

MAX UHLE, 1856-1944
A MEMOIR OF THE FATHER OF
PERUVIAN ARCHAEOLOGY

BY
JOHN HOWLAND ROWE

UNIVERSITY OF CALIFORNIA PUBLICATIONS IN AMERICAN
ARCHAEOLOGY AND ETHNOLOGY
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MAX UHLE

A portrait made near the end of his life

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In Americanist studies, the first thing that had to be done was to introduce the idea of time, to get people to admit that the types could change.—MAX UHLE

PREFACE

TO MY GREAT regret I never met Max Uhle, and the following account of his life and work is a piece of historical research. It turned out to be a very complex one, which has left me deep in the debt of many friends and colleagues. First of all I want to call attention to the important part played by Dr. Clement W. Meighan, of the University of California Archaeological Survey, in the library research which lies behind the text. He compiled a preliminary bibliography, which is the basis of the one accompanying this study, and assembled much information on Uhle's movements and archaeological work which served to guide my own investigations. He also contributed the assessment of Uhle's contribution to the archaeology of California.

Dr. J. Alden Mason, of the University Museum in Philadelphia, and Miss Bruckner, the Museum's Recorder, were kind enough to assemble and make available the records of Uhle's work for the University of Pennsylvania in 1895-1898 and 1917. Miss Dorothy Menzel deciphered Uhle's German script and extracted the necessary information from this material, and she also consulted Adolph Bandelier's journal for me at the American Museum of Natural History. Dr. Gerdt Kutscher of the Latein amerikanische Bibliothek in Berlin, the repository of Uhle's notes and manuscripts, kindly supplied much information and some reprints. Dr. Martin Gusinde of the Catholic University of America sent me three pages of invaluable data on Uhle's life in Chile. Dr. Gordon R. Willey of Harvard University supplied a glimpse of Uhle's last year in Peru, which I have quoted in the account of his life. For other personal impressions of Uhle I am indebted to Drs. A. L. Kroeber, Ronald L. Olson, and Robert H. Lowie of the University of California. I want to thank also Mr. Junius Bird of the American Museum of Natural History, Dr. Alfred Kidder II of the University Museum, Dr. William Duncan Strong of Columbia University, Dr. Greta Mostny of the Museo Nacional de Historia Natural, Santiago, Dr. Henry Wassén of the Etnografiska Museet in Göteborg, Dr. Herbert Baldus of the Museu Paulista, and Sr. Jorge C. Muelle of the Museo Nacional de Historia, Lima.

My data on Uhle's early life come from a biographical report which he supplied for the Biobibliographical Service of the President's Office of the University of California in 1905. For the years when he worked for the University of California I have used the catalogue and correspondence file of the Museum of Anthropology at Berkeley. For his field work done for the Berlin Museum and for his career from 1906 on I have had to depend on the published records, which are scanty, for in these periods Uhle published little about his own work and others reported it only sketchily.

Except as otherwise noted, the impressions of Uhle's character and ideas are my own, based on a very extensive sampling of his writings.

This memoir should not remain the last word on the subject. Uhle is an important enough figure in the history of anthropological field work to deserve a full biography. The task of doing Uhle real justice, however, is more than I can undertake at present, and I would rather make what information I have available than delay it until I can track down the answers to all the questions that remain.

Berkeley, California, May 1, 1952

J.H.R.

CONTENTS

	PAGE
Max Uhle, 1856–1944	1
Bibliography of Max Uhle	26
A. Uhle's Writings	26
B. Discussions of Uhle and His Work	47
Appendix A. The Aims and Results of Archaeology, by Max Uhle	54
Lecture 1	55
Lecture 2	65
Lecture 3	78
Lecture 4	90
Appendix B. Letters from Argentina and Bolivia, 1893–1895, by Max Uhle	101
Extract from a letter from Max Uhle to J. D. E. Schmeltz, written from Salta in 1893	101
Letter from Dr. Max Uhle about his journeys in South America, Tupiza, November 16, 1893	101
Letter from Dr. Max Uhle about his journeys in Bolivia, La Paz, April 16, 1894	103
Letter from Dr. Max Uhle about his journeys in Bolivia, La Paz, January 22, 1895	106
Appendix C. Documents Relating to the Years 1903–1906	109
Letter from Kroeber to Uhle, March 6, 1903	109
Extract from a letter sent to Uhle, in Peru, by F. W. Putnam, October 8, 1904	109
Draft of a letter from Uhle to Putnam, Supe, November 3, 1904	110
Letter from Uhle to Putnam, Lima, November 22, 1905	111
Letter from Uhle to Kroeber, Lima, November 22, 1905	112
Letter from Uhle to Mrs. Hearst, Lima, December 21, 1905	114
Letter from Charlotte Uhle to Kroeber, Lima, April 15, 1906	115
Plates	121

MAX UHLE, 1856-1944

BY

JOHN HOWLAND ROWE

THE FOUNDATIONS of Andean archaeology were laid by Max Uhle between 1892 and 1905, and no important modification or extension of his framework of styles and periods was suggested until W. C. Bennett's *Excavations at Tiahuanaco* was published in 1934. When Uhle started work, American archaeology was wholly without depth. A good deal of digging and collecting had been done and local styles were fairly well known in some areas, but American antiquities were all simply "pre-Columbian." It was Uhle who first applied modern principles of stratigraphy and seriation to American materials and sorted them out into a chronological sequence. This is only part of his achievement, but it is probably the part that will be longest remembered.

Uhle did more field work in western South America than anyone else who has ever lived. Most of it was archaeological, though some of it also had to do with ethnography and the analysis of Indian languages. He was so interested in gathering data that he never got around to publishing most of them. There are extensive collections of his in Philadelphia, Berkeley, Berlin, Quito, Lima, and Santiago, and smaller ones in Göteborg and São Paulo, for the most part documented by detailed catalogues and preliminary field reports in the form of letters. His notes and many unpublished manuscripts are in Berlin. Kroeber's publications based on the Uhle collections at Berkeley have demonstrated the value of the sort of study that can be made of data-accompanied museum collections. This account of Uhle's life and work is presented in the hope that it will stimulate more such studies and contribute in some degree to the completion of the work which Uhle himself left unfinished.

Max Uhle was born in Dresden, Saxony, on March 25, 1856. His full Christian name was Friedrich Max, but he used the full form only on official documents. His father was named Friedrich Ernst Uhle, and the son probably preferred to use his middle name to avoid confusion with his father. His parents were people of some substance in Dresden. His father was Royal Staff Surgeon Major of Saxony (*Königlich sächsischer Oberstabsarzt*), and his mother, Anna Kunigunde Lorenz, was the daughter of a royal judge, Wilhelm Lorenz (*Königlich sächsischer Gerichts-Director*). In 1869 the boy was sent to boarding school at the *Königlich Sächsische Fürsten- und Landesschule*, St. Afra bei Meissen, about twenty miles northwest of Dresden. He graduated in 1875 and went immediately to the University of Leipzig for the summer. In the fall he began a year of military service in the artillery, after which he went to the University of Göttingen for a year. In the fall of 1877 he went back to Leipzig, and stayed there until he took his Ph.D. degree in 1880. This was in linguistics, and his thesis was on a point of medieval Chinese grammar. Apparently the thesis subject was chosen to suit the professor's interest rather than the student's, for Uhle never wrote again on Chinese philology.

A year after taking his degree, Uhle got his first job, as assistant to the director of the Königliches Zoologisches und Anthropologisch-Ethnographisches Museum in Dresden (1881-1888). His publications while at Dresden indicate broad anthropological interests, with some emphasis on Malaya and New Guinea, probably because of the nature of the museum collections.

The period of Uhle's work at Dresden coincided very nearly with the dates of publication of *Das Totenfeld von Ancón in Peru* by Reiss and Stübel (3 vols., Berlin, 1880-1887; simultaneous English edition: *The Necropolis of Ancón in Peru*). This work, the first descriptive report on a scientific excavation in the history of Peruvian archaeology, created a considerable sensation in anthropological circles and roused widespread interest in the Andean area as a field for research. Uhle not only felt the influence of the book but had the personal encouragement of one of its authors. Alphons Stübel lived in Dresden and knew Uhle well, and it was largely his inspiration that led the young museum assistant to dedicate his life to Andean anthropology.

In 1888 Uhle left the Dresden Museum to become Assistant at the Königliches Museum für Völkerkunde in Berlin, which was then under the directorship of Adolf Bastian. Berlin at that time was probably the most stimulating place in Europe for an aspiring Peruvianist. Bastian himself had traveled in the Andes and was writing *Die Culturländer des alten America* (3 vols., Berlin, 1878-1889). Wilhelm Reiss, Stübel's colleague at Ancón, was also there, and there were others with similar interests.

Uhle was only in Berlin for four years, but they were years of tremendous activity. He was an assistant secretary to the VII International Congress of Americanists (Berlin, 1888), along with Seler, Steinen, Luschán, and other illustrious contemporaries, and he prepared both a book and a paper to present to the congress. The book was a series of essays on outstanding archaeological specimens from Mexico, Colombia, and Peru in the Berlin Museum, and in the essays Uhle discussed a number of archaeological problems that had been debated at the previous congress, notably the use of molds in ancient America. The paper was on the classification of the Chibcha languages. Uhle related Chibcha proper to the languages of the Sierra Nevada de Santa Marta and to Talamanca of Costa Rica and Guaymí of Panama. He called attention to a series of systematic sound correspondences, and thus made one of the first applications of the comparative method of Indo-Europeanists to native American languages. This paper has many defects as a linguistic study, but it remained for twenty years the basis of the classification of the Chibcha family.

Another major publication of Uhle's Berlin years was his *Kultur und Industrie südamerikanischer Völker* (1889-1890), a two-volume study of the archaeological and ethnographical collections at Leipzig assembled by Stübel, Reiss, and Koppel from all parts of South America. A series of excellent plates with commentary, this work is still indispensable and has been unjustly neglected by recent scholars. Finally, in 1892, appeared Uhle's *Die Ruinenstätte von Tiakuanaco*, a detailed description and interpretation of the great Bolivian site on the basis of photographs and measurements made by Alphons Stübel in 1876 to 1877. This book

served to define the style of Tiahuanaco and established it as pre-Inca, and thus laid a firm basis for the archaeological chronology Uhle was to build up later in Peru. Somehow Uhle also found time in these years to write a series of articles on various subjects: house types in Holstein, Costa Rican gold, and ancient Mexican featherwork. He belonged to the Berliner Gesellschaft für Anthropologie, Ethnologie und Urgeschichte and to the Gesellschaft für Erdkunde zu Berlin and took an active part in their meetings. Thus, when his chance came to go to South America for field work in November, 1892, Uhle was already widely known as a productive scholar and somewhat of an expert on South American problems. He was only thirty-six.

His first field trip, to Argentina and Bolivia, was made under the auspices of the Prussian government and the Berlin Museum, and his field reports were made to Bastian as director of the latter institution and sponsor of the work. Uhle landed at Buenos Aires and went overland to Córdoba. Thence he went to Catamarca by mule, and from Catamarca by way of Chumbicha to Tinogasta. This town in the southwestern part of the province of Catamarca was his base for exploration of the archaeological sites between Fiambalá in Catamarca and Chilecito in La Rioja. In April, 1893, he shipped to Berlin a collection from the sites of Medanito, Tinogasta, Aimogasta, and Aniyaco-Watungasta in this area. After this work he moved north to Belén, where he explored the Belén valley, and then northeast to Tucumán, via Andalgalá. From Tucumán he went on to visit the sites of the Calchaquí valleys, which he explored from Fuerte Quemado to Molinos. Then he went on via Conchas to Salta, to ship off his collections and prepare to go on to Bolivia. From Salta he wrote to J. D. E. Schmeltz of the emotional and intellectual impact his field work was having on him; he felt as if he were discovering a new world and at the same time improving his research methods and broadening his intellectual horizons (see App. B). At the very beginning of his work in America he acquired the passion for field work which later often interfered with his plans for publication or settled academic life.

To enter Bolivia he chose the route via San Antonio de los Cobres and the region of Cochinoaca and Casabindo. A stopover at these two towns gave him a chance to explore some dry rock shelters, which yielded a large collection of well-preserved burials. With a load of skulls and mummy bundles, he went on by the Quebrada of Talina to Tupiza in Bolivia, arriving there in November, 1893. Southern Bolivia fascinated Uhle; the archaeology was not spectacular, but the population, still Indian in speech and customs, stimulated him to make ethnographic observations. He did not stay very long in one place, however; soon he was off on an excursion of several weeks into the interior of Lipes, the little-known southwestern corner of Bolivia, visiting Esmoraca, San Antonio de Guadalupe, San Pablo, and Cerritos. After this trip Uhle took another short one, in which he revisited Talina; then he continued his northward journey by way of Cotagaita to Potosí, and from there went by way of Challapata to Oruro, along the east shore of Lake Poopó. Oruro was his base for a month's excursion to the interior of Carangas, which he undertook early in 1894 at the height of the worst rainy season in years. Carangas is rough country at best, but Uhle had to struggle through miles

of marsh, following inundated trails and finding little in the way of comfort in the towns where the roads ended—Totorá, Curahuara de Carangas, Turco, Huachacalla, Corque, and Chuquichambi. He found the archaeological remains scanty, though there were hundreds of burial towers (chulpas) in northern Carangas. One of the purposes of this trip was to visit the Uro village of Chipaya, near Lake Coipasa; but he found, on reaching Huachacalla, that the road to Chipaya was completely impassable. His disappointment was somewhat lessened by the discovery that there were two Uro families living at Huachacalla, and he spent three days and nights in February questioning them with the aid of an Aymará interpreter. The result was an Uro vocabulary of more than four hundred words and a sketch of the grammar. Of all this Uro material, only about nineteen words of the vocabulary have ever been published. Uhle struggled back to Oruro and then went direct to La Paz, arriving there at the beginning of March.

One of the first things Uhle did after he reached La Paz was to pay a visit (April 20–21) to the ruins of Tiahuanaco, which he already knew intimately from Stübel's notes. To his horror he discovered that the Bolivian regiment stationed at Tiahuanaco was using the sculptures of the site as targets for rifle practice. He wrote immediately to the Minister of Government protesting this piece of vandalism and sent a copy of his letter to the newspaper *El Comercio*, of La Paz. The paper published it on May 7, 1894; other papers, such as *Ecos Liberales*, took up the scandal (May 13), and the shooting was stopped. It was more than ten years, however, before any adequate protection was provided for Bolivia's most famous site.

From April to September, Uhle was stranded in La Paz, in such financial straits that he had to borrow money to live on. The reason for this situation was a change in his sponsorship, which took some months to work out. In 1893, while Uhle was still in Argentina, Mrs. Zelia Nuttall heard his praises in Berlin from Bastian and Stübel and proposed to her friend Mrs. Cornelius Stevenson, a patron of the University of Pennsylvania, that the university take over Uhle's work. Bastian had planned on further German support of the explorations but was willing to relinquish Uhle to Pennsylvania if the Americans wanted him. The difficulty was that it took many months to raise the necessary money in Philadelphia, and it was not until early in 1895 that Uhle actually went to work for the University of Pennsylvania.

He managed to make his stay in La Paz profitable, however, by making an intensive study of the Aymará language. He wanted to learn it, and he was also interested in working out various problems of the grammar. He had a copy of E. W. Middendorf's Aymará grammar (1891) and in going over it became convinced that Middendorf had obtained only part of the verb conjugation and had missed various other details. In studying Aymará he had the stimulation of working with a number of Bolivian friends who spoke the language well and were interested in its grammar; he apparently used them as informants and not the Indians themselves. He felt, after some four months of work, that he had the notes for a better Aymará grammar than any that had yet appeared; but like most of the rest of his linguistic data it remained in manuscript. He published only the table of verb forms which he had worked out (Uhle, 1902*a*, 1912*c*).

One of his most severe trials during his stay in La Paz was the presence of a rival anthropologist. Adolph Bandelier arrived in August to undertake a program of archaeological and ethnographic research in the same area in which Uhle wanted to work, and Uhle felt rather bitter about his own enforced idleness. The two men established a reasonably cordial though cautious relationship. They saw each other fairly frequently when they were both in La Paz, and made at least one short trip together; but each told the other as little as possible of his own research, and each was critical of the other's results.¹

Between September, 1894, and the end of the year, Uhle made two trips to the shores and islands of Lake Titicaca, still for the Berlin Museum. He was in the field continuously during these months except for the first eleven days of October. He went first to Copacabana, where he visited various sites, including Lloqepaya, opposite the island of Anapia. He visited the island of Coati twice, seven days in all, and spent thirteen days on the island of Titicaca, describing and measuring the Inca sites there, which were also later published by Bandelier. After this work he crossed the lake to Achacachi and followed the shore northward to Huaycho, just short of the Peruvian border. He found this whole expanse thickly sown with fortified hilltop villages roughly built of fieldstone and associated with the coarsest and least-decorated pottery he had yet seen. Since Uhle found in them a few pots of Tiahuanaco style and also some Inca material, he concluded that these sites had probably been occupied down to the Spanish conquest.

After this trip he spent a couple of months in La Paz, writing reports, shipping off his collections to Berlin, and waiting for the worst of the rainy season to be over. Early in March of 1895 he was off again, this time working for the University of Pennsylvania. He spent the rest of March and the first half of April surveying the southeast shore of Lake Titicaca around Aygachi and Copahancara, and the neighboring islands of Paco, Cumana, Intja, Taqueri, and Quevaya. On this trip he dug a number of graves, measured a great many ruined buildings, and collected scraps of ethnographic information. He ended his work in this region with a study of the Tiahuanaco-style ruins of Wilaqollo on the Finca Lucurmata at Huacullani. Here he had some difficulties with the Indians because of local political troubles, and left somewhat precipitately after three days, having completed the notes he wanted. From Huacullani he went via Lacaya to Tiahuanaco.

From April to July, Uhle was working at Tiahuanaco, making measurements and photographs, taking squeezes of the sculpture, and making collections. He was unable to do any digging at the site because, after the scandal he had raised about vandalism there in the previous year, the government had prohibited all digging, and his attempts to negotiate with the local authorities and with those at La Paz were alike fruitless. It was an ironical situation, a bitter disappointment to Uhle, and a blow to the development of Bolivian archaeology. Uhle had to be content with collections of surface sherds, what objects he could purchase, and ethnographic specimens.

¹ For example, Uhle says, "Most of the plans which Bandelier has furnished of the ruins on the island of Titicaca suffer from numerous errors" (Uhle, 1917*d*, p. 157). Since Uhle's plans of these ruins have not been published, it is difficult to know who is right. I discovered, however, when I compared Bandelier's plans of Sillustani with the ruins themselves in 1941, that Bandelier was not above mapping nonexistent walls which he thought ought to be there.

Although he was at Tiahuanaco off and on for two and a half months, one month of that time was taken up with trips to La Paz, Chililaya, Desaguadero, and Lacaya. He covered some of the same territory in August and September, visiting Aygachi, Tiahuanaco, Taraco, Desaguadero, and Hachiri. The attraction at Desaguadero was the Uro community of Iruwitu, four to five leagues south of Desaguadero town. Uhle had planned to make extensive linguistic and ethnographic studies of these Uro, whom he found closely related linguistically to those at Chipaya; but the news of his mother's death, received in September, cut short his field work, and he returned to La Paz on September 17, 1895. Still, he had collected a considerable amount of information on the Uro, certainly enough to make a worthwhile publication. It was never written.

The rest of the year Uhle seems to have spent in La Paz, except for another ten-day trip to Desaguadero in December and January. He was winding up his Bolivian investigations and preparing to go to Peru; the frustration of being unable to dig and his treatment at the hands of Bolivian officials had brought him to the point where he declared himself "utterly wearied of Bolivia." He left La Paz on January 14, 1896, went down to the coast of Peru and, following the coast overland, reached Lima on the twenty-second.

Uhle began work in Peru almost immediately with a small excavation at Ancón, and then moved on to Pachacamac. His excavation there was the greatest he ever undertook, and the one which, because his findings were promptly published, had the most immediate and lasting effect on American archaeology. He worked at Pachacamac for a full year, finishing only in February, 1897. His headquarters were at the Hacienda San Pedro, owned by Don Vicente Silva, and he was close enough to Lima to be able to go to town frequently to ship collections and attend to other business. Uhle was not exclusively occupied with Pachacamac during this year; he also dug at Marques, four leagues north of Lima, and purchased collections from Trujillo, Huacho, Chancay, and the valley of Lima. Sometime in 1897 he closed his Peruvian field work and sailed for the United States to write up his report at Philadelphia.

Uhle was in Philadelphia from 1897 to 1899, writing his report on Pachacamac and some shorter papers and giving lectures. It was in this period that he met the girl he was later to marry, Charlotte Dorothee Grosse, daughter of Johannes Bernhard Grosse, M.D., and Luise Sophie Wulkop. Miss Grosse was charged with the translation into English of Uhle's German manuscript on Pachacamac, and her work naturally brought her into frequent contact with the author. Just at this point, however, Uhle's fortunes underwent a crisis. His chief patron at the University of Pennsylvania, Dr. William Pepper, physician, former Provost of the University and President of the Department of Archaeology and Palaeontology, died on July 29, 1898, at the age of fifty-five. Uhle foresaw a black future for himself without Dr. Pepper's support, but he soon found himself in good hands. Mrs. Phoebe Apperson Hearst, a close friend of Dr. Pepper and a person with similar archaeological interests, came to his support and offered to finance a new Peruvian expedition for him under the auspices of the American Exploration Society of Philadelphia. Uhle was happy to accept this chance, and came to work for the University of California. Mrs. Hearst transferred the official spon-

sorship of the expedition in May, 1900, to this institution, and the collections Uhle made in his field work between 1899 and 1905 are therefore at the University of California.

Although he had written no report on the work at Tiahuanaco or on his two years of field work for the Berlin Museum, Uhle sailed for Peru again on June 19, 1899, from New York. He had long wanted to work on the north coast of Peru and planned his next campaign in that area; but first, arrangements had to be made in Lima, and it was August 27 before he got to Trujillo. In the meantime, he took advantage of the delay to make a week's trip to Tarma and Tarmatambo in the central highlands, primarily to make some ethnographic observations which he hoped would enable him to interpret some of his Pachacamac finds. He took notes on costume and various aspects of material culture and also looked over the local ruins.

The valley of Trujillo proved just as interesting as he had hoped. He visited Chanchan and Moche and other sites there, and then determined to concentrate his work at Moche, since this site showed promise of yielding earlier material than the others. He dug first on Cerro Blanco and then on and around the Huaca del Sol and Huaca de la Luna; sometime in November he located an undisturbed Early Chimu cemetery (site F) at the west foot of the Huaca de la Luna. Uhle opened thirty-two graves in this cemetery and catalogued all the specimens by grave provenience. Although many more extensive Early Chimu cemeteries have been excavated, both before and since, Uhle's Cemetery F collection remains to this day the only one with recorded grave associations, and since its publication by Kroeber in 1925 it has been the type collection for the Early Chimu style. Other parts of the Moche site yielded Tiahuanaco-influenced pottery and Late Chimu materials, and Uhle was able—by an argument based primarily on style analogies with Pachacamac—to arrange these materials in the following order: Early Chimu, Tiahuanaco-influenced, Late Chimu; an order confirmed many years later by stratigraphy.

The excavation of Cemetery F continued through January and February, 1900; after that, Uhle had to give some time to organizing and packing the materials collected. On April 2 he left for the highlands to study sites in the neighborhood of Huamachuco. This trip lasted until June 24. Its objective was to determine what lay behind the great archaeological centers on the coast; and Uhle worked at Marca Huamachuco, Viracochapampa, Cerro Amaro, and a number of other sites, measuring and describing the ruins and assembling collections of stone sculpture, pottery, metal objects, and so forth, by excavation and purchase.

Late in July, Uhle returned to Lima. He spent the next two months attending to expedition business, with short visits to Maranga and other sites in the valley of Lima and to the neighboring valley of Lurín. In September he moved down to the south coast and worked at Chíncha from September 22 to the early part of December. He next went to Ica valley and worked there through May of 1901. It was during this work at Ica, specifically at Hacienda Ocucaje, that Uhle localized, and hence in a real sense discovered, the Early Nazca pottery style, known previously only from isolated specimens in the Berlin Museum. There was also

much interesting later material from Ica, including rich tombs of the Inca period yielding carved wood, jewelry, and some gold and silver.

In his work at Chíncha and Ica, Uhle had bracketed the intermediate valley of Pisco, but he wanted to visit it also because it was the starting point for one of the principal Inca roads leading to the highlands. He spent a month and a half there (August 23–October 11), chiefly occupied in measuring and photographing the extraordinarily well preserved Inca palace of Tambo Colorado. Then he followed the Inca road up into the mountains to Huaitara, where he found that the village church was a converted Inca building with little more than the façade added—the only well-preserved example of such re-use known anywhere in Peru. He returned from Huaitara on October 23, went back to Lima, and sailed for San Francisco on the Pacific Steam Navigation Company's S.S. *Chile*. He landed on December 3, exhausted by the most active, and in some ways the most spectacular, field trip of his career.

To house the collections that were arriving for the projected university museum, Mrs. Hearst had built on the University of California campus at Berkeley a temporary storage building—a building still occupied fifty years later by the Department of Anthropology. This was where Uhle was to work, but like many other members of the university community he preferred to live in San Francisco and commute to Berkeley. He had little time to rest; within a few weeks of his arrival, Professor J. C. Merriam had talked him into participating in the excavation of a huge shellmound at Emeryville, near Berkeley, and he had agreed also to give a short series of lectures. Since Uhle's English was still poor, in spite of his two years at Philadelphia, he gave the lectures in German (February 3–10, 1902). The Emeryville excavations started a week after the lectures were over and lasted until May 1. For once in his career, Uhle went to work immediately on the report, and his manuscript was completed by the middle of June. Dr. Clement W. Meighan characterizes Uhle's Emeryville work as the first scientific archaeology done in California and notes that Uhle recognized, in the small sample of materials secured, elements of stratigraphic difference which were later confirmed by more extensive work. The site was so poor in comparison with Peruvian ones that Uhle misjudged the amount of digging that would be necessary in order to secure an adequate sample; he therefore did not get enough material to make any very elaborate chronological distinctions. The Emeryville work may have served to stimulate his interest in shellmounds in general and thus contributed to his discovery of the Early Ancón shellmound site on his next trip to Peru. It is true that Uhle had visited and described two shellmounds at the mouth of the Ica River in 1901, and they perhaps would have been enough to call his attention to the shellmound problem. Still, it is an interesting coincidence that Uhle's first shellmound excavation in Peru followed his work on a similar California site.

Most of the rest of Uhle's stay in San Francisco was taken up with unpacking and studying his collections and the writing of reports. Uhle wrote the text of his reports in German, but this was the least part of the job. He had hundreds of photographs and drawings made for use as illustrations and had materials and shells identified by specialists at Berkeley; his work was also complicated somewhat by the transfer of the museum collections from Berkeley to the Affiliated

Colleges building in San Francisco in the summer of 1903. He took a few vacations, notably a holiday trip to Yosemite in August, 1902, and a trip to New York in October of the same year to attend the meeting of the XIII International Congress of Americanists.

In March, 1903, Mrs. Hearst offered Uhle a three-year contract to cover another expedition to Peru (see App. C). Uhle himself had been hoping that he would be offered a teaching post; the prospect of more field work, however, was also very attractive, and he was given an academic title (Hearst Lecturer in Peruvian Archaeology) even though he would not be in Berkeley to teach. He accepted the field-work contract, and it was agreed that the three-year term would begin whenever he had finished writing his report and was free to take it.

On the strength of the new contract, Uhle married Miss Grosse, the translator of Pachacamac. They were married in Philadelphia on June 10, 1903, and came back to San Francisco soon after, because Uhle was still working on his reports. It was now decided that Mrs. Uhle should undertake the translation of the latest group of reports and that she should take the manuscripts with her on the new expedition so as not to delay the field program any more than was necessary.

The reports were finished by October 7, 1903, in the form of seven manuscripts of unequal length. It was planned to group these into three memoirs to be issued by the University of California, and all three were listed as "in press" on the covers of early issues of the University's *Publications in American Archaeology and Ethnology*. The plan of publication was not exactly as Uhle wanted it; he favored large publications in portfolio like his earlier ones on Tiahuanaco and Pachacamac, with the idea that the larger page size made it possible to print the photographs on a larger scale. His colleagues at California were less tractable in this respect than the authorities at Pennsylvania had been, and he was forced to accept a quarto format, but he was never happy about the idea. As things worked out, the decision to let Mrs. Uhle do the translating proved disastrous; she completed the translation of only two of the seven reports, and the manuscripts were never sent back to California, although Kroeber asked for them repeatedly in later years. Uhle kept the manuscripts, plans, ink drawings, and original field notes with him, and they passed, at his death, to the *Latein amerikanische Bibliothek* in Berlin. The photographs remained in Berkeley, together with the collections, Uhle's field catalogues, and the long and informative letters he had written from the field as preliminary reports.

The job of writing out of the way, the Uhles sailed from San Francisco on November 7, 1903, for the second University of California expedition to Peru. They reached Callao on December 10 and were ready to start work early in January. To give his wife a chance to adjust easily to life in Peru, Uhle arranged to do his first digging of the trip at Ancón, a charming and fashionable summer resort near Lima, at the height of its season during the months they would be working. Uhle had always been interested in the Ancón site because of the work done there by Reiss and Stübel, and he had already done some digging there on a small scale in 1896 and 1897. His 1904 work was more extensive (January-May) and added much new information, for Uhle found chronological differences where Reiss and Stübel had described all their finds as simply prehistoric. Uhle also noticed that

in addition to the cemetery, long known for its rich graves, there was a shell-mound on the south side of the modern town that had been ignored by all previous visitors. Here he found unpainted black pottery decorated by incision and related techniques and a cultural inventory notably poorer than that of the cemetery. This is the Early Ancón material, the first archaeological culture belonging on the so-called Chavín horizon. It was a discovery as momentous as his localization of Early Nazca in 1901 but much more difficult to fit into the chronological scheme. As happened several times in his career, Uhle reached the right conclusions by the wrong argument. He dated Early Ancón at the beginning of his sequence because he regarded it as primitive in an evolutionary sense. Since the more recent discoveries of great architectural sites and stone sculpture associated with similar pottery, we are more inclined to attribute the poverty of the Early Ancón site to local economic considerations, but the style belongs stratigraphically exactly where Uhle put it.

There was plague in Lima when the Uhles finished at Ancón, so they took a launch direct to Chancay valley instead of returning to the capital. They worked in this valley from May to September, digging at five different sites. Again Uhle discovered new pottery styles—this time two, now known as Interlocking and White-on-Red, which were found together on the south slope of Cerro de Trinidad, Kroeber's site E. Uhle decided that both these styles were pre-Tiahuanaco and that Interlocking was earlier than White-on-Red. His argument involved interpretation of some confused associations in the ground and some reasoning about style development which is not very convincing. For some reason, possibly because the graves were poor and much of the pottery was broken, Uhle did not record the grave provenience of the material as he usually did. Hence, nothing much could be done about checking Uhle's sequence until more digging could be undertaken. It was not until 1941-1942 that the question was settled; Gordon R. Willey found a stratigraphic sequence with White-on-Red earlier than Interlocking. Uhle's error in this dating was the only serious one he ever made regarding style sequence in Peru.

While working at the Late Chancay site of Hualar Viejo (site D), Uhle had a serious accident. He fell head foremost into an excavation ten feet deep and sprained his neck severely (see App. C). He wrote later that he had recovered completely and that his work had not been interrupted, but one cannot help wondering whether the damage was not more serious than he admitted. For whatever reason, the quality of Uhle's reports shows a distinct falling off after the Chancay work. They become less frequent, less specific, and more concerned with interpretation at the expense of description.

The Uhles moved north to Supe valley in September, and after a reconnaissance settled down to work at the site of Chimú Capac on the Hacienda San Nicolás. The remains found here are of the period of Tiahuanaco influence, and the collection is notable for the fine preservation of textiles and wooden objects. Late Chimú and Inca specimens were also found in the Supe valley. Near Puerto de Supe, Uhle located two more sites of the Early Ancón type. The notes he supplied on the work at Supe are notably less clear and detailed than those on pre-

vious collections; for example, he nowhere tells us when the Supe work was finished. It was probably about the end of the year.

In 1904, Mrs. Hearst decided to retrench her archaeological work, and Uhle was notified by a letter of October 8 that he should plan to finish his field work in time to get back to San Francisco and write up his report within the span of his contract; that is, before November 3, 1906. Uhle received and answered this letter while he was working at San Nicolás (see App. C). He agreed to comply with the new instructions, but it is clear that he felt that the future looked very insecure and that he might well find himself unemployed in San Francisco in 1906.

Nevertheless, the work went on. In the first half of 1905, Uhle undertook a long trip to Cuzco and the interior of southern Peru because he felt he ought to know more about the highlands and more about the original home of the Incas. He sent back a long report on this trip, but it contains very little information on his movements and does not cover all the research he did. For example, he reported to the XXIII International Congress of Americanists in 1928 that he had measured a hitherto unknown section of wall in the Temple of the Sun at Cuzco in 1905; this discovery is not mentioned in the report he sent to Berkeley.

The Uhles were shocked by the complete lack of sanitation at Cuzco, and stayed outside the town, believing that the country was more healthful. The archaeological problems were quite different from those on the coast, and Uhle found his methods not very effective in the Cuzco area. He looked for cemeteries and found very few, and most of those had been looted. He found some graves on the road to Pisac, between Cochahuasi and Huancalli; others near La Recoleta; and a looted burial cave at Colmay, one and a half leagues northwest of Chinchaypuquio. In addition, he did enough digging near the fortification walls of the fortress of Sacsahuaman to satisfy himself that it had been built by the Incas. The collection Uhle made at Cuzco is a small one, and he got relatively little new archaeological information there. He was naturally much interested to discover that there were still descendants of the Inca nobility living in the neighborhood of Cuzco, and he made some interesting notes on their ayllu system as found at San Sebastián and San Gerónimo and on present-day festivals.

On the way back to the coast, the Uhles visited the ruins of the great Temple of Viracocha at Cacha, collected modern Indian herb remedies in Sicuani, took a side trip from Puno to visit Hatun Colla and Sillustani, and made two small excavations near Arequipa. He wrote his report at Chala, on the coast road to Lima, on September 9, 1905. By November 22 he was back in Lima. Between these dates he had crossed the desert from Lomas to Nazca and Ica and had made a fine collection of Early Nazca pottery, which he sent to Berkeley to complement his much better documented Ica collection of 1901.

On his return to Lima, Uhle was approached by the Peruvian government with the proposal that he undertake to found a national archaeological museum in Lima under contract with Peru. The scheme was an attractive one for many reasons. There was an enthusiasm for the country's antiquities previously unheard of in Lima intellectual circles, and as a result of it the Instituto Histórico del Perú had been formed in 1905. The government was disposed to support the museum project and was interested in the protection of the ancient sites, a matter

dear to Uhle's heart ever since his experience at Tiahuanaco. Uhle liked Peru, and he felt that there was no limit to what he might find there if he could continue his field work. Besides, there seemed to be little future in continuing to work for Mrs. Hearst, since she had made it clear that she was not planning to renew his contract. Uhle accepted the job in Lima without hesitation, and Mrs. Hearst willingly released him from the remainder of his contract with her, terminating it on December 31 (see App. C).

The arrangements that had to be made about the new job required Uhle's presence in Lima from time to time, and he decided to spend the last six weeks of his work for Mrs. Hearst digging in the valley of Lima. His extraordinary skill at picking coastal sites was evident again, for he chose the cemetery at Nievería, not far from Cajamarquilla, as the place to work. The collection includes a variety of the Interlocking style, which Uhle now calls "Proto-Lima," and some interesting Tiahuanaco-influenced materials of a new and distinctive style. Uhle never sent a report on the Nievería excavation, but his field catalogue includes grave associations for thirty-four graves, comprising about half the collection.

Because he had continued digging until his new contract began, Uhle had to find time at the start of his work for the Peruvian government to pack and ship his collections. This work was finished by early April, 1906, probably in the intervals between field trips for his new museum. Mrs. Uhle sent also, as a gift to the University of California, a collection of specimens which she had picked up on the surface or had purchased at sites to which she had accompanied her husband. The most notable specimens in her collection are a series of pottery molds from Chancay, probably the largest such series in existence (see App. C).

The new job was somewhat different from his previous ones in that Uhle's administrative duties took a much greater proportion of his time. Also, he no longer had a sponsoring institution at a distance to which he had to make periodic reports. As a result, he did less and less field work and wrote less and less about it. After 1905 it becomes impossible to date all Uhle's excavations or even list them, and all his activities in this period are known in less detail.

The new museum was organized in two sections or departments; the Sección de la Colonia y de la República was under the direction of José Augusto de Izcue, while Uhle directed the Sección de Arqueología y de las Tribus Salvajes. The museum as a whole was known as the Museo de Historia Nacional. Izcue is listed as general director at first, but after 1907 this position fell to Uhle. For quarters the new institution had the second floor of the former Palacio de la Exposición, an attractive but jerry-built structure which needed a great deal of remodeling for its new purpose. The collections had to be made almost from scratch; about all there was to start with was the famous Raimondi Monolith from Chavín. Uhle went to work with his usual industry to build up the museum's holdings, and by the time of the official opening on July 29, 1906, he had assembled an impressive collection from the valley of Lima, the most notable unit of which was a group of specimens from Cajamarquilla. He also purchased the Luís N. Larco Collection from the Trujillo area. There was a small ethnographic collection too, mostly from the Aguaruna, a Jíbaro subtribe living on the Marañón River.

Uhle remained at the head of the national museum in Lima through the year

1911. Many of his archaeological activities during this period can be reconstructed only by a process of elimination: we know where he had worked in Peru before 1906, and when he mentions a site where he had not worked before he took over the Lima museum, we can assume that he worked there between 1906 and 1911. One of his first projects was to visit the Peruvian part of the Lake Titicaca basin and bring down to the museum the two famous carved pillars of Hatun Colla, which he had seen on his 1905 trip. I assume that this expedition was carried out between 1906 and 1908, because in the latter year Uhle mentions having been to Acora on the west shore of Lake Titicaca. It was probably on this trip that he visited Arapa, north of the lake, and photographed a carved stela there which is very similar to an aberrant carving at Tiahuanaco. He was in Cuzco in 1907 and excavated some tombs at Qhatan near Urubamba, discovering there the first examples of the Early Inca pottery style.

He also did a great deal more work in the valley of Lima, a convenient field for exploration because he could also keep an eye on museum affairs. He worked again at Nievería in 1908 and 1909, and sometime before 1910 dug around Copacabana in the Chillón valley (a northern extension of the valley of Lima) and located refuse deposits at Bellavista, near Callao, which are probably contemporaneous with Early Ancón. In 1909 he also worked on the south coast, excavating a cemetery on the Hacienda Chaviña, which yielded among other things a choice lot of wooden spear-throwers. This list of his archaeological activities during the Lima years is undoubtedly incomplete.

One of the highlights of the Lima years was probably Uhle's part in the XVII International Congress of Americanists held at Buenos Aires, May 17-23, 1910. Uhle attended, with his wife, and was the official Peruvian delegate and an honorary vice-president of the congress. He took a prominent part in the proceedings and had to make a number of official speeches in addition to delivering his own paper on the origin of the Incas. After the meetings in Buenos Aires, an official excursion to Bolivia and Peru was organized, and Uhle became a sort of informal guide to the delegates. He had an unparalleled chance to show off all that he had learned in some twelve years of field work and to revisit the sites of his earlier exploits. He and his wife crossed to Valparaiso to enter Bolivia from Chile, while another party went by rail through Argentina. The congress group reassembled in La Paz. There a session of papers was held on June 18, and Uhle spoke on the historical position of the Aymará; on the twenty-first the delegates all went out to Tiahuanaco. Here Uhle was horrified at the destruction that had taken place since 1895; pot hunting and railroad construction had damaged the site so much that Uhle said he would hardly recognize it. The tour next took the party to the islands of Titicaca and Coati, to Copacabana, Puno, and Cuzco; they returned by rail, went down to Arequipa and Mollendo, and proceeded to Lima by boat. From Lima there were excursions to all Uhle's near-by sites: Pachacamac, Ancón, Cajamarquilla. There was a final session of papers at the Sociedad Geográfica, at which Uhle again read a paper, this time on Inca ayllus, and the party broke up on July 21.

It was very probably on his visit to Chile in 1910 that the ground was laid for the invitation to come to Santiago, which Uhle accepted in 1911. The reasons

for the move are obscure because we have no information on the financial situation and political difficulties of the Lima museum. There is no reason to think that the Uhles were personally unhappy in Lima; they had a lovely house on the Avenida de La Magdalena with all their family things in it, and Uhle says specifically that his wife was most unhappy to leave (Uhle, 1937a). Nevertheless, they went; and Uhle spent the next four years (1912–1915, inclusive) organizing an archaeological museum in Santiago.²

Uhle went to Chile under contract with the Chilean government to do field work, lecture, and generally build up Chilean archaeology. His base was to be a new Museo de Etnología y Antropología, organized as a section of the Museo Histórico de Chile, itself a new institution created only in 1911. There seems to have been not a little jealousy between the new Museo Histórico and the older Museo Nacional, especially as it was proposed to transfer the archaeological collections of the latter to the former. However, Uhle went ahead with the new Museo de Etnología y Antropología. Its quarters were in the Calle de la Moneda, and here was brought the small archaeological collection of the Philippis, all the relevant material already in the Museo Histórico.

In Santiago, as in Lima, there had recently been a burst of interest in history and archaeology, which led to the foundation of a new society, the Sociedad Chilena de Historia y Geografía. This society met in several sections, one of which was devoted to anthropology. Uhle was elected to the society in April, 1912, and in May became president of the anthropological section, a post he held as long as he was in Santiago. The society provided him with much intellectual stimulation and a vehicle for publication, and he took a very active part in its proceedings. He also lectured at the University of Chile.

Uhle's field work in Chile, although not as extensive as that in Peru, was still considerable. In July and August, 1912, he dug in the cemetery of Chunchuri near Calama on the Río Loa. This site had been partly excavated by Sénéschal de la Grange in 1904; but Uhle found a much richer section, which yielded 1,100 objects and more than 200 skulls and mummies in a space of 55 square meters. Uhle visited other sites in the Río Loa region as well. He also stopped off in Antofagasta and secured as a gift the Echeverría y Reyes Collection, a noteworthy lot of antiquities from Chuquicamata and San Pedro de Atacama. This material got the new museum off to a fine start.

In 1913, Uhle went north again and worked from May to September near Pisagua, mostly at Pichalo, a mile and a half away. Here he found three cemeteries, each yielding a different style; he arranged these styles in chronological sequence according to their resemblances to Peruvian styles. Surface finds constituted a fourth style. He also dug a cave at Pichalo and reported that he found

² One of the last things Uhle did in his capacity of director of the Lima museum was to make a collection of Peruvian archaeological specimens for the Museu Paulista in São Paulo. The request for this collection had been submitted to the Peruvian government by the Brazilian legation, and all restrictions on the export of archaeological specimens were waived as a matter of international courtesy. The Brazilians provided a sum of money and asked Uhle to pick out for them a collection as broadly representative of Peruvian styles as possible from the materials available in the antiquity shops of Lima. Uhle went further; he did some collecting himself in the neighborhood of Lima to supplement the purchased materials. The catalogue which he supplied with the collection in March, 1912, runs to 320 numbers. Dr. Herbert Baldus, the present director of the Museu Paulista, kindly provided me with a copy of it.

the deposit stratified. The Pichalo sites were also very rich, and Uhle took back forty-one cases of objects for his museum.

In January and February of the next year Uhle visited Constitución, in the south, and found there an extensive rubbish site about three hundred meters northwest of the Alameda. It was full of ashes and rich in chipped-stone implements which Uhle considered crude enough to be regarded as typologically palaeolithic. This was the "Palaeolithic Station of Constitución," about which a considerable stir was made at the time. Uhle claimed no great antiquity for it; in calling it "palaeolithic" he was merely exercising the comparative method of the cultural evolutionists. A year later, in January and February, 1915, he was back in Constitución digging in some burial caves. Only the scantiest notes on these two seasons in southern Chile have been published, and little can be said about the results.

Uhle also took time early in his Chilean period to write a series of summary articles on the Peruvian field work he had done for the University of California (on Moche, Uhle, 1913*e*, 1915*c*; on Ica, 1913*h*; on Ancón, 1913*c*). These articles are useful summaries of his conclusions, but they contain little of the description which should have documented his views, and they are poor substitutes for the reports he had written and never published. It is probably no exaggeration to estimate that Uhle's failure to publish his full reports at this time set Peruvian archaeology back at least ten years. Uhle's full reports might have had something of the impact that Kroeber's did between 1924 and 1927.

The Uhles lived in a small house in the northern part of Santiago, comfortably but not luxuriously furnished. Martin Gusinde, to whom I owe all my information about Uhle's personal life in Chile, recalls that Uhle complained often that his house was not large enough to accommodate his large library. The Uhles did no entertaining at home.

Uhle's contract with the Chilean government was for four years, and when it came up for renewal, the economy-minded authorities wanted to pay his salary in Chilean currency rather than in the gold he had been getting. Uhle was always quick to feel that people were trying to take advantage of him, and at the same time he was anxious to get back to Germany and did not believe that the war would last much longer. Consequently, he turned down the new contract and determined to live on his savings until he could get passage home.

Not much is known of Uhle's activities during the war years. He left Santiago on May 26, 1916, with a commission from the government to go to Taltal in northern Chile and make a report on Augusto Capdeville's claims that he had found a palaeolithic station there. Uhle spent most of June at Taltal and went on to Arica on June 24. He was much interested in the site but did not find the stratigraphy that Capdeville claimed he had found.⁸

For the next year, until the middle of 1917, Uhle was engaged in exploring and excavating sites in the neighborhood of Tacna and Arica, with his headquarters at Arica. This work was financed, at least in part, by the University of Pennsylvania, and the collections are now in Philadelphia. The report on this work was published in Quito (Uhle, 1919*a*; 1919*c*; 1922*c*), but the manu-

⁸ See the discussion of the Taltal question in Bird, 1943, pp. 381-382.

script, for some reason, is in Arequipa. Then followed two years in which Uhle did a minimum of archaeological work. He was still living at Arica and writing now and then (the reports on his 1917 work and an article published at the time of his death—Uhle, 1944), but I have no idea what his other activities were. Arica was probably a relatively economical place to live, and, as the war dragged on, his savings were heavily drained. At war's end, it was arranged that Mrs. Uhle would go back to Germany alone to attend to the family affairs. She started overland for Buenos Aires, but had a heart attack on the journey and arrived there very sick. She died in the Argentine capital probably early in 1919.

Her husband had not accompanied her, because he had decided to accept an invitation to go to Ecuador. In this country also a new archaeological movement was under way, led by Jacinto Jijón y Caamaño and a handful of others with historical and archaeological interests, who had founded the Sociedad Ecuatoriana de Estudios Históricos Americanos (later the Academia Nacional de Historia). Jijón himself had done a great deal of digging in highland Ecuador and was a great admirer of Uhle's work. Fortunately, he was both personally wealthy and very influential; when travel became possible again after the war, he was thus able to extend to Uhle an invitation to come and work in Ecuador. As he had done twice before, Uhle responded eagerly to an invitation to help the local enthusiasts organize their own archaeological program in an Andean country. He went to Ecuador in 1919, happy, in spite of his sixty-three years, to do field work in a new area, and he remained in that country until 1933.

Uhle's last project in Chile was to make a small representative collection of the antiquities of the Arica region for the Ethnographical Museum in Göteborg, at the request of his friend Erland Nordenskiöld. He got together some thirty-three specimens for this purpose, without doing any major digging, and sent them off in April, 1919, with a characteristic Uhle catalogue.

After Uhle's arrival in Ecuador, his trail becomes much harder to follow, since published records of his activities in this period are fewer. There is probably an extensive file of his letters to Jijón y Caamaño and other documents in Quito from which the story can one day be written, but I have had no opportunity to consult them. Uhle's work in the north began with a visit to a part of Peru he had never previously visited: the region of Piura (April–July, 1919). Here he visited some sites near Sullana and inspected the big Elías and Eguiguren collections. Next he worked in the southern highlands of Ecuador, around Loja and Cuenca (1919–1922). He excavated the temple of Chinquilanchi at Loja; and thirty-three kilometers north of that town, near San Lucas, he dug at the ruins of Tambo Blanco, a site mentioned by Cieza de León. At Cuenca he identified and excavated the ruins of the Inca town of Tomebamba, the location of which had always been a subject for controversy among Ecuadorian writers. Near Cañar he dug at the great site of Cerro Narrio, for which he announced a series of pottery styles. By this time, however, his ability to distinguish styles had become definitely impaired; subsequent work by Collier and Murra at Cerro Narrio failed to find any trace of the "Maya" and "Tiahuanaco" influences which he reported.

In 1923 and 1924 he was in Quito for at least part of the time and gave a most

interesting series of lectures at the university on the methods and aims of archaeology, his only extensive statement of his general views on archaeological problems. These lectures are so important for the evaluation of Uhle's work that I am including a translation of them as Appendix A.

In August, 1924, he went to Sweden for the XXI International Congress of Americanists at Göteborg. He was the official delegate of Ecuador at this congress and was a vice-president of it. His paper, on the Central American origin of Moundbuilder and Pueblo cultures, was in many ways one of the worst he ever wrote and displays the dominant idea of his later years: that all the "higher civilizations" in the New World had a common origin and that this origin was to be sought among the Maya. I will come back to this question in discussing the history of Uhle's ideas. Even the worst of Uhle's papers contain some important observations, however, and this one includes the first recognition of negative painting in the southeastern United States, as Gordon Willey was kind enough to point out to me. On his way back to Ecuador, Uhle stopped off at Panama for a few days in October and studied the archaeological collections there.

In 1925 a chair of Ecuadorian Archaeology was created at the Universidad Central in Quito, and Uhle was named to it. He was also charged with creating a national archaeological museum at the university, his third South American museum. He opened his professorship with an interesting series of lectures on the problems of Ecuadorian archaeology; three of these have been published (Uhle, 1925*c* and 1929*d*). Soon afterward he was in the field again, excavating a cemetery at Cumbayá, less than ten kilometers east of Quito. Next he went down to the coast and explored the province of Esmeraldas and the northern part of Manabí. In March, 1926, he dug at Cuasmal in the province of Carchi.

The XXIII International Congress of Americanists met at New York in September, 1928, and again Uhle was the Ecuadorian delegate. He read three papers, one of general statement of his theories on the development of American culture, another on some observations he had made at the Temple of the Sun at Cuzco in 1905, and the third on a very curious discovery he had recently made at Alangasí, twelve kilometers east of Quito. In a well-known fossil deposit there, mastodon bones had been discovered associated with painted pottery. Uhle's paper gives a careful description of the find. The possibility that the pottery is of Pleistocene date struck him as nonsense, and he interprets the evidence to mean that the mastodon survived until relatively recent years in the Ecuadorian highlands. Uhle's colleagues are still puzzled by the association.

The year after his return to Ecuador, the Universidad Central was badly damaged by fire, and Uhle's museum with it (November 9, 1929). What the fire spared was destroyed soon after by the carelessness of the repair crew. All the collections which Uhle had made since 1925, together with many gifts and purchases, were lost in this disaster, and it was almost more than he could bear. Nevertheless, he salvaged what he could and went to work to build up the museum again. He made several more field trips (Manta, August-October, 1930; the Panteón Viejo of San Gabriel, Carchi, December, 1931; and the Inca site of Cochasquí on the south slope of the Cerro Mojanda, December, 1932); but his day was over now, and he knew it. In September, 1933, he went back to Germany to enjoy a

pension offered him by the German government. He had done his last field work at the age of seventy-six, forty years after he visited his first American site in Argentina.

Uhle was not a man to retire fully while he could talk or write, and he settled in Berlin to work as he could at the Ibero-Amerikanisches Institut and to lecture at the University of Berlin. He continued to write articles and had plans for a great "History of Ancient Peru"—a work which he never wrote. On the occasion of his eightieth birthday, in 1936, he was showered with honors. Peru conferred the Orden del Sol, grado de Comendador, on January 17; Ecuador raised his decoration "Al Mérito" from the rank of Comendador Ordinario to that of Comendador de Número in March. Germany conferred the Goethe Medal.

There were still meetings to attend. Uhle was honorary president of the German delegation to the XXVI International Congress of Americanists, in Seville in 1935, and was much interested in the Paracas textiles which were part of the Peruvian exhibit on that occasion. In 1939 he was preparing to represent Ecuador at the VI International Congress of Archaeology in Berlin when he was invited by the president of the XXVII International Congress of Americanists in Lima to attend that. He went to Lima with the support of the German government and was caught there by the outbreak of the war.

In this crisis the Peruvian government took him under its protection; and he remained in Peru until 1942, living in Bellavista, near Callao. The group of American archaeologists who worked in Peru in 1941 and 1942 for the Institute of Andean Research spoke of him often at their meetings in Lima and met him occasionally in the National Museum, but only Gordon R. Willey went to see him. He describes the incident as follows:

In January, 1942, I invited Uhle out to see my diggings in the Ancón shell heaps. He was then well over 80. Lucio, the chauffeur, picked him up in Bellavista and brought him out to the dig. He arrived impeccably clad in a white palm beach suit with his notebook and a new Argus camera. He seemed completely dazed by the appearance of Ancón, and continually remarked that it had changed so much since his work there almost 40 years before. He did not recognize the shell heap location although his old trenches were only a few meters from ours, and he insisted that he had never excavated in that part of the site. However, when I showed him some of the Ancón Incised pottery he immediately brightened up and observed that this was the old "fisher-folk culture" which one found in Peru long before the true civilizations arrived from China. Then we went down into the Necropolis where Marshall Newman was digging some Middle Ancón tombs. Uhle recognized the Necropolis area and took a great interest in the tomb excavation, sitting on the dump heap and commenting on the various pots which were being brought out. He was still keenly accurate on such things as Coast Tiahuanaco influence, etc. He upbraided me for using the term "Epigonal," as, in his words, "Young man, every culture has its epigonal. You will have to be more specific."

Afterwards we drove him back to Bellavista and he invited us into his study which was packed to the ceiling with books and manuscripts. He also treated us to a glass of wine and all in all it was a very pleasant afternoon. In general, he was extremely excited and elated about his junket and about our interest in him. It was as though he were being brought back into the professional fold after being somewhat neglected and pushed aside for some years. He dutifully made notes on the Necropolis diggings and took some pictures with his new Argus.

A week or so after this, as the result of the Rio de Janeiro Agreement, the Peruvians rounded up all the Germans and either sent them to the States or back to Germany. Some of us protested about Uhle's being treated in this manner and at the last minute I understand that the

Peruvian Foreign Office relented, allowing the old man to remain in Peru. This was too late, as by this time he was incensed and refused such amnesty, sailing with his compatriots.

There was not much time left. On May 11, 1944, Max Uhle died at Loben in Upper Silesia at the advanced age of eighty-eight.

Uhle was a man of medium height, thickset, with dark hair and a large bushy mustache. He wore glasses as early as 1900, to judge from the few available pictures. Kroeber remembers him as being somewhat untidy in his dress and rather jerky in his movements. He was proud and a little touchy and at the same time fundamentally a very shy person. His shyness showed in a number of ways. One gets the impression from his letters that he did not make friends easily and that he had few intimates. It is probably also significant that his ethnographic research was concerned almost exclusively with artifacts and with language; that is, he got the kind of information one can obtain without building up a friendly intimacy with his informants. There were, however, other factors besides shyness behind this emphasis in his ethnographic field work; he was trained as a philologist and museum man and therefore felt most at home with material culture and linguistic data. I suspect that he was also incurably optimistic; each new venture filled him with enthusiasm, and then, if it did not turn out well, he was deeply discouraged and seized eagerly on the next new project. He was restless in his field work, skimming the cream off an archaeological site and then moving on, never to come back to it except for casual visits. An exception to this statement perhaps is the site of Nievería, where he worked twice (in 1905 and in 1908-1909); but here he may have wanted to secure a second collection for the Lima museum because he had sent the first one to California. In contrast to his restlessness in field work, he was very tenacious of ideas. For example, in spite of his bitter experience at Tiahuanaco, where his attempt to secure government protection for the site had resulted in government refusal to let him excavate it, he again and again advocated legislation to regulate excavations (see Uhle, 1917*c*). He never accepted the hard fact that such legislation only prevents scientific archaeological work; the pot hunters will dig anyway. Other examples of Uhle's tenacity of ideas can easily be found in his writings on Peruvian chronology or on the migration of cultures.

Uhle's writings show little interest in theoretical problems; one gets the impression that he accepted a body of theory about cultural history early in life and that it did not occur to him to question it later. He seems to have regarded theory as a tool which one used to investigate anthropological facts; he did not try to use the facts to test the theory. For example, he states as a law the principle that art develops always from the realistic or figurative to the conventionalized and geometric. He found this principle very useful for dating styles when there was no other evidence available (see App. A; Uhle, 1924*b*, pp. 197-198). The fact is that in Peru, as elsewhere in the world, examples can be found of the reverse development. The important point here is not that this particular principle was wrong, but that Uhle regarded it, not as a hypothesis to be tested but as a law to be applied.

If the contradiction was not too obvious, Uhle, like many more recent writers, was quite capable of following two inconsistent ideas at different points in an argument. He was a wholehearted diffusionist, from his youth; he was, for example, always ready to assume that even the most remote similarity between culture traits indicated large-scale historical connections. At the same time he could be an evolutionist when it suited him, looking for a paleolithic stage in the archaeology of Peru and Chile.

His greatest theoretical achievement was one of strictly local application, the relative chronology of Peruvian styles. This chronology was not built up by the application of any radically new method. Uhle knew and favored the stratigraphic principle of the paleontologists: that, when layers are superimposed, the upper one is later than the lower. But because he preferred to dig in cemeteries, he found only one clear-cut case of stratigraphy—at Pachacamac—and that was a superposition of graves. This case of stratigraphy was not vital to Uhle's reasoning either; it merely confirmed inferences he had made on other grounds. His procedure throughout his work in Peru was one of seriation of styles, and it was well started before he ever left Germany. In 1888, the year he went to Berlin, the museum there acquired the Centeno Collection of Inca antiquities from Cuzco. This was one of the few collections from Cuzco in Europe, and it gave Uhle a magnificent opportunity to familiarize himself with authentic specimens of the Late Inca style. This familiarity shows in his work; he was always able to recognize Inca pieces without hesitation wherever they were found. Next, he went to work to write up Stübel's notes on Tiahuanaco. He noted immediately that the style of Tiahuanaco sculpture was different from Inca style, and he found statements by sixteenth-century Spanish writers that Tiahuanaco was already in ruins then and that the Inca inhabitants of the area did not know who had built it. He could then infer that the Tiahuanaco style was older than the Inca style.

In his work at Pachacamac, Uhle found specimens in Tiahuanaco style and also specimens in Inca style. In addition, he found a style that showed no particular Tiahuanaco influence but was associated with Inca pieces. It was reasonable to arrange the new styles between Tiahuanaco and Inca in a chronological scheme. At Moche, on the north coast, he found a similar series of Tiahuanaco, local styles with and without Tiahuanaco influence, and Inca; he also found the style which has since been called Early Chimú. As the Early Chimú style showed neither Tiahuanaco nor Inca influence and was not associated with any of the other styles, Uhle inferred that it was earlier than Tiahuanaco. This gave him a basic framework of an early, pre-Tiahuanaco period, a Tiahuanaco period, a late but pre-Inca period, and an Inca period. This scheme seemed to work all along the part of the coast where Uhle dug, and he applied it to all his material.

In this review of the logic behind Uhle's chronology, I have deliberately oversimplified Uhle's argument, giving essentially those points which were convincing to Kroeber when he reviewed the evidence and which therefore validated the sequence in the minds of Uhle's successors. Uhle used all sorts of other arguments based on his ideas regarding the universal development of style, resemblances of styles between valleys, and so forth. Uhle's own reasoning is often so obscure

that one wonders whether it would have had the effect that it did without Kroeber's lucid exposition.

Except for the fact that a number of new styles have been discovered since Uhle's time, the sequences summarized in Uhle's tables have been modified only in detail, and his old tables look strikingly modern. The main differences lie in correlations between one valley and another; here, where the only evidence was style similarity, Uhle's judgment was often worthless. Often it is not possible to tell what observations he had been making when he equates two distant styles or when he says that one substyle is earlier than another, for he states his conclusion without presenting any evidence. Unfortunately, the intuition in which he had so much faith was a shaky guide. In his excavations at Moche F, for example, he picked out one large grave lot as more "archaic" than the others; in the Moche sequence, this lot is Moche III, right in the middle in relative date, for the cemetery covers the subperiods Moche I-II to Moche IV.

When Uhle went on to work in Chile and Ecuador, he did not develop new chronologies for these areas but simply tried to extend his Peruvian sequence to cover them, by looking for similarities in style. This sort of extension was possible in northern Chile, where both Inca and Tiahuanaco influences are very clear; but it worked poorly in Ecuador, where there is no real Tiahuanaco at all.

In his later years, Uhle became intensely preoccupied with tracing diffusion over large distances, claiming, on the one hand, that all American "higher civilizations" had their ultimate origin in the Maya area and, on the other, that their ultimate source was the mainland of Asia. His writings on this subject have led many people to say that Uhle went crazy in his old age. There is some basis for such a statement, but it needs to be carefully qualified.

In the first place, it is not so much the conclusions as the arguments Uhle advances for them which are "crazy." After all, many others have advocated equally remote historical connections without having their sanity doubted. Uhle's arguments are unbelievably fantastic, however. They seem to reflect primarily a certain insensitiveness to style differences. This is a rather odd trait to ascribe to a man who pioneered in distinguishing local styles throughout the Andean area, but it cannot be denied. He points triumphantly to Maya and Mexican similarities in Peruvian and Ecuadorian specimens that, to his colleagues, do not look any more Maya or Mexican than they do Greek.

Uhle's ideas of the common origin of Central and South American cultures developed gradually from beginnings which were quite obvious even before he left Germany. At first he merely noted similarities; he says, for example, that before he ever went to Peru he and Bastian commented on resemblances between Nazca pottery, of which the Berlin Museum had a few specimens, and the Maya style (Uhle, 1914*e*). Uhle returned to such comparisons in 1904 and 1913, apparently with the idea that they were probably significant but that not enough evidence was available to make possible any conclusions. By 1917 he thought that Central and South American connections were very probable, and by 1923 he was sure that he had the full proof. Actually, very little more evidence had come to light between 1913 and 1923. All that had happened was that Uhle's standards of proof had become lower.

It should also be pointed out that Uhle was not subject to any very strong intellectual influences that were opposed to the loose sort of diffusionism in which he became increasingly involved. P. Martin Gusinde brought the Kulturkreis doctrines to Chile while Uhle was there, and although Uhle criticized some details of Father Schmidt's historical reconstructions, he may well have been influenced by the type of remote diffusion that the Kulturkreis theory postulated. In Ecuador his patron, Jacinto Jijón y Caamaño, was a wholly kindred spirit. In other countries, few people cared to give a frank opinion of Uhle's articles, either out of respect for the useful work he had done earlier or simply because they did not read them.

Even in Uhle's "best" period, his papers display much the same sort of naïveté we associate with his old age, whenever he strayed very far from discussing the immediate local relationships of specific archaeological styles or simply recording his observations. In 1888 he offered a fantastic reconstruction of the migrations of the Chibcha-speaking peoples as the conclusion to his paper on the relationships of the Chibchan languages, a reconstruction based on exaggerations of the similarities between Cauca valley and Costa Rican artifacts, deductions from mythology, statements by Spanish writers about the warlike or peaceful character of various tribes, and the repeated assumption that, if the languages of two tribes belong to the same family, their culture and character must be similar also. This nonsense follows several pages of sound and critical linguistic comparisons.

Because Uhle is read chiefly by archaeologists, it is the deterioration of his discussion of archaeological styles that has been chiefly noted. There was at the same time a corresponding decline in the quality of his philology, which took the form of a misuse of the evidence of place names. The most extensive example of this misuse is probably his paper on the "Fundamentos étnicos de la región de Arica y Tacna" (1919), but its beginnings go back to his entry into Bolivia in 1893. He began immediately to collect place names which suggested to him that there had been an Aymará occupation of southeastern Bolivia before the establishment there of Inca speech. He seizes on the name Membrilluni (from Spanish *membrillo*, quince, plus Aymará *-ni*, locative suffix) as proof that Aymará was still spoken in the area in comparatively recent times (see App. B, third letter). It seems never to have occurred to him that the suffix *-ni* might have been borrowed into Inca, which has no exactly equivalent suffix, and used to form new names by people who had no knowledge of Aymará at all. This is precisely what has happened farther north in Puno. He probably owed this obsession with place names to Middendorf, whose Aymará grammar he had with him. The descriptive work he did on the Aymará and Uro languages, however, was far better than anything his contemporaries in the area were capable of. For one thing, he caught phonemic distinctions which Middendorf had entirely missed.

We can sum up the foregoing discussion of Uhle's interpretative work by saying that some of it—his comparison and classification of Chibcha languages and his relative chronology of Peruvian archaeological styles, for instance—was thorough enough and critical enough to render his results useful and important. Generally, however, even from his earliest work, his attempts at historical reconstruction were surprisingly naïve. The "craziness" of his later work represents chiefly an

increased preoccupation with the sort of problem that he had never been able to handle.

When we turn to his descriptive work, we find more to admire, and our chief reason for regret is that Uhle's declining interest in the description of his discoveries after 1904 has deprived us of much indispensable information. He continued to do field work until 1932; but more and more, instead of presenting the evidence, he expected his colleagues to take his word for its significance.

For his generation, Uhle's archaeological field methods were good but were not comparable, for example, with George Reisner's. Reisner, who dug in Egypt for the University of California while Uhle was digging in Peru, took full notes on all associations and published his results so systematically that the reader of one of his reports can pick out any single specimen and determine not only in what grave it was found but where it lay in the grave and what the grave looked like. Uhle, whose sites were entirely comparable to those excavated by Reisner, merely listed the objects from each grave in his catalogues, usually without any information about the appearance of the tomb or the relative positions of the objects. His Moche F catalogue, for example, includes sketch plans of only two of thirty-two tombs, and it contains no cross references that would enable the reader to find out which pots came from which corner. It is possible that he had additional information in his notes, but if so, it was not deposited with the collection. He took many photographs during his work at Moche, but only one shows the appearance of an opened grave before the specimens were removed. In the Moche catalogue, the graves are not even numbered systematically. Some have no designation at all, and others are labeled with Greek letters. On the plan published with his "Die Ruinen von Moche" (1913) appears an entirely different series of numbers, which cannot be matched with the Greek letters of the catalogue. Later, at Nievería, he numbered each grave with a Roman numeral, but still gave no description of the graves. His report of his work at Cumbayá (published in 1926) includes plans, cross sections, and descriptions of seventeen of thirty-four tombs; but for the specimens illustrated he gives no grave provenience and he shows no whole grave lots. In other words, Uhle noted archaeological associations but did so in a seemingly capricious manner, without the systematic thoroughness that was characteristic of Reisner's work and which Reisner left as a legacy to present-day American archaeology.

The same partial lack of system appears in Uhle's general discussions of his results. He did not define carefully the styles which he distinguished, and he did not name them until about 1910. The terminology of Peruvian styles in use today is very largely that contributed by Kroeber.

However, if Uhle's field methods seem erratic when compared to Reisner's, they were incomparably better than those practiced by most other so-called archaeologists in the New World. Thorough and systematic field techniques came into general use in North America between 1910 and 1920, in part as a result of Reisner's influence on such thoughtful students as A. V. Kidder, who took his course in field method at Harvard. Important contributions to this development were made independently by Boas, Kroeber, Nelson, Spier, and a few others. In South America it was not until Kroeber's 1926 expedition that any work better than

Uhle's was accomplished, and Kroeber's work was directly inspired by Uhle's.

There is little doubt that much of the present importance of Max Uhle's work is due to the publication of his collections at Berkeley by Kroeber, Strong, Gayton, and O'Neale (1924-1930). Their studies made clear sense out of Uhle's data in a way that he had rarely been able to do himself, and presented the evidence in such a way that others, without access to the collections, could use it. In strict fact, it is their publications, not those of Uhle, which mark the beginning of modern archaeology in the Andes. Uhle's *Pachacamac* (1903) is an early landmark, but it served merely to point the way, and Uhle himself did not follow it up as it deserved. Without his work of collecting, however, there could have been no publication program in the years between 1924 and 1930. His contribution was the finding of the materials and the placing of them where they could be studied, with enough notes on provenience and associations to make sense to people who had never been to Peru. This contribution, though it may seem simple, is of enormous importance, for Uhle thus provided material which can serve generations of students working on problems which he could not have foreseen. And these students must go to Uhle's collections because, with inconsiderable exceptions, there are no others even in Peru with as much documentation as his.

Uhle was appreciative of the careful and considerate way in which Kroeber and his associates published his collections, and he cited their studies with pride. He also commended Bennett's work at Tiahuanaco, and gave generous praise to others who did what he would have liked to have done in a way that he could approve (Uhle, 1937*c*, 1943*a*, and 1943*c*). He had no direct disciples who carried on his work. A young French officer, Captain Paul Berthon, sat at his feet in 1904 and 1905 to learn Peruvian archaeology, and then made a big and poorly documented collection on which he published a report in 1911; Uhle reviewed the publication unfavorably (Uhle, 1913*d*). In Chile, P. Martin Gusinde was a disciple of Uhle in a sense, but Gusinde went on to do a very different type of work from anything that Uhle attempted. Uhle undoubtedly influenced other associates, such as Aureliano Oyarzún in Chile and Jacinto Jijón y Caamaño in Ecuador, but not in any very profound way. Yet he lectured constantly, both to the public and at the universities at Santiago, Quito, and Berlin, and maintained an extensive correspondence.

The collections he made are one of his most valuable legacies to posterity. They are all where he left them, except for the one he made for his museum at Lima; this has suffered some curious vicissitudes. The Lima museum, after a couple of years of virtual abandonment, passed into the hands of an ambitious young Peruvian doctor named Julio C. Tello, who had studied abroad and was filled with an enthusiasm for archaeology. Uhle's collections were arranged by site and association, as he had catalogued them, so that they could be of maximum use to students; Tello rearranged them all according to his own somewhat mystical ideas of style, to make them illustrate his theories on Peruvian prehistory. Tello was eased out of the museum in 1915, but he never lost his ambition to direct it. Under the patronage of Victor Larco Herrera, he built up a new collection of purchased materials, which was bought by the government in 1924. Soon afterward, Tello got control of Uhle's collections again and transferred them to the new building

which Larco had built on the Avenida Alfonso Ugarte. A new shift in the Peruvian political situation in 1930 brought Luís E. Valcárcel to the directorship of the consolidated museum, and Tello retired to the University of San Marcos. Repeating his earlier tactics, he now built up another rival museum in the suburb of Magdalena Vieja, and finally in 1945 he was again given control of the collection at Alfonso Ugarte, which he moved immediately to Magdalena. Here, in the "Museo Nacional de Antropología y Arqueología," Uhle's collections are overshadowed by the much larger ones assembled by Tello, in presentation as well as in numbers. There is something symbolic about this situation; it marks the climax of Tello's lifelong effort to subordinate Uhle's contribution to Peruvian archaeology to his own and create the impression, at least in Peru, that Tello was the father of the subject.

Uhle's bibliography is a long one and includes many important contributions, only a few of which have been touched upon in the foregoing review of his life and work. Others which deserve mention are his articles on the quipu (Uhle, 1895*a*, 1897*a*), which anticipate by twenty to thirty years most of what Locke said in his classic monograph of 1923 (see Uhle, 1923*e*); his bibliographies of the anthropology of Ecuador (Uhle, 1926*a*, 1927*a*, 1929*b*, and 1929*c*); his rejection of the historical authority of Juan de Velasco (Uhle, 1930*d*); and his studies of the use of snuff (Uhle, 1898, 1913*f*, 1915*d*) and of spear-throwers (1885*b*, 1887*e*, 1888*a*, 1889*b*, 1907*d*, 1909*b*) in ancient America. Even his shortest notes and his book reviews often contain important bits of descriptive information and valuable suggestions for interpretation which he never published in any other connection.

Much of Uhle's most important work has never been published, and it could still be published with profit. It would be especially important to have studies of his other collections, such as the ones Kroeber and his associates made of the materials at Berkeley; and at least some of his unpublished manuscripts should be issued. Dr. Gerdt Kutscher, of the Latein amerikanische Bibliothek in Berlin, who is the custodian of most of Uhle's personal papers, has announced a projected edition of some of the more important ones; but this will be only a start. In many respects, it would be even more valuable to publish his letters, as the reader can judge by examining the four presented in Appendix B. It will be many years before we are in a position to pass final judgment on Max Uhle's contributions to Andean anthropology.

BIBLIOGRAPHY OF MAX UHLE

THE BEST previous bibliography of Max Uhle is the one which appeared in the *Revista del Museo Nacional*, tomo IV, no. 1, I semestre, pp. iv-xi, Lima, 1935. This bibliography and the accompanying biographical sketch seem to have been furnished by the Ibero-Amerikanisches Institut, Berlin, probably with Uhle's collaboration. The bibliography contains 124 items, but it is neither complete nor accurate. Most of the work of compiling the new bibliography which follows was done independently of the 1935 one, and the new list is much more extensive (232 items). However, I am reasonably certain that it is not complete. Complete files of all the journals in which Uhle might have published articles are not available in Berkeley, and most of the journals not checked are ones which were not regularly indexed by contemporary bibliographers. There are probably about twenty more reviews, letters, short articles, and reprints of articles by Uhle which should be added. Some important items undoubtedly appeared only in South American newspapers which I have had no opportunity to examine.

In an attempt to secure maximum accuracy for the references, I have rechecked personally every available title. The ones I have not seen are marked with an asterisk; I have taken the references to these from the best available bibliography.

The second part of the following bibliography—that listing publications about Uhle and his work—makes no pretense to completeness. I have listed those titles which proved useful to me in writing the preceding biographical sketch, and some others which give either factual information about Uhle's activities or important opinions regarding the significance of his work.

About half of the original work of compiling these bibliographies was done by Dr. Clement W. Meighan.

A. UHLE'S WRITINGS

1880

Die Partikel 惟, wei' im Schu-king und Schi-king. Ein Beitrag zur Grammatik des vorklassischen Chinesisch. Inaugural-Dissertation zur Erlangung der Doctorwürde der Philosophischen Facultät der Universität Leipzig, vorgelegt von Friedrich Max Uhle aus Dresden. Leipzig, Druck von Alexander Edelmann, Universitäts-Buchdrucker. x, 107 pp.

The vita on p. 107 gives some interesting information about Uhle's university career: "Als Student der Philologie bezog ich dann auf ein Semester die Universität Leipzig, diente ferner als Einjährig-Freiwilliger in Dresden, und studierte dann weiter auf den Universitäten Göttingen und Leipzig Philologie und Indogermanistik.

"Mich. 1878 trat ich aus dem philologischen Seminar in Leipzig, dem ich ein Jahr angehört hatte, aus, und wandte mich ganz der allgemeinen Sprachwissenschaft zu, als Herr Prof. G. v.d. Gabelentz seine Vorlesungen eröffnete, und meine lange gehegten linguistischen Neigungen dadurch einen besonders starken Impuls erhielten. Unter Herrn Prof. v.d. Gabelentz studierte ich von da ab ostasiatische Sprachen, wurde ausserdem durch Herrn Prof. Loth in das Türkische, durch Herrn Prof. Windisch in das Sanskrit eingeführt, und hörte philosophische Collegien bei den Herren Proff. Wundt und Heinze.

"Ich denke mich der allgemeinen Sprachwissenschaft dauernd zu widmen." It was a short lived resolution.

Copies of this work are now rare; I consulted it in the New York Public Library.

1881

*Beiträge zur Grammatik des vorklassischen Chinesisch: 1. Die Partikel 惟 *wei* im *Schu-king* und *Schi-king*, mit autographierten Schrifttafeln. T. O. Weigel, Leipzig. x, 106 pp.; 18 pls. of Chinese text.

1883

a. Ueber den Gott Batara Guru der Malaien. Verhandlungen der Gesellschaft für Erdkunde zu Berlin, Band X, no. 3, pp. 143-158. Berlin.

b. *(With A. B. Meyer.) Zur Dippil-Sprache in Ost-Australien. Jahresbericht des Vereins für Erdkunde zu Dresden, Band 4, nos. 18-20, pp. 129-136. Dresden. (Tafel 1.)

1884

a. Prosperpinen im Malaiischen Archipel. Das Ausland [Band 57], no. 2, 14 Januar, pp. 31-34. München.

b. Ueber ethnologisches Reisen. Das Ausland [Band 57], no. 52, 29 Dezember, pp. 1036-1038. Stuttgart.

Some thoughts on anthropological field work; Uhle's first theoretical comments. "Die Ethnologie . . . ist die Wissenschaft vom gesamten geistigen und materialien Kulturapparat des Menschen" (p. 1037).

1885

a. (With A. B. Meyer.) Chinesischen und amerikanischen Klangplatten. Verhandlungen der Berliner Gesellschaft für Anthropologie, Ethnologie und Urgeschichte, Jahrgang 1885 [vol. 17], pp. (312)-(314). Berlin. 2 figs.

b. (With A. B. Meyer.) Seltene Waffen aus Afrika, Asien und Amerika. Königliches Ethnographisches Museum zu Dresden [Publicationen, V]. Leipzig. [ii], 6 pp.; 10 pls.

c.*Sur quelques tam-tams seamois. Mémoires de la Société des Études Japonaises, Chinoises, Tartares et Indochinoises à Paris, 1 série, vol. 4, no. 2, pp. 153 ff. Paris.

1886

a. Holz- und Bambus-geräte aus Nord West Neu Guinea (hauptsächlich gesammelt von A. B. Meyer) mit besonderer Berücksichtigung der Ornamentik. Publicationen aus dem Königlichen Ethnographischen Museum zu Dresden, VI. Leipzig. [iv], 14 pp.; 7 pls.

b. Ueber einige seltene Federarbeiten von Californien. Mitteilungen der Anthropologischen Gesellschaft in Wien. Band XVI (n.f., Band VI), pp. 15-20. Wien. Figs. 1-2.

c. Zwei prähistorische Elephantendarstellungen aus Amerika. Verhandlungen der Berliner Gesellschaft für Anthropologie, Ethnologie und Urgeschichte, Jahrgang 1886 [vol. 18], pp. (322)-(328). Berlin. 2 illus.

1887

a. Angebliche Elephantendarstellungen der prähistorischen Zeit Amerikas. Mitteilungen der Anthropologischen Gesellschaft in Wien, Band XVII (n.f., Band VII), pp. 24–29. Wien.

b. Kupferaxt von S. Paulo, Brasilien. Verhandlungen der Berliner Gesellschaft für Anthropologie, Ethnologie und Urgeschichte, Jahrgang 1887, vol. 19, pp. (20)–(22). Berlin. 1 fig.

c. Review: J. G. F. Riedel, De sluik- en kroesharige rassen tusschen Selebes en Papua. s'Gravenhage, Martinus Nijhoff, 1886. 486 S., 13 Karten, 44 Tafeln. Revue Coloniale Internationale, tome IV, no. 3, Mars, pp. 238–249. Amsterdam.

d. Ueber die ethnologische Bedeutung der Malaiischen Zahnfeilung. Abhandlungen und Berichte des Königl. Zoologischen Anthropologisch-Ethnographischen Museums zu Dresden [vol. 1], 1886–1887, no. 4, Berlin. ii, 18 pp.; 20 figs.

e. Ueber die Wurfhölzer der Indianer Amerikas. Mitteilungen der Anthropologischen Gesellschaft in Wien, Band XVII (n.f., Band VII), pp. 107–114. Wien. Pl. 4.

1888

a. Pfeilschleuderhaken? Internationales Archiv für Ethnographie, Band I, no. 6, pp. 209–211. Leiden. Figs. 1–12.

Chibcha spear-thrower hoods in European collections.

b. [Remarks on R. Virchow's paper, Sendung aus Surinam.] Verhandlungen der Berliner Gesellschaft für Anthropologie, Ethnologie und Urgeschichte, Jahrgang 1888 [vol. 20], p. (406). Berlin.

c. Review: A. Bastian, Allerlei aus Volks- und Menschenkunde. 2 Bde. mit 21 Taf. Berlin, Mittler u. Sohn, 1888. XI u. 512, CXX u. 380 S. gr. 8° M. 18. Deutsche Literaturzeitung, IX Jahrgang, no. 41, 13 October, pp. 1503–1505. Berlin.

Signed: U. . e.

d. Review: Dr. O. Finsch: Ethnologische Erfahrungen und Belegstücke aus der Südsee, mit einem Vorworte von F. Heger. I. Bismarck-Archipel mit 5 Tafeln (davon zwei in Farbendruck) in: "Annalen des K.K. Naturhistorischen Hofmuseums," Band III. Wien, 1888. Internationales Archiv für Ethnographie, Band I, no. 6, pp. 244–246. Leiden.

e. Review: Internationales Archiv für Ethnographie, redigiert von J. D. E. Schmeltz. 1. Bd. H. 1 u. 2. Leiden, 1888. Trap. (S. 1–76 Gr. 4.) pr. 1–2 M. 21. Literarisches Centralblatt für Deutschland, Jahrgang 1888 [vol. 39], no. 27, 30. Juni, pp. 913–914. Leipzig.

f. Die Sammlung Censeno [*sic*] befindet sich in Berlin! Internationales Archiv für Ethnographie, Band I, no. 6, pp. 234–235. Leiden.

A letter announcing the acquisition of the Centeno Collection from Cuzco by the K. Museum für Völkerkunde, Berlin.

g. Ueber Pfeile aus der Torresstrasse. Internationales Archiv für Ethnographie, Band I, no. 5, pp. 173–176. Leiden. Figs. 1–4.

h. Wurfstock (Speerschleuder) von Australien. Internationales Archiv für Ethnographie, Band I, no. 5, p. 196. Leiden.

1889

a. Ausgewählte Stücke des K. Museums für Völkerkunde zur Archäologie Amerikas. Veröffentlichungen aus dem Königlichen Museum für Völkerkunde, Band I, Heft 1, pp. 1–44. Berlin. Pls. 1–10.

Contents: (1) Männliche Figur von Thon aus Yucatan; (2) Schädelmaske aus Mexico und Analogien aus der Südsee; (3) Geräte zum Bastklopfen aus Amerika u. and. Gegenden; (4) Lippenzierrathe aus Amerika; (5) Altperuanische Töpferformen; (6) Yucatekische Töpferform; (7) Modellplatten für Metallarbeiten nebst Abdrücken, Tschibtscha; (8) Yucatekische Terracotta.

b. [Remarks on A. Bastian's note, Altmexikanisches Wurfbrett.] Verhandlungen der Berliner Gesellschaft für Anthropologie, Ethnologie und Urgeschichte, Jahr 1889 [vol. 21], p. (226). Berlin.

c. Review: Dr. L. Serrurier: De anthropologische wetenschappen.—S.A. aus: *Jaarboek van het onderwijs*, Haarlem 1889. Internationales Archiv für Ethnographie, Band II, no. 1, pp. 75–76. Leiden.

Deals with the classification of anthropology.

d. Review: Kristian Bahnson, Ueber ethnographische Museen in: *Mitteil. der Anthropol. Gesellsch. Wien* 1888, XVIII. Uebersetzung aus dem Dänischen der "Aarbøger for Nord. Oldk. og Historie," durch Frl. Mestorf. Internationales Archiv für Ethnographie, Band II, no. 1, pp. 74–75. Leiden.

1889–1890

Kultur und Industrie südamerikanischer Völker, nach den im Besitze des Museums für Völkerkunde zu Leipzig befindlichen Sammlungen von A. Stübel, W. Reiss und B. Koppel. Text und Beschreibung der Tafeln von Max Uhle. 2 vols. Verlag von A. Asher & Co., Berlin.

Vol. 1: Alte Zeit; vol. 2: Neue Zeit.

1890

a. Das fähringer Haus. Verhandlungen der Berliner Gesellschaft für Anthropologie, Ethnologie und Urgeschichte, Jahrgang 1890 [vol. 22], pp. (62)–(75). Berlin. Figs. 1–9.

House types in Holstein.

b. Mörser aus trachytischer Lava (mit Pistillen aus gleichem Material) von Fähr. Verhandlungen der Berliner Gesellschaft für Anthropologie, Ethnologie und Urgeschichte, Jahrgang 1890 [vol. 22], pp. (61)–(62). Berlin. Figs. 1–2.

c. [Presentation of a publication of the Museum für Völkerkunde.] Congrès International des Américanistes, *Compte-rendu de la septième session*, Berlin, 1888, pp. 737–739. Berlin.

The publication is Uhle, 1889a.

d. [Remarks on R. Hartmann's paper, Peruanischen kartoffelpräparate Chuñu.] Verhandlungen der Berliner Gesellschaft für Anthropologie, Ethnologie und Urgeschichte, Jahrgang 1890 [vol. 22], pp. (301)–(304). Berlin.

Includes a discussion of the distribution of New World potatoes.

e. [Remarks on Ulrich Jahn's paper, Ostfelder und friesische Haus (Holstein).] Verhandlungen der Berliner Gesellschaft für Anthropologie, Ethnologie und Urgeschichte, Jahrgang 1890 [vol. 22], p. (536). Berlin.

f. Verwandtschaften und Wanderungen der Tschibtscha. Congrès International des Américanistes, Compte-rendu de la septième session, Berlin, 1888, pp. 466–489. Berlin.

On the classification of Chibcha language.

1891

a. Costaricanische Schmuckgeräte aus Gold und Kupfer. Globus, Band 60, no. 11, pp. 163–165. Braunschweig. Figs. 1–8.

A collection of ancient jewelry from near Cartago.

b. Das dänische Haus in Deutschland. Verhandlungen der Berliner Gesellschaft für Anthropologie, Ethnologie und Urgeschichte, Jahrgang 1891, vol. 23, pp. (493)–(515). Berlin. Figs. 1–13.

c. [Remarks in answer to Ulrich Jahn's comments on Uhle's Das dänische Haus in Deutschland.] Verhandlungen der Berliner Gesellschaft für Anthropologie, Ethnologie und Urgeschichte, Jahrgang 1891 [vol. 23], p. (648). Berlin.

d. Zur Deutung des in Wien verwahrten altmexikanischen Federschmuckes. Verhandlungen der Berliner Gesellschaft für Anthropologie, Ethnologie und Urgeschichte, Jahrgang 1891 [vol. 23], pp. (144)–(155). Berlin. Figs. 1–6.

1892

(With Alphons Stübel.) Die Ruinenstaette von Tiahuanaco im Hochlande des alten Perú. Ein kulturgeschichtliche Studie auf Grund selbstaendiger Aufnahmen. Verlag von Karl W. Hierseemann, Leipzig. [140], 68 pp.; 42 pls., map, all in portfolio.

1893

a. [Extract from a letter written from Tinogasta, April 26, 1893, to R. Virchow.] Verhandlungen der Berliner Gesellschaft für Anthropologie, Ethnologie und Urgeschichte, Jahrgang 1893 [vol. 25], p. (306). Berlin.

Announces the sending of a collection of skeletal material.

b. Von Dr. Max Uhle über seine Reisen in Süd-Amerika. Tupiza, 16. November 1893. Verhandlungen der Gesellschaft für Erdkunde zu Berlin, Band XX, no. 10, pp. 521–523. Berlin.

A translation appears in Appendix B, below.

1894

a. *Carta al señor Ministro de Gobierno (acerca de las ruinas de Tiahuanaco). El Comercio, 7 de mayo de 1894. La Paz.

b. Dr. M. Uhle bei den Urus in Bolivia. Globus, vol. 66, no. 1, Juni, p. 16. Braunschweig.

Extract from a letter to Karl Künne.

c. [Extract from a letter written from Salta to J. D. E. Schmeltz.] Internationales Archiv für Ethnographie, Band VII, no. 4, pp. 219–220. Leiden.

Gives Uhle's itinerary in Argentina. A translation appears in Appendix B, below.

d. *(With Alphons Stübel.) Las ruinas de Tiahuanacu en la región alta del antiguo Perú. Boletín de la Sociedad Geográfica de Lima, tomo IV, nos. 4–6, pp. 205–207. Lima.

e. Von Herrn Dr. Max Uhle über seine Reisen in Bolivia. La Paz, 16. April 1894. Verhandlungen der Gesellschaft für Erdkunde zu Berlin, Band XXI, no. 6, pp. 328-332. Berlin.

Describes Uhle's journey from Tupiza to La Paz. A translation appears in Appendix B, below.

1895

a. Aus Briefen Herrn Dr. Uhle's, ed. A. Bastian. Ethnologisches Notizblatt [vol. 1], Heft 2, pp. 80-83. Berlin.

Important material on modern quipus.

b. [Extract from a letter written from La Paz, December 31, 1894, to J. D. E. Schmeltz.] Internationales Archiv für Ethnographie, Band VIII, no. 3, pp. 131-132. Leiden.

c. Von Herrn Dr. Max Uhle über seine Reisen in Bolivia. La Paz, 22. Januar 1895. Verhandlungen der Gesellschaft für Erdkunde zu Berlin, Band XXII, nos. 4-5, pp. 311-314. Berlin.

A translation appears in Appendix B, below.

1896

a. Herr Dr. Max Uhle über seine Reisen in Bolivia und Peru. Lima, 17. Mai 1896. Verhandlungen der Gesellschaft für Erdkunde zu Berlin, Band XXIII, no. 7, pp. 357-360. Berlin.

b. Ueber die Sprache der Uros in Bolivia. Globus, vol. 69, no. 1, Januar, p. 19. Braunschweig.

Extract from a letter of September 23, 1895, to Karl Künne at Charlottenburg. Describes his research but gives no linguistic material.

1897

a. A modern kipu from Cutusuma, Bolivia. Bulletin of the Free Museum of Science and Art of the University of Pennsylvania, vol. 1, no. 1, May, pp. 51-63. Philadelphia. Pl. 1, fig. 2.

b. [Summary of the preliminary report on Pachacamac.] Bulletin of the Free Museum of Science and Art of the University of Pennsylvania, vol. 1, no. 1, May, pp. 21-23. Philadelphia.

Summary by the editor, with quotations from Uhle.

1898

A snuffing-tube from Tiahuanaco. Bulletin of the Free Museum of Science and Art of the University of Pennsylvania, vol. 1, no. 4, June, pp. 159-177. Philadelphia. Pl. 13, figs. 19-26.

1899

[Extract from a letter to Paul Staudinger about a bronze knuckle-duster from Bolivia.] Verhandlungen der Berliner Gesellschaft für Anthropologie, Ethnologie und Urgeschichte, Jahrgang 1899 [vol. 31], pp. (620)-(621). Berlin.

1900

a. La antigua civilización peruana. Boletín de la Sociedad Geográfica de Lima, tomo X, año 10, nos. 1-3, 30 de junio, pp. 93-98. Lima.

Reprint of 1900c.

b. La antigua civilización peruana. Boletín de la Sociedad Geográfica Sucre, año 2, no. 20, pp. 109-116. Sucre.

Reprint of 1900c.

c. *La antigua civilización peruana. La Industria, 12 de mayo de 1900, Trujillo.

The most frequently reprinted of Uhle's articles; a good short statement of his north coast chronology.

d. Letters of Max Uhle, 1899-1900. [Printed for Mrs. Phoebe A. Hearst, Berkeley; no date.] 136 pp.

Uhle's letters and field catalogue covering his work at Moche; the manuscripts are in the University of California Museum of Anthropology. Copies of the printed pamphlet are excessively rare.

1901

a. Die deformirten Köpfe von peruanischen Mumien und die Uta-Krankheit. Verhandlungen der Berliner Gesellschaft für Anthropologie, Ethnologie und Urgeschichte, Jahrgang 1901, vol. 33, pp. (404)-(408). Berlin.

b. Relación somera que de sus viajes en Bolivia hizo á la Sociedad de Geografía de Berlín el Dr. Max Uhle, desde La Paz, en abril 14 de 1891 [*sic*]. Traducido por E.O.R. Boletín de la Sociedad Geográfica Sucre, año 2, no. 23, pp. 158-163. Sucre.

A translation of Uhle, 1894e. The date of the letter should read: Abril 16 de 1894.

1902

a. * [Conjugación del verbo aimará muñana, amar.] Academia Aymará, año 1, no. 6, 20 de septiembre, pp. 47-48. La Paz.

See also 1912d.

b. Types of culture in Peru. American Anthropologist, n.s., vol. 4, no. 4, October-December, pp. 753-759. New York. Fig. 30.

"Presented by title at the meeting of the International Congress of Americanists, New York, October 20-25, 1902." A general statement of the results of his work in Peru, 1896-1901, with emphasis on chronology.

1903

a. Ancient South American civilization. Harper's Monthly Magazine, vol. CVII, no. DCXLI, October, pp. 780-786. New York and London. 10 photos.

A more popular article covering much the same ground as his Types of Culture in Peru.

b. Pachacamac. Report of the William Pepper, M.D., LL.D., Peruvian Expedition of 1896. Department of Archaeology, University of Pennsylvania, Philadelphia. xii, 104 pp.; 21 pls.; folding map; 122 figs.

Translated by Charlotte Grosse.

1906

a. Aus meinem Bericht über die Ergebnisse meiner Reise nach Südamerika 1899-1901. Ueber die historische Stellung der feinen bunten Gefässe von Ica unter den übrigen prähistorischen Resten von Peru. Internationaler Ameri-

kanisten-Kongress, Vierzehnte Tagung, Stuttgart 1904, zweite Hälfte, pp. 581-592. Stuttgart, Berlin, Leipzig. Figs. i-x.

b. Bericht über die Ergebnisse meiner südamerikanischen Reisen. Internationaler Amerikanisten-Kongress, Vierzehnte Tagung, Stuttgart 1904, zweite Hälfte, pp. 567-579. Stuttgart, Berlin, Leipzig. Figs. xvii-xx.

Describes the discovery of the Early Ancón style.

c. [Discurso de incorporación al Instituto Histórico del Perú.] *Revista Histórica*, tomo I, trimestre III, pp. 408-414. Lima.

Portrait of Uhle opposite p. 409.

d. Los 'kjoekkenmöeddings' del Perú. *Revista Histórica*, tomo I, trimestre I, pp. 3-23. Lima.

A catalogue of known shellmound sites in Peru.

e. Las llamas de piedra del Cuzco. *Revista Histórica*, tomo I, trimestre III, pp. 388-392. Lima. 2 illus.

Modern llama figurines from Sicuani.

f. *Primera lección práctica dedicada a la Escuela Normal de Varones, Sección de las tribus salvajes y arqueología. *Boletín de Instrucción Pública*, año 1, no. 7, diciembre, pp. 329-339. Lima.

g. Review: Tarmapap pacha-huaray—Azucenas quechuas, por unos parias. Tarma, 1905. Tarmapap pacha huarainin.—Apólogos quechuas por unos parias. Tarma MPCCVI [*sic*]. *Revista Histórica*, tomo I, trimestre III, pp. 393-394. Lima.

Uhle ascribes the works reviewed to Adolfo Vienrich.

h. * [A letter criticizing Posnansky in the *Revista Nacional*, Buenos Aires.]

1907

a. Algunas observaciones al artículo precedente. *Revista Histórica*, tomo II, trimestre I, pp. 63-64. Lima.

The "preceding article" is Algo sobre el quipus, by Enrique de Guimaraes.

b. Conferencia arqueológica del doctor Uhle. *Revista Histórica*, tomo II, trimestre III, pp. 450-457. Lima.

A speech delivered July 29, 1906, upon the inauguration of the National Museum and a series of lectures.

c. The Emeryville shellmound. *University of California Publications in American Archaeology and Ethnology*, vol. 7, no. 1, pp. 1-106. Berkeley. Pls. 1-12, figs. 1-37.

Edited by John C. Merriam.

d. La estólida en el Perú. *Revista Histórica*, tomo II, trimestre I, pp. 118-128. Lima. Pls. 3-5.

e. La masca paicha del Inca. *Revista Histórica*, tomo II, trimestre II, pp. 227-232. Lima. Pl. 6, fig. 1.

1909

a. La esfera de influencias del país de los Incas. *Revista Histórica*, tomo IV, trimestres I-II, pp. 5-40. Lima.

b. Peruvian throwing-sticks. *American Anthropologist*, n.s., vol. 11, no. 4, October-December, pp. 624-627. Lancaster, Pa. Pls. 38-39.

A collection of eighteen spear-throwers from a grave at Chavina.

c. Tipos de civilización en el Perú. Boletín de la Sociedad Geográfica de Lima, año 19, tomo XXV, trimestre III, 30 de setiembre, pp. 289-294. Lima.

A translation of Uhle, 1902.

1910

a. Las civilizaciones primitivas en los alrededores de Lima. Traducción del alemán al francés por el R. P. Ph. Kieffer, O.S.E., Director del Seminario Francés de Roma, etc., etc., y del francés al español por la señorita María Wiesse. Revista Universitaria, año V, vol. 1 [no. 4], abril, pp. 333-347. Lima.

A translation of 1910*f* without the illustrations.

b. Datos para la explicación de los intihuatanas. Traducción del alemán por la señorita H. Stahl. Revista Universitaria, año V, vol. 1 [no. 4], abril, pp. 325-332. Lima.

A translation of 1910*g* without the illustrations.

c. La posición de los aymaras en el antiguo Perú. Boletín de la Oficina Nacional de Estadística, año VI, nos. 58-60, segundo trimestre, pp. 350-356. La Paz.

A reprint of 1910*d*.

d. *La posición de los aymaras en el antiguo Perú. El Tiempo, no. 368, 21 de junio, pp. 1-2. La Paz.

A lecture given before the Sociedad Geográfica de La Paz on June 18 at a joint session with the delegates of the XVII International Congress of Americanists.

e. Tiahuanaco y el Sr. González La-Rosa.

A critical review of Manuel Gonzáles de la Rosa, Les deux Tiahuanaco, leurs problèmes et leur solution, Verhandlungen des XVI. Internationalen Amerikanisten-Kongresses, Wien, 9. bis 14. September, 1908. Zweite Hälfte, pp. 405-428. Wien und Leipzig, 1910. Uhle's review was contributed to an unidentified Lima newspaper; I have seen a clipping of it in the Peabody Museum Library, Cambridge, Mass.

f. Ueber die Frühkulturen in der Umgebung von Lima. Verhandlungen des XVI. Internationalen Amerikanisten-Kongresses, Wien, 9. bis 14. September, 1908. Zweite Hälfte, pp. 347-370. Wien und Leipzig. Figs. 1-19.

g. Zur Deutung der Intihuatana. Verhandlungen des XVI. Internationalen Amerikanisten-Kongresses, Wien, 9. bis 14. September, 1908. Zweite Hälfte, pp. 371-388. Wien und Leipzig. Figs. 1-17.

1911

a. El aillu peruano. Boletín de la Sociedad Geográfica de Lima, año 21, tomo XXVII, trimestre 1, 31 de marzo, pp. 81-94. Lima.

Read before a joint session of the Sociedad Geográfica and the delegates of the XVII International Congress of Americanists, July 20, 1910, with the title "Los ayllus de los Incas."

b. La esfera de influencia del país de los Incas. Volúmen XIV de los Trabajos del Cuarto Congreso Científico (1° Panamericano) celebrado en Santiago de Chile del 25 de diciembre de 1908 al 5 de enero de 1909. Trabajos de la III sesión, Ciencias Naturales, Antropológicas y Etnológicas, tomo II, pp. 260-281. Santiago.

1912

a. [Abstract of a speech delivered May 24, 1910, at the Sociedad Científica Argentina, Buenos Aires.] Actas del XVII° Congreso Internacional de Americanistas, Sesión de Buenos Aires, 17-23 de mayo de 1910, p. 118. Buenos Aires.

A plea for the expansion of archaeological research on Peruvian problems.

b. *Arqueología sudamericana* (Thomas A. Joyce, *South American archaeology*. An introduction to the archaeology of the South American continent with special reference to the early history of Peru. With numerous illustrations and a map. London, Macmillan and Co., 1912. Pág. IX and 292). *Revista Chilena de Historia y Geografía*, año II, tomo IV, 4° trimestre, no. 8, pp. 411-425. Santiago. Figs. 1-4.

Partly a review and partly a summary of Uhle's own views.

c. *Los indios atacameños*.

A clipping from an unidentified Santiago newspaper pasted in the pages of a copy of 1914a in the New York Public Library. A summary of Uhle's 1912 field trip.

d. *Los orígenes de los Incas*. *Actas del XVII° Congreso Internacional de Americanistas*, Sesión de Buenos Aires, 17-23 de mayo de 1910, pp. 302-353. Buenos Aires. Figs. 1-4.

With an anexo: *El verbo del aimará*, pp. 348-353.

e. Posnansky—*Guía general ilustrada para la investigación de los monumentos prehistóricos de Tihuanacu é islas del Sol y de la Luna, etc.*—La Paz, 1911. *Revista Chilena de Historia y Geografía*, año II, tomo II, primer trimestre, no. 5, pp. 467-479. Santiago. 16 figs. on 7 pls.

More an article inspired by Posnansky's publication than a formal review. Read before the *Sociedad Chilena de Historia y Geografía*, June 26, 1912. Discusses among other things the relation of Tiahuanaco style sites to the level of Lake Titicaca.

f. *Las relaciones prehistóricas entre el Perú y la Argentina*. *Actas del XVII° Congreso Internacional de Americanistas*, Sesión de Buenos Aires, 17-23 de mayo de 1910, pp. 509-540. Buenos Aires. Figs. 1-17.

g. *Tejidos protonascas* [abstract]. *Revista Chilena de Historia y Geografía*, año II, tomo IV, 4° trimestre, no. 8, pp. 553-554. Santiago.

Read before the *Sociedad Chilena de Historia y Geografía*, September 28, 1912. Some of the illustrations were published in the review of Joyce, Uhle, 1912b.

1913

a. [Ausgrabungen im nördlichen Chile.] *Zeitschrift für Ethnologie*, 45. Jahrgang, Heft 6, pp. 1141-1142. Berlin.

Describes Uhle's work at Pichalo, May-September, 1913.

b. *Los indios atacameños*. *Revista Chilena de Historia y Geografía*, año III, tomo V, 1er trimestre, no. 9, pp. 105-111. Santiago.

Describes Uhle's work at Calama in July and August, 1912.

c. *Die Muschelhügel von Ancon, Peru*. *International Congress of Americanists*. *Proceedings of the XVIII. Session*, London, 1912. Part I, pp. 22-45. London. Pls. 1-4, figs. 2-10.

English abstract, pp. 42-45.

d. Review: Paul Berthon (Capitaine), *Etude sur le précolombien du Bas-Perou*. (*Nouvelles Archives des Missions Scientifiques et Littéraires*. Nouvelle série. Fascicule 4). Paris, 1911. (Págs. 53-126). *Revista Chilena de Historia y Geografía*, año III, tomo VI, 2° trimestre, no. 10, pp. 471-473. Santiago.

e. *Die Ruinen von Moche*. *Journal de la Société des Américanistes de Paris*, n.s., tome X, fasc. 1, pp. 95-117. Paris. Pls. 4-6, figs. 1-20.

f. *Tabletas de madera de Chiuchiu*. *Revista Chilena de Historia y Geografía*, año III, tomo VIII, 4° trimestre, no. 12, pp. 454-458. Santiago. Figs. 1-27 on 7 pls.

g. Tiahuanaco e Inca [abstract]. *Revista Chilena de Historia y Geografía*, año III, tomo VI, 2° trimestre, no. 10, p. 496. Santiago.

Read before the Sociedad Chilena de Historia y Geografía, April 26, 1913.

h. Zur Chronologie der alten Culturen von Ica. *Journal de la Société des Américanistes de Paris*, n.s., vol. 10, no. 2, pp. 341-367. Paris. Pls. 10-11, figs. 1-18.

1914

a. Conferencias sobre etnografía y arqueología de los países americanos desde México al sur. Imprenta, Litografía y Encuadernación "Barcelona," Santiago de Chile. 24 unnumbered pp., printed on recto only.

Apparently the program of a series of eight lectures given under the auspices of the Universidad de Chile. A short summary of each lecture is given. The titles and dates of the lectures are: 1. El origen del indio americano, April 24; 2. Naciones y civilizaciones antiguas de México, May 8; 3. Las regiones limítrofes entre América del Norte y la del Sur: Centro América, Colombia, Venezuela y Ecuador, May 15; 4. Las tribus de las regiones tropicales del este, May 22; 5. Las naciones y civilizaciones antiguas del Perú, May 29; 6. El imperio de los Incas, June 5; 7. El este de Sud América al sur de los trópicos, June 12; 8. Etnología e historia antigua de Chile, June 19. There is a copy of this rare pamphlet in the New York Public Library.

b. La estación paleolítica de Constitución [abstract]. *Revista Chilena de Historia y Geografía*, año IV, tomo X, 2° trimestre, no. 14, pp. 494-495. Santiago.

Read before the Sociedad Chilena de Historia y Geografía, March 28, 1914.

c. (With Aureliano Oyarzun and Tomás Thayer Ojeda.) Informes y otros antecedentes sobre el valor histórico del cuadro "Descubrimiento de Chile" del señor don Pedro Subercaseaux. *Revista Chilena de Historia y Geografía*, año IV, tomo IX, 1er trimestre, no. 13, pp. 69-94. Santiago. 1 pl.

The report of a committee of the Sociedad Chilena de Historia y Geografía, made at the request of the Chilean Senate. The committee was appointed November 26, 1913, and presented its report on December 11. The report contains some very interesting circumstantial information about the Spanish invasion of Chile.

d. [Letter to Miss A. C. Breton about his excavations in northern Chile.] *Man*, vol. XIV, no. 1, January, article 5, p. 9. London.

An English translation of 1913a. It is not clear whether Uhle wrote separately to Miss Breton or whether she simply translated his German account without indicating the source.

e. The Nazca pottery of ancient Peru. *Proceedings of the Davenport Academy of Sciences*, vol. XIII, pp. 1-46, February, pp. 1-16. Davenport, Iowa. Figs. 1-3. Dated at Lima, December, 1911.

1915

a. Investigaciones arqueológicas en Constitución [abstract]. *Revista Chilena de Historia y Geografía*, año V, vol. XIV, 2° trimestre, no. 18, p. 493. Santiago.

Read before the Sociedad Chilena de Historia y Geografía, May 1, 1915. See also 1915b.

b. Las piedras de tacitas [abstract]. *Revista Chilena de Historia y Geografía*, año V, tomo XIV, 2° trimestre, no. 18, p. 493. Santiago.

Read before the Sociedad Chilena de Historia y Geografía, May 15, 1915. A continuation of 1915a. The "piedras de tacitas" are like North American bedrock mortars.

c. Las ruinas de Moche. *Boletín de la Sociedad Geográfica de Lima*, año 1914, tomo XXX, trimestres tercero y cuarto, pp. 57-71. Lima. 2 photos, figs. 1-20.

A translation of 1913e by H. H. Urteaga, who introduces it with a note entitled: Las estuendas ruinas de Moche y Chanchan, p. 57.

d. Los tubos y tabletas de rapé en Chile. *Revista Chilena de Historia y Geografía*, año V, tomo XVI, 4° trimestre, no. 20, pp. 114-136. Santiago. Pls. 1-2, fig. 1.

1916

a. [Carta al señor Carlos Vicuña Mackenna, Presidente de la Sociedad Chilena de Historia y Geografía, agradeciéndole su nombramiento como socio correspondiente. Tacna, 20 de julio de 1916.] *Revista Chilena de Historia y Geografía*, año VI, tomo XIX, 3er trimestre, no. 23, p. 477. Santiago.

b. Sobre la estación paleolítica de Taltal. Una carta y un informe. Publicaciones del Museo de Etnología y Antropología de Chile [vol. 1], año 1, no. 1, pp. 31-50. Santiago.

A letter written from Taltal, June 11, 1916, to Aureliano Oyarzun, and a report to the Ministro de Instrucción Pública, Arica, July 1, 1916.

c. Sobre la estación paleolítica de Taltal. Una carta y un informe. *Revista Chilena de Historia y Geografía*, año VI, tomo XX, 4° trimestre, no. 24, pp. 47-66. Santiago.

Same as 1916b.

1917

a. Los aborígenes de Arica. Publicaciones del Museo de Etnología y Antropología de Chile, año 1 [vol. 1], nos. 4-5, pp. 151-176. Santiago.

Uhle discusses his earliest finds in northern Chile and relates them to his finds in other areas. Chronological table on p. 176.

b. *Los aborígenes de Arica y el hombre americano (Conferencia leída en el Instituto Comercial el 26 de noviembre de 1917). "La Aurora," Arica.

c. Conveniencia de dictar una ley uniforme en los países americanos, para proteger y estimular el estudio y recolección de material arqueológico y antropológico. Proceedings of the Second Pan American Scientific Congress, Washington, U.S.A., Monday, December 27, 1915, to Saturday, January 8, 1916. Section I, Anthropology. Vol. 1, pp. 386-408. Washington.

Includes four appendixes with samples of legislation. The text contains some interesting information on the havoc wrought by South American pot hunters. A draft of this paper was read before the Sociedad Chilena de Historia y Geografía, August 21, 1915.

d. Fortalezas incaicas: Incallacta-Machupichu [*sic*]. *Revista Chilena de Historia y Geografía*, año VII, tomo XXI, primer trimestre, no. 25, pp. 154-170. Santiago.

A review of Nordenskiöld's article on Incallacta in Ymer, 1915, and of Bingham's In the Wonderland of Peru, National Geographic Magazine, 1913.

1918

a. Los aborígenes de Arica. *Revista Histórica*, tomo VI, entrega I, pp. 5-26. Lima.

Reprint of 1917a.

b. Los aborígenes de Arica y el hombre americano. *Revista Chilena de Historia y Geografía*, año VIII, tomo XXVII, 3er trimestre, no. 31, pp. 33-54. Santiago.
See 1917b.

1919

a. La arqueología de Arica y Tacna. *Boletín de la Sociedad Ecuatoriana de*

Estudios Históricos Americanos, vol. III, nos. 7-8, julio-octubre, pp. 1-48. Quito. Pls. 1-27, figs. 1-26.

Based on the work done for the University of Pennsylvania.

b. [Carta al señor secretario de la Sociedad Ecuatoriana de Estudios Históricos Americanos, agradeciéndole su nombramiento como socio correspondiente. Arica, 15 de marzo de 1919.] *Boletín de la Sociedad Ecuatoriana de Estudios Históricos Americanos*, vol. II, no. 5, marzo-abril, p. 322. Quito.

c. *Fundamentos étnicos de la región de Arica y Tacna*. *Boletín de la Sociedad Ecuatoriana de Estudios Históricos Americanos*, vol. II, no. 4, enero-febrero, pp. 1-37. Quito. Pl. 1.

Consists mostly of deductions from place names, but gives some interesting bits of information; for example, a few Uro words on p. 6.

1920

a. *Apuntes sobre la prehistoria de la región de Piura*. *Boletín de la Sociedad Ecuatoriana de Estudios Históricos Americanos*, vol. IV, no. 10, enero-febrero, pp. 165-167. Quito. Pl. 48.

Extracts from Uhle's letters to Jacinto Jijón y Caamaño, edited by the latter.

b. *Los principios de la civilización en la sierra peruana*. *Boletín de la Academia Nacional de Historia*, vol. I, no. 1, julio-octubre, pp. 44-56. Quito. Pls. 1-7.

A criticism of an article by P. A. Means; the illustrations show pots from the Río Napo. This issue of the *Boletín* was printed as *Boletín de la Sociedad Ecuatoriana de Estudios Históricos Americanos*, vol. V, nos. 13-14, julio-octubre, 1920, and a new title was added when the name of the society was changed.

c. *Los principios de las antiguas civilizaciones peruanas*. *Boletín de la Sociedad Ecuatoriana de Estudios Históricos Americanos*, vol. IV, no. 12, mayo-junio, pp. 448-458. Quito.

A criticism of P. A. Means, *La civilización precolombiana de los Andes*, in no. 9 of this series. Uhle's argument with Means over chronology leads him to present a very good chronological table of his own. The article is a step in Uhle's "proof" of connections between Mexico and Peru but also contains important observations, for example, on Peruvian coast architecture.

d. Review: Doctor Erich Zurkalowsky.—*Observaciones sobre la organización social del Perú antiguo*.—"Mercurio Peruano", 1919, II, páginas 337-352. 480-495. *Boletín de la Sociedad Ecuatoriana de Estudios Históricos Americanos*, vol. IV, no. 12, mayo-junio, pp. 505-507. Quito.

1922

a. [Carta al Dr. Remigio Crespo Toral (Cuenca), fechada el 17 de enero de 1922, sobre el descubrimiento de entierros ricos en oro cerca de Cañar.] *El Comercio*, 2 de febrero. Quayaquil.

b. *The excavations at Cañar. *The Pan-American Magazine*, vol. 34, no. 4, April, pp. [?]. New York.

c. *Fundamentos étnicos y arqueología de Arica y Tacna*. Segunda edición. Sociedad Ecuatoriana de Estudios Históricos. Imprenta de la Universidad Central. Quito. [iv], 100 pp., 27 pls., 26 figs.

Based on 1919a and 1919c, with some modifications.

d. *Les huacas de Cañar*. *Journal de la Société des Américanistes de Paris*, n.s., vol. XIV, pp. 242-244. Paris.

Uhle's letter to Dr. Crespo, 1922*a*, in the original Spanish with an introductory paragraph by Paul Rivet.

e. Influencias mayas en el alto Ecuador. Boletín de la Academia Nacional de Historia, vol. IV, nos. 10-11, marzo-junio, pp. 205-240. Quito. Pls. 1-50.

f. Influencias mayas en el alto Ecuador. Epílogo. Boletín de la Academia Nacional de Historia, vol. V, nos. 12-14, julio-diciembre, pp. 1-3. Quito.

g. Orígenes centroamericanos. Boletín de la Academia Nacional de Historia, vol. IV, no. 9, enero-febrero, pp. 1-6. Quito.

h. El problema paleolítico americano. Boletín de la Academia Nacional de Historia, vol. V, nos. 12-14, julio-diciembre, pp. 302-316. Quito. Pls. 1-5.

i. Sepulturas ricas en oro en la provincia del Azuay. Boletín de la Academia Nacional de Historia, vol. IV, no. 9, enero-febrero, pp. 108-114. Quito.

See also 1922*d*.

1923

a. Civilizaciones mayoides de la costa pacífica de Sudamérica. Boletín de la Academia Nacional de Historia, vol. VI, nos. 15-17, enero-junio, pp. 87-92. Quito. Pls. 1-4.

On p. 89, n. 1, Uhle gives his own account of the development of his idea of the Maya origin of Andean civilization.

b. Cronología y origen de las antiguas civilizaciones argentinas. Boletín de la Academia Nacional de Historia, vol. VII, no. 18, julio-agosto, pp. 123-130. Quito. Pls. 1-4.

An answer to Eric Boman's Ensayos de establecer una cronología prehispánica en la región diaguita.

c. [Extracto de una carta a Augusto Capdeville, 4 de julio de 1918.] Boletín de la Academia Nacional de Historia, vol. VII, no. 18, julio-agosto, p. 35. Quito.

Printed by Capdeville in an article entitled: Un cementerio Chíncha-Atacameño de Punta Grande, Taltal, pp. 34-49.

d. Review: Ernest Fuhrmann, Band i Reich der Inca. Band 2 Peru 2. Principio de una serie de publicaciones iguales como introducción a las culturas de la tierra, con el título: "Kulturen der Erde. Material zur Kultur- und Kunstgeschichte aller Völker. 1922. Folkwang Verlag, Hagen i.W." Boletín de la Academia Nacional de Historia, vol. VI, nos. 15-17, enero-junio, p. 160. Quito.

e. Review: L. Leland Locke, The ancient quipu or Peruvian knot record. The American Museum of Natural History, 1923. Pág. 84 con lám. 59. Boletín de la Academia Nacional de Historia, vol. VI, nos. 15-17, enero-junio, pp. 160-162. Quito.

Contains important notes on the quipu question.

f. Review: P. Rivet, La orfèvrerie précolombienne des Antilles, des Guyanes et du Vénézuéla dans ses rapports avec l'orfèvrerie et la métallurgie des autres régions américaines. Journal de la Société des Américanistes de Paris, Nouv. Sér. —tome 15, págs. 169-182 con planche 4, y págs. 183-213. Boletín de la Academia Nacional de Historia, vol. VII, no. 19, septiembere-octubre, pp. 270-272. Quito.

g. Las ruinas de Tomebamba. Conferencia leída por el Dr. Max Uhle en el Centro de Estudios históricos y geográficos del Azuay. Academia Nacional de Historia—Quito; Centro de Estudios Históricos y Geográficos del Azuay—Cuenca.

Imprenta y Encuadernación de Julio Sáenz Rebolledo, Tipógrafo-Editor, Quito. [iv], 12 pp., 6 pls., 11 maps.

The last of Uhle's field reports to appear in his favorite large format. It is primarily an account of his excavations in the ruins of the Inca city of Tomebamba which he identified on the outskirts of Cuenca; brief notes on other sites in southern Ecuador are included. The maps and site plans are on an admirably large scale (1:250 to 1:60,000). There are three plans of Tomebamba and details, two of Tambo Blanco, one each of Vinoyacu, Dumapara, Minas (Jubones valley), and the Incapirca of Sulupali (Yunguilla valley). One shows the Inca road and some small ruins along the Jubones River. As usual, the text gives no information about the dates and circumstances of Uhle's work at these sites. Nevertheless, this is the most important single report published by Uhle in his Ecuadorian period.

h. Toltecas, mayas y civilizaciones sudamericanas. Boletín de la Academia Nacional de Historia, vol. VII, no. 18, julio-agosto, pp. 1-33. Quito. Pls. 1-15.

1924

a. Ancient civilizations of Ica valley. University of California Publications in American Archaeology and Ethnology, vol. 21, no. 3, Appendix C, pp. 128-132. Berkeley.

"The summary concluding a lengthy field letter dated at Ocucaje February 26, 1901" (n. 24). Edited by A. L. Kroeber and W. D. Strong in: The Uhle pottery collections from Ica.

b. Conferencias del doctor Uhle. Anales de la Universidad Central, tomo XXXII, no. 249, abril-junio, pp. 159-203. Quito.

Versión taquigráfica. Contents: Presentación del Dr. Uhle. Discurso del Vicerector de la Universidad, pp. 159-161; 1a. conferencia, 9 de mayo de 1923, pp. 162-179; 2a. conferencia, 16 de mayo, pp. 180-203.

These lectures are not titled, but Uhle begins by saying: "La arqueología, de cuyos fines y resultados me propongo tratar en el presente curso de conferencias..." A translation of these lectures appears in Appendix A.

c. Conferencias arqueológicas del Dr. Uhle. 3a. conferencia. Anales de la Universidad Central, tomo XXXIII, no. 250, julio-diciembre, pp. 159-179. Quito.

"Versión taquigráfica de la conferencia dada el 31 de mayo." A continuation of 1924*b*. A translation appears in Appendix A.

d. Cronología y relaciones de las antiguas civilizaciones panameñas. Boletín de la Academia Nacional de Historia, vol. IX, nos. 24-26, julio-diciembre, pp. 190-207. Quito. Pls. 1-8.

e. Explorations at Chincha. Edited by A. L. Kroeber. University of California Publications in American Archaeology and Ethnology, vol. 21, no. 2, pp. 55-94. Berkeley.

Final report sent by Uhle from Barranco, Peru, to Mrs. Phoebe A. Hearst, July 30, 1901.

f. Notes on Ica valley. University of California Publications in American Archaeology and Ethnology, vol. 21, no. 3, Appendix A, pp. 121-123. Berkeley.

"Extracted from field reports by Max Uhle," by A. L. Kroeber and W. D. Strong, in: The Uhle pottery collections from Ica.

g. Notes on sites and graves excavated, extracted from catalogue of Max Uhle. University of California Publications in American Archaeology and Ethnology, vol. 21, no. 3, Appendix B, pp. 123-127. Berkeley.

"Condensed from comments in the excavator's specimen catalogue," by A. L. Kroeber and W. D. Strong, in: The Uhle pottery collections from Ica.

1925

a. La balance romaine au Pérou. *Journal de la Société des Américanistes de Paris*, n.s., tome XVII, pp. 335-336. Paris. Fig. 1.

A note by Uhle in Spanish on a specimen collected in the Tarma market in 1899. The French title was supplied by the editor.

b. Conferencias arqueológicas del Dr. Uhle. 4a. conferencia. *Anales de la Universidad Central*, tomo XXXIV, no. 253, junio-julio, pp. 201-220. Quito.

"Versión taquigráfica de la conferencia dada el 6 de Junio de 1924" [should read 1923?]. A continuation of 1924*b* and 1924*c*. A translation appears in Appendix A.

c. Estado actual de la prehistoria ecuatoriana. *Anales de la Universidad Central*, tomo XXXV, no. 254, agosto-setiembre, pp. 1-44. Quito.

"Versión taquigráfica de la conferencia dada en la Universidad, el 27 de abril de 1925," pp. 1-18. Same, 4 de mayo de 1925, pp. 19-31. Same, 11 de mayo de 1925, pp. 32-44. A series of three lectures giving an introduction to the archaeology of Ecuador. Reprinted as 1929*d*.

d. [Extracts from Uhle's field catalogue and notes on his Ancón excavations.] Edited by W. D. Strong, in: *The Uhle pottery collections from Ancón*. University of California Publications in American Archaeology and Ethnology, vol. 21, no. 4, pp. 168-179. Berkeley.

e. Der mittelamerikanische Ursprung der Moundbuilder- und Pueblo-civilisationen. *Congrès International des Américanistes*. *Compte-rendu de la XXI^e Session*, deuxième partie, tenue a Göteborg en 1924, pp. 673-698. Göteborg. Figs. 1-36.

f. Report on explorations at Supe. [Appendix to A. L. Kroeber, *The Uhle pottery collections from Supe*.] University of California Publications in American Archaeology and Ethnology, vol. 21, no. 6, pp. 257-263. Berkeley.

1926

a. Bibliografía sobre etnología y arqueología del Ecuador. *Anales de la Universidad Central*, tomo XXXVII, no. 257, pp. 167-177. Quito.

b. Los elementos constitutivos de las civilizaciones suramericanas. *Anales de la Universidad Central*, tomo XXXVI, no. 255, enero-marzo, pp. 1-12. Quito. Pls. 1-2.

A review of Rivet's article in the proceedings of the XXI International Congress of Americanists.

c. Excavaciones arqueológicas en la región de Cumbayá. *Anales de la Universidad Central*, tomo XXXVII, no. 257, pp. 5-37. Quito. Pls. 1-10.

d. Report on explorations at Chancay [Appendix to A. L. Kroeber, *The Uhle pottery collections from Chancay*.] University of California Publications in American Archaeology and Ethnology, vol. 21, no. 7, pp. 293-303. Berkeley.

1927

a. Adenda a la bibliografía sobre etnología y arqueología del Ecuador. *Anales de la Universidad Central*, tomo XXXVIII, no. 259, pp. 234-235. Quito.

b. Las antiguas civilizaciones esmeraldeños. *Anales de la Universidad Central*, tomo XXXVIII, no. 259, pp. 107-136. Quito. Pls. 1 and 2.

c. Estudios esmeraldeños. *Anales de la Universidad Central*, tomo XXXIX, no. 262, pp. 219-279. Quito. Pls. 1-32, maps and profiles 1-3, figs. 1-6.

1928

a. Las ruinas de Cuasmal (informe elevado al Ministerio de Instrucción Pública por el Sr. Dr. Max Uhle). *Anales de la Universidad Central*, tomo XL, no. 264, abril-junio, pp. 183-234. Quito. Pls. 1-15, figs. 1-6.

b. Valioso obsequio para el Museo de Arqueología. *Anales de la Universidad Central*, tomo XL, no. 264, abril-junio, pp. 356-360. Quito.

Inventory of the Vörbeck Collection of specimens from central Ecuador.

1929

a. *Apuntes arqueológicos acerca de la isla Puná. *Revista de la Universidad de Guayaquil*, tomo I, pp. 79-88. Guayaquil.

b. Bibliografía ampliada sobre etnología y arqueología del Ecuador. *Anales de la Universidad Central*, tomo XLII, no. 267, enero-marzo, pp. 53-83. Quito.

Designed to replace 1926a. Contains 338 titles.

c. Bibliografía ampliada sobre etnología y arqueología en el Ecuador. *Anales de la Universidad Central*, tomo XLIII, no. 270, pp. 453-489. Quito.

Expanded from 1929b; contains 384 titles.

d. Estado actual de la prehistoria ecuatoriana. Conferencia del arqueólogo profesor Dr. Dn. Max Uhle. Gobierno del Ecuador, Oficina de Información y Propaganda del Estado, publicación no. 14. Talleres Tipográficos Nacionales, Quito. ii, 48 pp., 9 pls.

A reprint of 1925c with illustrations added.

e. Informe del delegado ecuatoriano al XXIII Congreso Internacional de Americanistas, que tuvo lugar en Nueva York del 17 al 22 de setiembre de 1928. *Anales de la Universidad Central*, tomo XLIII, no. 269, julio-setiembre, pp. 71-87. Quito.

Report addressed to the Ministro de Instrucción Pública. Contains some interesting theoretical comments.

1930

a. El desarrollo de la prehistoria ecuatoriana en los primeros cien años de la república, in: *El Ecuador en cien años de independencia, 1830-1930*, ed. by J. Gonzalo Orellana, tomo primero, pp. 1-22. Escuela Tipográfica Salesiana, Quito.

A thoughtful and informative account of the history of Ecuadorian archaeology.

b. Desarrollo y origen de las civilizaciones americanas. *Proceedings of the Twenty-third International Congress of Americanists*, held at New York, September 17-22, 1928, pp. 247-258. New York. Figs. 1-14.

c. Informe del profesor de arqueología, Sr. Dr. Max Uhle, delegado ecuatoriano al XXIII Congreso Internacional de Americanistas, que tuvo lugar en Nueva York del 17 al 22 de setiembre de 1928. *Boletín de la Academia Nacional de Historia*, vol. XI, nos. 30-32, junio-diciembre, pp. 209-221. Quito.

Same as 1929e.

d. El reino de Quito. *Boletín de la Academia Nacional de Historia*, vol. X, nos. 27-29, enero-mayo, pp. 1-17. Quito.

An able article arguing against the veracity of Juan de Velasco's famous history.

e. Review: Dr. K. Th. Preuss.—*Monumentale vorgeschichtliche [sic] Kunst. Ausgrabungen im Quellgebiet des Magdalena in Kolumbien und ihre Ausstrahl-*

ungen in Amerika. Band 1: Text; 2: 87 Tafeln und 193 Abbildungen. Göttingen, Vanderhoek & Ruprecht. 1929. Boletín de la Academia Nacional de Historia, vol. XI, nos. 30-32, junio-diciembre, pp. 278-282. Quito.

An attempt to date the sculptures of San Agustín by comparing them with other American styles.

f. Review: R. Lehmanm [*sic*] Nitsche.—Mitología sudamericana IX. La constelación de la Osa mayor y su concepto como huracán o dios de la tormenta en la esfera del mar caribe. Revista del Museo de la Plata, tomo 28, págs. 103-145.—Buenos Aires, 1924. Boletín de la Academia Nacional de Historia, vol. XI, nos. 30-32, junio-diciembre, pp. 273-276. Quito.

Uhle was interested in this article because he felt that it emphasized the role of diffusion in culture history as he wanted to do.

g. Späte Mastodonten in Ecuador. Proceedings of the Twenty-third International Congress of Americanists, held at New York, September 17-22, 1928, pp. 247-258. New York. Figs. 1-10.

An association of mastodon bones and pottery, near Alangasí, 12 km. east of Quito.

h. El Templo del Sol de los Incas en Cuzco. Proceedings of the Twenty-third International Congress of Americanists, held at New York, September 17-22, 1928, pp. 291-295. New York. Figs. 1-4.

1931

a. Las antiguas civilizaciones de Manta. Boletín de la Academia Nacional de Historia, vol. XII, nos. 33-35, enero-junio, pp. 5-71. Quito. Pls. 1-11.

Although inspired by a field trip in 1930, this article tells almost nothing about the archaeology of Manta, being concerned with historical reconstruction.

b. [Discurso de agradecimiento pronunciado en la celebración de sus bodas de oro profesionales en Quito.] Anales de la Universidad Central, tomo XLVI, no. 275, enero-marzo, pp. 228-232. Quito.

1932

Ursprung und Chronologie der alten Kulturen des westlichen Südamerika. Forschungen und Fortschritte, 8. Jahrgang, no. 20, 10 Juli, p. 255. Berlin.

1933

a. Estudio sobre las civilizaciones del Carchi e Imbabura. Anales de la Universidad Central, tomo L, no. 284, abril-junio, pp. 351-409. Quito. Pls. 1-9, figs. 1-4.

Contents: Observaciones generales, pp. 353-391; Hallazgos en el "Panteón Viejo" de San Gabriel, pp. 393-402. Apéndice: Hallazgos legítimos mayas en el Ecuador.

b. Estudio sobre las civilizaciones del Carchi e Imbabura. Informe al señor Ministro de Educación Pública. Talleres Tipográficos Nacionales, Quito. 62 pp., pls. 1-9, figs. 1-4.

c. Review: Rafael Requena, Vestigios de la Atlántida. Carácas, 1932. Anales de la Universidad Central, tomo L, no. 283, enero-marzo, pp. 339-341. Quito.

d. *Las ruinas de Cochasquí. El Día, 23 de enero de 1933. Quito.

See also 1935e, 1937d, 1939e.

e. Die Ruinen von Cochasquí (nördlich von Quito). *Ibero-Amerikanisches Archiv*, Jahrgang VII, Heft 2, Juni, pp. 127–134. Berlin. Figs. 1–6.

See also 1933*d*, 1937*d*, 1939*e*. The report on Uhle's last field trip.

1934

a. *Las antiguas civilizaciones del oeste sudamericano. *Ibero América*, órgano de la Asociación General de Estudiantes Latino-Americanos, no. 1, octubre–noviembre, pp. 8–9. Berlin.

b. Die Darstellung des Mastodon in der Kunst der Maya. *Ibero-Amerikanisches Archiv*, Jahrgang VIII, Heft 3, Oktober, pp. 285–289. Berlin. Figs. 1–5.

Comments inspired by Karin Hissink's Masken als Fassadenschmuck, untersucht an alten Bauten der Halbinsel Yukatan, Strassburg, 1934.

c. Ernesto Quesada.† *Ibero-Amerikanisches Archiv*, Jahrgang VIII, Heft 1, April, pp. 1–6. Berlin.

An obituary notice.

d. Los geroglíficos de la portada de Tiahuanaco. Actas y trabajos científicos del XXV° Congreso Internacional de Americanistas (La Plata, 1932), tomo II, pp. 199–220. Buenos Aires. Figs. 1–5.

Nonsense, like almost everything else written on this subject.

1935

Die alten Kulturen Perús im Hinblick auf die Archäologie und Geschichte des amerikanischen Kontinents. Wilhelm Süsserott Verlag, Berlin. 50 pp., figs. 1–20.

Publication financed by the Notgemeinschaft der deutschen Wissenschaft for presentation to the XXVI International Congress of Americanists in Seville.

1936

a. [Carta a la Academia Nacional de Historia agradeciendo una carta y un telegrama de felicitaciones. Berlin, 27 de mayo de 1936.] Boletín de la Academia Nacional de Historia, vol. XIII, nos. 36–39, enero–junio, p. 128. Quito.

b. [Carta a la Academia Nacional de Historia agradeciendo una carta de felicitaciones. Berlin, 18 de junio de 1936.] Boletín de la Academia Nacional de Historia, vol. XIV, nos. 40–41, julio–diciembre, pp. 130–131. Quito.

c. Un folleto del Prof. Max Uhle. Boletín de la Academia Nacional de Historia, vol. XIII, nos. 36–39, enero–junio, pp. 5–12. Quito.

An extract and summary in Spanish of Uhle, 1935, by R. P. Eduardo Kaesen, S.J.

d. Review: Karsten, Rafael: "The head-hunters of western Amazonas." The life and culture of the Jíbaro Indians of eastern Ecuador and Peru. Helsingfors, Societas Scientiarum Fennica, 1935. 598 S., 1 Karte, .4 Bildtaf., viele Bilder i. Text. 8°. *Ibero-Amerikanisches Archiv*, Jahrgang X, Heft 3, Oktober, pp. 345–346. Berlin.

e. Review: Nomland, Gladys Ayer: "New archaeological sites from the state of Falcón." Venezuela [*sic*], University of California Press. Berkeley, California 1935. Pag. vi, and 113 (incl. 5 Tafeln und 20 Seiten Figuren). *Ibero-Amerikanisches Archiv*. Jahrgang X, Heft 3, Oktober, pp. 362–363. Berlin.

1937

a. Una carta del Prof. Max Uhle. *Revista del Museo Nacional*, tomo VI, no. 1, I semestre, pp. 92-94. Lima.

Undated letter to Luís E. Valcárcel written from Wangenheimstr. II, Berlin-Grünwald. Uhle thanks Valcárcel for the honors paid to him and gives new data on his earlier work.

b. Herkunft und Alter der frühgeschichtlichen Denkmäler von San Agustín in Kolombien. *Ibero-Amerikanisches Archiv*, Jahrgang XI, Heft 3, Oktober, pp. 327-332. Berlin.

A review of the San Agustín problem inspired by Lunardi's *El Macizo Colombiano en la prehistoria de Sud América*, 1934, and *La vida en las tumbas*, 1935.

c. Review: Bennett, W. C.: Excavations at Tiahuanaco. *Anthropol. Papers of the Am. Mus. of Nat. History*. Vols. XXXIV. Pt. III. New York, 1934. S. 357-491. 9 Taf. und 35 Figuren. *Ibero-Amerikanisches Archiv*, Jahrgang XI, Heft 3, Oktober, pp. 408-409. Berlin.

d. Las Ruinas de Cochasquí. Traducido por Julio Nieto. *Revista del Museo Nacional*, vol. VI, no. I, I semestre, pp. 86-91. Lima.

Translation, without the illustrations, of 1933e.

1938

a. Die Herkunft der alten peruanischen Kulturen. *Forschungen und Fortschritte*, 14. Jahrgang, nos. 20-21, 10. und 20. Juli, pp. 229-230. Berlin.

b. Review: Lunardi, Federico: O Angasmayo ou os verdadeiros limites septentrionaes do Imperio Incaico. Rio de Janeiro: Typ. do Jornal do Commercio 1935. 40 S., 5 Taf., 3 Karten. 8°—Dasselbe: 2a. ed. Rio de Janeiro: Imprensa Nacional 1935. v. 30 S., 5 Taf., 3 Karten. 8° *Ibero-Amerikanisches Archiv*, Jahrgang XI, Heft 4, Januar, p. 536. Berlin.

1939

a. La antigua civilización peruana. *Revista del Museo Nacional*, tomo VIII, no. II, segundo semestre, pp. 187-189. Lima.

A reprint of 1900c.

b. La antigua civilización sudamericana. In: Tihuanacu (antología de los principales escritos de los cronistas coloniales, americanistas e historiadores bolivianos), ed. Gustavo Adolfo Otero, Biblioteca Boliviana, no. 2, pp. 175-194. La Paz.

"Publicaciones del Ministerio de Educación, Bellas Artes y Asuntos Indígenas." A reprint of 1900c.

c. [Carta al señor doctor don Julio Tobar Donoso, presidente de la Academia Nacional de Historia, renunciando la representación de la Academia en el Congreso Internacional de Arqueología en Berlín.] *Boletín de la Academia Nacional de Historia*, vol. XVII, nos. 50-53, enero-junio, pp. 214-215. Quito.

d. El origen de las antiguas culturas peruanas (traducido por el Doctor Juan Odermatt, director del Observatorio de Quito). *Boletín de la Academia Nacional de Historia*, vol. XVII, nos. 50-53, enero-junio, pp. 5-8. Quito.

e. Las ruinas de Cochasquí. *Boletín de la Academia Nacional de Historia*, vol. XVIII, no. 54, julio-diciembre, pp. 5-14. Quito. 5 photos on 1 pl.

A translation of 1933e.

1940

Un kipu moderno procedente de Cutusuma, Bolivia. *Revista del Museo Nacional*, tomo IX, no. 2, II semestre, pp. 183-190. Lima. Figs. 1 and 2.

A translation of 1897a by J. Eugenio Garro.

1942

a. La marcha de las civilizaciones. Actas y trabajos científicos del XXVII° Congreso Internacional de Americanistas (Lima, 1939), tomo I, pp. 369-382. Lima. Figs. 1-26.

b. Procedencia y origen de las antiguas civilizaciones americanas. Actas y trabajos científicos del XXVII° Congreso Internacional de Americanistas (Lima, 1939), tomo I, pp. 355-368. Lima. Figs. 1-18.

1943

a. Alter und Herkunft der Ruinen von Tiahuanaco. *Revista del Museo Nacional*, tomo XII, no. 1, I semestre, pp. 14-18. Lima.

A favorable review of Bennett's Tiahuanaco report.

b. La antigua civilización sudamericana. In: Tihuanacu, selección de Gustavo Adolfo Otero, Colección Buen Aire [no. 28], pp. 101-111. Emecé Editores, Buenos Aires.

Another edition of 1939b.

c. Antigüedad y origen de las ruinas de Tiahuanaco. Trad. de J. C. Muelle. *Revista del Museo Nacional*, tomo XII, no. 1, I semestre, pp. 19-23. Lima.

Translation of 1943a, revised and somewhat amplified by the author; see note, p. 23.

1944

Grausamkeiten und Menschenopfer in den alten Kulturen Perús. *Ibero-Amerikanisches Archiv*, Jahrgang XVIII, Heft 1-2, April-Juli, pp. 32-53. Berlin and Bonn.

"Aus dem Nachlass herausgegeben von Gerdt Kutscher." The editor says that it was probably written soon after 1917.

1948

La antigua civilización peruana [abstract]. *Archives Ethnos*, no. 1, May, Series A, no. 3. Buenos Aires.

An abstract of 1900b.

1951

Las antiguas civilizaciones del Perú frente a la arqueología e historia del continente americano. Universidad Nacional de San Agustín de Arequipa, *Revista*, año XXIII, no. 33, primer semestre, pp. 81-142. Arequipa. Figs. 1-20.

"Traducción del alemán por Pablo M. Bosman, corregida por Julio C. Guerrero." A translation of 1935.

IN PREPARATION

Zusammenfassende Ergebnisse der archäologischen Forschungen in Peru, ed. G. Kutscher. Collection "Americana," *Studien zur Amerikakunde* [no. 2?]. Berlin.

Announced in *American Anthropologist*, n.s., vol. 50, no. 4, p. 722. Menasha, Wis., 1948.

B. DISCUSSIONS OF UHLE AND HIS WORK

ANONYMOUS

1897. [Max Uhle's excavations at Pachacamac.] *Globus*, vol. 72, nos. 6, 7, August, pp. 99-100. Braunschweig.
- 1906a. *Anthropologic miscellanea*: Dr. Max Uhle. *American Anthropologist*, n.s., vol. 8, no. 1, January-March, p. 202. Lancaster, Pa.
- 1906b. Incorporación del doctor Uhle é inauguración del Museo de Historia Nacional. *Revista Histórica*, tomo I, trimestre III, pp. 402-423. Lima. 4 pl.
Portrait of Uhle opposite p. 409.
1936. *Bibliografía del Dr. Max Uhle*. *Revista Chilena de Historia y Geografía*, tomo LXXX, no. 88, mayo-agosto, pp. 204-212. Santiago.
117 items. See also Valcárcel and others, 1935.
1944. *Notas históricas y geográficas*. El Dr. Max Uhle. *Revista Chilena de Historia y Geografía*, no. 104, enero-junio, p. 284. Santiago.

BASTIAN, ADOLF

1895. *Peruanische Quipus*. *Verhandlungen der Berliner Gesellschaft für Anthropologie, Ethnologie und Urgeschichte, Jahrgang 1895* [vol. 27], p. (96). Berlin.
Calls attention to Uhle, 1895a.

BERTHON, PAUL

1911. *Étude sur le précolombien du Bas-Pérou*. *Nouvelles Archives des Missions Scientifiques et Littéraires*, n.s., fascicule 4, pp. 53-126. Imprimerie Nationale, Paris. Pls. I-XXIV. 20 figs.
See Uhle's review, 1913d.

BIRD, JUNIUS B.

1943. Excavations in northern Chile. *Anthropological Papers of the American Museum of Natural History*, vol. XXXVIII, part 4, pp. 169-318. New York. 46 figs.

BORJA, L. F., and A. I. CHIRIBOGA

1936. *Homenajes al Dr. Max Uhle*. *Boletín de la Academia Nacional de Historia*, vol. XIII, nos. 36-39, enero-junio, pp. 126-128. Quito.
Correspondence relating to Uhle's medal.

BRETON, ADELA C.

1913. A stone implement of early type from Ancon, Peru. *International Congress of Americanists. Proceedings of the XVIII. Session, London, 1912. Part I*, pp. 46-49. London. 1 pl., figs. 1-2.
All the photographs were taken by Uhle, and the text reports his ideas.

CAPDEVILLE, AUGUSTO

1923. *Un cementerio Chíncha-Atacameño de Punta Grande, Taltal*. *Boletín de la Academia Nacional de Historia*, vol. VII, no. 18, julio-agosto, pp. 34-49. Quito. Pls. 1-5.
This item includes Uhle, 1923c.

COLLIER, DONALD, and JOHN V. MURRA

1943. Survey and excavations in southern Ecuador. *Field Museum of Natural History, Anthropological Series*, vol. 35, pp. 1-108. Chicago. 54 pls., 18 figs.

DEBENEDETTI, SALVADOR

1912. Excursión del XVII° Congreso Internacional de Americanistas á Bolivia y Perú (del diario de viaje). *Actas del XVII° Congreso Internacional de Americanistas*, Sesión de Buenos Aires, 17-23 de mayo de 1910, pp. 625-676. Buenos Aires.

DUN, ALEJANDRO L.

1910. Proyecto de alfabeto para escribir la lengua aymará. *Boletín de la Oficina Nacional de Estadística*, año VI, nos. 61-63, tercer trimestre, pp. 471-473. La Paz.

"El alfabeto aymará que tengo el gusto de presentar á la Sociedad Geográfica de La Paz, fué indicado á un grupo de aymaristas, por el Profesor Max Uhle, el año ... [1894]. Ese grupo se componía de los RR. PP. José Cardenas y José, [sic] María Valle, el Presbítero Aransaez y el suscrito." Uhle's orthography for writing Aymará and Inca—an extraordinarily good one. The article was reprinted in the same journal in 1912.

GAYTON, ANNA H.

1927. The Uhle collections from Nievería. *University of California Publications in American Archaeology and Ethnology*, vol. 21, no. 8, pp. 305-329. Berkeley. Pls. 91-97, figs. 1-11.

GAYTON, A. H., and A. L. KROEBER

1927. The Uhle pottery collections from Nazca. *University of California Publications in American Archaeology and Ethnology*, vol. 24, no. 1, pp. 1-46. Berkeley. Pls. 1-21, figs. 1-12.

GRIJALVA, CARLOS EMILIO

1937. La expedición de Max Uhle a Cuasmal, o sea, la protohistoria de Imbabura y Carchi. *Prehistoria*, tomo I. Editorial Chimborazo, Quito. pp. 7-296, 22 pls.

Since the year 1939 is mentioned on p. 9, the work was probably published later than the date (1937) that appears on the title page. It is a discursive controversy with Uhle over archaeological interpretation which leaves the reader with the impression that both principals were probably wrong. In the correspondence quoted by Grijalva is a letter to him from Jacinto Jijón y Caamaño dated Quito, June 1, 1929, which contains some interesting remarks about Uhle (p. 285):

"Max Uhle siempre fué intractable, caprichoso y falto de tacto social, pero fué un investigador muy distinguido, su cronología peruana ha sido confirmada por estudios posteriores de otros arqueólogos; pero a juzgar por sus últimos trabajos, principiando por aquel sobre las antiguas civilizaciones de Panamá, que se publicó en el *Boletín de la Academia* y siendo la corona y remate el famoso Informe [our Uhle, 1928a—J.H.R.], motivo de su estudio, demuestran a todas luces que está ya chocho; son obras de decrepitud mental, indignas de sus anteriores producciones. ..."

GUSINDE, MARTÍN

- 1916a. *El Museo de Etnología y Antropología de Chile*. *Publicaciones del Museo de Etnología y Antropología de Chile* [vol. 1], año 1, no. 1, pp. 1-18. Santiago.
- 1916b. *El Museo de Etnología y Antropología de Chile*. *Revista Chilena de Historia y Geografía*, año VI, tomo XIX, 3er trimestre, no. 23, pp. 30-47. Santiago.
- Same article as 1916a.

HARCOURT, RAOUL D'

1922. *La céramique de Cajamarquilla-Nivería*. *Journal de la Société des Américanistes de Paris*, n.s., tome XIV, pp. 107-118. Paris. Pls. 1-7, figs. 1-5.
Most of the pieces illustrated are from Uhle's collection in Lima. "Nivería," of course, is for "Nievería." See Gayton, 1927, above.

HARSCHBERGER, JOHN W.

1898. The uses of plants among the ancient Peruvians. *Bulletin of the Free Museum of Science and Art of the University of Pennsylvania*, vol. 1, no. 3, April, pp. 146-149. Philadelphia.
Includes comments on plant remains in Uhle's Pachacamac collection.

HAUTHAL, RUDOLF

1911. *Reisen in Bolivien und Peru, ausgeführt 1908*. *Wissenschaftliche Veröffentlichungen der Gesellschaft für Erdkunde zu Leipzig*, Siebenter Band. Leipzig.
Hauthal was a geologist; Uhle took him to visit the archaeological sites of Ancón and Bellavista, and Hauthal comments on them on pp. 142-144. His fig. 12 gives the only published cross section of the famous refuse deposit at Bellavista.

KROEBER, ALFRED LOUIS

1904. Dr. Uhle's researches in Peru. *American Anthropologist*, n.s. vol. 6, no. 4, July-September, pp. 576-577. Lancaster, Pa.
A preliminary note on the excavations at Ancón, including the shellmound material.
1905. The Department of Anthropology of the University of California, University of California Publications. The Press, Berkeley. 38 pp.
1906. Recent progress in American anthropology. A review of the activities of institutions and individuals from 1902 to 1906. University of California. *American Anthropologist*, n.s., vol. 8, no. 3, July-September, pp. 483-492. Lancaster, Pa.
Uhle's work is discussed on pp. 490-491.
- 1925a. The Uhle pottery collections from Moche. University of California Publications in American Archaeology and Ethnology, vol. 21, no. 5, pp. 191-234. Berkeley. Pls. 50-69, figs. 1-5.
- 1925b. The Uhle pottery collections from Supe. University of California Publications in American Archaeology and Ethnology, vol. 21, no. 6, pp. 235-264. Berkeley. Pls. 70-79.
1926. The Uhle pottery collections from Chancay. University of California Publications in American Archaeology and Ethnology, vol. 21, no. 7, pp. 265-304. Berkeley. Pls. 80-90, figs. 1-26.
1927. Coast and highland in prehistoric Peru. *American Anthropologist*, n.s., vol. 29, no. 4, October-December, pp. 625-653. Menasha, Wis.
Review of Uhle's work, pp. 625-631.
1930. Cultural relations between North and South America. *Proceedings of the Twenty-third International Congress of Americanists*, held at New York, September 17-22, 1928, pp. 5-22. New York.
1944. Peruvian archeology in 1942. Viking Fund Publications in Anthropology, no. 4. New York. 151 pp., pls. 1-48, figs. 1-8.

KROEBER, A. L., and E. W. GIFFORD

1946. University of California Museum of Anthropology. Report to President Robert Gordon Sproul for the year ending June 30, 1946. Berkeley. 18 pp.

KROEBER, A. L., and WILLIAM DUNCAN STRONG

- 1924*a*. The Uhle collections from Chincha. University of California Publications in American Archaeology and Ethnology, vol. 21, no. 1, pp. 1-54. Berkeley. Pls. 1-24, figs. 1-27.
- 1924*b*. The Uhle pottery collections from Ica. With three appendices by Max Uhle. University of California Publications in American Archaeology and Ethnology, vol. 21, no. 3, pp. 95-133. Berkeley. Pls. 25-40, figs. 1-17.

KUTSCHER, GERDT

1944. Max Uhle zum Gedächtnis. Ibero-Amerikanisches Archiv, Jahrgang XVIII, Heft 1-2, April-Juli, pp. 1-8. Berlin and Bonn. 2 photos of Uhle.

LEWIS, AUSTIN

1903. Twenty centuries earlier than the Incas. Uhle expedition unearths amazing proofs of ancient civilization in Peru. American Magazine Supplement of the San Francisco Examiner, Sunday, May 3. Supplement to vol. LXXVIII, no. 123 [p. 3]. San Francisco. 12 photos.
- An interview with Uhle.

LINNÉ, SIGVALD

1925. The technique of South American ceramics. Göteborgs Kungl. Vetenskaps- och Vitterhets-Samhälles Handlingar, Fjärde följdén, band 29, no. 5. Göteborg. [vi], 199 pp., figs. 1-44, maps 1-9.
- "On visiting the Museum during the recent Congress of Americanists, Professor Max Uhle was good enough to supply me with valuable particulars from his unparalleled experience and knowledge of the archaeology of West-Andean South America" (p. [iii]).

MCCOWN, THEODORE D.

1945. Pre-Incaic Huamachuco: Survey and excavations in the region of Huamachuco and Cajabamba. University of California Publications in American Archaeology and Ethnology, vol. 39, no. 4, pp. i-x, 223-400. Berkeley and Los Angeles. Pls. 8-23, figs. 1-21, map.

MUELLE, JORGE C.

1945. Prof. Max Uhle mayo de 1944. Revista del Museo Nacional, tomo XIV, pp. 192-193. Lima.

OLIVER SCHNEIDER, CARLOS

1936. El arqueólogo Dr. Max Uhle y su obra en la costa del Pacífico. Revista Universitaria, tomo 21, no. 1, agosto, pp. 17-36. Santiago. Portrait of Uhle on p. 19.

O'NEALE, LILA M., and A. L. KROEBER

1930. Textile periods in ancient Peru. University of California Publications in American Archaeology and Ethnology, vol. 28, no. 2, pp. 23-56. Berkeley. Pls. 1-48, figs. 1-13.

A series of later papers by O'Neale and others on the Uhle collection textiles are omitted from this bibliography.

OYARZÚN, AURELIANO

1936. Max Uhle. *Revista Chilena de Historia y Geografía*, tomo LXXX, no. 88, mayo-agosto, pp. 195-197. Santiago.
A not very informative note.

PANHORST, K. H.

1936. Aus dem Arbeitsgebiet des Ibero-Amerikanischen Instituts und der Deutsch-Ibero-Amerikanischen Gesellschaft. *Ibero-Amerikanisches Archiv*, Jahrgang X, Heft 1, April, pp. 90-92. Berlin. Portrait of Uhle opp. p. 1.
Text describes Uhle's anniversary, p. 90.

POSNANSKY, ARTHUR

1913. I. Una falsa crítica de Max Uhle. II. Un par de palabras críticas sobre la obra Tiahuanaco por Stübel y Uhle (parte de Uhle). [The author.] Berlin. vi, 20, vi pp.
Published simultaneously in German under the title: Eine falsche Kritik Max Uhles. Ein paar Worte der Kritik über Stübel und Uhles "Tiahuanaco." (Teil Uhle.) A scurrilous pamphlet reflecting Posnansky's rage at reading Uhle, 1912*d*. Like all of Posnansky's work, full of misstatements of fact.

RIVET, PAUL

1933. Retour du Dr. Max Uhle. *Journal de la Société des Américanistes*, n.s., tome XXV, fasc. II, p. 385. Paris.

ROOT, WILLIAM C.

1949. The metallurgy of the southern coast of Peru. *American Antiquity*, vol. XV, no. 1, July, pp. 10-37. Menasha. Figs. 8-21, tables 1-26.
Materials from the Uhle collection.

SCHWAB, FEDERICO

- 1936*a*. Max Uhle y la arqueología peruana. *Revista Chilena de Historia y Geografía*, tomo LXXX, no. 88, mayo-agosto, pp. 198-203. Santiago.
1936*b*. Max Uhle y la arqueología peruana. *Revista del Museo Nacional*, tomo V, no. 1, I semestre, pp. 11-14. Lima.
A brief biographical note.

SINGER, ERNESTINE WIEDER

1936. The techniques of certain Peruvian hairnets. *Revista del Museo Nacional*, tomo V, no. 1, I semestre, pp. 16-24. Lima. Pls. 1-8, figs. 1-4.
Twenty-nine hair nets from Uhle's Pachacamac collection.

SPILLMANN, FRANCISCO

1928. Estudio comparado de cráneos humanos antiguos procedentes de la provincia del Carchi, Ecuador. *Anales de la Universidad Central*, tomo XL, no. 264, abril-junio, pp. 235-240. Quito. Pls. 1 and 2.
Six broken skulls collected by Uhle.

STAUDINGER, PAUL

1899. Ein eigenthümliches Bronze-Artefact aus Bolivien. *Verhandlungen der Berliner Gesellschaft für Anthropologie, Ethnologie und Urgeschichte*, Jahrgang 1899 [vol. 31], pp. (619)-(620). Berlin. 1 fig.
See Uhle, 1899.

STRONG, WILLIAM DUNCAN

1925. The Uhle pottery collections from Ancon. *University of California Publications in American Archaeology and Ethnology*, vol. 21, no. 4, pp. 135-190. Berkeley. Pls. 41-49, figs. 1-11.

1948. Cultural epochs and refuse stratigraphy in Peruvian archaeology. *Memoirs of the Society for American Archaeology*, no. 4, pp. 93-102. Menasha, Wis.

STRONG, W. D., GORDON R. WILLEY, and JOHN M. CORBETT

1943. Archeological studies in Peru, 1941-1942. *Columbia Studies in Archeology and Ethnology*, vol. 1. New York. x, 224 pp., 21 pls., 33 figs., tables.

THORPE, FRANCIS NEWTON

1904. William Pepper, M.D., LL.D. (1843-1898), Provost of the University of Pennsylvania. J. B. Lippincott Company, Philadelphia and London. 555 pp., 11 pls.

TSCHUDI, JOHANN JAKOB VON

1887. Kupferaxt von S. Paulo, Braxilien. *Verhandlungen der Berliner Gesellschaft für Anthropologie, Ethnologie und Urgeschichte, Jahrgang 1887*, [vol. 19], pp. (592)-(593). Berlin.

Comments on Uhle, 1887b.

UNIVERSIDAD CENTRAL DEL ECUADOR

1931. Bodas de oro profesionales del señor doctor Max Uhle. *Anales de la Universidad Central*, tomo XLVI, no. 275, enero-marzo, pp. 226-233. Quito.

VALCÁRCEL, LUÍS E., and others

1935. Homenaje a Max Uhle. *Revista del Museo Nacional*, tomo IV, no. 1, I semestre, pp. i-xi. Lima. Portrait of Uhle.

Contents: El jubileo del profesor Max Uhle, pp. i-ii. Biobibliografía del profesor Max Uhle, ii-xi. The bibliography appears on pp. iv-xi. It consists of 119 numbers (124 items) and covers the years 1880-1934. Reprints of this were titled: El jubileo del prof. Max Uhle. Su biobibliografía.

1936. Homenaje al prof. Max Uhle en su 80° aniversario. *Revista del Museo Nacional*, tomo V, no. 1, I semestre, pp. 3-14. Lima. Portrait of Uhle.

1939. El XXVII Congreso Internacional de Americanistas. *Revista del Museo Nacional*, tomo VIII, no. 2, II semestre, pp. 179-187. Lima. 11 photos, including one of Uhle on p. 180.

VILLAR CÓRDOVA, PEDRO E.

1936. Dos palabras sobre el ilustre peruanista profesor Dr. Max Uhle. *Revista del Museo Nacional*, tomo V, no. 1, I semestre, pp. 7-8. Lima.

VIRCHOW, RUDOLF

1894. Schädel aus Süd-America, insbesondere aus Argentinien und Bolivien. *Verhandlungen der Berliner Gesellschaft für Anthropologie, Ethnologie und Urgeschichte, Jahrgang 1894* [vol. 26], pp. (386)-(408). Berlin. Pl. XII, 4 figs.

See especially the discussion of this paper, pp. 408-410, by Waldeyer, Virchow, Bastian, and Seler. The last two give much information about Uhle's field work.

VITERI LAFRONTE, HOMERO

1924. El sabio Max Uhle en la Universidad de Quito. *Anales de la Universidad Central*, tomo XXXII, no. 249, abril-junio, pp. 154-158. Quito.

The introduction to Uhle's lecture series on archaeology.

WARDLE, H. NEWELL

1936. Belts and girdles of the Inca's sacrificed women. *Revista del Museo Nacional*, tomo V, no. 1, I semestre, pp. 25-38. Lima. Pls. 1-7, figs 1-10.

A study of objects from Uhle's Pachacamac collection. A letter, p. 15, offers this paper and that of E. W. Singer as a tribute to Max Uhle.

WILKEN, G. A.

1888. Iets over de mutilatie der tanden bij de volken van den Indischen archipel. Opmerkingen naar aanleiding van Uhle's "Ueber die ethnologische Bedeutung der Malaiischen Zahnfeilung." *Bijdragen tot de Taal-, Land- en Volkenkunde van Nederlandsch Indië*. vijfde volgrees—derde deel (deel XXXVII der geheele reeks), pp. 472-504. 's Gravenhage.

APPENDIX A

THE AIMS AND RESULTS OF ARCHAEOLOGY

BY

MAX UHLE

TRANSLATOR'S NOTE.—In 1923 Uhle delivered a series of four general lectures on archaeological theory and method at the Universidad Central del Ecuador in Quito. They were delivered in Spanish, apparently from notes, for the published text (1924*b*, *c*, 1925*b*) is based on a stenographic record rather than on the author's manuscript. The university's *Anales* in which they appeared had a very poor distribution in 1924 and 1925, and very few of the people who are interested in Uhle's work have had a chance to read these lectures. They are sufficiently important for an understanding of Uhle's views to warrant translation and republication in this study of Uhle's career.

Uhle's books and articles deal mostly with specific archaeological problems or with his theories concerning the origins of particular civilizations, and the argument is often difficult to follow because there is no statement of the theoretical framework within which the author is operating. Theoretical statements are traditionally omitted in archaeological reports, but the omission usually raises no serious problems, because the author's theoretical views are fundamentally rather close to those of his readers. In Uhle's case, there was no such basis for understanding, though Uhle remained entirely unaware of it. He assumed a series of laws of cultural development based on the theories of cultural evolution which were current in his youth and a number of postulates about diffusion reminiscent of Graebner. His "explanations" of archaeological facts are in terms of these principles; but he does not state them, because he assumes that his readers share them. His readers, however, thought either in terms of a much less detailed evolutionism, or, following the lead of Franz Boas, regarded all generalizations as hypotheses to be tested by facts instead of as infallible guides to interpretation. It is no wonder that Uhle's conclusions often seemed "crazy" to them.

The importance of the 1923 lectures lies in the fact that they contain the only explicit statement of his theoretical framework that Uhle ever made, and they consequently throw a flood of light on his reasoning in particular papers. No one who tries to use any part of Uhle's work should fail to read them.

Like all Uhle's papers, the lectures also contain many interesting comments on details of Andean archaeology and a few constructive ideas for interpretation. There are many references to Uhle's own field work, especially his almost unknown explorations in Ecuador.

It may also be noted that these lectures constitute the first reasonably systematic statement of archaeological theory and method by an Americanist; hence they have a place in the history of American archaeology in spite of the scant influence they had on its development. Uhle always had a way of being first.

The translation is a reasonably free one in which I have taken the liberty of clarifying some of the more involved expressions of the original text, without, I hope, doing excessive violence to Uhle's meaning. His written style had a tendency to be jerky and somewhat confused no matter in what language he was writing, and I have refrained from editing out these qualities entirely in the translation. A few of Uhle's technical terms need brief comment: "method" in these lectures means "theory," as it does in German; "anthropology" is physical anthropology; and "civilization" means "culture"—or rather, "advanced culture" in the evolutionary sense. The title of the series is supplied from the first sentence of Lecture 1.

Uhle quotes several times from W. M. Flinders Petrie's *Methods and Aims in Archaeology* (Macmillan and Co., London, 1904). All these quotations have been verified, and page references, lacking in the original text, have been added. Uhle thought very highly of Petrie and of Petrie's work, and he evidently learned certain things from this book; but he also disagreed

with Petrie, as he did with almost everyone, and these lectures are by no means a mere summary of Petrie's exposition.

With few exceptions, all the examples Uhle cites from South American archaeology are from his own experience. The fact may not have been entirely obvious to his original audience, however, for many of the examples are given impersonally. His statement "Cemeteries of the earliest Peruvian civilization of Proto-Nazca, formerly unknown, were discovered by the clue of a fragment of a vase lying on the ground . . .," for instance, is a reference to his work in the Ica valley in 1901. The chronological outline of Uhle's field work given in the preceding memoir will clarify most of these references.

It should not be necessary to warn the reader that modern archaeology should not be judged by Uhle's principles.—J.H.R.

LECTURE 1, MAY 9, 1923

Archaeology: its meaning, origin and development; differences from and relations with other sciences—The archaeological method and its basis—Classes of archaeological evidence—Archaeological conclusions—Archaeological chronology—Examples pertinent to Ecuador.

Archaeology, the aims and results of which I propose to discuss in the present series of lectures, can be defined as the study of lost civilizations, beginning with the earliest forms of the human race which prepared the way for the progress of the civilizations of the present.

It is the youngest of the sciences which have increased the circle of the important branches of knowledge created, for the most part, long before our time. It was the last to arise, perhaps for the very reason that it is more directly concerned with man himself, and concerns him more nearly, than any of the older sciences. These last, many of which trace their origin to ancient times, like physics, mathematics, astronomy, psychology, and medicine, either concern themselves with the world around us, or, when they deal with man, deal only with one aspect of him. Archaeology, however, investigates all the products of our species, shows what man did in all the centuries before our time, explains his mental state, his thoughts, his tastes, his ways of feeling, and, by revealing the road which the human race has traveled since its beginnings, explains the very origin of our existence.

More than history, which is concerned with the political evolution of states or the achievements in intellectual culture of the nations; more than anthropology, which even in the widest sense of the term only describes in systematic fashion the stature of man and the ways he reacts to nature, archaeology reveals to us in chronological order the details of the struggle which has carried our species from its first insignificant beginnings to the heights of the civilizations of the present.

The archaeologist finds the raw materials for the construction of this story mostly in the ground. Literary documents and the invention of writing reach back only a few thousands of years. The poorly developed writing which the Spaniards found in parts of the American continent is of only the scantest help in the archaeologist's task. The written documents of Egypt and of Babylonia, even though they are helpful in other respects, do not explain the form, the history, and the origin of their civilizations as well as could be desired. Hundreds of earlier centuries, going back to the time of the first appearance of man, with no written document of any kind to explain them, would thus remain in complete darkness for us if we had not learned to read all the principal events which still interest us at this distance in the material remains left in the ground by ancient man

with the same precision as if they were written in books in an alphabetic script. The reading of these material documents forms the task of the archaeologist.

Archaeology practiced in this way promises to be of immense utility to the generations of the present. It offers them a more liberal education than any other branch of knowledge. Because it teaches how man has risen to his present position in our changing world, archaeology is potentially one of the broadest of studies and one of the best fitted to suggest new ideas and produce that breadth of interests and general tolerance which form the most lofty product of any type of culture.

Knowing the road which man has traveled down to our own time and the stages of his progress reached after thousands of years, we are also better equipped to understand the laws which govern our own progress toward a perfection which the future will bring us.

Moreover, it is the duty of any people to know the history of its own land, because only with such knowledge comes a true feeling of ownership. Peoples who lack such knowledge live in their territory much like aquatic plants which float rootless on the surface of a lake, and which may be destroyed or swept away by any storm because they have no anchor to hold them firm.

A country which devotes the attention to history that Ecuador does is thus continually preparing an anchor which may hold it firm in the storms that can assail any country at any time.

The breadth of the concept of archaeology and the details of its character are best seen through its own history, just as everything in the world is properly understood only from the way in which it came to be.

Archaeology as a science takes its name from the Greek word *archē*, "beginning," from which have been formed also the Greek words *archaiein*, "begin," and *archaios*, "primitive," and with the derived meaning "ancient."

It was Winckelmann, the founder of Classical archaeology, who, about the middle of the eighteenth century, invented the term "archaeology" to designate the study of ancient Greek and Roman art. In its classical sense, archaeology still means the study of Greek and Roman antiquities, such as the legal system, state organization and administration, customs, and rites, and is based primarily on the evidence relating to these subjects found in the works of Greek and Roman writers. One of its branches is the study of monuments and artistic objects, facilitated by excavations of various kinds of remains, such as buildings or buried cities like Pompeii.

The purpose of these studies is exclusively that of making clearer to us the character of ancient civilization and the beauty of ancient art, but generally without any preoccupation with explaining the origin of civilization itself. It was for this reason that the excavations of Schliemann in Troy and Mycene caused so much surprise when they showed that Classical civilization could be explained by the development of others.

There is now also a "Christian archaeology" for the purpose of finding the sources of the art style which now dominates the religion. Its purpose is strictly limited, like that of the science previously discussed; and neither of these can properly be compared for breadth of aims with "prehistoric archaeology," as

the branch of learning which studies all lost civilizations and which concentrates on the whole history of man is also called.

The difference between the aims of this last science and those of the ones previously mentioned is most clearly seen if we examine its origin and note the difference of time which was necessary to its establishment.

Modern archaeology matured about a hundred years after the origin of the archaeology concerned with Greek art. All branches of modern archaeology were products of the development of modern science, which, as is well known, stimulated almost simultaneously the most diverse branches of learning.

About the end of the eighteenth century the new term "ethnography" first appeared, but only to designate a kind of study or interest connected with geography. Since the last years of the eighteenth century it has been accompanied on a roughly equal basis by anthropology, later related to "Urgeschichte," or primitive history, which in the beginning was modestly restricted to the problems of the earlier history of European man. However, in 1828 the first remains of fossil man were discovered; and the first essay on "The origin of primitive society," written in 1829, was published in France a few years later.

Interest in a general empirical concept of the world had meanwhile been growing stronger daily in other fields with historical interests.

In 1804 Alexander von Humboldt returned from his American journeys, and his researches had a very broad influence on the development of science. The German scholar Grötefend had already deciphered the first cuneiform inscription in 1802. The French scholar Champollion followed him in 1822 with the reading of the famous "Rosetta stone" in Egypt. These discoveries indicate that a curiosity with respect to the ancient civilizations of Babylonia and Egypt had already been aroused.

Soon thereafter, Humboldt began the series of great scientific travels in America. The first to follow his example were Prince Maximilian of Wied and Spix and Martius in Brazil between 1815 and 1820. In 1831 Lord Kingsborough published his costly work containing reproductions of Mexican art. Alcides d'Orbigny was at the ruins of Tiahuanaco in Bolivia in 1843 and made notes there which were later published in his great book of South American travel.

In 1841 John L. Stephens' work entitled "Incidents of Travel in Central America, Chiapas and Yucatan" produced a well-known revolution in people's ideas about the importance of the ancient monuments of Mexico. J. J. von Tschudi published his work on Peruvian antiquities in Vienna in 1851. About the same time, Lewis Morgan, Squier, Davis, and Schoolcraft started the study of the antiquities of the United States.

In 1858 Desjardins published valuable information about ancient Peruvian ruins, and even before this there had appeared the great travel work of Castelnau with many illustrations of ruins and of Peruvian artifacts. In 1866 [*sic*] E. G. Squier began his exploration of the monuments of Peru, the results of which, published some eleven years later, even today give the impression of a completely modern study.

Thereafter, through the excavations of Wilhelm Reiss and Alphons Stübel in the necropolis of Ancón, whole Peruvian civilizations were brought out into the

light of day, ensuring a continued interest in ancient varieties of culture which was no longer in any danger of declining.

Long before, systematic excavations had already begun in the Tigris and Euphrates region and in Egypt. Botta, and after him Layard, undertook large-scale excavations in Babylonia and Assyria in 1842.

Meanwhile, the study of prehistoric European man had also developed in a surprising fashion. In 1836 Thomsen, in Denmark, published his classification of primitive history into stone, bronze, and iron ages. The Swedes and the Swiss followed with their relative chronology. The French undertook another line of study, working into history from geology, the so-called "palaeo-ethnology" forming the link which joined these two fields closely together.

It was Boucher de Perthes, the famous antiquarian of Abbeville, who discovered the first evidence of the existence of man during the Diluvium, or Quaternary period of the earth, in 1836 in the Somme Valley near Amiens. He was derided at first by the Paris geologists, but finally secured full recognition of his extraordinary observations in 1859, with the aid of the respected English geologist Charles Lyell.

On the occasion of a fall in the level of the lake of Zürich in 1853, as the result of a drought, the whole civilization of a primitive people appeared for the first time in the lake bottom; and excavations near the salt pans of Hallstadt, in Austria, begun as early as 1846, revealed the full range of a civilization of the bronze and iron ages.

The theories of Darwin on the development of species and the transformation of types gave a notable stimulus to interest in the evolution of the human race from the more primitive forms to the historic ones of our time, beginning in the 1860's.

Then, in 1866, a Palaeo-ethnological Congress convening in Neufchatel gave shape to the new science. The following year, at a new congress meeting in Paris, it appeared with the name of "prehistoric archaeology," its definitive title henceforward.

Museums were also being built everywhere, following the urging of the Dutchman von Siebold, who had recommended the installation of "collections of archaeology and ethnology" as early as 1843.

The only undesirable feature of the situation was that at that period ethnology was still considered the more important branch of knowledge, with archaeology as its assistant, charged with the task of illustrating the character of lost civilizations by means of works of art.

Consequently, the excavations in Babylonia and Egypt had, at first, no other purpose than that of bringing to life again the civilizations of those regions. It was more curiosity than scholarly interest which dictated the nature of the expeditions of that time.

Similarly, the first American archaeological collections deposited in the museums of ethnology served only the purpose of giving an idea of the greatness of the civilizations represented and contributed nothing to their study. As a consequence, the museums acquired chiefly collections assembled with the assistance of *huaqueros* (pot hunters), consisting of mixed specimens without indications

of provenience and selected to eliminate the less attractive objects. Cultural differences were not indicated in these collections, and consequently their formation implied the destruction of the cemeteries from which they were made rather than a contribution to our knowledge of the civilizations they represented.

No one thought, at that time, of the possibility of reconstructing the types of the civilizations involved, much less their application to the reconstruction of history.

A scholar of the caliber of Adolf Bastian, who traveled through the chief American countries of ancient civilization and took back with him extensive new materials for the exhibits on ancient civilizations in the Berlin Museum, sadly summarizes the scientific result of the observations he made during his travels by saying that wherever one looks on this continent there appear the remains of great civilizations of the past, but for lack of writing it will never be possible in the whole of future time to reconstruct their history from the tiny crumbs that have remained.

Meanwhile, the studies of Babylonian, Assyrian, and Egyptian antiquities had been organized in the form of independent branches of learning because of the importance of objects found and the variety and detail presented by these civilizations. Little by little they developed an appropriate research method in which cuneiform and hieroglyphic written documents proved very useful.

For Americanist studies as well, the time now seems to have arrived for their emancipation from ethnology. For half a century their representatives have met every two years in special congresses. Their material for study has grown enormously and continues to grow greater daily. They were originally attached to ethnology for the purpose of illustrating ancient types, but they have now developed their own method, with results which would never have been possible under the former dependence on ethnology, the methods of which are diametrically opposed to those which Americanist studies are compelled to adopt by the very needs of their subject matter.

The current method used in Americanist studies is derived from the well-known one of European prehistory, involving the documentation of ancient civilizations by artifacts alone, without the aid of writing.

The use of this method is becoming more and more general among the Americanists of this continent. Even in Mexico, where the old-fashioned ethnological and philological method was followed longer than elsewhere because of the excellent results which this yielded when applied to the rich Mexican materials, a change is now occurring, especially since Boas studied the stratification of civilizations in the ground at Azcapotzalco in 1912.

Modern archaeology can be regarded as divided into several specializations: prehistoric archaeology, Assyriology, Egyptology, and Americanist studies; and new specializations can appear at any time through the further development of studies in such areas as India, China, and so forth. Buried cities have also been studied in recent years in Turkestan, yielding many documents in the Uigur language.

I said at the start that archaeology is the science of the development of the human race from its insignificant beginnings up to its entry on the highway of

modern times. The present separation of its different specializations as independent sciences may appear to contradict this definition and mark it as premature. Nevertheless, the development of the science in this direction is an absolute necessity.

General prehistory, which begins with the beginnings of the human race, has as its objective to trace the development through successive periods, from an earliest age of the use of stone implements through another of the use of bronze implements to a final one of iron implements. The later ages of bronze and iron implements have been studied in Europe. At the same time, Egyptology and Assyriology, in their study of tombs, find a progress from the use of stone tools to others of bronze and finally to tools of iron. Prehistoric archaeology, Egyptology, and Assyriology must, accordingly, meet inevitably at some point in their studies, since the first works down and the other two work up; and combined they can give us a complete history of the development of humanity up to its expansion in the civilizations of medium culture.

The situation of American archaeology is not very different. Primitive stone implements made by man have already been found in nearly all parts of the globe—in north and south Africa, India, Siberia, and China—with nearly the same forms as the ones found in Europe.

The first age of man in America, also one of stone implements, displays the same forms as in the Old World. In America, as in Asia, Africa, and Europe, the first progressive civilizations were raised on the basis of the use of primitive stone implements. Examples of such implements, of the most ancient type known, have been found in Yucatan, afterward the home and place of origin of the highest American civilization. With proof of the theory that American man originated in the Old World, the day will also come when American history will be shown to be directly connected with the development of the Old World civilizations.

Thus we find archaeology, already united in our time, in the midst of neighboring sciences such as geography, ethnology, and anthropology on the one hand, and geology and paleontology, with which it has old associations, on the other.

Geology and paleontology give constant aid to our science, determining the age of strata which contain valuable human remains, either by the succession of geological layers alone or by the age of the fossil animals or plants which they contain. We have already noted that in France the science of most ancient man took geology as its point of departure.

With geography, our science of man, whose dwelling has always been the earth, naturally has numerous relationships. The geographical laws which determine the location of towns, the dependence of the forms of life on conditions of the earth, natural routes of commerce, and migrations also hold for archaeology.

With anthropology, in the narrowest sense of the word, taking it as the science of the features constituting the physical man, archaeology naturally also has many relationships. It is only necessary to recall the variation in physical characteristics in the most primitive tribes, for example, the aborigines of Arica—the thickness of the skull, the proportions and curvature of the long bones, the breadth of the jaw and the form of the teeth—which indicate a certain inferiority and also a greater antiquity for this race than for others which have been studied

archaeologically. The proportions of the head in whole races, whether a tribe belongs to a dolichocephalic or long-headed race or to a brachycephalic or short-headed one, have an intimate connection with archaeological problems such as those of the origin and descent of the tribes and possible migrations. The different artificial deformations of the head in infants present a problem which is ethnological and archaeological in the fullest sense but is also a matter of anthropological concern.

Archaeology has also done a great service to anthropology, giving it a chance to correct its earlier methods in the search for the distinctive characteristics of human races. Anthropology seemed completely lost in wasting its time taking irrelevant measurements of the skull and determining its capacity and brain volume. This earlier work seemed for a long time to be quite fruitless. However, the archaeological discovery of the remains of *Homo primigenius*, with very different characteristics from those of recent man, has shown anthropology which are the essential characteristics in distinguishing human races, and since then it has developed new standards of procedure which now are beginning to yield excellent results.

Archaeology is also in a close and active relationship with ethnology, which studies primitive tribes. It assists ethnology by determining the stage reached in the general sequence of civilization by each of the tribes now existing. It determines the origins of many types and forms, such as those of stone axes, the shapes and decoration of pottery products, and even the ancestry of whole peoples and races which inhabit different parts of the world.

At the same time, it receives help from ethnology, a subject which has the advantage of a better acquaintance with the ways of life of the tribes of today. With this information we can supplement our knowledge of the ways of life of prehistoric man, whose remains are found in the ground only in an incomplete state. For example, the mere fact that the pigmy tribes of the interior of Africa have preserved the most primitive ways of life enables us to say that people of this stage of development in ancient times already had religious ideas.

An archaeologist is never safe in disregarding present customs when he is trying to explain ones of the past. I recall a pertinent example.

Small figures of llamas made of stone or wood, each with a hole in the back, found in Inca tombs, exist by the hundreds in our museums. Their use was unknown and had been the subject of scientific discussion for decades without any satisfactory solution having been reached. Once [in 1905], when I was crossing the plaza of Sicuani, a small town situated between Cuzco and Puno, I noticed similar small figures of modern make being offered for sale. By asking the obvious question I found out that the modern substitutes were still used in a religious ceremony. They were buried with an offering placed in the hole in the back as payment to the goddess Pachamama for the grass eaten by the llamas during a year. In this case the stone figure replaced the sacrifice of a live llama.

The archaeologist who observes the foods and drink of the modern Indians, the ceremonies carried out in their religious festivals, and innumerable other cultural details is continually reminded of the type of culture found in his excavations.

Finally, archaeology has numerous relationships to general history as well as

to the history of art and to the art of our own civilization. The production of art began very early in the evolution of the human race. For this reason, every book on the history of art allots whole chapters to the description of the prehistoric monuments of Europe, the ancient Mexican temples, the marvelous architecture of the Mayas in Yucatan, and the monolithic art of the Bolivian civilization of Tiahuanaco. It is well known all over the world that Inca masonry, in its class, has never been equalled or surpassed in any other part of the globe.

The designs of ancient Peruvian textiles have sometimes been copied, even industrially, producing, in a number of cases, extremely handsome works of art.

The success of a science depends entirely on the method it follows.

"A science can hardly be said to exist until it has a developed system of work, and its possibilities of value for teaching purposes depend entirely on the organization of its methods. Geology was a chaos before the generalization of the successive order of the strata, and the method of the determination of a stratum by its fossils, gave the subject a working system. Astronomy was a maze until the Newtonian laws produced methods of analysis. Chemistry could not be said to have any methods until the use of the balance and the theory of atomic combination made possible the last century of development" [Petrie, *Methods and Aims in Archaeology*, p. 122].

Archaeology also carries out its operations according to certain rules, for the most part quite fixed ones. The development of the science will show the extent to which these rules can be increased, in whole or in part.

Good method is derived from the observation of the relevant laws governing the subject matter studied.

Archaeology has two aims, one descriptive and the other historical. Its subject in both cases is man as a living organism.

For one thing, all existing art objects have an intrinsic interest as creations of man and crystallizations of ideas which perhaps were only produced once. They thus have the same value as personalities. We must always lament, therefore, the loss to human history, and to our knowledge of the breadth of man's nature and thought, occasioned by the loss of any idea which has ever been produced or imagined and which disappears from history without being preserved for the future.

This is the value of the description of the objects which archaeology discovers, a value which has always been recognized and which was formerly considered the chief one, especially in Americanist studies. The cultural interest and value of the objects is preserved in all archaeological work, because every study of existing ruins or excavation necessarily begins with the recording and location of the types found.

In another sense, this activity can be considered only a preliminary in the accumulation of materials from which conclusions regarding the origin, date, and relationships of civilizations are drawn.

When I submitted the report on my first studies made at Pachacamac, some of the authorities of the American university complained that I had gone beyond the limits of my task, which they regarded as restricted to the description of the objective character of the finds. They felt that I should leave the conclusions for

them to draw, an illustration of how narrow the prevailing conception of archaeology was at that time.

Others, when told that the archaeologist ought to know what he is looking for, said that this was nonsense because such calculated purpose would falsify the results.

Nowadays, all the important representatives of the science have a very different attitude toward the matter. It is now generally recognized that the archaeologist ought to know from the beginning what his goal is, and his goal can only be one of a historical nature. The well-known Egyptologist Flinders Petrie states the postulates in this way: "The old saying that a man finds what he is looking for in a subject, is too true; or if he has not enough insight to ensure finding what he looks for, it is at least sadly true that he does not find anything that he does not look for" [Petrie, p. 1].

Many details which are important for the ultimate conclusion can be observed in archaeology only at the instant of their uncovering and are lost as the work proceeds. An archaeologist who merely pocketed the objects with the idea of undertaking a study of them in his office would find that he had left behind most of the observations he needed, in the field, where they remain forever lost. For this reason, at the very beginning of his work the archaeologist should have a thorough acquaintance with the method he will need to follow.

All forms of life, and inorganic substances as well, are subject to the laws of evolution, the determination of which as the most important factor in the movement of the world's affairs is the outstanding result of the scientific discoveries of the last century.

According to these laws, all forms are derived from one another in a regular evolutionary order, appearing successively in time and spreading out in space, changing and perfecting themselves continually to adapt themselves better and better to their environments. In this case they are products of a nature which operates by causes which are accidental at each moment but are controlled by fixed laws. This way of regarding change is the only one consonant with the inductive method of modern science.

Without it, each form of life represents a type which is apparently stable and which, as far as we can observe, is changed only gradually, although the forces behind its change are always active. The appearance of stability is the result of man's limited capacity for observation. Continual change is the eternal law of the world.

We can thus speak of types, but the types are not lasting. What is true for living forms is equally true for the products of art or for ideas, these being the effects of living forms, and indeed for all the elements or external types of culture.

These conclusions, derived from the fundamental laws of all the inductive sciences, form the basis of the method which archaeology applies in its operations in order to secure results of permanent validity worthy of being recognized as advances in our knowledge of the origin and development of the human race.

A cultural type forms to some degree a personality, composed of various elements consistent with one another. The type strives to preserve itself, but it cannot do so, because the law of change, influenced by a variety of factors, internal,

external, or externally accessory, is always active. There exists within the type itself a certain inertia or resistance to change, but internal or external influences always change it.

Small involuntary variations, with their effects concentrated, produce constant change in the type. The development is slow and easy. "Nature makes no jumps" we say with good reason. Furthermore, a type is always related to some previous type by the connection of having developed from it. Consequently, there are no creations from nothing—there is nothing completely new. Each form, each type, each ornament has its antecedent which formally resembles it. No one invents a design without remembering, even though subconsciously, others he has previously known. Similarly, the shape of our knives is not the product of the free imagination of some original inventor but is derived from the shape of blades split from a stone nucleus which served as the knives of primitive man, and the shape itself consequently represents nothing more than the reproduction in another material of the original shape of the knives of primitive man. The copper or iron axe of today preserves the shape of the original stone axes. The well-known copper or bronze knives of the Incas, shaped like a T, reflect the shape of a segment of a circular stone which once served the primitive tribes of the area as a knife, and the change of shape amounts to no more than the addition of a handle which makes up the vertical part of the T.

The intrinsic inertia of types, taken together with gradual changes to keep them always adapted to the environment, and the continual reaction of types upon one another with influencing back and forth give us, in consequence, the fundamental law of change in ethnological and archaeological types and, furthermore, an adequate basis for a method of recognizing the type of civilizations, the changes that take place in them, and the causes of these changes, whether internal or in a particular way brought in from outside.

In a similar fashion Spengler has tried to explain the origin of the Spanish culture type. On the soil of Spain various types of culture mingled continually, aiding or inhibiting each other in the process. Each type of civilization seems to him to have the characteristics of a personality, with distinctive tastes, ideas, and qualities. Each one, meeting another which is different, must make an adjustment, even one involving resistance, and it is lost if it cannot win its battle. In their old age, civilizations become paralyzed and send out below the surface new offshoots by a process which he calls pseudomorphosis. He considers civilization to some extent as a paradigm of the occurrence of such pseudomorphoses, its whole character consisting of forms produced by the struggle of different cultural types.

Obviously, the ways in which the general principle of archaeology is applied can be refined to a certain extent with the advance of the science and the natural growth of its results, but no basic change in the method is possible.

The results which have been achieved by the application of this method are already enormous in number and importance. Equality of style must equal equality of time and equality of culture. On this principle, numerous types of culture formerly unknown have been determined with respect to their content as well as with respect to their geographical extension.

Furthermore, it has been possible to determine, in the same way and almost in every case, their relative position in time, their source, and their relation to later types of culture; and innumerable series of successive culture types have been built up which now form the basis of our knowledge of the origin, early development [and progress of mankind (The text is obscure here).].

Since the change of one type of culture to another is produced chiefly through the influence of neighboring types, we have also learned, in this way, the numerous forms of connection between one type and another, and thus have been able to construct a true history of the types of culture in different regions of the world, a history which daily is being extended further by endless new discoveries.

These great results attained in the definition of the past, of generations which are thousands and thousands of years removed from our time, are ample recompense for the unavoidable fact that this type of history has a more summary character than that based primarily on written documents; without archaeological studies we would know nothing about the origin of our species and about the events of immensely long later periods. In the possession of this knowledge we should feel ourselves richer than with the often less significant details of modern history.

LECTURE 2, MAY 16

Paleontology and archaeology—The antiquity of man in America—Ameghino's theory—Methods and aims of archaeology and archaeological evidence—Chronology and archaeology.

I discussed in my first lecture the origin of archaeology, how and from what necessities it arose, the specialties into which it is divided, and the general bases of its method, which differs from the methods of other sciences because, in undertaking the task of writing the history of the human race without having literary documents to consult for the greater part of his work, the scholar must depend on material remains left in the earth, which naturally demand a different treatment from written works.

We have also seen that the science has from its early days been divided into different branches, such as prehistoric archaeology, Assyriology, Egyptology, and studies of ancient American man, and that, with the discovery of further varieties of civilization the number of these branches may increase in various ways in the future.

Recognizing that each of the branches of the science has its special method adapted to its own conditions, I propose to explain in the present lecture the principal rules which govern Americanist studies, according to the circumstances encountered in this field. They are the rules of most immediate concern to those of us who live in American countries, and we have constant occasion to apply them. All of us, even those who will never dedicate themselves to this study, may be interested at some time or other to know how a discovery may throw light on the history of ancient American man.

In contrast to other specialties of our science, Americanist studies include an interest in two periods of different character. First, in studying the period of the first inhabitants of the continent, Americanists seek to find out how long ago these people settled it, whence they came, and what has been their fate up to

the time of the beginning of the American civilizations. Second, in studying the period of the civilizations themselves, they try to learn how these civilizations originated. The study of the first period is undertaken, in large part, by paleontology and anthropology, since it involves examining the original racial type and comparing it with others, or investigating remains found in geologically ancient layers or in caves associated with the remains of extinct animals.

Florentino Ameghino, for example, was the author of a theory that the human race originated in the preglacial period in Argentina. This theory has already been rejected by North American geologists and anthropologists, who proved that the geological levels which contain these human remains are of more modern origin, that the types of skulls found correspond to those of modern Indians, and that the artificial deformations of the skulls assigned to the Tertiary and Diluvial epochs are comparable to those used in the period of civilization. The study of the types of deformations and the determination of the period when their use began in a particular part of the world is, of course, also a matter of great interest to archaeology.

In the soil of the Argentine pampas, fragments of pottery have been found beside the bones of extinct animals such as the glyptodon, an association which appears to indicate that men of advanced culture were contemporary with such fossils. But archaeology must show that this pottery certainly originated long after the Quaternary, and hence suggests that the animals in question survived much nearer to our own time rather than that men of advanced culture lived in the Diluvial epoch contemporary with these animals.

Similarly, it was claimed that some finely made stone mortars were found with a human skull in the Tertiary or preglacial layers of a California gold mine; but they could not have belonged to that period because man only began to manufacture such objects late and in relatively modern times.

Some excellent anthropologists have claimed that there is no need to attribute a greater antiquity than about three thousand years to American man, basing this conclusion on the distribution of the American population in only three races, the first of which, according to this theory, reached South America only a few centuries before our era. Such narrow time limits are unacceptable to archaeology, which must explain the great diversity of the American nations, considers that their record goes back at least three thousand years from the present, and looks for an origin before that. Hence, the conclusions of anthropology must be based on some error which it is the duty of archaeology to correct.

Similarly, the discovery of types of stone implements resembling the oldest ones used by the human race in various parts of the continent, for example in the lower levels of ancient shell heaps, indicates the arrival of man in the continent in a very early period, because there can be no suspicion of a continuation of the connection in very recent centuries in America or in Asia.

Likewise it has been said that the general use of pottery in the New World indicates that man could only have migrated there in some postglacial period contemporary with or later than the one which marks the invention of pottery making in Europe. Archaeology, however, shows that the supposed general distribution of pottery did not exist in ancient times in this continent, and that

consequently American man arrived in an earlier period and pottery making was introduced and its use generalized only later on.

The discovery of axes of an extremely primitive type buried in strata of geological antiquity in Patagonia and on the surface of such strata in the United States is a fact which closely concerns American prehistoric archaeology; hence it is necessary for an archaeologist who concerns himself with the history of man in this continent to be familiar also with the rules and method of European prehistoric archaeology, so as to be prepared at any moment to pass judgment on problems and questions related to the antiquity of man.

Sometimes also it is only the archaeologist who can determine whether objects found with the remains of animals of truly Diluvial origin, as, for example, slivers of bone in Californian caves, have the character of human artifacts, in order to determine the presence of man at the same date as the animals.

I will now turn to a discussion of the method which is needed in the study of more developed civilizations.

Flinders Petrie, the famous Egyptologist, has attempted to set up certain rules dealing with this subject. The twelfth chapter of his useful book *Methods and Aims in Archaeology* deals with archaeological evidence and begins as follows:

The nature of proof is more complex than it seems to be at first sight. True enough, all proof is merely a matter of common sense; it does not appeal to any different faculty. And though a proof may follow as simply as possible from the facts, yet it cannot be understood by one who is not familiar with the facts to begin with. Trigonometry is the most obvious common sense to any one familiar with the formulae; and the formulae themselves are only common sense to any one who takes the trouble to argue them through. Yet, for all that, trigonometry is not obvious to the ignorant. In the same way the evidences about the past of man are simple and clear when the facts and methods from which they are deduced are already known. Yet it requires a good familiarity with the material before the conclusions can be felt to be self-evident results [p. 136].

Petrie then classifies archaeological evidence under four headings, which he takes from legal evidence: witnesses, material facts, exhaustion (that is, exclusion of other possibilities), and probability.

The evidence of witnesses, of the exclusion of other possibilities, and of probability appeals directly to the most obvious common sense and is used in all sciences; there is nothing distinctive about the logic used in archaeology. These classes of evidence can thus be eliminated from the list of rules which are peculiar to our science. There remain material facts; and although it is certain that few archaeologists are capable of utilizing them with such skill and ability as Petrie does, it is none the less true that the explanation he gives in the following twenty-eight pages [pp. 141-168] is more a series of examples of the application of the method than a set of rules for its use.

The principal rules, themselves resulting from fundamental scientific law, remain to be explained so that anyone will be able to apply them at any time.

We have already seen that equality of style in certain objects implies equality of date and also of culture. Styles are consequently an index to the type of civilization. Civilizations resemble personalities, which are permanent or change according to the influences brought to bear on them. The principal procedures of

the archaeologist consequently consist of the definition of cultural types, the observation of their variations, the determination of the causes of these variations, and determination of the relationships between civilizations and the influences which they bring to bear on one another.

There were formerly a number of archaeologists who considered the types of civilizations as things that were fixed and never changed. The limited temporal duration of these types seemed to them a strange idea. They considered different styles as indicating different civilizations existing alongside one another, all contemporary because they were found side by side in the ground, and characterizing only different neighboring tribes. They had no thought of a succession of styles.

They also explained the designs found as entirely lacking precedents; hence their interpretations often were very peculiar. In Americanist studies, the first thing that had to be done was to introduce the idea of time, to get people to admit that the types could change. We now have several sequences of types in Peru, Bolivia, northern Chile, Riobamba, Ambato, Azuay, Cañar, and Loja, succeeding one another in time; and it is only in this way that ancient history can be reconstructed.

The speed with which civilizations develop can vary according to circumstances, some remaining more stable than others. Some types of shape or design, if of simple nature, may continue in use without change for many centuries, such as the small rectangular baskets used in Peru for holding spindles and other spinning equipment, or cooking pots of a primitive and natural type.

The rate of development in the scale of civilization can also vary. Thus, the culture of the Indians of eastern South America has remained backward in comparison with the types of culture of the Andean highlands and of the west coast, wherever this latter area was suitable for advanced ways of life.

In the countries around the Mediterranean, culture developed more rapidly than in the countries of northern Europe. The Lacandonese of Yucatan, a people of the same stock as the other Maya, have remained primitive, whereas numerous tribes of the same family reached the peak of American culture.

Lake dwellings on piles, a trait which can appear repeatedly at certain levels of development, appeared in Italy between 2000 and 1000 B.C.; in Roumania and the Caucasus about 500 B.C. They are still used in New Guinea and also in the Lake of Maracaibo, where the pile dwellings of the Carraus [*sic*; Paraujanos] can be observed even today.

It was formerly believed, also, that the most primitive forms of stone implements found in America must indicate the same glacial antiquity for man as in Europe, whereas the fact is that the development of these forms was slower and its duration longer in other regions than in Europe.

The term "convergence" is used to designate the independent appearance of the same shapes and designs of artifacts and of identical customs in different parts of the globe, when these are due solely to a law of natural development, an example being the volute design. The mere appearance of this design in Greece or Egypt and in ancient Peruvian or Central American art does not, in consequence, indicate a historical connection between these civilizations. Frequently enough, inexperienced observers think they see a similarity between types of civilization where

none exists, usually on the basis of a general impression which is without justification. In all cases, a careful comparison of details is necessary to establish relationships between civilizations.

Convergences exist between numerous types of culture, but in matters of detail rather than in the type of each particular civilization as a whole.

One of the most surprising convergences is one of shape, technique of manufacture, character, and detail presented by certain large pottery vessels made in Attica in Greece in the eighth century B.C. which, in spite of the peculiarity of the style and the infinite complication of the details of the decoration, are so similar to the corresponding Inca vessels that it would be very easy to mistake one for the other. There can be no historic relationship, because no type created more than two thousand years before the Incas could be preserved unaltered for so long a period, according to the unbreakable law of the eternal change of types.

Such extraordinary exceptions to the law that individual types always characterize a single time and a single culture are extremely rare in the history of civilizations. In any case, they can well be merely reflections of a similar mental state, for the human mind also follows eternal laws in its development. Thus, in a certain stage of the general evolution, complicated forms which are entirely alike may be produced, although usually only on a larger scale.

Looked at from this point of view, the parallelism between the immediate precursors of Greek art, the most classic art thus far produced in the world, and Inca art, arouses speculation about the destiny of Inca culture if, instead of being cut off by the sword of Pizarro, it could have continued for some centuries more as one of the flowers of the development of the American civilizations.

Since differences of style indicate differences of culture or of date, and equality of style in objects indicates equality of date and culture, it follows that pieces representative of a particular style found at some distance from their original home demonstrate the transportation of the cultural form from one region to another, and, in consequence, commercial relations or migrations of people.

It makes no difference whether the distance between the two points is small or great.

The equivalence of a style found in some part of Ecuador or in another South American country with Mexican or Central American styles consequently is evidence of the migration of people from the latter regions, no matter by what route it took place.

In this way it was possible to establish the fact that the Maya people, of Central American origin, occupied great stretches of the Ecuadorian coast and laid the foundations of civilization in the highlands as well, from Loja to the region of Ibarra.

Similarly, it was possible to prove that Central American civilization had been taken to the south coast and to the interior of the United States.

Inca culture, like all other cultures, had its peculiar style and its own type. At first it was not recognized as such, but the preponderance of the style in great collections from Cuzco, the seat of Inca government, led to its identification. Similar remains scattered all over the Andean area from Mendoza in Argentina to the Colombian border enabled archaeology to verify the reports of the

extension of Inca conquests in South America; and innumerable remains of buildings, temples, palaces, and fortresses, identified by their Inca style, then gave us an explanation of the character of the methods the Incas used to facilitate the incorporation of the conquered provinces into their empire. Similarly, we were able to determine that, many centuries before, the civilization of Tiahuanaco, the monuments of which are preserved on the shores of Lake Titicaca, spread its influence as far as Catamarca in Argentina and northward to Riobamba in Ecuadorian territory.

Not so long ago, similarities of detail between widely separated civilizations attracted little attention as indications of the relationship between the civilizations. Now, however, the reason for the existence of these relationships over so broad a geographical area has become clear. The trait of indicating a second mouth in human figures, found both in northern Chile and in Costa Rica, and the identity of certain fishhooks found on the coast of Florida with those from the Peruvian coast and the coast of Chile as far south as Antofagasta, are results of the diffusion of the civilizations of Central America—a diffusion which, in ancient times, united the coasts of Chile with the distant shores of the United States.

Likewise, elements of one style copied in the artifacts of another demonstrate the existence of relationships, whatever the nature of these relationships may have been.

It has been believed at times that the Incas were a people of extra-American origin, but the complete repetition of coastal styles of the same latitude in the Inca style is sufficient proof that Inca civilization developed in its own home, the American continent.

Numerous pottery seats were excavated in the search for tombs containing gold in Cerro Narrío near Cañar. They belonged to a style which at the time seemed new and difficult to explain. However, seats of identical form and decoration have since been found in Costa Rica, and this discovery establishes the Central American origin of the style.

The frequency with which objects are transported in commerce to other regions should not be forgotten either. Commerical relations and commercial routes are almost as old as the human race. From the earliest times, flint, deposits of which occur only near the northern coasts, was traded almost all over Europe for the manufacture of stone implements. The Phoenicians sought tin for their bronze in Spain and in the British Isles. After the end of the Stone Age, there was a sea traffic between Greece and Egypt in oil, hides, wood, dates, grain, and so on; and as early as the time of King Agamemnon precious electrum was brought all across Europe from the northern coasts to Mycene.

We have found no traces of the trade in cloth which is authenticated for the time of Pizarro all along the northwest coast of South America. However, pearls, which are not found in Peruvian seas, have been found in tombs in the valley of Lima, and fragments of the red shell of *Spondylus pictorum* and similar shells which exist only in the warm seas around the central part of America are found spread over the whole Andean region to beyond the desert of Atacama; these shells, then, are the products of a commerce carried on in South American seas

perhaps over a period of thousands of years. Bits of volcanic glass, or obsidian, can be found in tombs and in the soil of settlements throughout Ecuador, although this material is generally not found in natural deposits; it must have diffused through trade. The frequent discoveries of shells from the Pacific Ocean on the other side of the Cordillera on Argentine soil might also be mentioned.

However, to explain the presence of many of the objects found in foreign territory as the result of commerce would do violence to the facts. Such objects are often the best evidence of the influence of other civilizations and of changes in the native culture as a result of it, especially if the objects, as has happened several times in Central America, are stone sculptures which no one would be likely to carry along simply for trading purposes. Those who disbelieve in cultural change have overemphasized the importance of trade, since this factor would not affect the stability of cultural types.

It has been suggested to me a number of times as an objection that a superposition of two great types of civilization in one place might be matched by a sequence of the same types in the reverse order in another. For example, the civilization of Tiahuanaco, which existed earlier on the shores of Lake Titicaca, might have arrived later in the region of Trujillo. This suggestion defies the law of equivalent styles occurring only at a single time, this law having the implication that even when the styles are found in another country they represent the same date. In the Old World, the interchange of products between the civilizations of Egypt and Mycene proved their absolute contemporaneity at the points of origin and destination. The exchange of objects between contemporary civilizations at Pachacamac and Trujillo has confirmed the same rule.

Because of the necessary contemporaneity of the same civilization in two places, it was possible to establish that the Maya style of Cuenca, which is of Mexican origin, must have dated from the same period in Mexico also. The implications of this fact served to correct the whole chronological system recently put forward for ancient Mexico.

I want to add to the discussion of the general laws an account of some rules which will facilitate the archaeologist's work in special situations.

Sometimes traits of one period are found combined with those of another. Then the archaeologist must be very discriminating to avoid errors.

For example, sometimes the same tomb has served for burials in two different periods. The usual consequence is that objects of the two periods are found mixed up together and all may be taken mistakenly as representing one of the periods, with resulting distortion of the picture.

Sometimes stone implements of one period have been re-used in another, with some reworking in the later style. The combination of the two methods of stone working in such artifacts may lead to a misinterpretation of one of them if the archaeologist fails to distinguish between them.

Large-sized huacas of the Proto-Nazca period in Chincha valley, with numerous pits dug in their surfaces, appear to belong in all details to a single period. Excavations in the sides of the pits brought to light burials with Inca objects. It would, however, be a mistake to consider the whole huaca as an Inca construction or to attribute the tomb type to the Proto-Nazca period to which the huaca itself

belongs. The fact is that the Incas were looking for dry ground for burials and took advantage of a much older temple.

Town sites have generally been occupied in a number of different periods. For this reason, it is a great mistake for museums to exhibit collections of ancient objects excavated from a single cemetery at one of these cities—Pachacamac for example—as representative of the historic character of its whole occupation. The city of Rome has existed for more than twenty-five centuries and has seen a great number of different periods pass over its soil. The city of Constantinople is more than fifteen centuries old. Berlin is constructed on the site of an ancient Slav town. Cuzco is a city of at least two periods, the Inca and the Spanish. In the streets of various modern towns in Bolivia, fragments of pottery can be picked up from the ground. Even the character of cemeteries is sometimes mixed. Furthermore, modern cemeteries can sometimes be found laid out in the middle of ancient ones. Hence, it is the constant duty of the archaeologist to try to find all the periods represented in a particular place by careful studies. The histories of Pachacamac, of the fishing village of Ancón, of the city of Cholula in Mexico, and of the ruins of Moche and Chanchan near Trujillo in Peru are good examples of the occupation of a single site during several periods.

Another type of error may arise from the attempt to judge the age of certain remains from the depth at which they are found. Because of recent floods and landslides the level of the ground may have risen, increasing the depth at which tombs or isolated objects of recent type are found. Such objects have been found in various parts of the United States at depths of more than six meters and have been taken erroneously as evidence of very ancient man. Sr. Jacinto Jijón y Caamaño, working at Quimsacruz, near Quito, found graves at a depth of twelve meters because the original ground level had been covered with new soil brought down by the rains from Mount Pichincha.

In front of ancient temples, ancient burials often occur at great depths because of the collapse of parts of the facade, when the temples are built of adobe.

Even when there are no floods or landslides, the depth of graves is no sure indication of their relative antiquity. It was therefore a mistake when a recent writer considered the most ancient Argentine graves as being of relatively recent origin on the ground that they were found near the surface of the earth. The graves of the aborigines of Arica are found for the most part at a depth of only thirty to fifty centimeters below the surface of the ground; those of the early Proto-Chimu period in Peru generally at depths of one and a half to two meters; Inca burials rich in gold and belonging to the latest period are found near Ica in Peru at a depth of seven meters.

In many cases the earliest men did not yet have adequate tools for digging holes in the earth; their respect for the resting place of the dead, however, was often stronger than in later periods, so that there was no need to bury their dead deeply in the earth.

The difference between the level of the ground at the time the graves were dug and the present level should always be carefully noted, however, because it may indicate the relative antiquity of the various graves. Each year the Nile

deposits a new layer of earth over the ground, and the rise in ground level can be used to measure the antiquity of the remains.

An archaeologist's conclusions from obvious facts may be premature in some cases and much too slow in others. In all his observations the archaeologist needs to exercise a calm and serene judgment, but also a decisive one.

A slide of Tertiary strata in the neighborhood of Cuzco exposed a walled grave, and some archaeologists attributed to it an antiquity of sixty thousand years, without taking into account the scanty probability of so great an age or the fact that the wall was of Inca-type construction. A second expedition was necessary to correct the mistaken estimate of the chronological position of the grave.

In the ancient lake dwellings of Switzerland, enormous quantities of nephrite and jadeite axes were found, and these specimens attracted attention because the materials were not common in that area but were native to Persia and China. It would have been too hasty to conclude that the materials for these axes had been traded from Persia and China to ancient Switzerland without first studying the geology of the neighboring country and taking into account the small probability of such an importation taking place just for Switzerland. In the end, nephrite and jadeite were found in the Swiss rivers, and this discovery yielded the expected solution to the problem.

The archaeologists who did not accept the fact of Greek influence in the earlier periods of Egypt, in spite of the presentation of the evidence over long periods, were too slow in their judgment. They held back the progress of the science unnecessarily by their hesitation.

The evidence for Maya influence on the earliest South American civilizations went unrecognized for many years until the discovery of a Maya civilization in the Cuenca region changed the course of existing theories.

Faced with the question of the existence of an ancient Cara empire in the Quito region, of which P. Velasco has told us much, and of the presence of the Incas in Ecuadorian territory before their spread from the region of Cuzco, the archaeologist finds himself in somewhat the same position as those who defended Greek influence in Egypt. In spite of the fact that the abundant existing archaeological materials offer no confirmation of the theories mentioned, there are always some people who attribute more value to tales and traditions than to conclusive scientific evidence. The existence of an ancient Cara empire in Ecuador cannot be accepted archaeologically, because nowhere do we find evidence of a high civilization of the type postulated, extending over different provinces, and nowhere the unity of provincial types which should exist as the consequence of imperial unity if there is a single grain of truth in the traditional stories. Furthermore, neither the style of archaeological finds nor the geographical names confirm the arbitrary legend of an earlier presence of the Incas in Ecuador. The value of archaeology in forming conclusions is absolute. The whole ancient history of Ecuador can be easily put in order after the elimination of these ill-founded tales and legends.

Up to this point I have been discussing the general laws and practical rules which govern the study of any kind of somewhat more advanced civilization.

We have already seen, however, that each archaeological specialty has its own special method determined by the nature of the material available. Egyptology

thus has a method, and we should not expect that Americanist studies, which deal with rather different materials, should have exactly the same one. Studies of the Copper and Bronze ages in central Europe will also present conclusions of a somewhat different nature.

This last field took as its point of departure a period division based on the materials used—stone, copper, or bronze. Certain types of culture were then given special names derived from the names of places where they are most typically represented. The development of the study of Greek culture, as at Mycene, led further to the establishment of cross dating between features of the northern civilizations and those of Mycene, and thus provided a sort of comparative chronology which can be improved further in the course of time.

Egyptology is in a very fortunate position from every point of view. In Egypt there are thousands of well-preserved tombs from many periods. Many of them are situated on the edge of the desert, where they are less exposed to depredations than are those of most American regions, where the ancient cemeteries are often close to modern towns and have excited the activity of *huaqueros* until tomb plundering has become almost an honorable profession. Egyptian tombs usually contain a variety of pottery objects. Egyptian pottery has a great variety of shapes but less variety of ornamentation than is found in the pottery of the American civilizations. Egyptology's greatest advantage consists in the use of writing, beginning with the fifth millennium B.C. Even in tombs of the First Dynasty, about 3400 B.C., stelae carved with the names of kings are found.

Flinders Petrie, not content with comparing ceramic types, undertook the formation of a catalogue, or corpus, of the pottery types existing in Egypt, and after listing about one thousand shapes in this way he estimates the total number necessary for all Egyptian pottery at about three thousand.

Designating each type with a number and a letter, he can record the content of all graves in an abbreviated manner, and graves found after the system is set up can be dated from the variations of types found in them as if in a statistical chart.

The method of American archaeology must be different for various reasons.

The number of graves available for study is now much reduced because of the continuous and still uncontrolled activity of the *huaqueros* all over the continent. Furthermore, the graves of many periods are poorly furnished with objects through which we can study the civilization of the time. Writing is lacking. The character of a number of civilizations is not very precise as revealed in its objects, which are consequently less well suited to the formation of a corpus, or general catalogue, of all the shapes of the civilization. Inca civilization, that of Tiahuanaco, and several Ecuadorian and Peruvian civilizations of Maya origin are exceptions to this statement.

On the other hand, it is an advantage that in most parts of the continent there have developed a large number of small civilizations, varying from province to province and often from valley to valley, which thus furnish materials for the comparative study of the types.

There is also a great variety in the pottery because of the extensive use of painted or incised ornament, and this variety is an additional advantage in comparative work.

In all civilizations, pottery products are extremely useful for the identification and comparison of the civilization. The multiplicity of features found in the paste, technique of manufacture, shape, and ornament especially attract the archaeologist's attention. Pottery products change more readily than art objects because of their great fragility; they break and must be replaced frequently, and thus facilitate a constant change in type. For these reasons they merit being taken as a guide, in archaeological work, for the identification of types of civilization in the same way that remains of extinct animals determine the age of layers in geology. The great development of pottery art in the American civilizations makes up in many respects for their other defects, even to some extent for the lack of writing.

One of the easiest ways to determine the relative age of decorated vases, or figured textiles, stone, or metal when these are available, is by comparing the designs with similar ones in comparable objects. There is a law governing the development of design, namely, that representational ornament breaks down and degenerates in the course of time until it becomes purely geometric. Examples of this process can be found in all parts of the globe. The law rests on the fact that people's mentality is not capable of maintaining the representational type of design when it is introduced in their art, partly because of the law of general weakening, as in the development of writing, which was originally figurative and developed later into hieroglyphs and abbreviated characters; partly because tribes of inferior mental development who try to imitate the designs of a superior culture are not able by themselves to maintain the level of the original concepts. A more broken-down representational element is consequently always less ancient than another which has better preserved its original form. The existence of designs derived from representational ones in itself indicates the previous existence of a higher culture from which it is descended. By the aid of this principle it was possible to recognize that the civilization of the Mound Builders of North America originated in civilizations of higher type, even before the discovery of its Maya origin.

Following these laws, it is not necessary, in spite of what Flinders Petrie says, to know the point of departure of a development in order to determine the direction in which it proceeds [see Petrie, p. 128].

The reverse idea, that geometric ornament may, through a slow development, be transformed into representation, is the product of ideas elaborated by theoretical ethnologists working in museums, where they have plenty of opportunity to form abstract theories without verifying them against practical observation in excavations.

Another belief formed in this way is that the origin of ornament is to be sought in the technique of manufacture. Threads crossing at right angles in textiles would, according to this theory, be taken as the origin of ordered design, completed later by the introduction of representative ideas. Taking this theory as a base, there have even been attempts to invert the whole chronological system of civilizations, taking the earliest designs for the latest and designs with textile ornament as the earliest.

It was easy to set things where they belonged in this case by the evidence of

excavation. Thus, archaeology supplies theory to ethnology, and there is no reason why it should accept the reverse influence.

The volute in ancient North American civilizations, which derives from technical processes, offered no explanation of the origin of the civilizations. The key to their origin lay in representational designs derived from Mexico, indicative of the source of the whole civilization.

Sometimes archaeology is assisted in its task of determining the relative age of civilizations by stratification, the superposition of the remains of one civilization on those of another. Such observations were the starting point at Pachacamac for the chronological arrangement of civilizations and were used later on at Trujillo and in other places.

The great number of different types encouraged us from the beginning to make up the full series of civilizations represented in each valley or each province, as far as possible without leaving gaps in the complete series. This procedure was relatively easy because of the general parallelism and contemporaneity of the civilizations in different regions. The arrangement itself showed up any gaps there might be in the series, and they could then be filled by more active study in the direction indicated.

The different profiles of the development and succession of civilizations in different areas, when matched against one another, revealed without more ado the sources of each of the civilizations, in the same area or in another where the same type had been preserved. Thus it was possible to obtain the whole genealogical tree of the civilizations.

There are two kinds of chronology, absolute and relative. The first arranges events by dates taken from chronicles or successive governments, or carefully determined from coins (see Petrie [p. 127]). Relative chronology only puts them in order among themselves, as, for example, in the arrangement of the stone, bronze, and iron ages as successive. The whole arrangement of prehistoric periods in Europe was at first only by relative chronology.

Chronological arrangement of civilizations is the most important task and aim of all archaeology. With the determination of the sequence of civilizations in different parts of South America, fixing the *ante quot* and *post quot* [sic] of each of them, we have secured a chronology as the first important result of this work.

Ethnologists, and sometimes archaeologists as well, have believed that archaeology is only good for arranging civilizations in a chronological sequence, in Europe and elsewhere, but that it will not explain their origins one from another. Nevertheless, it must be observed that if civilizations have a foreign origin, as Hallstadt, for example, has an Etruscan one, their origin cannot be explained in the country where they exist. In many parts of America, in the south, for example, the civilizations have a mixed character. They go back in part to others which preceded them in the same area and in part to influences received from foreign civilizations. Nevertheless, all can now be explained, and consequently it is unjust to assert that the task of archaeology is ended when the civilizations have been arranged in order. The only thing lacking is the determination of their absolute age.

The determination of the relative age of a civilization naturally is only an insufficient satisfaction of our curiosity. I have frequently been faced with the question of how old, in an absolute sense, the marvelous civilizations of South America are; and recognizing the propriety of such questions on the part of interested people, I thought to find an absolute relative measurement in the average of the duration of periods of similar culture in other parts of the world, such as those of Crete, ancient Greece, and central Europe. Five hundred years for each period seemed to me a more or less reasonable span.

In the absence, at first, of any better method of measuring age, this procedure seemed enough to prevent anyone from attributing a very recent origin to a civilization separated from our own time by one year or several thousands of years. I thus arrived at the conclusion that the first South American civilizations must have had an antiquity of two or even three thousand years, certainly not less; and later work proved me right.

However, American archaeology still was in an unfavorable position in comparison with European prehistory, at least so far as the important civilizations of South America were concerned. Many periods of central Europe could be placed in relation to others elsewhere, such as those of Etruria, Mycene, and the ancient Gauls, but nothing similar could be done with the postulated dates of the ancient South American civilizations.

All this has now changed, thanks to the discovery of their connection with the better-dated ones of Central America. Since the earliest South American civilizations correspond in style to known Central American ones, it is clear that the dates of the South American civilizations must be the same as those of the identical Central American ones, according to the law of the contemporaneity of civilizations of the same type.

The Maya monuments are marked with dates expressed in hieroglyphic series, which, through the laudable efforts of the Mexicanists can now almost all be read. These dates correspond to a calendar which distributes time in cycles of 400 years and periods of 20 years, and the years in 18 months, each month containing 20 days. We now know that the calendar began approximately with the year 3450 B.C.

There was still a difficulty at first in determining the relationship of this calendar to dates of the European calendar. Furthermore, we have dates in the Maya calendar only for a period of time of about six hundred years.

A number of different Maya dates were suggested as equivalents for dates in the European calendar, and the count was then made in different ways. There were differences, in the calculation, of as much as eight hundred years. Fortunately, the relatively great antiquity of the first South American civilizations which were parallel to Central American ones allowed us to exclude the possibility of very recent dates for materials contemporary with the South American ones. Because of the long sequence of civilizations in South America, the beginnings of the South American development could not have occurred as late as about A.D. 1000, for instance. With the mere elimination of this possibility there was no longer any great difference of opinion regarding the date of the start of the Maya calendar and its correlation with Christian era dates. The calendar

correlation established by the North American Bowditch, with minor later corrections, is the one which is now accepted. We thus arrive at the date 3450 B.C. for the start of the Maya calendar. Accordingly, the date Cycle 9, Period 3, found on one of the monuments of the ancient Maya city of Tikal in Yucatan, corresponds roughly to A.D. 210, and gives us the date of the associated monuments.

Designs identical with those on the monuments of Tikal—for example, representations of birds flying with the wings spread—have been found in the Proto-Nazca style of Peru, with the result that we can now be absolutely certain that the great development of the Peruvian civilizations began about the year 200, a date which can be confirmed in another way, because the same type of design figures is found again in the first Toltec monuments of Teotihuacán near Mexico, representing a civilization which is likewise generally calculated to have begun about the year 200.

All that now remains to be done in order to fix the majority of the dates for the South American development is, then, the preparation of a very detailed chronology of all the types of Mexican and Central American civilizations which, in different centuries, diffused their influence to the South American ones. Thus far we have adequate dates only for the first South American civilizations of Peru and Ecuador. There is hope of determining dates down to about A.D. 600 because Central American influence in South America lasted several centuries longer, the corresponding period in Central America being well dated.

In establishing a perfect chronology of the Central American civilizations, it would be very useful to assemble a corpus of all the forms existing before these civilizations, together with a complete record of the presence of each of the forms in the graves. This record would also be useful in facilitating the systematic recording of the South American civilizations.

Sr. Jijón undertook the formation of a corpus of the pottery types represented in an Inca cemetery of Quito and of other types from the region of Imbabura, but without a record of their individual occurrence in the graves. If such a record had accompanied the descriptions, this corpus could have proved useful at some future time in reconstructing the development of the civilizations of South America.

LECTURE 3, MAY 31

Rules for archaeological research and advice to the investigator—The principal elements in the investigation: the investigator, the objects found, and how to study them.

In my earlier lectures I discussed the foundations of the science, defining the term "archaeology" as the designation of the science of the beginnings of the human race and its progress toward civilization, so far as its history can be deduced from the remains or traces hidden in the ground.

We also set forth the method needed to read the history of the past in these documents.

Our explanation of archaeological science would be incomplete if we were now to proceed directly to the presentation of its results. The quality and quantity of the results themselves depend heavily on research practice and on the way the

studies are carried out. Consequently, I must answer the question which has often been put to me: "But how do you find all the things you do?"

I have no doubt that the more fully I can explain the way the results of archaeology have been achieved, the greater will be your appreciation of the results and the greater the personal interest you take in the science. Furthermore, each of you can fit himself to make observations which will be profitable to this science when occasion arises, and there are always opportunities.

It seems to me, further, that I would fail to do justice to the dignity of this University, which is preparing to establish a new Faculty of Philosophy and Letters, one of the tasks of which will be the cultivation of history, if I tried to describe only the problems and results of this science without showing also how the results have been achieved.

I will therefore discuss the practical procedures of archaeology in this lecture and the following one, and I am sure that this method of presentation will increase my hearers' interest in the exposition of the results to which these procedures have led.

I can picture the condition of the continent when it was still empty of man and occupied only by animals which originated in it or had immigrated in recent geological periods. Man arrived, either by origin in this continent or by immigration from some other regions of the world which were already inhabited. The new occupant left remains of his history in all parts of the continent. How can we profit from this evidence, in large part hidden, for the reconstruction of the past up to the beginning of the new era which commenced with the entry of the European race? To achieve this result we need first of all a great network of systematic observations, continually reduced to order in the form of conclusions.

The effectiveness of the observations for the end desired depends entirely: (a) on the personnel engaged in making them; (b) on the sum of the objects available in each case to give us information about the history of the past; and (c) on the way in which the observations are utilized. If there is a deficiency in any of these three factors, all equally prerequisite to the desired result, the observations will also be deficient, and their contribution to the progress of history will be forever lost.

There is perhaps no science in which the subject matter available for observation is as limited as it is in archaeology. If the chemist's experiment turns out badly, he can repeat it another day; the observation of a star overlooked on one night can be repeated by the astronomer on another. But once the materials which might serve for the reconstruction of human history are destroyed, they cannot be replaced, and the chance for observations has been lost forever.

The so-called *huaqueros* have caused irreparable damage to the documents of ancient history throughout the continent.

As soon as the news of a great find of ancient gold spreads in some part of Ecuador, people who are as ignorant as they are avaricious gather from great distances and set to work digging, in a frenzy to destroy the existing remains that gives them no rest until the last hope of finding more gold has vanished. This is what has happened in Chordeleg, in Sigsig, and two years ago at Cerro Narrio, near Cañar; and now it seems likely that it will happen again near Cayambe.

Ancient buildings are treated as quarries, throughout the continent and not least in this country, where, as a direct consequence of this activity, the ruins are to some extent in worse condition than those in either of the neighboring countries.

In Peru I have seen the state devote more care to the protection of the *huaqueros* than to the studies of scientists and their efforts to preserve the monuments.

In consequence, it is of the greatest importance that the state always devote some of its attention to appropriate measures for the preservation of the archaeological remains which still exist, and that these measures be administered by trustworthy employees.

The archaeologist himself may do damage if he lacks personal aptitude for the special kind of work which is necessary.

To secure worthwhile and decisive results, an archaeologist should be dedicated to the pursuit of an ideal by means of solid, precise, and constant work. For this reason Flinders Petrie distinguishes two kinds of scholars in archaeology: those who live to study and those who study to live (see Petrie [*Methods and Aims in Archaeology*, p. 2]). Only the first kind will be certain of success in archaeology, for results are achieved not by work alone but by the steadfast pursuit of an ideal without any wavering. Flinders Petrie rightly says, "The engineering training of mind and senses which Prof. Perry advocates will really fit an archaeologist better for excavating than book-work can alone." He continues [p. 3]: "Best of all is the combination of the scholar and the engineer."

Archaeologists who think that all they need to do to get results is to put enough men to work and come around in the evening to look things over and take the objects found in the excavation away to their lodgings will never get any results which will further the progress of science. For this purpose it is essential that the man who directs the work maintain a continuous and strict observation of the proceedings everywhere and at all times.

Furthermore, the archaeologist must possess a talent for observing, even from a distance, the most minute circumstances which appear during the course of an excavation and which may relate to the problems being investigated. If this talent is lacking, none of the excavations undertaken will yield any results.

An archaeologist who, in the course of an excavation, does not know enough to distinguish the representation of a *caballito*, a primitive Peruvian form of raft, from the representation of a horn (as occurred in the case of the author of one of the most recent books on Peruvian antiquities) does not have the aptitude to understand the meaning of a representational ornament and hence lacks the skill to understand alien modes of thought; such an archaeologist would find the road to valuable results closed against him.

The archaeologist should know how to distinguish the character of styles and be able to group together instantly things which have the appearance of belonging together. If he has good preparation, he will know how to analyze the design of any tapestry into elements of different national origins, and when he walks through a ruin he will recognize immediately the period in which the building was used from the pottery fragments scattered on the ground.

Cemeteries of the earliest Peruvian civilization of Proto-Nazca, formerly unknown, were discovered by the clue of a fragment of a vase lying on the ground,

the rim painted dark red like the earliest styles then known, which roused hopes of discovering features of at least equal age.

The archaeologist accordingly needs an excellent memory which will remind him at any time of a type he has once seen, so that he can make comparisons with it. Knowledge which has once been acquired should never be forgotten. Each new observation should be recorded in the memory instantly and in its proper context, and the archaeologist must have the ability to picture the position of an object in relation to other cultural forms which are already known. Fragments of painted pottery, scattered in an old railroad cut near Chancay in Peru, were noted and led to a two weeks' project which resulted in the discovery of the Proto-Lima style, one of the most important of the earliest Peruvian styles on the central coast.

The archaeologist needs also a special sense to grasp the character of the topography of an area.

At Ancón, nine leagues from Lima in the middle of an extensive plain near the sea, the necropolis is situated in depressions scattered among a hundred or so mounds, seven to ten meters high and the same color as the adjacent desert. Messrs. Reiss and Stübel introduced a new era in the development of Americanist science with their excavations in these cemeteries, but they failed to notice the artificial nature of the mounds. An excavation carried down ten meters in one of them revealed the artificial character of them all. The fishermen of the place had heaped them up with their refuse over a period of innumerable centuries. The general level of the desert was reached at the base of these mounds, and the ancient cemeteries continued in part below them.

Some hills near the resort town of Ancón which were apparently natural were distinguishable by their color from the whitish surface of the adjoining desert. Trenches revealed that the upper layers consisted of shell midden containing remains of Central American civilizations even older than the other Peruvian civilizations.

The archaeologist who wants to succeed should have, then, a profound knowledge of the results attained in earlier studies and should combine with an intrepid enthusiasm the ability to make new observations at any time.

When the need arises, he should be able to make a drawing of anything which crops up in the course of the work. It should be no problem to him to apply the rules of trigonometry to making a plan of a ruin. He must frequently be able to take photographs. All this is easily learned when needed. Further, he needs to know some rules of chemistry that will serve him for the identification of the material of which objects are made, so that he can apply the best method of preserving them.

In an excavation the workmen are assistants and agents for the execution of the work and must be guided by the director at all times, as the pilot guides the helm. In this way, what the workmen do is in a sense done personally by the archaeologist. The latter, for his part, must be aware of the condition of the work at all points where it is being carried on and must be ready at any time to furnish new instructions, even without looking over the situation himself.

Generally, the archaeologist is also the busiest man on the job, for he must constantly examine the character of the finds, put them in order, label them, and be

ready to intervene directly in the work if his instructions have not been understood.

Furthermore, the excavation is only the beginning of the archaeologist's task. He must also arrange the transportation of the objects found to a place of storage, taking care that there is no loss or breakage in the process; he must report on the progress and principal results of the excavations and supervise and arrange the packing and transportation of the finds to their definitive resting place. Only the publication of the results marks the end of his obligations.

The way in which the work is organized is also a matter of great importance for the success of the excavation. On no account should the archaeologist employ more men than he can watch and keep constantly busy; the laziness of some always has a contagious effect on the others. The workmen should be carefully chosen, if possible. If they have had no experience in the special requirements of the work, they must be shown and taught. They should be honest in handing over everything they find. At the same time, the director of the work must be on the lookout for cases of inexperience, carelessness, and possible dishonesty. It may sometimes be desirable to reward the men for a discovery or for finding the missing part of a broken object.

The number of workmen should vary according to the kind of work being done. I had excellent results digging the shallow graves of the aborigines of Arica with one or two men. In the excavation of ancient cemeteries, four or five men can usually be used with profit if the burials are not too scattered. With too many workmen there is always the risk that the director will be unable to keep up with the work. More men can be employed in the excavation of ruins. In the work at the ruins of Tomebamba I frequently had as many as forty-four.

It improves the organization of the work to hire a foreman who can act as intermediary between the director and the workmen, the director remaining in charge of scientific matters. The foreman should himself understand the nature of the work and should take the same interest as his employer in its successful conclusion. His understanding of the work should be sufficient to allow the archaeologist to discuss with him the best method of procedure. Foremen who know nothing about the work or who take no interest in it do more harm than good, and their worthlessness is likely to spread to the workmen.

The number of foremen should also vary with the nature of the job. In the excavation of ruins like Tomebamba two or three for some forty workmen may be enough. Working with tombs, one foreman for every five or six workmen seems to be about right.

We must also say a few words about the variety of objects which can serve as evidence of man's activity and hence are the subject matter of the archaeologist's observations.

Some are *immovable*, others are *movable*.

Among the most important movable objects—important because of the information they yield—are those found in graves. Such objects not only can be studied, they can be taken away and put in museums.

Immovable objects can only be studied: they can be excavated, recorded, measured, drawn, and photographed; and they can be made the subject of maps, archi-

tectural plans, and so forth. The plans of the tombs, their type and shape differences, belong in the class of immovable remains; however, because of the important relationship of the tomb and its contents, it is better to consider them with the movable objects.

To the class of immovable objects belong: (1) buildings or similar constructions; (2) other modifications of the earth's surface; (3) impressions made on nature by the hand of man; and (4) certain natural formations which must be studied because they are closely related to human customs and consequently contain human remains.

The best ancient buildings in Ecuador are those left by the Incas; unfortunately, most of them are now in poor condition. The best buildings in the whole of America are those constructed by the Mayas and by some other Mexican nations, such as the Zapotecs, the Totonacs, the Toltecs, and so forth.

In Ecuador, solid buildings have been built in all periods. There are foundations of stone buildings of the first Maya period, for example, on the Hacienda Huancauchu near Cuenca and on the Hacienda Carmen near the confluence of the Cuenca River with the river of Sigsig; there are substantial remains of buildings of the Tuncahuan period in Garcelán, near the junction of the river of León with the river of Santiago; there are remains of several buildings of the San Sebastian period, contemporary with Tiahuanaco, at Macají near Riobamba, formerly covered with volcanic sand and partially excavated by Sr. Jijón y Caamaño; and there are extensive remains suggesting a Cañar city at Dumapara near Cochapata. Inca buildings formed an extensive city at Tomebamba, of which only the plan and the foundations remain; military and administrative centers, made up of several buildings, are found, among other places, at Tambo Blanco near San Lucas, at Paquinzhapa at the place called Minas in the valley of the Jubones, and on the road between Cuenca and the coast. The buildings of Incapirca near Cañar and those of Callo were *tambos* [resthouses on the road].

More or less isolated buildings are found in many places. The buildings found include palaces, temples, royal *tambos*, fortified places, the residencies of governors, and so forth. Another type of building is the tower-shaped *chulpa*, used for tombs, found in Bolivia and in parts of Peru. Stone defense walls enclose cities or fortresses in many places. A curious construction is a well, ten meters deep and faced with stone, of the Tiahuanaco period—more than twelve hundred years old—found on the summit of Cerro Amaro near Marca Huamachuco in Peru. In spite of its exposed position, it never lacks water, which it receives through subterranean channels from a near-by hill. Stone sculptures in the shape of dragons were found beside it as guardians. From the deep mud at the bottom, mud as old as the well itself, many kilos of objects of different-colored stone and shell were washed out; these represented beads, plaques, and imitations of animal feet. There were also some metal objects. All were evidently ancient offerings to Pachamama in gratitude for the constant supply of water in the well. These remains gave evidence of one of the most ancient Peruvian periods.

You can see that the remains of stone construction are of the most varied character and furnish abundant material for the study of ancient history, in South America in general and in Ecuador in particular.

Europe and neighboring parts of the ancient world yield some further types, rarely represented on American soil or not represented at all, such as dolmens (rooms made of gigantic rough stones); menhirs (monolithic columns); cromlechs (circles or squares of such elements), and so forth. To this category belong certain chulpas of very large stones in the Bolivian region, the enclosures of monolithic stones among the monuments of Tiahuanaco, a monolithic column near Tafi in Argentina, and so forth.

Buildings of the same type as those listed as built of stone are found in South America built of adobe, and in immense numbers. They occur chiefly all along the coast but are also found in the highlands, many of them fallen so that they now resemble natural hills, but with the whole type of the building preserved in the interior.

They fall into different classes according to the construction elements: some are made of tapia, a uniform mass of adobe like Roman cement; others of round balls of adobe; and others of rectangular adobes, small or large depending on the age. The constructions of round balls of adobe in Peru are considered to be among the most ancient buildings.

Immense edifices, temples of 300 meters in length and often up to 25 meters high, with an occasional one as high as 45 meters, were constructed of these materials in South America, most of them at the beginning of the great civilizations.

The largest of these buildings are found in the valleys of Pisco, Chincha, Lima, and Trujillo.

Many Peruvian valleys contain also ruins of extensive towns, built of adobe, with hundreds of walls, streets, and spacious houses, most of them well preserved, lacking only the roofs. The city of Chanchan covers an area three-fourths by one-fourth of a league, and a man can get lost walking around in it.

Buildings can be observed and studied from very different points of view.

In the first place, there is the construction material; was it taken from the neighborhood, or from the bed of a river where all sizes of stone are found, or from special quarries? It appears that blocks found in the near-by river and on the site itself were used in the construction of the buildings at Tomebamba. The idea that the materials for the construction of Inca buildings were brought from Cuzco has not been confirmed in any particular case and is doubtless a legend. The fortress of Sacsahuaman at Cuzco is built in cyclopean fashion of enormous stones, as large as 8 by 4 by $3\frac{1}{2}$ meters. We know that they were brought from limestone quarries only about a kilometer away. The great stones used in the buildings of Ollantaytambo were dragged a distance of more than two leagues and across the river. The material used in the monolithic constructions of Tiahuanaco near the shores of Lake Titicaca is varied. We know that blocks of 60 and 100 tons found there were brought by human hands from quarries on the slopes of Cerro Quimsachata, more than two leagues to the west.

The technique of construction is important, because it can be used to determine the variety of styles. The technique and type of construction used by the Incas is very different from that found at Tiahuanaco. In Cuzco itself, some five different styles can be distinguished, each representing a different period, in the same way as in Rome, where the cyclopean style of the wall of Servius Tullius is found

only in the earliest period of the ancient city. In Cuzco likewise, a small-scale mosaic of cyclopean type is the characteristic construction style of the earliest times, this observation permitting the localization of the first center of settlement of the city.

Certain types of buildings are found repeatedly in the styles of America. Thus, for example, the Inca style is characterized by houses with a dividing wall down the center (the type found in *tambos*); long houses with many entrances on a side (*barracks*); houses arranged on four sides of a patio (*dwelling*s), and so forth.

These are the fundamental types, and they occur also in combination and developed in different ways, as can be seen, for example, in the city of Tomebamba.

It is also interesting to observe the line of development and derivation of the fundamental construction types. For example, the type of the great pyramidal temple with three spacious terraces, like the temple dedicated to the Sun at Pachacamac, is derived from the great Acapana temple at Tiahuanaco, the latter having served as its model. The Acapana, in turn, is built on the model of various Central American temples.

An indirectly related type is the pyramidal form with high, steep sides of the great Proto-Chimu temple at Moche, which has a pyramid set on top of it. This form of temple is copied directly from the Maya temples of Copán in Honduras and Monte Albán in the Zapotec country in Mexico. By tracing back to a common origin on Central American soil the forms of the temples of Tiahuanaco and Pachacamac, on the one hand, and the form of the Proto-Chimu temples on the other, the unity of origin of all these forms is established. Their relationships to one another resemble more or less those of the different types of Christian churches, all of which have their original prototype in ancient Roman buildings, specifically in the basilicas which served as law courts in Rome.

In many parts of the Andean region, the tops and slopes of the hills have been transformed into strong points by ditches surrounding them. There are a number of these fortifications in Ecuador too, for example in the province of Imbabura, and there are others in Loja province. The road of El Batán crosses the ditch of one of these forts, which extends westward from Guápulo along the slope of the hill. There are other fortifications in flat land, such as the one near Chilecito in the province of La Rioja in Argentina; these last resemble ancient Roman camps in their ditch arrangement.

The category of modifications of the surface of the earth by human hands includes also the *tolas*, large and small, which are especially frequent in the north highlands of Ecuador and all along the coast. Although most of them are constructed of earth, they sometimes resemble in other respects constructions of adobe. They were used partly as temples and partly as dwelling places, and because of this last use a varying number of graves is frequently found in them also.

Other earth constructions include tumuli, some of which cover or contain burials. There are others in this country (in the valleys of the Catamayo and the Jubones, for example), and in Argentina as well, which contain no graves or other materials and remain in consequence rather enigmatic. It has been suggested that they may have had an agricultural use.

On many parts of the coast, people have lived on the products of the sea from very early times to very recent ones, piling up their kitchen refuse, especially shells, until the refuse forms artificial hills. As the hills rose, the houses or huts built on top of them rose also, and as a consequence, remains of old abandoned houses are often found in the interior of these mounds.

These shellmounds, of which there are some also in the region of Santa Elena on the coast of Ecuador, are important to the archaeologist because they are among the most ancient remains of man, giving evidence frequently of periods different from those represented elsewhere. So, for example, the lowest levels of a shellmound at Taltal contained stone implements of the earliest known European types, some fifty thousand years old; hand axes and daggers hitherto not found in other sites in America and belonging in consequence to a period which in America also was one of the earliest in relative age. The explanation is that fishing is the most natural way of life for primitive man, and fishermen cluster in small settlements at certain places on the coast and leave us evidence of their earlier presence in the shellmounds.

Shellmounds have another unusual interest because they developed slowly through different periods and reveal to us in their stratification the way in which culture slowly developed.

The visible remains of cultivated fields representing an advanced agriculture form another subject for study. There are enormous quantities of terraces built for this purpose in the whole Andean region between Ecuador and Argentina, especially in Peru. These terraces are made by modifying the slopes of hills, which are too steep in their natural state to be used for agriculture, into a series of steps rising one above another, with or without the constructions of walls, and with corresponding leveling of the soil. Along the Oroya railroad the traveler can count sometimes as many as 170 or 200 steps or terraces rising directly one from another on hillsides rising 500 meters and more above the river. They give excellent evidence of the millennial antiquity of human agricultural industry in these regions. Terraces representing the work of ancient man can also be observed in various ravines in the province of Loja.

In less steeply sloping country or where the terrain is nearly flat, as for example in the valley of Pisco in Peru or in the valleys of Yunguilla and of the Jubones, the agricultural terraces also rise more gently, following the inclination of the ground. In such terrain, the terraces are built to facilitate the distribution of water for irrigation.

Traces of ancient cultivated fields of a special type, in the form of slightly elevated beds more than a meter in width, are preserved in many places from ancient times. There are great extensions of them, for example, on the Bolivian shore of Lake Titicaca, and they are found in Ecuador on the Hacienda El Paso near Nabón. The beds follow different plans; straight, curved, circular, spiral, and so forth.

The practice of agriculture is as old as the civilizations themselves in this continent, although it was undoubtedly imported, in the form in which it was practiced, from Central American regions. Sometimes one can observe fragments of pottery of the oldest periods on the surface of the terraces, as occurs in the valley

of Lima and also near Chordeleg in the province of Azuay. The ancients also cleaned their fields, gathering, removing, and piling up the stones in special places. In the resulting stone piles one sometimes finds characteristic pots of the earliest periods; at Chancay, for example, Proto-Lima pottery is found in them. Near Miraflores in the valley of Lima there is one of these piles which covers a hectare of land to a height of more than two meters and includes remains of the earliest civilized periods of the valley. In modern fields one looks in vain for similar care for the success of the crops.

Many of the ancient cultivated fields, and terraces in particular, were artificially irrigated by carefully graded canals which brought the water from varying distances, often of many leagues.

The water for the Inca fields of Sumaipata in the valley of Jubones was brought along the course of the Uchucay River from the highest mountain range to the east, in a canal seven leagues long.

The Chimu built enormous tanks to store up river water as if with dams until it could be used more profitably.

Subterranean canals for the irrigation of cultivated fields can be observed in the valley of Nazca, near Ica, belonging to the earliest Peruvian period.

Also deserving of study are the remains and traces of roads, which served as lines of communication in all countries. We are informed of the existence of roads in Peru from the earliest times. The Incas were experts at building them, often using masonry construction for this purpose. Ecuador also is crossed in many places by roads leading in the most diverse directions.

The remains of ancient bridges should also be studied. These can usually be identified from the remains of their abutments, and there are examples in Ecuador also in various places, for instance on an eastern tributary of the valley of Catamayo and on the Jubones River below the mouth of the Uchucay River. Even the sides of dry ravines and other cuts sometimes show remains of ancient bridge abutments where a bridge was built to make the passage easier, as occurs in many ravines and cuts in the Jubones valley above Minas where nowadays the mules have to descend and climb again to cross the bridgeless ravines.

Man's workshops should also be observed. These are the places where he found and worked to some extent the materials which served him for tools or for construction purposes: mines of copper, silver, and gold; open-air workshops where tools were made; and quarries from which he secured the large stones for buildings. There are extensive quarries of riverworn pebbles near Washington on the banks of the Potomac and Chesapeake rivers which yielded materials for stone tools made on the spot. Near Mitla in Mexico the visitor can still see the quarries in which the stones for temple construction were cut, and some stones remain in an unfinished condition. Two leagues from Ollantaytambo, a site near Cuzco, the quarries are still visible from which the Incas dragged enormous blocks for their constructions, and some blocks abandoned on the road can still be seen. In the desert of Atacama above Taltal there are ancient open-air workshops of quartz and chalcedony with all the tools left at the spot as perfect as if the Indians had abandoned them today with the intention of returning tomorrow to take up

their work again. These workshops are extremely instructive if one wishes to know where and how tools were made in ancient times.

Among the impressions on nature left by the hand of man I count petroglyphs and bedrock mortars, cut frequently in solid rock to take the place of portable ones.

The whole continent, from Central America to the interior of Argentina, east and west of the Andean region as well as within it, is rich in ancient cliff inscriptions. These consist of figures of men and animals, useful objects, and abbreviated signs often of a purely ornamental appearance, sometimes regularly arranged and at other times in disorder. Some of them seem to be the product of idle hands, done for a game or to pass the time; others probably had a meaning, although they never were writing in the modern sense. The signs may have served sometimes to mark the limits of the land occupied by a tribe or the limits of fishing rights along a river; others were evidently the products of religious inspirations brought on by the special character of a place, the result being figures of a mythological character. They may at times express a man's ideas about the organization of the universe, when they include figures of the sun and moon, and perhaps of stars as well, all drawn together. They may correspond at times to our figures of Christian crosses often scratched on the cliffs along the roads. Other petroglyphs evidently have a historic character, summarizing in a few signs the events and results of war with a neighboring tribe, telling for example, how many men went out to fight, how many they killed, what booty was obtained, and so forth. These seem comparable to the cliff inscriptions with which King Xerxes announced to the world the victories he had obtained over enemy tribes and empires. Some of the petroglyphs are thus readable or capable of being interpreted. Most of them, however, elude any attempt to interpret them.

Petroglyphs are especially frequent in the north and center of Chile and in Argentina, but they have also been found repeatedly in Peru and Bolivia. Several are also known from Ecuador, in the Yunguilla valley and on the coast of Manta. The oldest ones date from the time of the earliest civilizations, such as some in the valley of Chinchu, nine leagues from the coast, which contain Proto-Nazca motives; others are as late as Inca times.

A very curious petroglyph is an enormous figure 128 meters high and 74 meters wide dug in the slope of a headland on a peninsula facing the sea, two leagues south of Pisco in Peru. It can be recognized easily from the sea at a distance of several leagues. This figure is cut into a salt cliff in lines $2\frac{1}{2}$ meters wide and 50 centimeters deep. The sand would have wiped out the lines long ago except that they have been cleaned regularly for the processions of May 3, the Feast of the Cross, a symbol which the modern people think the figure resembles. I have been told that there is a different figure in a similar position facing the sea near Manta, which probably had the same purpose and may have been made by people with the same ideas. These petroglyphs may have indicated the boundaries of related tribes who were in communication with one another along the Peruvian coast.

Bedrock mortars are among the most frequent types of remains left by man, especially in Chile. They are generally cylindrical, twenty, thirty, or more centimeters deep, and always in clusters, several in the same rock. Such mortars are

also well known from various places in Argentina, and it is curious that they occur again in exactly the same form in the south of Ecuador from Macara to about the valley of Loja. It has often been believed, especially in Chile, that they are connected with a bloody ancient cult, but they indicate nothing more than the presence of ancient populations whose women ground grain for the household in these holes.

Ancient man sometimes preferred certain kinds of places as dwellings or for the burial of the dead, and such places, recognizable from the known customs of certain ancient peoples, deserve the special attention of the archaeologist.

Throughout the world, caves, shelters prepared by nature itself, formed a frequent dwelling place for wild animals and man, especially primitive man. The most important discoveries relating to the earliest history of man have been made in caves. It is sufficient to recall the caves of the Dordogne in France, those of Grimaldi in Italy, that of Krapina in Czechoslovakia, and the marvelous paintings of Magdalenian man in the caves of Spain and France to appreciate the importance which caves have always had for human history. Near Arica there are petroglyphs in caves. At Pisagua I explored a cave which yielded the earliest remains of man known in that region as well as interesting mummies from various periods.

The region of Saraguro in Ecuador is full of caves which are the products of ancient earth movements around the Jubones valley. Many of them have been used for burials, and in them the bones, so rarely found in the highlands, are preserved almost intact. Even whole mummies and textiles have withstood the destructive effect of time there. Others, near Tanta in the same region, were inhabited by people representing the first Ecuadorian civilizations, and their remains, so hard to find in other areas, are preserved in the caves.

Man preferred to worship, offer sacrifices, and bury offerings to his deities on the tops of hills. For this reason gold and silver figurines have been found frequently on the tops of hills over the whole area of the Inca empire, among other places on the top of Cerro Hailli, the highest hill in the neighborhood of Sigsig. The top of other hills, like that of the isolated hill of Tari near San Bartolomé, were used in ancient times for burial. The graves on Cerro Tari are fifteen to twenty meters deep and surrounded by a deep ditch, but unfortunately they were emptied by *huaqueros* in years past.

The Chibcha nations had a special lake worship. We have a series of Colombian gold representations of rafts, which depict the cacique taking part in the ceremony of going out on the lake to offer sacrifices to the highest gods in the form of gold objects. As a result, a Colombian lake has been drained in modern times in search of the gold offerings left by pre-Spanish man. The ancient nations of the Ecuadorian highlands all belonged to one family, this same Chibcha family, and shared in consequence the beliefs current among the Colombian nations. An indication of this is the fact that tales relating to lakes are told also in various parts of Ecuador. For example, there is a story that the divinity of a lake in front of Cerro Acacana fought with the divinity of another near Cerro Phulla near Saraguro. In the fight, one vomited gold, the other only copper; but I do not know how the fight came out. Probably the one who had gold on his side won.

In the next lecture I will discuss the importance of movable remains for archaeology, especially those preserved in ancient graves down to our day, and then I will explain the contributions of archaeology to the primitive history of man.

LECTURE 4, JUNE 6

The importance of graves in archaeology—Principal kinds of graves; how to locate and excavate them—Technical and practical advice for the treatment and study of movable remains.

Movable remains are in some respects the most important ones for the study of civilizations and the earliest history of man. For one thing, they are found more widely than ruins, *tolas*, traces of communications, and so forth, which are not found in all types of culture. The character of civilizations is established by science in large part by individual traits found in objects of this kind, and for this reason they are the most useful for comparison with other types of culture.

The earliest remains of man consist entirely of movable objects, found either in isolated form in geological deposits or in shell heaps where they were lost or thrown away by people who rarely piled them up as scanty furnishings accompanying a dead man.

For the study of civilizations, the remains found in graves are more important than those of any other kind. In well-developed civilizations one may sometimes expect to find works of sculpture, such as statues, stone seats, relief slabs, and so forth, as for example in the ancient civilizations of Manta, and here it happens that, for lack of graves, these objects are the most important materials for study.

The importance of graves for the study of civilizations is based on the general occurrence, among primitive nations, of the belief in continuation of life in the other world, and the care which, in consequence, is taken to accompany the dead with everything necessary for the life hereafter. For this reason, it is the utensils most necessary in this life that are found in the tombs as furnishings for the journey to the other.

Naturally, food was included in the Peruvian graves, although most of it has disappeared because of its perishable nature. Sometimes, however, supplies of maize have been found, and occasionally the preserved food *chuño*, or cold *tunta*, made from potatoes, as well as supplies of peanuts. In the soil of the Temple of the Sun at Pachacamac even bits of charqui, or dried meat, have been preserved in so fresh a state that they might serve today for the preparation of food. The care taken to provide necessities in the other life is demonstrated even more clearly in the graves by the presence of seeds of cotton or slips of yuca [manioc], of the sort used for the propagation of new plantings. These seeds and slips accompanied the dead man so that he could plant them in the other life as he had done in this one.

Pieces of copper, silver, and gold are often found in the mouths of the dead or in their hands. Pieces of gold of a value of more than twelve pounds have frequently been found so placed. These were the *oboloi* with which the survivors equipped the dead man so that he could use them to overcome the obstacles he found in the journey to the other world.

Remains of food offered to the dead or kitchen refuse can be observed on the surface of many graves, representing the custom of giving food to the dead which

survives among the Indians in many parts of the Andean region today. To the same custom pertain shallowly buried jars with holes in the bottom so that the food can pass through to the dead man, or clay or bamboo tubes which were used for the same purpose.

In such circumstances it may be assumed to be certain that the grave furnishings represent everything which seemed most necessary for the support of life at the time the burial was made.

Ancient graves interest us because of the differences in their general types, and, when they are burials made in the earth, because of their special shapes and the ways in which the body of the dead is treated and placed in the tomb, even aside from the furnishings that accompany it, which, as indicative of the type of civilization, receive most attention in studies.

There are different kinds of graves, above the ground or in the ground, without including the cremations. This last mode of disposing of the body, which is usually combined with the destruction of all the objects which might have accompanied the dead, is in most cases absolutely unproductive for archaeology. Fortunately, it is rare. Traces of it have been found in Ecuador, for example in the province of Imbabura, and in Yunguilla valley, and perhaps it was also practiced in the region of Manta. The custom was rare in Peru also. Traces of cremation have been found in the ruins of Chimú Capac near Supe, but the implements used by the shamans were still placed in holes dug for the reception of the dead.

There is considerable variety in the types of tombs above ground. The best known are the chulpas, towers of stone or adobe already mentioned, which are found in Bolivia and in part of Peru; they have sometimes been wrongly interpreted as having been used for dwellings. In these chulpas the bodies of the dead are found seated along the walls, with their knees drawn up.

Tombs in natural crevices under overhanging cliffs are quite common in the highlands. In these the dead are found separated from the world by little walls of stone or clay.

Often the bodies were simply deposited in caves, but in Bolivia they are sometimes found fitted into narrow cells of clay as in a honeycomb.

Another form of burial is in the interior of the walls of buildings. The face of the wall in this case gives no hint of the contents, and it is only by striking the wall and listening to the sound that one can tell that the wall is hollow. Burials of this type have been found in the walls of the Temple of the Sun at Moche, which are of adobe; in the stone buildings of Marca Huamachuco; and, I understand, in the east in the fortress of Cuelap near Chachapoyas.

Usually the dead were buried in the ground. If so, the nature and shape of the holes dug varied, depending on whether the dead were simply covered with earth, as happened among the aborigines of Arica and to some extent at Ancón and Chancay, or whether they were placed under fragments of pottery jars, in well-dug and prepared holes, as commonly occurs in the Andean countries. The shape of the holes is characteristic of the particular type of civilization. Some are round, others rectangular, cubical, or deep and narrow. Some are lined with stones and others are not; some have steps in the inside of the hole, and so forth.

Each type of civilization had its special forms of burial also with respect to the

way in which the hole was filled and afterward covered with earth, ashes, branches, leaves, stones, adobe, and so forth. These characteristic forms of burial sometimes have value in making comparisons with other civilizations; for example, round shafts two or three meters deep with resting places on the inside and one or more niches at the bottom, in one of which the dead man was placed, represent a type which connects some of the Columbian civilizations with graves on the north coast of Brazil, with others of the civilization of Tacalzhapa and Tuncahuan in the Azuay region, and with the Tiahuanaco period of Ancón, all being temporally related.

Instead of in shafts, burial in pots was sometimes practiced, especially for children, in the earliest periods from southern Peru to Argentina. Numerous mummies, especially ones of children from the Arica region, show signs of having been kept in the open air for a long period and having been roughly treated, the living having taken them along with them in going to their daily work.

The preparation of the dead for burial also reveals many considerable differences, the observation of which is very important for the characterization of the culture type.

The preparation of the body for burial by means resembling mummification was very general in South American countries. We know that the bodies of dead Incas were dried over a fire. No doubt the custom of removing the intestines was common, if we can judge by the good state of preservation noted in all bodies not damaged by the weather. These practices began in South America at the very beginning of the civilizations, as is indicated by the mummies of Arica. These have the abdominal cavity dried out and almost burned by fire, stuffed thereafter with different kinds of wool and fibers, and finally sewed up in the form of a cross; in many mummies the cranial cavity was also emptied and stuffed in the same way. It is interesting and important that mummies have been found at Arica in which the line of the suture in the abdominal region was completely recognizable.

In Arica, mummies have also been found wrapped in wet sand and then dried, a procedure which gives them the appearance of having been cooked in dough.

The bodies were buried in the most different ways and positions. Burial with the body stretched out on the back seems to have been the original custom; this was also the practice of early European man. It has been found in various parts of Ecuador, in Loja for example, and near Lima, at Arica, and at Taltal, the mummies always belonging to the earliest known times.

The most commonly found position is with the body seated or doubled up, with the bundle standing, leaning, or lying down, the body in this case having the knees drawn up. The sitting position with the mummy bundle standing up can be considered the latest and most developed form. It is characteristic as early as Tiahuanaco times. The bodies, wrapped in cloths and cotton and then baled up, have the appearance of a bundle which is provided on the outside with an artificial head; a face of wood, copper, silver, or gold; and clothing and ornaments. The dead are equipped as in life with ponchos, a scepter, a club, or a lance, as if to go to war or practice some other occupation. The bundle thus faithfully reflected the dead man's appearance in life.

The earliest Maya civilizations brought to South America with them the frequently observed custom of burying only the head, which, however, was adorned as in life. Often several vases accompanied the head as grave furnishings.

Another common custom was secondary burial. The dead person was dug up some time after the primary burial and was reburied, the bones being collected in a disordered pile, with the skeleton often incomplete, and accompanied by definite grave furnishings. This type of burial was very common in the province of Imbabura and on the central coast of Peru, at Ancón and Chancay, in the earliest period. From the desert of Atacama to the south, the bones were given secondary burial, usually in jars, even as late as Inca times. This custom was common also in eastern graves.

The archaeologist needs to be aware of all this variety of burial customs in the course of his excavations so that he will make a note of the form he finds in each case. Otherwise he will not be prepared to record any new type that comes to his attention.

The technique used by the archaeologist is important in all its details. This technique consists in knowing how to find places that interest him, even when they are not directly visible, in order to profit by existing ruins and other kinds of ancient remains.

Frequently the presence of ruins is not easy to determine. To find the ruins of Tomebamba I depended on historical references to the existence of the ancient city near Cuenca; stones, apparently from Inca constructions, scattered through the modern city; and fragments of Inca pottery scattered over parts of the Quinta of Pumapungu, the very name of which indicated a relation to the tradition of the Incas. All this would not have been sufficient to establish the probable existence of ruins. However, the tips of some ordinary stones which I noted on the surface seemed explicable on the basis of the presence of walls in the ground and consequently as an indication of earlier Inca activity. The progress of the excavation justified the original hypothesis beyond my hopes, for it resulted in the discovery of the plan of a whole ancient city. The archaeologist should always be ready to take such advantage of the scantiest clues to push forward his studies along whatever lines opportunity offers. Even though the results of an attempt cannot always be foreseen, it should always be made. Of several attempts, one will be crowned with success. Disappointments should not discourage the archaeologist; on the contrary, one success repays him many times over for all the failures.

The archaeologist should, then, take note of the nature of the ground surface wherever he finds himself. The surface, once disturbed, generally looks quite different. Above ancient graves, the surface is often sunken.

Fragments of pottery or other kinds of remains, either natural or the work of human hands, may be scattered on the surface of the ground in a way which does not accord with the nature of the place; these are always indications of an earlier settlement or of the presence of ancient graves. Their distribution on the surface is often the result of the fact that when the earth is disturbed for new burials, objects hidden under the ground or fragments belonging to earlier burials will usually come to the surface. Similarly, fragments scattered over

newly plowed fields indicate the presence of ancient graves, though the graves may have been already destroyed. It seems likely that many ancient cemeteries were situated in fields which were afterward used for agriculture. Nearly all the skulls and all the ancient copper axes which are known from the province of Loja were found accidentally in cultivated fields, and there is no way of calculating the damage done to archaeology by the carelessness and ignorance of the plowmen.

The plan of buildings hidden in the ground is often indicated on the surface, as, for example, at the ruins of Tiahuanaco near Lake Titicaca, which as yet are insufficiently excavated.

Cieza de León and others speak constantly of a place called Hatun Cañar, that is, Great Cañar. The existing remains, consisting mostly of the ruins of Incapirca and various *intihuatanas*, or pagan shrines for the worship of the Sun, seem inadequate to the prestigious name of the ancient site. However, beside the convent of Incapirca there is a pampa several hundred meters in length and width, marked out in rectangular shape like a plaza. Irregularities noted in the ground at its sides seem by their arrangement to indicate remains of buildings hidden in the ground. Perhaps if they were excavated they would justify the name by which the place is known in history.

The presence of shell heaps can sometimes be distinguished only by slight irregularities in the appearance of the soil. By such clues Augusto Capdeville found a very ancient one near Taltal, from which stone implements of the earliest type known on American soil were later taken.

Mounds of earth frequently characterize the site of ruins buried in the earth. Such mounds were the only indication of the existence of buildings in Tambo Blanco near San Lucas, and they led to the excavation of an Inca palace. Here the earth from the disintegrated adobes which formerly formed the upper part of the walls had covered the stone foundation walls of the building to such an extent as to make them unrecognizable.

Many buildings on the coast could be reconstructed by simply removing the disintegrated adobe earth which now covers them to such a degree that they look like mounds which never contained a building.

Sometimes it is necessary to dig below the surface of the ground with a shovel in order to see what it contains. Darwin and more recent geologists regarded the bits of shell scattered on the surface of the island of San Lorenzo, near Callao, as evidence of the emergence of the island from the sea in recent times. I had to make a special visit to the island with two famous geologists in order to convince them that, when the surface was excavated, ashes and other remains of human activity appeared, and that the shells on the surface indicated ancient shellmounds deposited by man, the supposed evidence for a recent emergence of the island being thus completely illusory.

The presence of ancient graves may always be suspected in *tolas* and similar constructions of adobe, and likewise in the vicinity of temples and shell-heap settlements and in caves; at least they should be suspected and looked for.

Sometimes tradition preserves a tale originally true of treasures included in graves. For example, there is a popular legend at Pueblo Nuevo near Ica that

there are golden bells in a dune there which always ring at twelve o'clock. Excavations undertaken in the neighborhood revealed the existence of numerous graves rich in gold in which were buried native caciques who had been vassals of the Incas.

Everywhere on the coast the existence of cemeteries may be suspected in dry lands bordering the irrigated valley, and they are easily found there by following the indications mentioned above. In the highlands, hilltops, steep slopes, and striking promontories were the preferred places for ancient graves. Elevations of the ground in the desert pampa near towns, as for example near Tacna, may contain ancient cemeteries; or an enclosure wall may show where a cemetery ends.

Huaqueros and amateurs are sometimes guided by mistaken ideas in their search for the sites of ancient graves and tear down monumental remains which have no relation to the burial sites and which might have been of much greater utility to ancient history if they had been left in place.

Some people have the idea that petroglyphs, bedrock mortars, and stones which ring like a bell have no other purpose than to indicate the position of treasures hidden in the earth. As a result of this idea, various rocks containing bedrock mortars in Chile have been ruined, and the interesting ringing stones near the port of Etén, formerly called "Las piedras del Capitán," were broken in pieces. In Ecuador, wherever one finds rocks marked with petroglyphs, or even with natural cracks which might possibly be taken for artificial designs, one sees also remains of excavations in search of treasure, which naturally have been uniformly fruitless.

The presence of graves in a site is often best noted by the observation of the peculiarities which appear in a cut in the ground, whether this cut is a natural one resulting from a landslide or has been made by human hands for other purposes. The use of a probe, a pointed iron rod, serves immediately to supplement the preliminary observation made in the cut. The use of this instrument is based in part on the observation that earth which has been disturbed to make a grave does not recover the hardness of undisturbed earth even in several centuries.

Huaqueros frequently determine the position of graves by the difference in sound noted when a crowbar is forcefully jabbed into the ground in the place where a grave is hidden. This principle is also illustrated by a story told by a French explorer who said that he galloped over a cultivated field and discovered the site of a grave by noting the differences in the sounds produced by his horse's hoofs.

Cuts are often made in the ground by archaeologists to locate more surely the positions of ancient graves and to observe their relations to one another.

Cuts made by others are also very useful to the archaeologist because of the opportunity they offer him to make his own observations.

Holes dug in the ground for house foundations frequently bring to light the most curious products of human industry. Inca graves were found repeatedly in the excavations for the foundations of the hospital and of the new Instituto Mejía in Quito. The widening of the street beside the Seminario Menor reveals, in the cut made in the earth, traces of a native cemetery of Inca times. The excavation of gravel for industrial purposes has led to a number of important discoveries: the earliest remains of human industry, found near Taubach in Germany;

the famous human jaw, of Mauer, near Heidelberg, the oldest actual remnant of primitive man; some of the earliest remains of American man near Trenton in New Jersey in North America; and remnants of man of the ancient Mousterian period in England. A telegraphic news item from Lima mentions the discovery of a great cemetery of one of the earliest periods of Peruvian civilization in the course of the removal of earth for a new road between Lima and Callao.

Cuts in the earth for new railroad lines are especially useful for the discovery of new and important archaeological evidence. The first traces of a very ancient period of civilization of the valley of Chancay, previously unknown, were first noted in a cut on an old railroad line between Ancón and Chancay. The construction of this same railroad led to the discovery, in the middle of the desert, of a cemetery of another civilization rarely represented in this fashion on the Peruvian coast. The cuts for the new railroad from Sibambe to Cuenca revealed, at Joyaczhí, ancient cap sites of the Tuncahuan period rarely found in this form and in this region.

The remains of the *Pithecanthropus*, long considered the precursor of man on the earth, were found in cuts made by a river near Trinil in Java. Ravines and cuts made by the sea along the face of the valley of Lima, near Bellavista south of Callao, revealed an occupation site earlier than the first Peruvian civilizations.

When there is some reason to think that there are ancient graves in a region, it is easy to locate them by means of the probe. In some soil the probe goes in more easily, and consequently longer rods are used. In harder ground such long rods are not necessary, and the success of the operation depends rather on the probe finding and bringing to the surface traces or indications of the presence of building stone or tomb covers, or earth of a different color, or evidence of pottery or bones in the ground—all these are clues to the existence of graves.

The success of the archaeologist's work depends ultimately on the way in which he takes advantage of the remains found for purposes of study.

Ruins should be measured and plans of them drawn from the measurements. In dealing with an extensive group of ruins, such as those at Moche in the valley of Trujillo, or those of Dumatpara near Cochapata, measurements taken with a metric tape twenty-five or thirty meters long are not sufficient, and trigonometric procedures must be followed, with an exact instrument for measuring angles, like a pantograph [*sic*, for transit], and with logarithmic calculations. The archaeologist should keep a set of logarithmic tables at hand, therefore, against the occasion when he needs them. A base for the rest of the observations is first laid out with a surveyor's chain, a more accurate method of measurement. The use of a glass to determine distant points is indispensable in this work. A telescope fixed on the instrument used for measuring the angles is the most useful.

For making a plan of a ruin one always needs a surveyor's tape and a good compass, if possible with a mirror. Distances can also be measured by pacing. Eighty centimeters is taken as the normal equivalent of a man's pace. However, this method of measurement can never be very accurate.

A compass is absolutely necessary for making a plan, for it must be used for measuring angles and determining the orientation of buildings. Ancient buildings the walls of which all meet at right angles are very rare, and a plan which

does not take these irregularities into account is usually worthless. The plans of Peruvian ruins given by E. George Squier in his book *Peru: Incidents of Travel* all suffer from this defect. It is not that the civilized nations of antiquity did not know how to distinguish various angles, for we have imposing evidence to the contrary. Near Huamachuco the Incas laid out the plan of a new city, now called Viracochapampa, surrounding it with an enclosure wall about five hundred meters long on each side. The four angles formed by this wall are true right angles, differing scarcely in minutes. The Incas must have had some good geometers, to lay out the angles so exactly. In their buildings most of the walls met at right angles, but they also varied, some of them intentionally. There are also Inca buildings with all the rooms in trapezoidal shape, but even in these buildings, the angles at which the walls met was fixed by formula.

The plan of a ruin may be obvious as far as its general layout is concerned, but the details of the arrangement may be sufficiently obscure to prevent the drawing of a complete plan. Some details, such as the location of the doorways and steps which formerly existed, may have been lost because of the poor state of preservation of the ruins. If so, the missing details must be determined by means of excavations. The layout of a building should appear in the plan, if possible, with the same clarity that we would expect in a plan of a modern building.

In order to understand the complete plan of a building better, it is preferable to excavate it one room at a time, instead of starting to dig in several places at once.

In making the plan it is advisable to measure the long distances first, instead of beginning with the small measurements and adding the others later.

Usually, the irregularities of the ground should be shown in the plan as well, in order to make it a better representation of reality.

Shell heaps must be excavated, and in the excavation the layers of different cultures must be distinguished and the different materials they contain duly noted.

The objects found should be kept separate according to the layers in which they were found. A plan of the shell heap must be made, using a level to measure the different stratifications so that the levels can be indicated in the plan. A level is also indispensable for determining the elevation of the shellmound over the adjoining sea or over the land around it, or, as was necessary in a shellmound on San Francisco Bay in California, the depth of its base below sea level, resulting from subsidence in past centuries.

In the excavation of graves, the surveyor's tape is also needed to determine the dimensions and the depth of the shaft and the position of the objects inside it; the compass also, to determine the orientation of the body, an observation which is often interesting because of the differences of custom between tribes in this respect.

It is necessary to determine the way in which the grave was covered, the difference of the level of the ground at the time it was dug from the present ground level, the kind of earth with which the grave was filled, and the position of each object deposited in the grave with the dead or laid in some separate place.

Experience has shown that it is easy to distinguish the earth of the fill from the walls of the shaft, a circumstance which makes the determination of the

shape of the shaft easier. The excavation should not be considered complete until it reaches undisturbed earth at the sides and at the bottom. Innumerable excavations have failed because this fundamental principle was not observed, the most important objects remaining unexcavated in the ground.

No object should be moved from its position in a grave until its location in the shaft has been recorded. When the objects are removed, they should be kept together and labeled piece by piece while the circumstances in which they were found are still fresh in the memory. The director of the excavation should keep at hand a number of sheets of paper and small boxes in which to preserve any small and delicate objects that are found. In transporting the objects to his lodgings, he must use extreme care, wrapping them in paper or packing them in moss or grass or wheat straw so that they will not be broken or damaged by rubbing.

Pottery objects need special care. Baked clay often becomes as soft as fresh clay after remaining in a grave in wet soil. When handled in this condition, a vase or figure is just as likely to fall apart as if it had never been fired.

When the pottery is uncovered, it should be set for half an hour or so in a covered place in the shade, so that it will dry; and only after this operation can it be handled freely.

The painting on pottery also often becomes loose and liable to destruction when it is thoroughly soaked.

The sherds of a broken vase must be collected, and the earth sifted with appropriate screens for this purpose. If this precaution is omitted, the loss of numerous sherds is absolutely certain, for they become so mixed with the earth that there is no way of finding them. Naturally, the vases which are the most valuable for study purposes are often the most broken; it would consequently be criminal to save only the complete ones and abandon the broken ones, which, if reconstructed, would have the same study values as the others.

Care must be taken to wrap the fragments in paper for transport so that the edges will not be damaged.

Everything a grave contains is important for the reconstruction of human history—important partly in a descriptive sense, for it shows the development from simple beginnings toward perfection, becoming gradually better in the course of thousands of years, and partly for use in a comparative study leading to conclusions regarding the path followed up to the stage represented by the contents of the grave. There is no type of objects—of cloth, of metal, of wood, of bone, and so forth—which cannot be used for such comparative studies. Even the ways in which a body is disposed in the grave present a rigorous sequence, as one may observe by noting the order of positions followed in Europe—from the original horizontal burial to the reclining position, then to the partially flexed position, then to the fully flexed position, and finally the burial of the head alone, separated from the body—and that this order is repeated in the same sequence in the South American development, from the primitive period to the time of the Proto-Nazca civilization.

I will add some notes about certain further details which must be observed in the excavation of graves.

If the body is found intact, it is necessary to examine the skin to see if it shows tattoo marks, because many representational vases of antiquity show designs on the body, and often mummies have been found with indications of tattooing, for example in the valley of Lima. Sometimes, even the toothed implements used to produce the designs on the skin have been found.

Furthermore, some attention should be given to the possibility of finding pathological phenomena in the skeleton. Traces of old fractures are common, and these were usually poorly set; traces of other afflictions which affected the living are also found; and all these matters need very detailed study.

If one wants to take a photograph of the position in which the dead person was laid out in the tomb, it is often necessary to alter the color of the earth by scattering ashes or plaster on it in order to create a color contrast between the bones and their setting. The same problem often arises in photographing petroglyphs, and here it is customary to color the petroglyphs. In any case, a very much better effect is gained by providing for contrast in the picture.

Any skull encountered in a grave should be saved. Its shape will tell us to which anthropological group the individual belonged, and it is thus often useful in solving problems of tribal migration or the movement of whole cultures.

Hair color may be altered chemically; a blonde color consequently may be no indication that the individual belonged to a different race.

It is important to note indications of artificial deformation in the skulls; sometimes it is even possible to observe on infant skulls the procedure used to produce it.

Traces of trepanation must be carefully observed on skulls, since these are primitive attempts at surgery and are of great interest for the history of curing.

It must not be supposed, either, that remains of animals and plants found in graves lack interest for human history. Both can tell us about the food habits of the people and the degree of their historic development.

For example, the aborigines of Arica did not yet know agriculture. They lived on the products of the sea, such as fish, shell fish, and *cochayuyo*, a marine alga. In the highlands, the cultivation of quinoa was already known at the same period. Our potato is of American origin and is found represented frequently on vases of very early Peruvian periods, such as Proto-Chimu; the actual remains of potatoes are found a little later in graves of the Tiahuanaco period. The cultivation of maize, of beans, of squash, and of many other agricultural products seems to have been introduced into South America from Central American regions. There was a time when the botanists of the Old World believed that beans, squash, gourds, and the use of cotton originated in Europe and were introduced into America only at the time of the conquest; and it was only through the actual discovery of plant remains in the graves that these ideas finally changed. The origin of the sweet potato is not yet known; it was cultivated in China as well as in America. The origin of the banana is also a still unsolved problem.

It appears from the discoveries made in the graves that the catching of sword-fish in the open sea began only in the Tiahuanaco period. Probably watercraft suitable for putting to sea and risking a fight with this dangerous fish were lacking in earlier times.

In the first Maya period of Ecuador, the use of the llama was still unknown,

and only bones of wild deer are found in the graves. Llama bones are also lacking in the graves of the first part of the Peruvian period of Proto-Nazca, and the figure of a llama led by a rope appears only rarely painted on the vases of the same period. Evidently the animal was not yet domesticated, as it was later. Its use for carrying burdens was perfected between this period and the next.

It is very important to preserve all remains of ancient dogs found in graves. The dog is the only domestic animal common to the Old World and to America. The domestication of the dog seems to have been based in America on a different animal from that of the Old World, and the jackal, which is found in Argentina, for example, seems to have been used in part for this purpose. The ancient Peruvians had already bred four different breeds of dog, including a mastiff and a small dog, just as in Assyria and Egypt different breeds of dogs were already known in extremely early times. Observations made on the ancient breeds of dogs may also prove valuable for a study of the ramifications of culture types.

There is thus nothing in the types of civilizations which is not capable of throwing light on the character and ancestry of civilizations, and it should be the duty of the archaeologist to omit no observation on any object he finds, so that his results will contribute to the history of civilizations.

APPENDIX B

LETTERS FROM ARGENTINA AND BOLIVIA, 1893-1895

BY

MAX UHLE

INTRODUCTORY NOTE.—Some of the best of all Uhle's work is in his letters written from the field to colleagues and sponsors. These letters give all sorts of extremely valuable information about the country traversed, modern Indians, and the archaeological sites where Uhle worked, much of it information that never appears in his formal reports and interpretative papers. This memoir would not be complete without a sample of these letters from the field, and to give one I have chosen a series of four letters descriptive of Uhle's first field work in Argentina and Bolivia. These letters were written in German to European colleagues and published in the *Internationales Archiv für Ethnographie* and the *Verhandlungen der Gesellschaft für Erdkunde zu Berlin*. They are somewhat better written than the 1923 lectures, and I found less need to rephrase them in making the translation.

A perusal of the bibliography will indicate that a number of other letters written by Uhle in Bolivia were published in European journals at the time. There were also many other letters to Bastian and others that have never been published. These four are selected to give a running account of his activities during the time he was working for the Berlin Museum.—J.H.R.

EXTRACT FROM A LETTER FROM MAX UHLE TO J. D. E. SCHMELTZ, WRITTEN FROM SALTA IN 1893

I cannot describe to you the degree to which personal observation of the regions in which the pre-Columbian cultural history of America was enacted increases one's interest in research subjects, changes one's general point of view, stimulates the development of research methods, and improves the results of one's researches. It is, scientifically, like attaining a new homeland.

From Córdoba I went on mule back to Catamarca, from Catamarca by way of Chumbicha to Tinogasta, from Tinogasta north and south, to Fiambalá and Chilecito, then on again by Belén, scouring its mountain valley twice; then by Andalgalá to Tucumán and from there to the high valley of the Calchaquí, which I got to know from Fuerte Quemado to Molinos; then on again by Conchas to Salta. Here I am sitting now and awaiting the final windup of my Argentine collecting affairs in order to be able to go on soon to Bolivia, the principal field of my studies. I had formed no conception in Europe of the degree to which life in the mountains is still Indian, and even here is still like ancient times. *Even the knowledge of firemaking with sticks is still known far and wide*, a mental reminiscence of primitive antiquity which is very significant. (Uhle, 1894c.)

LETTER FROM DR. MAX UHLE ABOUT HIS JOURNEYS IN SOUTH AMERICA

Tupiza, November 16, 1893

Several roads lead out of Argentina to Tupiza: (1) a road through the Quebrada of Humahuaca; this road branches off in the neighborhood of Negra Muerta and rejoins the second again higher up on the Argentine side. (2) Another through the Quebrada del Toro; this one starts at Salta as the first one does from Jujuy. It leads in part through uninhabited country and for part of one day's journey through a district without fodder or water, rejoining the first road in

the neighborhood of Abrapampa. (3) The third one goes by San Antonio de los Cobres and Poma near the Valley of the Calchaquí; it passes east of Casabindo and west of Cochinoca, by Tinata, and so forth. The second of these routes is at present little used by *tropas*. The through traffic, of small account and restricted to the regions of Tupiza and Tarija since the construction of the railroad from Antofagasta to Uyuni and Oruro, goes from Jujuy through the Quebrada of Humahuaca. By Poma go those who take mules to Bolivia for sale in the late summer months; this is a perennially flourishing Argentine business. These men, to the best of my knowledge, circulate northward through part of the Department of Lipes in Bolivia. A very good route leads also from the Campo de los Pozuelos through the Quebrada of Talina to Tupiza and is often used by the inhabitants of the western Argentine *puna* district, such as those of Cochinoca, Casabindo, and so forth. However, one looks in vain for the Quebrada of Talina on all Bolivian maps, and likewise on the Argentine ones by Mr. Brackebusch on which this part of Bolivia is shown. This is a sorry introduction to what still awaits me in the field of cartography in Bolivia, at least in the south where Pentland and Dr. Stübel have not worked.

The region between Negra Muerta, Casabindo, and the Bolivian border looks in no way attractive. To be sure there are many extensive stretches with good *pasto* for llamas, which are also found in large numbers. But the greater part of the country is good only for *tola*, which affords fodder only for sheep. Cochinoca appears especially desolate; it seems to me to offer, more than any other part of Argentina, convincing proof that the water supply of the country has decreased since the beginning of human memory, as is commonly claimed here. For Cochinoca, once better populated, now scarcely has water enough for its handful of inhabitants; alfalfa fields and seed corn, formerly abundant here, are now entirely lacking because of the present water shortage.

The region of Cochinoca and Casabindo proved unusually productive for my antiquarian studies. West of Cochinoca and south of Casabindo occur rugged sandstone cliffs, at the foot of which the ancient Indians had a marked preference for burying their dead. They also used natural hollows under fallen blocks of stone for the same purpose. Since it rains here only for a small part of the year, perhaps only in two summer months, and the perishable remains are moreover splendidly protected against damage by the weather, the preservation conditions were ideal for the long-buried remains in which I was interested, and I was able to bring here in safety some mummies as well as about 120 skulls, some of which are magnificently deformed; from here I will send them to the Kgl. Museum für Völkerkunde.

For the first time in this region in which I now find myself my journey has become really attractive ethnologically. Here I am in the midst of a population which speaks and understands Quechua to a not inconsiderable degree better than Spanish, though of course it is not as vigorously pronounced as in Cochabamba and not entirely pure in its vocabulary. Yesterday evening I witnessed a folk dance on the street, which, though taking place for a religious festival held that day, was genuinely Indian and reminded me immediately of the dance of the Bella Coola Indians I had seen in Dresden. Where is the southern boundary of

Aymará? Not near Oruro or far north of Potosí, as is stated in nearly all ethnographic text books, but in the latitude of Tupiza, almost at the southern end of the Department of Lipes. I will take the opportunity to make the personal acquaintance of the Aymará of this region. (Uhle, 1893b.)

LETTER FROM DR. MAX UHLE ABOUT HIS JOURNEYS IN BOLIVIA

La Paz, April 16, 1894

I sent my last report to the Gesellschaft für Erdkunde from Tupiza on November 16 of last year (see the *Verhandlungen* for 1893, p. 251). In the meantime, still working out of Tupiza, I have made an excursion of several weeks' duration to the interior of Lipes, visiting Esmoraca, San Antonio de Guadalupe, San Pablo, and Cerritos, as well as making another trip to Talina. I reached Potosí by way of Cotagaita and went from there via Challapata to Oruro. From there I made another trip of a month to the Department of Carangas, in which the chief places I visited were Totorá, Curahuara de Carangas, Turco, Huachacalla, Corque, and Chuquichambi; finally I came back to Oruro. From Oruro I came to La Paz in several days of fast traveling, arriving at the beginning of March.

During this part of my journey I became convinced that Aymará was formerly spoken in the eastern part of the Bolivian highlands as far south as the neighborhood of Talina. Today only Quechua is found in this district. This fact by itself has little importance for an understanding of the ancient linguistic situation in the country, for Quechua everywhere tends to displace Aymará and what is now happening has surely been going on for centuries. There is a clearly Aymará place name, Skunkani (the name of a peculiarly shaped knob of rock) about $1\frac{1}{2}$ leguas south of Talina. In the valley of Cotagaita occurs among others the place name Membrilluni, which supplies proof that even in recent Spanish times so much Aymará was spoken in this valley that a place could be given a Spanish name with an Aymará ending. In the narrow river valley of Toropalca between Cotagaita and Potosí, among its inhabitants who lead a peculiarly unspoiled and aboriginal Indian life, there exists even today the memory that, although formerly as now they all spoke Quechua, Aymará was their original speech, and a few of the older people can still express themselves just as well in the older colloquial language as they can in the newer one. The fact that in Potosí the Aymará language is entirely unrepresented and that it is only rarely spoken in Oruro can be sufficiently explained by the recent Spanish origin of these cities. Because their prestige gives it a slightly higher social status, Quechua is making decided advances against Aymará in central Bolivia. It is as astonishing as it is certain, for example, that La Paz is in the exclusive possession of Aymará speakers. To be sure, Aymará has lost much of its original purity; it has accepted numerous Spanish words into its vocabulary, although not so many as, for example, the Quechua of Potosí, which sometimes resembles Spanish put together according to the rules of an Indian grammar.

With regard to archaeology, the southern part of the highlands of Bolivia offers only very scanty profits. Archaeological remains first begin to be somewhat more plentiful in the immediate neighborhood of Lake Poopó. Even there, the

region east of the lake is today almost completely exhausted owing to earlier looting of the adobe burial structures there; whereas, in the region west of the lake and in the Department of Carangas as well—areas which are almost never traversed by travelers—the scantiness of the profits can be said to correspond to the natural poverty of this region, a fact which explains why very little collecting has yet been done in the area. In a valley between Totorá and Curahuara, already praised by Alcide d'Orbigny for its abundant antiquarian remains, I succeeded in taking from some burial caves a number of mummies and a larger number of skulls. Here the dead were deposited in great honeycomb-like sections, or cells, built of adobe. At some distance from the burial place is found also a stone burial structure of the shape which is usually built of adobe. It is an excellent example of the true cyclopean type of construction, surprising in this place, for no similar or related construction is otherwise found in the whole region. There are pictographs to be seen on the cliffs. Near-by hilltops—for example, one near Curahuara—are fortified with defensive walls.

The north part of the Department of Carangas is full of the peculiar adobe-built burial structures of which Alcide d'Orbigny and Francis Castelnau have given inadequate illustrations. The name *chulpas*, commonly employed for this type of construction, should not be recommended as a generic name, for *chulpa* means not only this type of building but in general designates anything deriving from the pre-Inca period, such as stone beads, copper knives, stone mortars, and so forth (Quechua *čulpa*, ancient). These burial structures are found on the east side of Lake Poopó as well as the west. In the south they apparently begin in the neighborhood of Quillacas. The traveler coming from the southeast, from Potosí, comes upon them first in the neighborhood of Ancacatu, and they may also be found in abundance in Chayanta. In the course of my journey I found them most numerous in the north half of Carangas. In particular, many such burial structures, as many as 50 or 100 in the same place, are found near Chuquichambi, Curahuara de Carangas, and in the valley of Corque. In the neighborhood of Turco, where suitable clay for adobe construction is lacking, there are some built of quarry stone. Between Vilacollo and Turco in the north and Huachacalla in the south they are almost entirely lacking, for the same reason; they are again numerous in the neighborhood of Andamarca. It is no exaggeration to calculate the number of burial structures found in the area between La Barca on the Desaguadero, Vilacollo, and Turco at 800 to 1,000. Many of these flimsy structures are already ruined, and the unusually heavy downpours of rain in the summer months of this year have contributed not inconsiderably to the destruction of those that remained standing. It is a cause for some astonishment that although many have decayed until they are level with the ground and of others only fragments remain standing, nevertheless many hundreds have survived for about half a millennium. Fear of touching the remains of ancestors is at present almost nowhere greater than an inordinate desire for the valuables which people believe are to be found in the burial structures. Hence there can be now only a small part of these structures the interiors of which have not been ransacked. Now and then one still finds the abandoned skull in these monuments once destined for the repose of the dead.

My trip to Carangas fell in the rainiest month in the year, and clear evidence of how much more severe than usual the rains of last summer were can be seen, for example, in the neighborhood of La Paz in the form of roads destroyed by the rains or covered by landslides. Nothing like it had been experienced for many years. Because of the rains I suffered doubly in a department so little developed as Carangas in the amenities of civilization, from the swollen rivers, bottomless roads, great stretches of swampy country, and frequent downpours, combined with a lack of civilized comforts. To my sorrow I found that these conditions prevented my visiting a settlement of Uros, some 500 strong, who live at Chipaya near Lake Coipasa. I found myself in Huachacalla, only 7 *leguas* away; but there were no roads, even in name, from there to Chipaya, and any further advance at this season would have brought serious danger to animals and men. I could not expose myself to it at this time at so long a distance from Oruro. Nevertheless, my penetration into Carangas still had important results, for I was able to find two Uro families living in Huachacalla and to make a detailed study of their peculiar language, as thoroughly as was possible in the short space of a few days and with the assistance of an Aymará interpreter. After my return I will be in a position to make available to science a short grammar of the Uro speech of these people. The peculiar speech of the Uros, which is spoken only by the population of Chipaya in the interior of Carangas, and by them only in their dealings with one another, has, except for an insignificant number of loan words, nothing whatever in common with Quechua and Aymará, the Indian languages known hitherto from the southern part of the Andean highlands. Its grammatical structure is simpler than that of these latter languages and in general completely different from theirs. The pronominal particles are not suffixed to substantives and verbs but are prefixed to the former and placed separately before the latter, and so forth. I is *werél*; thou, *ámki*; he, *nĩ*; father, *ep*; mother, *andál*; water, *kuás*; vicuna, *óka*; llama, *juála*; eye, *ćúke*; ear, *kúnni*; sun, *túñi*. For the numerals the Uro have only one to four (*sindálla*, *pisk*, *čep*, *pákpik*), and so forth. My Uro vocabulary amounts to more than four hundred words peculiar to the language.

The Uros must once have occupied the greater part of Lipes as well as the Department of Carangas. In this area they are now, except for the tiny remnant at Chipaya, entirely Aymaraized or, as in part of Lipes, Quechuized. They retain only various of their physical characteristics, as, for example, their short stature. There is also a settlement in Coro, south of Toledo and southwest of the Desaguadero, the inhabitants of which are distinguished by the name Uro. They have also preserved the memory of their former tribal relationship, but their original language is forgotten. Oruro (probably Urouro) also must have been named for the Uros, who probably were still living several hundred years ago on the left bank of the Desaguadero. There is another place named Oruro, west of La Paz in the Desaguadero area, near a place where there is still today a small colony of Uros who apparently still speak their language. The examination of the speech of this latter Uro group and a comparison of the results with the speech of the Uros of Chipaya should assume special importance for the improvement of our knowledge of the Uro population of Bolivia.

At present I am staying in La Paz, kept here for the moment by various circumstances, engaged in theoretical and practical studies of Aymará. The museum here is insignificant and must in former years have had larger holdings than now. However, the head of the great monolith from Tiahuanaco which Alcide d'Orbigny saw at Collocollo and illustrated in his book of travels is now in the museum. I can unfortunately see no chance yet to continue the compilation of the cartographic notes which I brought with me from the south, so far as it can be done in La Paz. (Uhle, 1894*e*.)

LETTER FROM DR. MAX UHLE ABOUT HIS JOURNEYS IN BOLIVIA

La Paz, January 22, 1895

If the Gesellschaft für Erdkunde has heard nothing for so long of the continuation of my expedition devoted to the interests of the Königliches Museum für Völkerkunde in Berlin, the cause was a standstill in my undertakings which kept me in La Paz for six months—an interruption which nevertheless has turned out to the Museum's advantage, for I found time to become better acquainted with Aymará, the characteristic language of the Bolivian *puna*. Thanks to this long time spent in La Paz and to the useful German introductory work of Dr. Middendorf embodied in his grammar of the Aymará language, I was able, with some friends living in La Paz, to pursue more detailed studies of this language than was possible for most of my predecessors in this field. I can already promise a more complete grammar of this language than those which have appeared so far.

The months from September to December of last year took me twice to the shores and islands of Lake Titicaca. With regard to these expeditions, special interest attaches in the first place to the neighborhood of Copacabana and the islands of Titicaca and Coati, and in the second place to the eastern shores of the lake in Bolivian territory, from Achacache to Huaycho. The next problem was to send scientifically precise, complete, and selected material to the Museum für Völkerkunde.

Direct study went hand in hand with collection. I measured the Inca ruins of the islands of Titicaca and Coati in detail. Unfortunately, they are badly ruined. The ruin of the palace on Coati is at present the best-preserved one to be found on the two islands. Next in importance and state of preservation are those of Pilkokamani, on the south side of the island of Titicaca, which stretches northward for three *leguas*. On Titicaca I note some six different groups of ruins of structures which were all built in the last period of the expansion of the Inca empire and are distributed on the south, east, and northwest sides of the island. The ruins of the ancient so-called "Palacio" erected near the north end of the island, which were the most important from the point of view of area covered, I found so poorly preserved that their study could add nothing extensive to my knowledge of the architectural style of the last period of the Inca empire gained at the other ruins. The style of the whole group of Inca constructions on the two islands of Titicaca and Coati is homogeneous throughout and basically different from that of the ancient structures at Tiahuanaco, of which only the foundations remain in place.

Eager to determine the cultural characteristics of the ancient ruins and other remains to be found on the east side, I crossed from the peninsula of Copacabana to the neighborhood of Achacache on the east side of the lake. George Squier had also visited the east shore briefly, in the neighborhood of Escoma. On this shore there are no Inca ruins like those on Titicaca and Coati, and also no ruins which appear to correspond in character to those of Tiahuanaco. The result of my journey of several weeks from Achacache to Huaycho, on which I nowhere penetrated more than about $1\frac{1}{2}$ German miles from the shore of the lake and generally traveled only in the narrow coastal plain, about $\frac{3}{4}$ of a mile wide, was the knowledge that here lived a population with an entirely different type of culture from anything I had yet found elsewhere in Bolivia. Both ruins and artifacts had their own peculiar character. There was no lack of ruins; they seemed nigh endless. From near Achacache to Huaycho there were innumerable hilltops crowned with fortification walls, ruins of houses, and so forth, remains of ancient pueblo-like settlements. These ruins are found mostly on heights 200 to 500 meters above the smooth surface of the lake. The native population must have been very dense in this region in ancient times. Here and there one finds hundreds of ruined houses close together, with numerous alleys between them, surrounded by imposing fortification walls. But in striking contrast to the density of the population which eked out its existence in these airy heights is the notable simplicity, the lack of ornament, and the complete barbarism of the construction style. One has scarcely the right to compare these ruins with the Inca ones of the islands as regards the fitting of the house walls of unhewn stones, the convergence and inclination inward of the house walls, the frequent actual narrowing upward of the doorways, or the fashion of covering the one-room houses with long, thin slabs of stone. And the artifacts are wholly comparable. There was a predominance of stone implements, which, though polished, are of a primitive sort. They could be found in great numbers. The prevailing style of pottery was entirely different from anything previously found. The decoration was predominantly of a primitive plastic sort such as I had scarcely encountered in all my travels to date. Any approach to ornamental designs in the painting turned out to be entirely unintentional.

Since I also occasionally found on the ruined sites themselves Inca potsherds and sherds of other vessels which in painting and shape seemed to me to point to the culture of Tiahuanaco—the first mentioned were relatively scarce—I became more and more inclined to admit that these peculiar hill pueblos were still inhabited to some extent in the last period before the arrival of the conquering Spaniards. From Achacache to Huaycho there is no lack of scattered indications that the Incas also paid some closer attention to the coastal area. Inca remains are of course incomparably more numerous in the neighborhood of Copacabana and on the two islands. Experience leads the traveler to expect abundant and pure Inca remains only where the climate is most temperate. Thus one finds numerous pure Inca remains precisely around Copacabana and on the islands where the climate is relatively very mild; proportionately many also, among those of other types, in the more sheltered valley of Tiahuanaco, and proportionately fewer on the colder, more inclement, and generally less hospitable east

shore of the lake. Inca remains are also scanty on the Bolivian *puna*. On the other hand, it is well known that the Incas went on to settle in the more temperate valleys of Cochabamba and Sucre and that the mild outlying valleys of the cordillera in Argentina served them as bases for the expansion of their culture far to the south.

The barbaric type of culture which centered in the region on the east shore of Lake Titicaca stretches to the southwest at least as far as the Strait of Tiquina. There are grounds for suspicion that it can be shown to have extended at one time to the east, to the upper part of the valleys which drop down to a warmer climate. On the other hand, it may seem surprising that remains of buildings and potsherds of the style of those on the east shore can be found on a hill which projects far out to the east, the hill of Qea on the island of Titicaca, which appears to be a domain of the pure and fully developed Inca culture.

To pick out only a few points from the abundance in my notes, I may be permitted to remark that it seems to me to be demonstrable that, in those truly distant centuries in which the unfinished ancient structures at Tiahuanaco were begun, Lake Titicaca can have had an average level scarcely 1 to 3 meters higher than at present. Not only are there Inca structures on the island of Titicaca which even now stand only 1 meter, or in other places 5 meters, above the lake—an ancient circular grave, probably that of a noble, is even visible about $\frac{1}{2}$ meter under water in the neighborhood of the Palacio on the island of Titicaca—but on the south shore of the peninsula of Copacabana opposite the island of Anapia there is a great terrace-like construction built of regularly hewn stone blocks which must have been built about the same time as the construction of Tiahuanaco; it has a total height of $2\frac{1}{2}$ meters and its foot is only 40 centimeters above the level of the lake, as I observed it in September of last year. Because of the unusually heavy rains in the first months of last year, the level of the lake rose about 1.75 meters by April and reoccupied the wide cultivated flats which had always been considered reclaimed. In September of last year the lake surface was still 0.85 meters above the usual level. (Uhle, 1895c.)

APPENDIX C

DOCUMENTS RELATING TO THE YEARS 1903-1906

INTRODUCTORY NOTE.—The University of California Museum of Anthropology has an extensive file of letters written by Uhle to Mrs. Cornelius Stevenson and to Mrs. Phoebe A. Hearst, covering his field work from 1899 to 1905. Extracts of some of these letters have been published by Kroeber and Strong, but an even greater quantity of equally important material remains in manuscript. These letters describing Uhle's field work are much more important for what they contribute to Peruvian archaeology than for what they tell about Uhle; they should consequently be edited and printed in a publication that would emphasize their archaeological contribution rather than in a memoir of their author.

Of letters of a more personal nature, the Museum has very few, for Mrs. Hearst turned over to it only the letters dealing directly with the collections. I did find a few items, however, mostly dealing with Uhle's second contract and his resignation in 1905 to take up the new job in Lima. These are included here as documentation of some of the statements made in the memoir. All these letters and notes were written in English and are printed here without change.—J.H.R.

LETTER FROM KROEBER TO UHLE

March 6, 1903

Dr. Max Uhle
700 Van Ness Avenue,
San Francisco.

DEAR SIR:

I have the honor to communicate to you the following resolution of the Department of Anthropology:

That an offer be made to Dr. Uhle to return to South America as soon as his report is finished and continue his work there for three years. Making archaeological and ethnological collections in such regions as will give good results, he is to give a portion of his time to linguistic research in connection with his ethnological work.

The offer is accordingly hereby made to you, and I beg to request the favor of a reply.

Respectfully,
A. L. KROEBER
Assistant Secretary
*Department of Anthropology**

[This offer was formally accepted by Dr. Uhle on March 9.]

EXTRACT FROM A LETTER SENT TO UHLE, IN PERU, BY F. W. PUTNAM, OCTOBER 8, 1904

It falls to me to write you the unpleasant information that you will have to cut short your explorations in Peru. Mr. Clark, who has been empowered to attend to these matters for Mrs. Hearst, fully realizes that an agreement was made with you for three years, and that agreement will, of course, be carried out; only, in-

* Letterbook 2, 11 Dec., 1902-9 Dec., 1903, p. 63; in Univ. Calif. Museum of Anthropology.

stead of passing the three years in Peru, I am requested to have you return to America in such time as will enable you to prepare your report before the three years have expired. I am as disappointed as you will be at this outcome; but we cannot help it. When one has done so much for science and education as Mrs. Hearst has, we can only try to do our part when the necessity for retrenchment arises. Therefore I shall feel obliged to you if you will kindly consider this whole matter and write me when it will be best for you to leave your field work and return to California so as to have plenty of time to catalogue your recent collection and complete your report before the three years agreement with you has expired.*

[Dr. Uhle sailed for Peru on November 9, 1903; on this date, accordingly, his contract began to be operative.]

DRAFT OF A LETTER FROM UHLE TO PUTNAM

Supe, November 3rd, 1904

DEAR PROFESSOR PUTNAM,

After having finished my work in the Chancay valley the most prominent result of which was the discovery of an unknown pre-Tiahuanaco civilization, I started for the north, in search of similar remains in order to widen the oldest historical and geographical base before entering deeper into the farther antiquity. With this view I visited the valley of Huacho and Supe and am now settled at San Nicolas in front of some of the most interesting old Peruvian towns, of which my present discovery is to give the first knowledge. I received your kind letter of October 8th which I hasten to answer.

I am indebted to you for your kind information about the fine way in which my Peruvian collections have been exhibited in the new Museum of the Affiliated Colleges and shall be certainly much pleased by the development which the Museum has taken under your direction.

This Museum will stand as a lasting monument of the generous interest, which Mrs. Hearst has taken in the development of our science, even when Mrs. Hearst unfortunately will feel the necessity of a general retrenchment of her large benefits. I fully realize the importance of what you express, dear Professor Putnam, in your letter of October 8th, concerning my work in this respect and shall carry out the new program of the time of my Peruvian expedition and the work at home following it, with the utmost loyalty. I am very thankful to Mrs. Hearst that she allows me to continue for a period on my scientific investigations. For though I might have been asked to interrupt my expeditions at once, I am glad that I am not in the necessity to do so, as the general results of my expedition would have suffered from it. But I shall now cut the work of my expedition down as much as I can, and shall return to San Francisco in such time, that my report will be prepared there before the three years have expired.

Mr. Hartman had heard right, that I met with an accident by falling into an excavation. This happened at Huaral Viejo in the valley of Chancay. But though I fell head foremost about 10 feet deep and some of my neck was much sprained I recovered soon under the care of Mrs. Uhle and my field work was in no way

* From typed sheet in 1903 letter file, Museum of Anthropology.

interrupted. But I thank you for your friendly inquiry and for the kind expression of your sympathy with what fortunately has not been quite so serious.

With best regards for Mrs. Putnam and yourself, in which my wife joins heartily, I remain dear Prof. P.

Yours very sincerely,
[MAX UHLE]*

LETTER FROM UHLE TO PUTNAM

The University of California
Archaeological Expedition to Peru

Lima, November 22d, 1905

Prof. F. W. Putnam,
Boston

DEAR PROFESSOR PUTNAM:

I beg to inform you that the Government of Peru has appointed me Director of the National Museum of Archaeology which will be initiated under my care from January the first, 1906. I, therefore, beg to offer my resignation of the Hearst Archaeological Expedition of the University of California. I regret, that I am unable to return to America to arrange my new collections and write my monograph on this last expedition. My reports are very full, and may be sufficient to give all the necessary information concerning the objects. The journey is so long and so costly that I could not possibly go to the United States for a few months and the Government here wished me to begin at once on January 1st. Therefore, I am obliged to ask Mrs. Hearst to cancel my contract for the remaining part of my expedition period of three years. I have just returned from the interior of Southern Peru where I followed the traces of my earliest Peruvian civilization. I have collected during my last trip crossing the desert between Lomas and Nazca and from there to Ica, a very handsome and representative lot of objects which I am now about to ship to San Francisco in 27 cases. This is the last collection of antiquities that will leave Peru legally. From January first no more can be shipped from Peru, nor will any foreigners be allowed to excavate here. Or if they do so, all the objects secured by them must go to the National Museum of this country. During the remaining few weeks to January first, I shall write my report on my last explorations in southern Peru. I have always been going and had so little time for writing that I feel I need a few quiet weeks to do it in. My wife is working on the translations of the manuscripts on Moche, Huamachuco and Valley of Pisco of my former expedition. The reason it is not yet finished is that she was always with me in the most out of the way places, where she had a great deal of work to do with our camp house-keeping as we even could not get good help. We shall send the translations in a box to San Francisco together with the maps and the manuscripts. Thanking you for all the kind and helpful interest in my work which you have always shown me, and with

* This draft, in Max Uhle's handwriting, is on the back of a letter from Mrs. Hearst's agent forwarding an \$800 payment; accession envelope no. 178, Museum of Anthropology.

the best regards to Mrs. Putnam and yourself from my wife in which I join her most cordially, I remain, dear Professor Putnam,

Yours very sincerely, and gratefully

MAX UHLE*

LETTER FROM UHLE TO KROEBER

The University of California
Archaeological Expedition to Peru

Lima, November 22d, 1905

Dr. A. L. Kroeber
Affiliated Colleges,
San Francisco

MY DEAR MR. KROEBER;

It will surprise you very much that I shall not return to San Francisco. The government of Peru, now well established, will engage my services for building up the scientific researches and the National Museum of Peru from the first of January, and Mrs. Hearst will be glad that her own engagements of financial character respecting me come to a satisfactory end before the limit, which she set in my favor. I have to thank you for so many favors shown me during the last two years, I wish you all luck in your scientific career and I am sure we shall meet still often on the camp of science personally on this or the elder continent. You will keep my copy of my work on Pachacamac as a souvenir and I hope I have the pleasure to see many of the papers which you will write in the course of time for the benefit of American science. To-day I have some wishes, which I beg to express, and Mrs. Uhle, who feels happy in Peru, and greets you cordially, joins me in them:

Will you kindly send my boxes and other objects of my property left in the Museum to my direction to Lima, by the next steamer of the Kosmos Line, c/o Messrs. Rodewaldt y Cia, Callao. The Kosmos agent of San Francisco knows me, I met him about two months ago at Callao, he promised me to take personally all sort of care in order, with which I would charge him. My wife has especial wishes for some of the boxes or barrels.

Some of the barrels may be weakened by this time and it will be unsafe to send them as they are and my wife begs you to kindly have a carpenter put uprights and cross pieces on them to hold them together [small drawing in the text to illustrate], at the same time examining closely the hoops and to renew any that are weakened, as these barrels hold all her treasures of old porcelain. I believe there is an old trunk among the lot. This will have to be placed inside of a packing case and nailed up. My wife thinks there must be a small box with loose fire irons or fire dogs, if you can come across them please give them to Professor Cauers for us, as a little keepsake. They are old Philadelphia things and I think the Cauers have an open fireplace.

There may be one or some boxes containing photographic plates of my property. They may be known by their weight. I would be very much obliged [to] you

* From longhand original (3 pp.) in the letter file of the Museum of Anthropology.

if you would personally superintend their being opened and being freshly packed if it is necessary so that they may arrive in good condition. Inside of one of the smaller boxes is a little trunk full of silver. In case you meet it unexpectedly, kindly have the box well nailed up. I hope the flat cases containing books and linen etc. of my wife will be strong yet to bear the journey. I hope the same of my own book boxes. Tomorrow I shall go to Graces to arrange with them that you may draw from their San Francisco house the money for the expenses which you will incur for us in packing, transportation to the steamer and freight. Please take the best transportation company for the hawling to the steamer so that not every thing may be broken inside before they are embarked, and kindly enjoin upon the agent of the Kosmos to have them handled with *exceptional* care.

Within the next few days I shall send you my report on Cuzco, while the one of Chala, Nazca and Palpa etc. is under preparation and will be finished during December, as well as the shipping of the final 27 or more boxes of exceptionally interesting and handsome objects from my earliest Peruvian civilization. This collection comprises about 800 objects. I shall write to Professor Putnam myself and also inform him of my new appointment. The two cases collected by my wife under bond now in the University she begs to offer to the Museum as her personal gift. One of the 27 or more boxes still here, a very large one, contains the rest of her collection of moulds, which is quite unique. In all my excavations I have only found one. My wife sends catalogues. In one of the cases of my wife you will find a few earthenware pots from Mexico and a few pieces of ancient copper things. These please keep for yourself if you like that sort of things. The copper needs polishing and makes pretty wall ornaments.

My wife has been working at the translation as best she could during our travels. One of the works is entirely finished. We shall return as soon as possible the manuscripts, translation and maps.

We are hoping to reach Mrs. Hearst by cabling to New York and a letter to her to the same address will probably be forwarded.

I am sure, that the University Museum under your special care will grow and flourish and attract attention all through America. I regret that I shall not be able to see my new collection in place but am sure that you will arrange everything as scientifically as possible.

My copies of Pachacamac, any other books or pamphlets that may have arrived for me, and some books which were left out when packing at San Francisco and remained in the Museum, kindly place all together into a box and send with the other effects.

I shall be glad that I shall have a little more time now for reading and writing and shall take special pleasure to read more carefully the monographs which you wrote and kindly sent me.

Both my wife and I remember you with a great deal of friendship and gratitude, and we hope sometime or other to see you again. We shall be certainly always most happy to hear from you from time to time and with many thanks beforehand for all the trouble you will have to take for my things I remain, dear Dr. Kroeber, your sincere friend always

MAX UHLE*

* From longhand original (6 pp.) in letter file of the Museum of Anthropology.

LETTER FROM UHLE TO MRS. HEARST

Lima, December 21, 1905

*Mrs. Phoebe Hearst,
Paris*

MY DEAR MRS. HEARST:

Your kind answer to my cablegram of the end of November: "Kindly permit cancelling contract January appointed Director at Lima." was thus: "Willing cancel contract."

I thank you with all my heart for this solution of my difficult position between a contract of not much hope for the future which I had to fulfill, and an invitation for an ideal position which will give me work, prestige and a settled home perhaps for all my coming years.

I shall take charge of the new archaeological Museum of the Government here on January 1st and am intrusted with the development of this Museum as well as with all the archaeological and ethnological studies of the old Indians of the country. So I shall have a task for all my life which I could not have hoped to get at San Francisco. What country for such a life work could be more ideal for me than Peru, in the study of which I obtained my best spurs. There is no doubt, my dear Mrs. Hearst, that I owe to you the best part of this happy turn in my career. For it was you who kindly intrusted me with a new expedition to Peru when all seemed to have come to an end after the death of Professor Pepper. And you intrusted me with a second expedition when there were many in the States who doubted of my scientific results or at least of their value, and tried to represent me only as a collector while I was accustomed to a different reputation from the beginning of my work. And this second expedition was the bridge for me to my new position in Peru as the head of the archaeological exploration work. I beg you to consider me always as a grateful debtor who never forgets that you gave and prepared for me this my new work in life.

There is no doubt that the collections of my second expedition for California will be easily unpacked and arranged on the hand of my catalogue. I am sorry that now I cannot write more monographs. But that is always a very expensive task, and perhaps you will not be dissatisfied of being released of those further expenses. I have here still one catalogue and two reports, one on my explorations around Cuzco, which Mrs. Uhle is asked to look through with respect to its English—since some time, and another on my trip to Nazca in October and November, where I brought together a quite exceptional collection which finally completes the results of my former studies, and now I am still occupied in some excavations 12 miles above Lima, where I find the oldest type of the civilization of the Lima valley, which are at the same time the first collections which I send from the environs of the capital. So I am working to the end of this month to fulfill my obligations with all earnestness possible to me. As it was impossible to return to the United States for a few weeks before the beginning of my new duties at Lima, especially when the largest part of the time would have been lost uselessly

on board of steamers (about five weeks in one direction) [!] I had decided that I was serving you best by making these last studies for fulfilling the time.

Mrs. Uhle is still at work upon the translation of my former monographs in manuscripts. When she is ready I shall send all over together with the designs and maps I have in hand, and I shall help as far as I can, in order that the publication may come out well.

Both my wife and I have written a long letter from Cuzco to you and we trust that you have received them. I was informed from Philadelphia that a copy of my work on Pachacamac, which I ordered to be sent to your address, was forwarded to you to Pasadena, where I trust you received it.

Once more allow me, Dear Mrs. Hearst, to express to you my most heartfelt thanks, my deepest gratitude which will last to the end of my life, and which is shared with my wife.

With our best greetings and sincerest wishes for a bright and cheerful Christmas and a happy New Year, I remain

Yours ever gratefully and sincerely,
MAX UHLE*

LETTER FROM CHARLOTTE UHLE TO KROEBER

Lima, April 15, 1906

DEAR MR. KROEBER,

Your kind letter of March 8th lies before me to answer. I am however so deeply indebted to you for all you have done for us, that first of all I must beg you to accept both Dr. Uhle's and my own warmest gratitude. You have had an immense amount of trouble and responsibility with this lot of boxes, and no end of running and arranging. You have done it all so beautifully and carefully that now they are all here and only need to be carried ashore from the lighter in Callao harbour. So far all is smooth and has gone well. At present we are meeting unexpected difficulties! It was promised to my husband that all our things should enter free—now they have forgotten their promise and all the boxes shall be subject to their exaggerated toll regulations, all except the books. So we will have the book-boxes sent to me at once, while the rest of the things shall remain in bond until they relent and allow them to enter freely. Since all are articles of long usage I cannot see why we should pay duties for them, especially as my husband is an officer of this government. Well, I will wait and see what will come of it!

We are here all settled in a beautiful flat, it is partly furnished with fine old Spanish furniture that I collected and am still gathering from old Convents and private houses—cheaper than modern things—and ever so much finer. I have a cabinet maker at work here in the house who is restoring each piece to its original fine condition. But we are waiting so for our cups and plates and tea things, and house-linen—in short for all the small articles that make up a home, and that are withheld from us at present. The "Luxor" arrived with yellow fever on board, and was quarantined for a number of days, then the steamer sailed south and took along what was left aboard of cargo. The agents assure us that our boxes are in the lighter, and were surely discharged before she sailed!

* From typed copy (3 pp.) in letter file of the Museum of Anthropology.

I am truly glad that my collection is considered acceptable and worthy of being set up among the Peruvian collections sent by Dr. Uhle. I felt as if I wanted to add my mite to his labours by collecting that which according to his instructions he was not allowed to gather into his own boxes. It would have been a pity to have all these fine things go to other collectors and other Museums and so I took all I could afford to buy or what chance sent my way as gifts or surface finds. Of the latter there are a good many as I always accompanied my husband to the excavations and wandered miles and miles over the graveyards of Ancon, of Chancay valley, etc. Only to Nazca-Ica I did not accompany Dr. Uhle, to my deep regret. It is the most interesting part of all Peru, but well nigh impossible for a woman to travel through. It must all be done on horseback over wide burning-hot pampas, (deserts like the Saharah) with no shelter for the night, or with a bed in a cane-hut of some Cholo, where the pigs squeal under the bed and the chickens roost above your head, not to mention all the other discomforts there. The collections from there must have arrived by this time, mostly pottery—and I am sure, will form the most interesting part of the Peruvian section. With the last lot of boxes, including objects from the valley of Lima, went my last box that stood in Callao for over a year. It contains objects from Chancay, things that I took for their pretty forms or other reasons, or textiles, that are becoming very scarce now. Of these I collected every variety of cotton and woolen fabrics, that were made in the Chancay valley, and which are well preserved owing to the sandy soil of that region. For just such scraps as the smallest and meanest as those in my collection they charge from 2 to 5 dollars here in Lima, when travellers want to buy some pieces for souvenirs. I enclose my catalogue such as it is. Of course you will have to re-catalogue the entire lot and distribute the things among the various groups where they belong. The moulds of all three boxes (138 or so) all came from one place, the cemetery of "La Mina," that is a site on a sandy slope directly over Chancay where at present not a single unopened grave could be found. I doubt if any more moulds will be found in other parts of the Chancay valley, and so I feel sure that my little collection of Chancay moulds would be rather unique.

Dr. Uhle is busy with the new Museum. He has his hands full to get the old *Palacio de la Exposicion* reconstructed and renovated. The difficulties are untold here in a country where all are alike inert and where workmen and masters are lazy. Still, some day the Museum will be ready to open its doors, and we will be able to travel about as before to explore and collect all that was left—it will be very little in some districts!—Dr. Uhle is happy in having so large and beautiful a task entrusted to him, and he gives all his time and all his energies to his work.

Whether we shall spend all our days here is another question. After some time of constant tropical summer there comes a sort of longing for a good honest winter-day and a nipping frost. I know we shall both want to end our days in a country where we can have both, and Christmas trees and a cheerful warm fire with a bright lamp to read by. These big Spanish houses are not homelike to live in for all one's days, although extremely interesting for a while. You ought to see the view from our balcony, it is like fairy land, palms and tropical plants, a real park of them, and beautiful blue mountains in the distance; while of the city

of Lima we see only the flat roofs and the cupolas of the Churches against the clear sky, and back of it the distant sea with the island of San Lorenzo looming up in blue hazy distance. It is all very beautiful. We will see how long it will be our home!

As to my translations I must say a word of excuse—I could not work at them during these last few months. It was an awful summer, such as they never had experienced here at Lima, and even to this day it is warm. At first, when we decided to stay in Peru we took this house and moved into it. I immediately was taken very ill with Erysipelas and remained half convalescent for a long time after. I am getting over it now and with the cooler days in sight trust that I shall be able to work hard and with regularity so as to make up for lost time. I am often sorry that we did not return to San Francisco, so that we could have told you all our experiences and adventures on these journeys. I also regret that I never shall see the objects again which to us are connected with such interesting and varied experiences! I could have told you stories of all of them almost, I know each one by sight and regret to have them removed out of my ken for ever and ever.

If anyone at Berkeley or San Francisco remembers us, I beg you to give him or her our best regards, Prof. Cauer & family for instance and that of his brother in law. They were besides yourself dear Dr. Kroeber, the only people who showed us kindness and bade us a friendly welcome at the shores of the Pacific. I except, of course, our kindest and noblest Mrs. Hearst, whose charming kindness I shall never forget, and I trust I may meet her again in person to tell her so. I must stop, my letter grows too long! Sr. Uhle will write you himself, soon. I thank you again most heartily, dear Dr. Kroeber, and remain ever sincerely yours

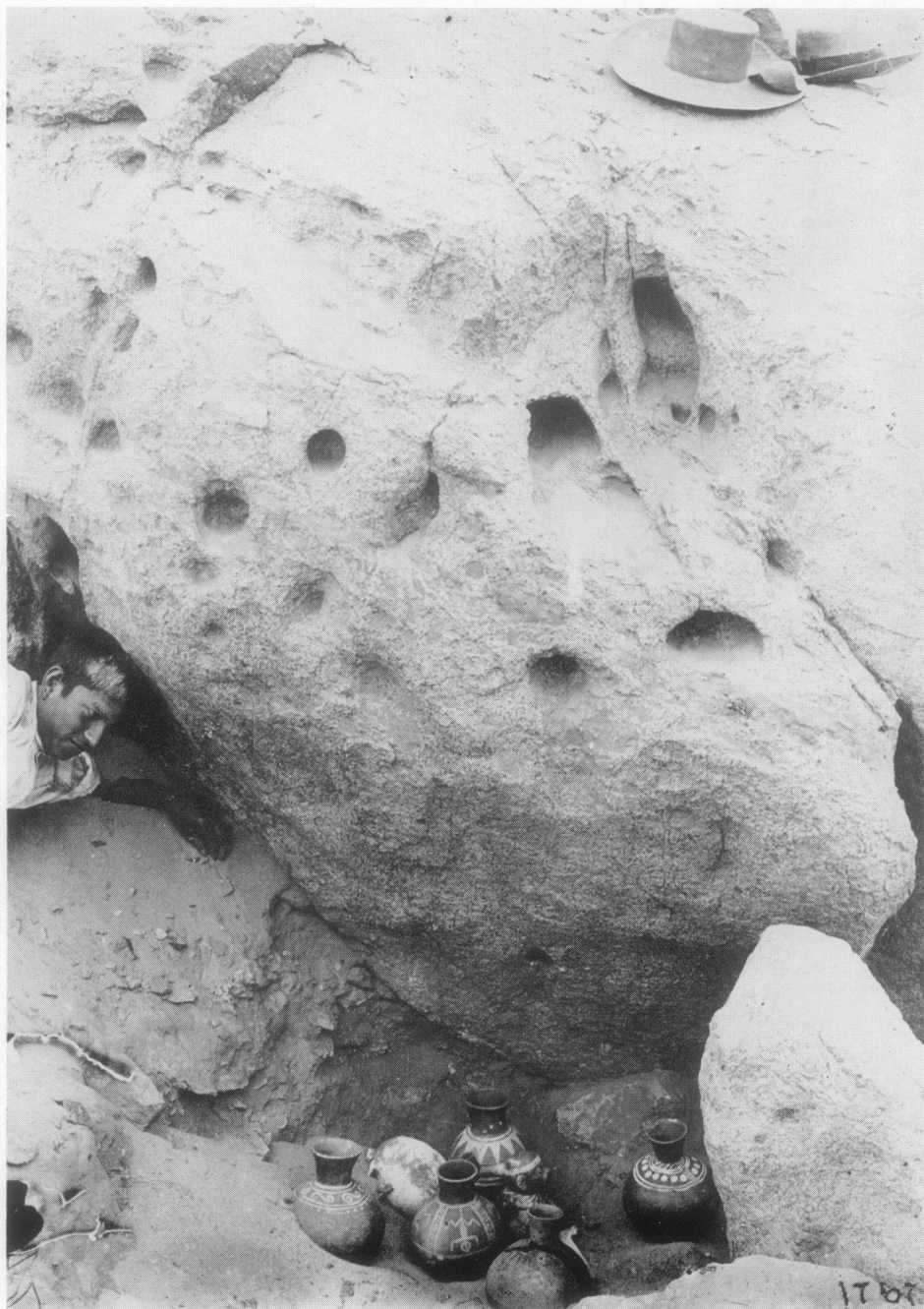
C[HARLOTTE]. UHLE*

* From a longhand original in the letter file of the Museum of Anthropology.

PLATES



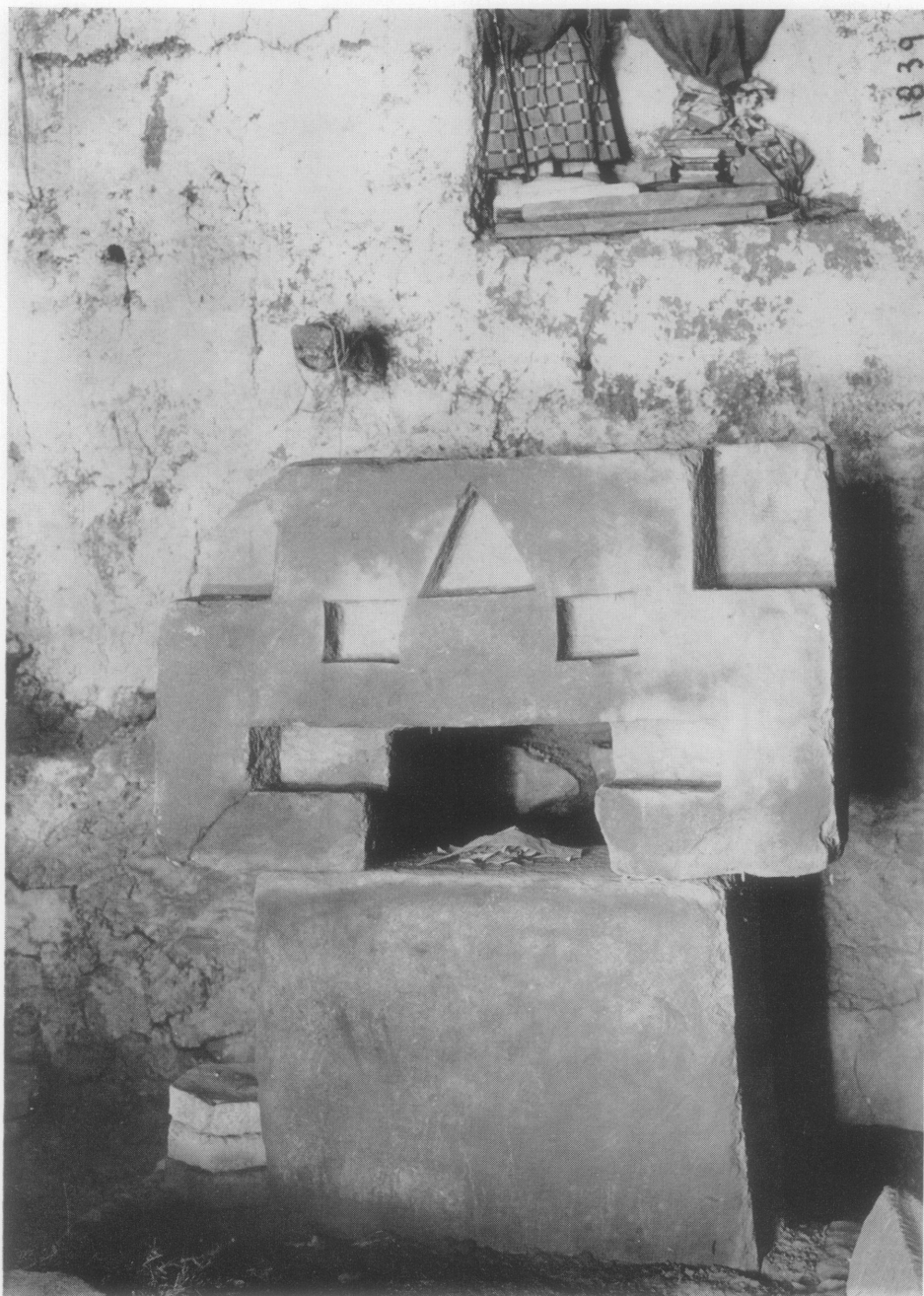
View of the west front of the Huaca de la Luna at Moche. Site F, the cemetery which is the type site of the Moche pottery style, lies at the foot of the structure on the right. UCMA negative 15-1759; photograph by Uhle, 1899.



Uhle's only photograph of a Moche grave lot: Moche, Site G (around a large rock on the slope of Cerro Blanco), Grave 3. Specimens shown are, left to right: 235, skull (not catalogued), 236, 233, 231, 234, and 240. The grave is of the Moche III-IV period. UCMA negative 15-1767.



General view of the plaza of Huamachuco showing the colonial church and bell tower. UCMA negative 15-1786; photograph by Uhle, 1900



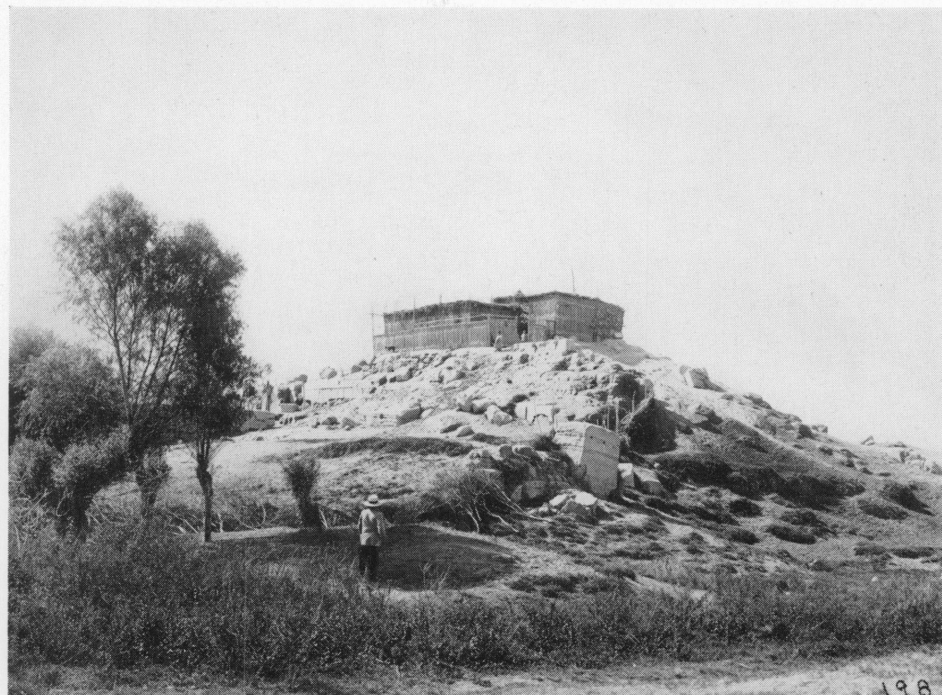
Ancient stone sculpture which Uhle photographed in a chapel on the hill of Marca Huamachuco. He tried unsuccessfully to make a paper squeeze of it. The design he identified as a conventionalized cat head. UCMA negative 15-1839; photograph by Uhle, 1900. Discussed in his MS catalogues, vol. 5, fols. 34-35.



Weaver finishing a piece of warp-stripe cloth on a backstrap loom. Otuzco, Peru. UCMA negative 15-1776; photograph by Uhle, 1900.



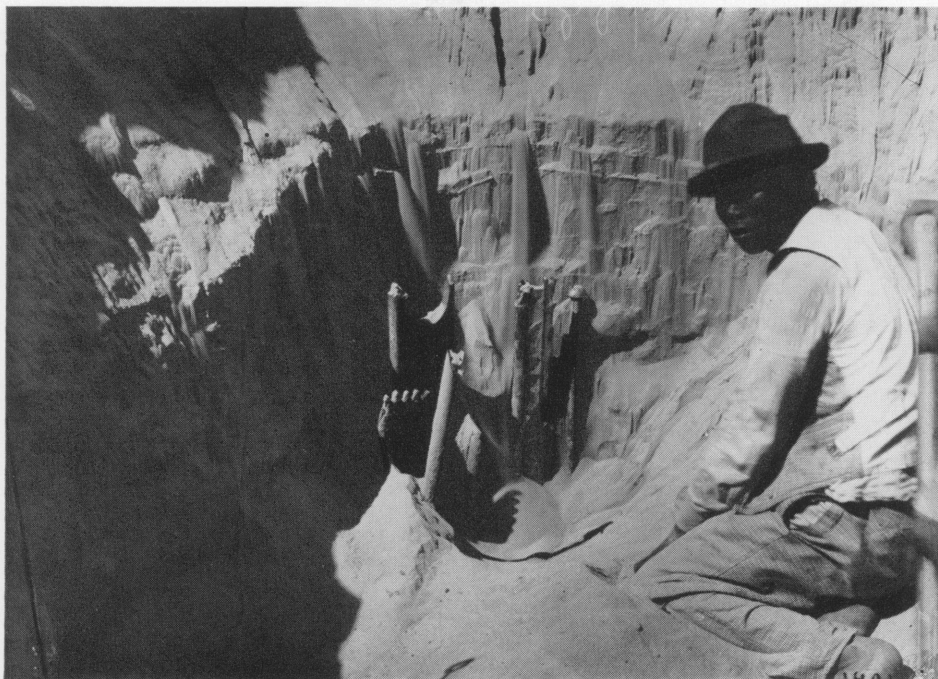
General view of the town of Huaitara in the upper Pisco valley, made in 1901. Interesting details of domestic architecture can be observed. The church (top left) is one of the few colonial churches in Peru which are built on Inca foundations. Uhle made detailed notes and photographs of it. UCMA negative 15-2040; photograph by Uhle.



An ancient coastal ruin with a modern house built on top, between Lurin Chincha and Santa Rosa in the valley of Chincha. The modern house is probably identical with common houses of antiquity in this area. UCMA negative 15-1983; photograph by Uhle, 1900.



Excavating an Early Nazca cemetery: Site F at Ocucaje. The burial jar in the foreground is UCMA 4-4788; the vessels stacked on the surface are from Graves 4 and 7. UCMA negative 15-1886; photograph by Uhle, 1901.



Excavating a rich Inca period grave on the road between Chulpaca and Tate, Ica valley. This is Grave Td-8. Some of the carved wooden ceremonial staffs found in this grave were sheathed with thin gold sheets. The specimens shown in this picture disintegrated on excavation and are now represented only by fragments. UCMA negative 15-1901; photograph by Uhle, 1901.



Excavating Late period mummy bundles in the cemetery on the road between Chulpaca and Tate, Ica valley. These two lay over Grave T-1. The mummy at the left is UCMA 4-5429; the other disintegrated and was not saved. UCMA negative 15-1904; photograph by Uhle, 1901.



Modeled portrait head on the neck of a small bottle from Moche, Site F, dating from the Moche IV subperiod. One of the finest modeled pieces in the Uhle Collection. UCMA 4-2652, total height 19 cm.; photograph by Victor Duran, 1953.



Effigy whistle from Site F, Grave 25, at Moche. The specimen is 10 cm. high. It is press molded, and unpainted. The whistle is attached to the back. A fine example of Moche-style modeling dating from the Moche IV period. UCMA 4-3246; photograph by Victor Duran, 1953.



Effigy jar showing a man playing a Panpipe. Site E, Chancay valley, UCMA 4-6762, height, 17 cm. This is one of the most unusual pieces Uhle found at Chancay. It is decorated in three-color negative. The painter first applied red chevrons in positive technique, then put on a coat of black paint, reserving rows of circles on the red chevrons; finally, he added another set of circles in a positively applied white overpaint. The piece is undatable in our present state of knowledge; Uhle assigned it to his "older period" (Interlocking). Photograph by Victor Duran, 1953.



"One-man band" from Nazca. One of the most elaborate and peculiar examples of the modeled style which flourished early in the history of the Nazca sequence. UCMA 4-8481, height 20 cm.; photographed by Victor Duran, 1953.