]

Meisch, Lynn Ann

- 1980 The Cañari People: Their Costume and Weaving. *El Palacio* 86, no. 3: 15-26. Santa Fe: University of New Mexico Museum.

Merisaldo y Santiesteban, Joaquín de

- 1894 Relación histórica, política y moral de la Ciudad de Cuenca. In *Tres tratados de América (Siglo XVIII)*. Colección de libros raros y curiosos que tratan de América. Madrid: Victoriano Suárez. [1765]

Miño Grijalva, Manuel

- 1977 *Los Cañaris en el Perú, una aproximación etnohistórica*. Quito: Pontificia Universidad Católica del Ecuador.
- 1978 Los Cañaris en la Conquista Española del Perú. *Etnohistoria y antropología andina. Primera Jornada del Museo Nacional de Historia, Noviembre de 1976, Organizada por el Museo Nacional de Historia y con el Auspicio de la Comisión para Intercambio Educativo entre los Estados Unidos y el Perú*. Compiled by Marcia Koth de Paredes and Amalia Castelli, pp. 151-157. Lima: Centro de Proyección Cristiana.

Morgan, Lewis Henry

- 1964 *Ancient Society; or, Researches in the Lines of Human Progress from Savagery, through Barbarism to Civilization*. Cambridge (Mass.): Belknap Press.

Morris, Craig and Donald E. Thompson

- 1985 *Huánuco Pampa, an Inca City and its Hinterland*. London: Thames and Hudson.

Moscoso Vega, Luis A.

- 1952 Ingapirca. *Revista del Centro de Estudios Históricos y Geográficos de Cuenca, Ecuador* 44: 132-134.

Murra, John

- 1946 The Historic Tribes of Ecuador. In *Handbook of South American Indians*. Vol. 2: The Andean Civilizations, edited by Julian H. Steward, pp. 785-821. *Bulletin of American Ethnology* 143. Washington DC: Smithsonian Institution.

Niles, Susan A.

- 1987 *Callachaca: Style and Status in an Inca Community*. Iowa City: University of Iowa Press.

Oberem, Udo

- 1968 Die Bergfestung Quitoloma im Nordlichen Hochland Ecuadors. *Baessler Archiv NF* 16: 331-354. Berlin.
- 1974- Los Cañaris y la Conquista Española de la Sierra ecuatoriana, otro capítulo de las relaciones interétnicas en el siglo XVI. *Journal de la Société des Américanistes* LXIII: 26-31. Paris. Also in Segundo Moreno Y. and Udo Oberem (1981), *Contribución a la Etnohistoria Ecuatoriana*:

- (Oberem, Udo)
Serie historia, pp. 129-152. Otavalo, Instituto Otaveleño de Antropología.
- 1980 Los incas en el Ecuador. *Historia del Ecuador* II: 151-169. Barcelona: Salvat Eds.
- Oberem, Udo and Roswith Hartmann
 1979 Apuntes sobre Cañaris en el Cuzco y en otras regiones del Altiplano Peruano-Boliviano durante la Colonia. In *Memorias del Primer Congreso Ecuatoriano de Arqueología, Ibarra, Ecuador, 20-24 September 1976*, pp. 106-123.
- Oberem, Udo and Riswith [sic] Hartmann
 1981 Indios Cañaris de la Sierra sur del Ecuador en el Cuzco del Siglo XVI (I). *Revista de Antropología* 7: 114-136. Cuenca, Ecuador: Sección de Antropología y Arqueología de la Casa de la Cultura Ecuatoriana del Nucleo del Azuay. Also published as Roswith Hartmann and Udo Oberem (1979), Indios cañaris de la sierra sur del Ecuador en el siglo XVI. *Revista de la Universidad Complutense* 128: 117, 373-390. Madrid.
- Paz Soldan, Mariano Felipe
 1865 *Atlas Geográfico del Perú*. Paris: Libreria de Fermin Didot Hermanos, Hijos y Ca.
- Pentland, J.B.
 1848 *La Laguna de Titicaca and the Valleys of Lucay, Collao and Desaguadero in Peru and Bolivia From Geodesic and Astronomic Observations Made in 1827, 28, 37 and 38 by J.B. Pentland*. Admiralty Chart. London: Lords Commissioners of the Admiralty.
- Pérez T., Aquiles R.
 1957 Contribución al mejor conocimiento de los Cañaris. *Llacta* II. Quito.
 1978 *Los Cañaris*. Quito: Casa de la Cultura Ecuatoriana.
- Plaza Schuller, Fernando
 1976 La Incursión Inca en el Septentrión Andino Ecuatoreano. *Instituto Otaveleño de Antropología, Serie Arqueología* 2. Otavalo.
- Poma de Ayala, don Felipe Guamán
 1987 *Nueva crónica y buen gobierno*. Edited by John V. Murra, Rolena Adorno, and Jorge L. Urioste. México: Historia 16. 3 volumes. [1615]
- Porras Barrenechea, Raúl
 1962 *Los Cronistas del Perú (1528-1650)*. Lima: Sanmartí y Cía.
- Porras G(arcés), Pedro I. and Luis Piana Bruno
 1976 *Ecuador Prehistórico*. Quito: Instituto Geográfico Militar.
- Prescott, William
 1908 *History of the Conquest of Peru*. London: Everyman.
- Raimondi, Antonio
 1874- *El Perú*. Lima: Imprenta del estado. 5 volumes.
 1913
- Regal Matienza, Alberto
 1936 *Los Caminos del Inca--En el Antiguo Perú*. Lima: Sanmartí.
- Rendón, Maximiliano
 1937 Los Cañaris (algo de Etnografía e Historia). *Revista del Instituto Arqueológico del Cusco* Año II, No. 3, Segundo Semestre: 51-57.
- Rivera Dorado, Miguel
 1973 Arqueología de Ingapirca, Ecuador: informe preliminar. *Acta praeistorica et archaeologica* 4: 235-240. Also in *Cuadernos de Historia y*

- (Rivera Dorado, Miguel)
Arqueología, Año XXIV, no. 41: 83-98. Guayaquil: Publicación de la Casa de Cultura Ecuatoriana, Nucleo de Guayas (1974).
- Rojas C., J. Heriberto
 1979 *El Castillo de Ingapirca/ The Castle of Ingapirca*. Cuenca, Ecuador: Editorial Amazonas, S.A.
- Salomon, Frank
 1987 Ancestors, Grave Robbers, and the Possible Antecedents of Cañari 'Inca-ism'. In *Etnologiska Studier* 38, Natives and Neighbors in South America, edited by Harald O. Skar and Frank Salomon, pp. 207-232. Göteborgs Etnografiska Museum.
- Salvador Lara, Jorge
 1964 Una excursión a Ingapirca. *Boletín de la Academia Nacional de Historia* XLVI(103), enero-junio: 40-47. Quito.
- Santacruz Pachacuti Yamqui Salcamaygua, Joan de
 1879 Relación de antigüedades deste Reyno del Pirú. In *Tres relaciones de antigüedades peruanas. Publicalas el Ministerio de Fomento, con motivo del Congreso Internacional de Americanistas que ha de celebrarse en Bruselas el presente año*, edited by Marcos Jiménez de la Espada. Madrid: M. Tello. [1570]
- Sarmiento de Gamboa, Pedro
 1960 Historia de los Incas. *Biblioteca de Autores Españoles* 135: 193-297. Madrid: Ediciones Atlas. [1572]
- Sherbondy, Jeanette
 1979 Les réseaux d'irrigation dans la géographie politique du Cuzco. *Journal de la Société des Américanistes* 66: 45-66.
- Skurdenis, Julie
 1987 Ecuador's Precolumbian Heritage. *Archaeology* 40(4), July/August: 64-ff.
- Spencer, Herbert
 1967 *The Evolution of Society. Selections from Herbert Spencer's Principles of Sociology*. Edited by Robert L. Carneiro. Chicago: University of Chicago press.
- Squier, E.(phram) George
 1877 *Peru, Incidents of Travel and Exploration in the Land of the Incas*. New York: Harpers & Brothers Publishers.
- Stern, Steve J.
 1981 The Rise and Fall of Indian-White Alliances: A Regional View of 'Conquest' History. *Hispanic American Historical Review* 61(3): 461-491.
- Uhle, Max
 1923 *Las ruinas de Tomebamba*. Quito: Imprenta Julio Sáenz Rebolledo. Reprinted in Max Uhle (1969), *Estudios sobre Historia Incaica*, edited by Toribio Mejía Xesspe, pp. . Lima: Universidad Nacional Mayor de San Marcos. Also reprinted in Luis A. León, *Compilación de Crónicas, Relatos y Descripciones de Cuenca y su Provincia*, Part 1: 155-199. Cuenca, Ecuador: Centro de Investigación y Cultura.
- Van de Guchte, Maarten
 1984 El ciclo mítico andino de la Piedra Cansada. *Revista Andina* 2(2): 539-556.
- Van Volxem, Jean
 1879 Notice sur la destination probable de l'Inca-Chunca. *Congrès des Americanistes. Compte Rendu de 3e session*. 2: 42-46. Paris: Guilmoto.

Varela, Tito

- 1980 Restos óseos de las necrópolis precolombinas de Ingapirca y Atacames (Ecuador). *Actas del primer Congreso Español de Antropología II*: 691-707. Barcelona.

Vásquez de Corral, L.

- 1973 Documentos para la Historia: Registro de Luis Vázquez de Corral 1592-1593. Folio 499. *Revista de Antropología* 4: 209-210. Cuenca, Ecuador: Sección de Antropología de Nucleo del Azuay de la Casa de la Cultura Ecuatoriana.

Vauban, Sebastien le Prestre de

- 1737 *De l'attaque et de la défense des places*. La Haye [The Hague]: P. de Hondt.

Vega Toral, Tomás

- 1921 *La Tomebamba de los Incas*. Cuenca: Impresa de la Universidad de Azuay.
- 1928a El Castillo de Ingapirca. *Revista del Centro de Estudios Históricos y Geográficos* 14: 87-99. Cuenca, Ecuador.
- 1928b El Castillo de Ingapirca. *Revista del Centro de Estudios Históricos y Geográficos* 15: 43-100. Cuenca, Ecuador.

Velasco

- 1978 *Historia del Reino de Quito en la América Meridional*. Quito: Casa de Cultura Ecuatoriana. 3 volumes. [1789]

Verneau, René and Paul Rivet

- 1912 *Mission du Service géographique de l'Armée pour la mesure d'un Arc de Méridien équatorial en Amérique du Sud sous le contrôle scientifique de l'Académie des Sciences*. 1899-1906 Tome 6: Ethnographie ancienne de l'Equateur. France, Ministère de L'instruction publique. Paris: Gauthier-Villars. Imprimeur Libraire du Bureau des Longitudes, de l'école polytechnique.

Villavicencio, Manuel

- 1858 *Geografía de la Republica de Ecuador*. New York: Robert Craighead.

Voltaire, Monsieur de (François-Marie Arouet)

- 1751 *Siècle de Louis XIV*. Paris.

Walter, Richard

- 1748 *A Voyage round the World, in the Years MDCCXL, I, II, III, IV*. By George Anson, Esq.; Commander in Chief of a Squadron of His Majesty's Ships, Sent on an Expedition to the South-Seas. London: J. & P. Knapton.

Wedin, Åke

- 1966 El Concepto de lo Incaico y las Fuentes: Estudio crítico. *Studia Historica Gothoburgensia* VII. Akademiförlaget, Scandinavian University Books.

Williams, Glyndwr

- 1967 Documents Relating to Anson's Voyage around the World 1740-1744. *Naval Records Society* 109. London: Naval Records Society.

Wolf, Teodoro

- 1879 *Viajes científicos por la República del Ecuador. Verificados y publicados por orden del supremo gobierno de la misma república*. Guayaquil: Imprenta del Comercio.
- 1892 *Geografía y geología del Ecuador*. Leipzig: Tipografía de F.A. Brockhaus.

Ziółkowski, Mariusz S. and Robert M. Sadowski

- 1981 La arqueoastronomía en la investigación de las culturas andinas. *Pen-doneros* 9. Otavalo: Editorial Gallo Capitán.
- 1982- Los problemas de la reconstrucción de los calendarios prehispánicos.
- 1984 *Estudios Latinoamericanos* 9. Warsaw.
- 1984 Informe acerca de las investigaciones arqueo-astronómicas en el área central de Ingapirca (Ecuador). *Revista Española de Antropología Americana* 14: 103-125. Madrid. Also published in "Prehistoric cosmology in Mesoamerica and South America," edited by Renée Opperman (1984), unpaginated. *Katunob: Occasional Publications in Mesoamerican Anthropology* 28.
- 1985 Informe de la segunda temporada de investigaciones arqueoastronómicas en Ingapirca (Ecuador). In *Primer simposio europeo sobre antropología del Ecuador. Instituto de Antropología cultural de la Universidad de Bonn*, edited by Segundo Moreno Yanez, pp. 91-116. Quito: Ediciones Abya Yala.

Zuidema, R.T.

- 1981 Inca Observations of the Solar and Lunar Passages through Zenith and Anti-Zenith at Cuzco." In *Archaeoastronomy in the Americas*, edited by R.A. Williamson. *Ballena Press Anthropological Papers* 22.

Selected Unpublished Manuscripts and Theses

Alcina Franch, José

- 1974 Informe de la Primera Temporada de Excavaciones en el sitio de Ingapirca (Cañar), de la Misión Científica Española. Comisión del Castillo de Ingapirca. Cuenca, Ecuador.
- 1975 Informe de la Segunda Temporada de Excavaciones en el sitio de Ingapirca (Cañar), de la Misión Científica Española. Comisión del Castillo de Ingapirca. Cuenca, Ecuador.
- 1978 Areas de asentamiento en Ingapirca, Cañar (Ecuador). Homenaje a D. Antonio Ballesteros Beretta en el centenario de su nacimiento. Madrid (in press as of 15 Sept. 1985).

Almeida, Napoleón

- 1976 Relación de los objetos arqueológicos localizados por los investigadores de la Comisión de Ingapirca Napoleón Almeida y Jaime Idrovo durante las excavaciones en la 'Quebrada del Intihuaico' desde Diciembre de 1975 hasta Diciembre de 1976. Comisión del Castillo de Ingapirca. Cuenca, Ecuador.

Archivo General de Indias

Mapas y Planos, Perú y Chile 158 bis. O'Higgins, D. Demetrio "Carta del Intendencia de Guamanga".

Collección Vacas Galindo, Dominican Convent, Quito, primera serie Vol. 30.

- 1565 Residencia de oidor Licenciado Juan de Salazar Villasante, Quito, Cuenca and Guayaquil.

Cortázar, Ramón

- 1836 Inventario y Tasación de la Finca pequeña de Ingapirca. Copia existente en la Biblioteca del Museo Arqueológico del Banco Central del Ecuador, Quito.

Cueva Jaramillo, Juan

- 1970 Informe preliminar de la Primera Etapa de los Trabajos Arqueológicos en Ingapirca: Julio-Septiembre 1970. Museo Arqueológico del Banco Central del Ecuador. Quito.

Hadden, Gordon

- 1968 Informe sobre las labores de limpieza y consolidación del Monumento Incaico de Ingapirca: 27-X-67 a 26-I-68. Museo Arqueológico del Banco Central del Ecuador. Quito.

Idrovo Irigüen, Jaime

- 1979 Aspectos funerarios entre los Cañaris de Ingapirca. Unpublished Master's Thesis (Archaeology), U.E.R. d'Art et Archeologie, Paris.

Isbell, Billie-Jean

- 1988 The shadow of time. Paper delivered at the Andean Studies Group Symposium, October 22-23, Indiana University, Bloomington, Indiana.

López y Sebastián, Lorenzo E.

- in prep. as of September 1988 Ingapirca: arquitectura y asentamiento. Supervised by José Alcina Franch at the Universidad Complutense de Madrid.

Meyers, Albert

- 1976 Clasificación Preliminar de la cerámica de Ingapirca, Excavación II. Seminar für Völkerkunde. Bonn.

Meyers, Albert

- in press Arqueología de los Cañaris: Consideraciones cronológicas a base de Comparaciones Estilísticas en los Andes norcentrales. To be published in *Miscelanea Antropológica Ecuatoriana*. Guayaquil, Ecuador.

Meyers, Albert and Juan Cueva Jaramillo

- In press Investigaciones Arqueológicas en Ingapirca (Ecuador). To be published in *Antropología Ecuatoriana* 4/5. Quito.

Misión Científica Española

- 1974 Diario de Campo, I. Comisión del Castillo de Ingapirca. Cuenca, Ecuador.
1975 Diario de Campo, II. Comisión del Castillo de Ingapirca. Cuenca, Ecuador.

New York Public Library

- 1550 Obadiah Rich Collection. 82. 25 May 1550. Letter from Fernando de Benaventi to the Audiencia of Los Reyes (Lima) in regard to his discoveries at Tomebamba.

Reiss, Wilhelm

- 1873 Carta del Doctor Wilhelm Reiss a S.E. el Presidente de la República sobre sus viajes a las montañas del Sur de la Capital. Quito.

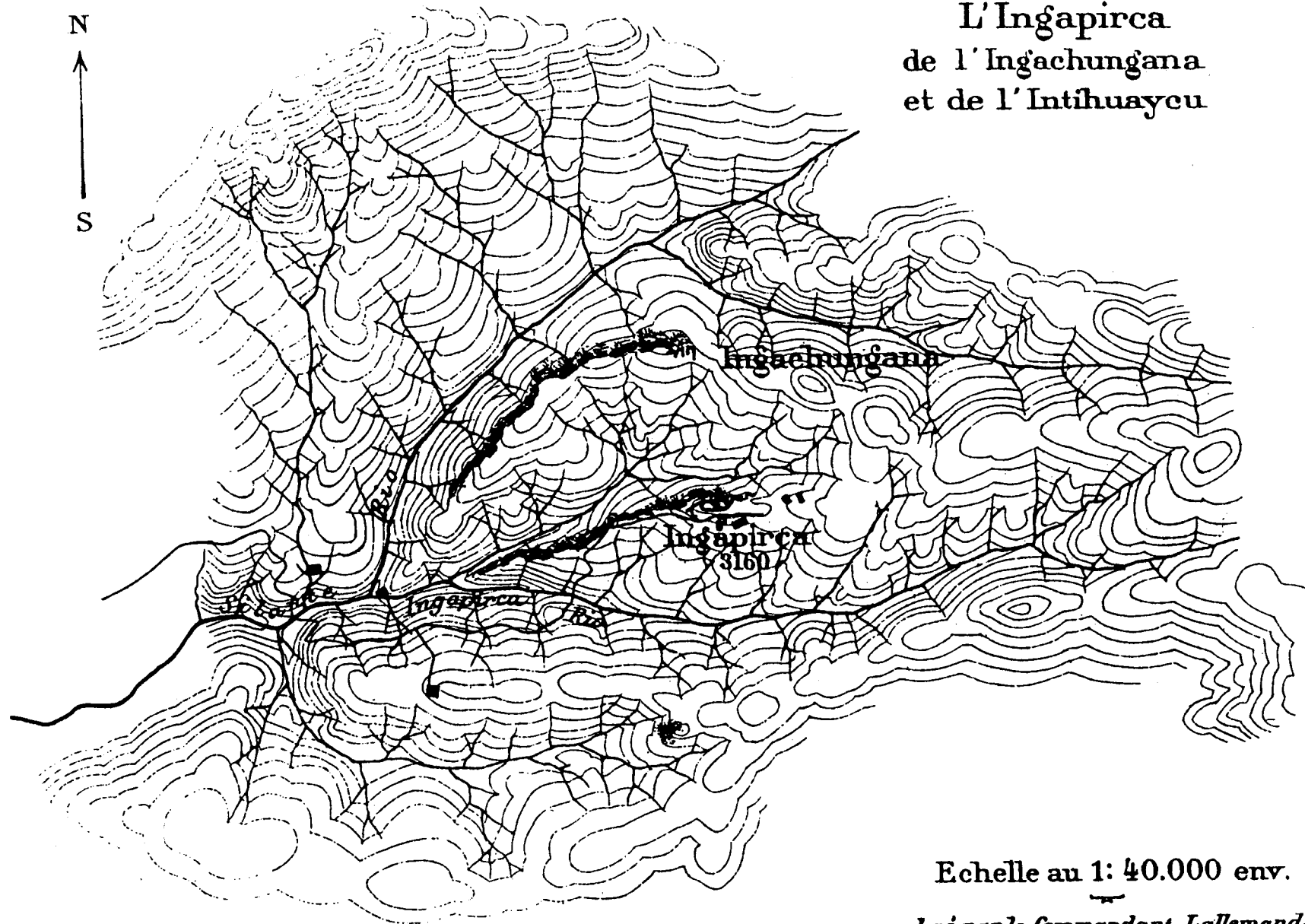
Ziółkowski, Mariusz S. and Robert M. Sadowski

- 1988 Investigaciones arqueoastronómicas en el sitio de Ingapirca, Prov. de Cañar, Ecuador: III informe. Paper presented at the 46th International Congress of Americanists, Amsterdam, 4-8 July 1988; and at the conference "1977-1987: Diez años de arqueología ecuatoriana," Cuenca, Ecuador, 15-19 August 1988.



Figure 1. Map of Ecuador showing location of Ingapirca.

Environs de
L'Ingapirca
de l'Ingachungana
et de l'Intihuaycu



F. Porremans sc.

Cartes III et IV. — PLANS DES ENVIRONS DES RUINES DE ROMPE ET D'INGA-PIRCA.

Figure 3. Verneau and Rivet's (1912) "Carte IV", "Plan. . des environs des ruines de rompe et d'Inga-Pirca", especially useful for its hydrographic details.

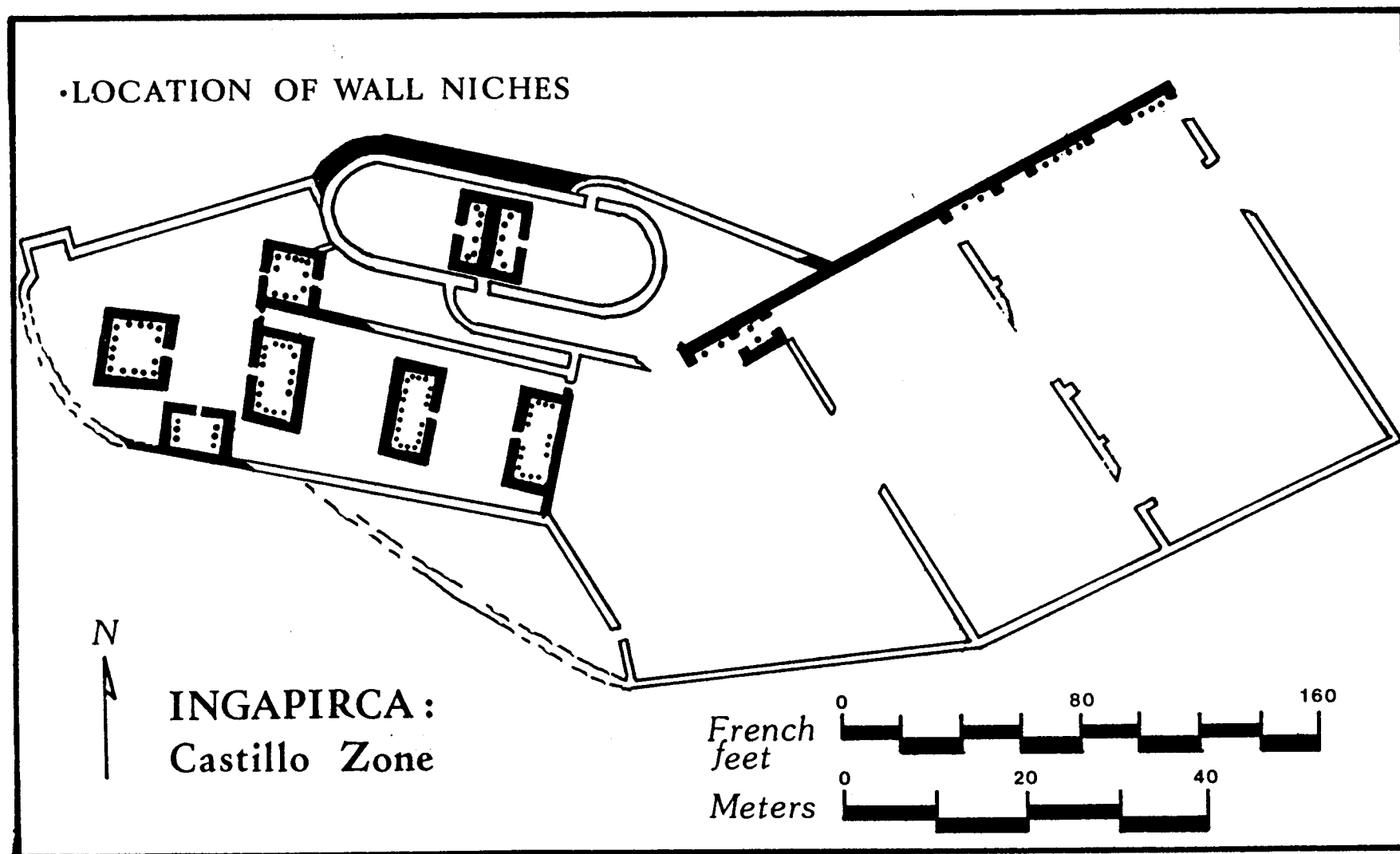


Figure 4. Plan after La Condamine (1748 [1746]) emphasizing niches.

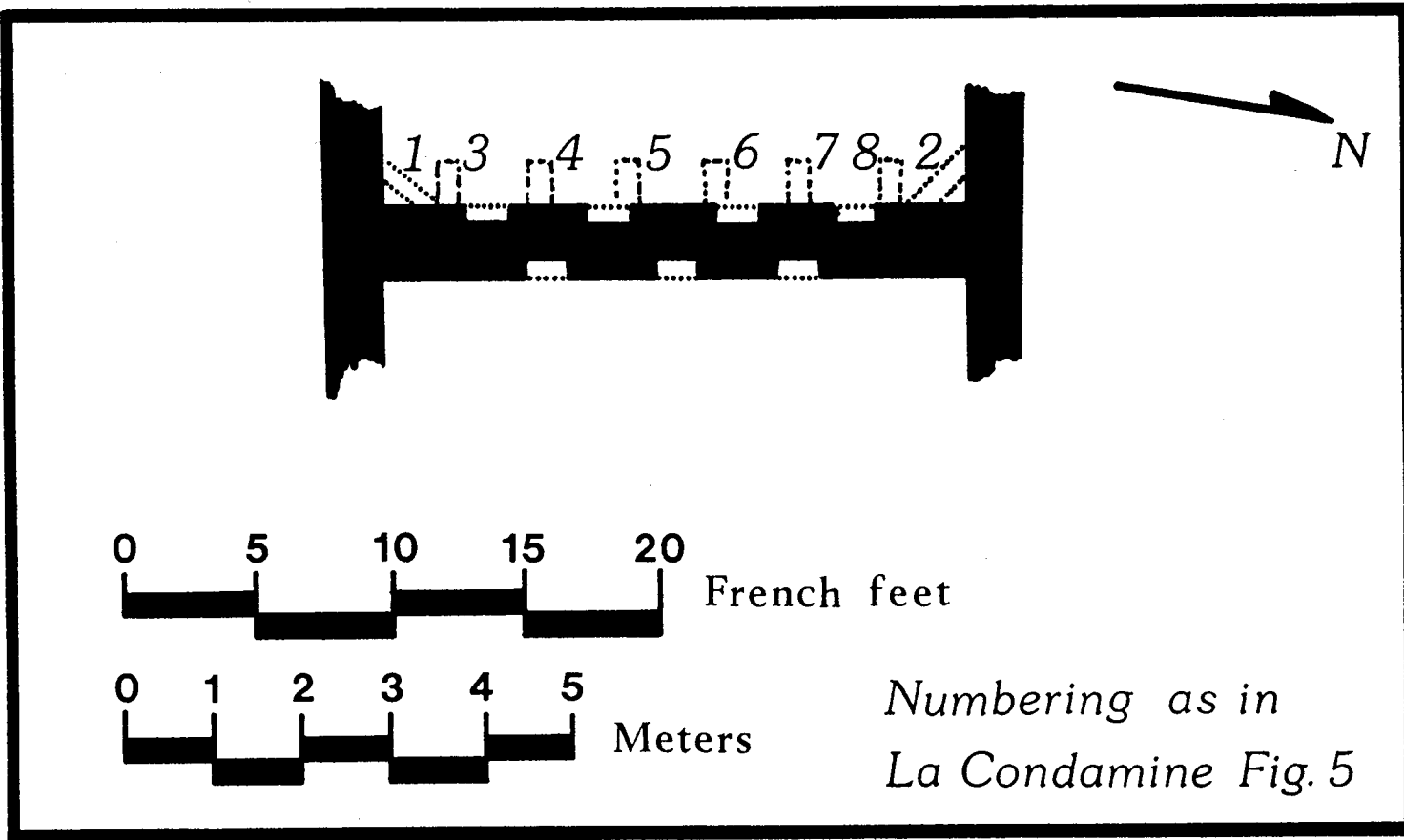


Figure 5. Detail of niches in the "Cuerpo de Guardia" after La Condamine (1748 [1746]).



Figure 6. Humboldt's (1813) Planche 17: "Monument Peruvien du Cañar".

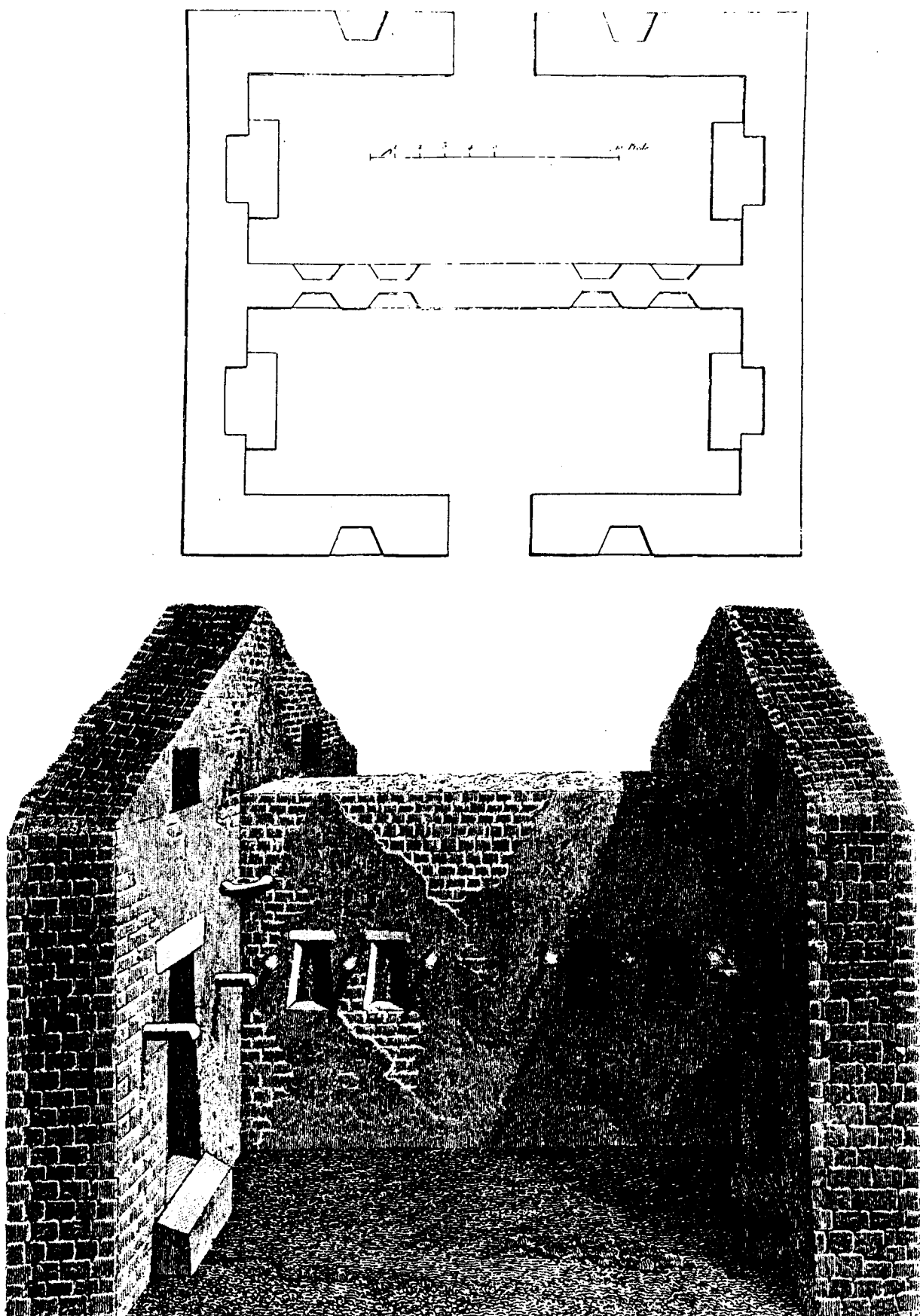


Figure 7. Humboldt's (1813) Planche 20: "Intérieur de la Maison de l'Inca".