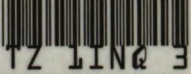

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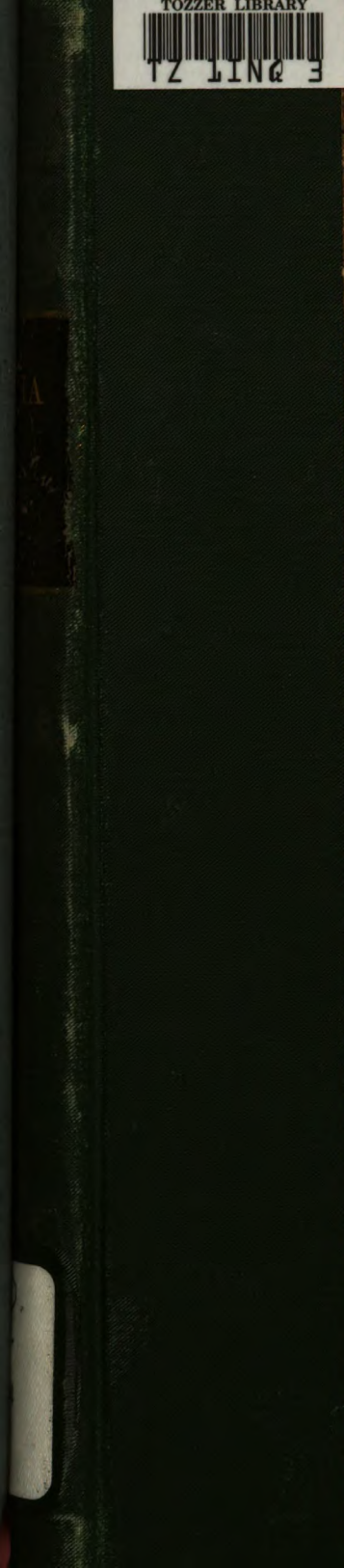
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ON

THE AYMARA INDIANS

OF

BOLIVIA AND PERU.

BY

DAVID FORBES, Esq., F.R.S., F.G.S., ETC.

[*Communicated June 21, 1870, to the* ETHNOLOGICAL SOCIETY OF
LONDON.]

LONDON:

PRINTED BY TAYLOR AND FRANCIS, RED LION COURT, FLEET STREET.

1870.
18589

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Tr. H.C.Z

Rec. Oct. 30, 1925

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ON
THE AYMARA INDIANS
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THE country inhabited by the Aymara race of Indians is nearly equally divided between the two South-American republics of Bolivia and Peru, forming the most northern or, rather, north-western part of Bolivia and the southernmost of Peru.

From north to south it extends from about 15° to 20° of south latitude; but from east to west it is more difficult to define its limits with any approach to exactitude, owing to the existence of several outlying colonies of these Indians; the Aymara country proper, however, may be regarded as bounded by the two great chains of mountains called by the Spaniards the Cordilleras de la Costa, or Coast Andes, and the Cordilleras de los Andes, or High Andes, which in this part of South America traverse somewhat obliquely the provinces of Peru and Bolivia, situated between the longitudes 67° and 72° west of Greenwich. The district itself, now only sparsely, but in former times much more thickly populated by these Indians, may be estimated as about 300 English geographical miles in length, with a breadth of about 150 miles, and consequently represents a superficial area of about 45,000 square miles.

The whole of this country is situated at a great elevation, and may be looked upon as an extensive table-land, having a minimum altitude of 10,000 feet, above which again rise several more or less parallel north and south mountain ridges, whose snowy peaks frequently attain double that height, or more than 20,000 feet above the Pacific Ocean; amongst these might be mentioned the volcanic cones of Sajama and Tacora, in the

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western range, which, upon measurement, were found to be 23,014 and 22,687 feet, as also the Silurian mountains of Illampu (Sorata) and Illimani, in the most eastern chain, respectively 24,812 and 24,155 feet above the level of the sea.

This high plateau extends further both to the north and south, but upon its other two sides it terminates abruptly by rapid descents into regions but comparatively little elevated above the level of the sea, which differ very greatly from it, as well as from one another, in both climate and general geographical features. On the east side, the greatest heights of the Andes look down like precipices upon the virgin forests and the low, humid, hot valleys and plains, irrigated by copious rains, and traversed by mighty rivers, which divide the republics of Peru and Bolivia from the empire of Brazil, the change being so sudden that the traveller descending from the perpetual snows of the Andes finds himself in the course of but a few hours' journey amongst the palms and luxuriant hothouse vegetation of the tropics.

On the western side, however, the change, although seen to be equally sudden, is altogether different in character; for upon leaving behind the cold misty mountains and streams of the Aymara highlands and crossing, as it were, an almost sharply defined line, every thing in the shape of moisture vanishes; the air becomes all at once clear, dry, hot, and scorching; and the mountain-declivities and sloping plains, which extend to the Pacific Ocean, present the appearance of an arid and, in many parts, saline desert,—a rainless region, destitute of water and, consequently, of verdure, in which few living creatures are to be seen, other than the numerous lizards basking in the sun, or the occasional huanaco which has strayed down from the mountains above. Vegetation is altogether absent, or at most only represented by a few solitary cactus trunks, except only in some few favoured small valleys (like cañons) far distant from one another, in which some small rivulet or natural spring exists, furnishing the basis for a luxuriant vegetation, like an oasis in the midst of a desert.

If the latitude of this country be alone taken into consideration, and its altitude above the sea-level neglected, the climate of this high table-land will be regarded as an extremely severe one. Above 17,000 feet the mountains are covered with perpetual snow; but below this elevation the snow seldom remains for more than a few days at a time. The year may be divided into a rainy and a dry season; the rainy season, commencing in November or December, continues until April, with heavy rains and occasional snow-storms, the weather usually cold and raw, the thermometer indicating between 40° and 50° F., and not

unfrequently descending to the freezing-point, or even some few degrees below it, whilst the air is usually damp, and the mountains are enveloped in dense misty clouds.

In the dry season, from April to November, the climate is fine and rather agreeable, the thermometer in the shade ranging from 50° to 70° F.; but in the sun the air is extremely scorching, and often accompanied by winds, which are so dry and parching as to affect the face and eyes in an extraordinary degree, blistering and drying up the skin to the consistence of horn, and making it crack and peel off, so as to cause extreme irritation, and even temporary disfigurement—so much so that when travelling in the Puna region it is customary amongst the whites to protect the face by masks or veils. During this season storms of rain and wind, with thunder and lightning, often of a truly terrific nature, are very common, and frequently cause considerable loss of life to man as well as beast; these storms are often accompanied by hail of great size, and, as I have noticed, sometimes of a peculiar conical form.

Situated near the northern extremity of this district is the greatest sheet of water or inland sea of South America, called the Lake of Titicaca*, covering a superficial area of about 2500 geographical square miles, being 100 miles in length from N.W. to S.E., with an average breadth of about 25 miles, although it is some 35 miles across in its broadest part. The surface of this lake is elevated 12,850 English feet above the level of the sea; and its waters are somewhat brackish. When not agitated by the winds, I found the surface-waters almost fresh to the taste; but it was evident that in depth the lower stratum of water was much more saline.

The shores of the Lake of Titicaca still remain the home, and no doubt also were the original cradle of the Aymara race, from which neither the victories of the Incas nor the subsequent conquest by the Spaniards have succeeded in dislodging them, notwithstanding that this has been the case with so many of the other tribes of both North and South America. The Aymara† or, as they were frequently termed by older Spanish

* This name is supposed to have been derived from the Aymara words "Titi" and "Caca." "Titi" is the Aymara name for tin, the ores of which are found in large quantity on the east side of the lake at Carabuco; and "Caca," a rock. Titi is also the name for the wild cat in Aymara; and as there is a tradition amongst the Indians of the appearance at times of an enormous wild cat on the island of Titicaca, some of the old Spaniards have accepted this interpretation.

† It is believed that the name Aymara was applied to this race of Indians even before the foundation of the Inca empire (*vide* Garcilasso de la Vega, Com. Real. de las Incas, Book iii. chap. x. p. 84). The name of Colla Indians is of much later date, and is derived from their being inhabitants of

writers, the "Colla" Indians are the only race in Peru or Bolivia at all entitled to the appellation of the "Titicaca race," which term has been quite incorrectly applied by Tschudi and others to the Inca or Quechua nation, a race totally distinct in language, character, and geographical position.

Under the Inca dynasty the Aymaras, although subjugated, appear to have remained more as a tributary people, without ever being actually incorporated into the empire; and consequently they never became assimilated into the great Peruvian or Quechua-speaking nation, as was the case with the numerous Indian tribes both to the north and south of them. Even to the present day they remain more or less isolated, and in many respects almost unchanged, retaining their ancient language, and a sort of national existence more pronounced probably than any of the other Indian races now remaining under the Hispano-American rule.

Most of the Indian languages in both the Americas have become all but extinct, and gradually replaced by Spanish or English. The only ones which, in Spanish or Portuguese South America, have survived are the Quechua in Northern Peru and Southern Bolivia, the Aymara in southern Peru and Northern Bolivia, and the Guarani in Brazil and Paraguay; these three may still be said to remain the languages of the countries, being, like Hindostanee in India, generally spoken by the white inhabitants also, and alone used by them in their intercourse with their domestics and with the mixed and pure Indian population.

The history of the Aymaras calls to mind the ancient history of the Welsh, where the inhabitants of Wales, unable to oppose their more numerous invaders in the open field, retired to their mountain fortresses, and, by their dogged but patriotic character, managed not only to prevent their being absorbed into the mass of their more powerful neighbours, but to preserve their ancient language and many of their customs even down to the present day.

What little is known of the early history of this race may be stated in but a few words. According to Indian tradition, from Aymara as well as Quechua or Inca sources, the inhabitants of this country, even in or before the time of the first Inca, Manco Capac (1021-1062), possessed a degree of civilization higher than that of the Incas themselves, or probably of

Colla-suyo, or the southern division of the Inca empire, which was divided into four grand quarters, known as the Chinchasuyo, or North; the Collasuyo, or South; the Antisuyo, or East; and the Cuntisuyo, or West. The term Colla Indians probably included many other Indian tribes in the south, and may be regarded as a purely geographical name.

even any other of the South-American tribes; and evidences attesting this may still be seen in the ruins of the grand temples and palaces of Tiahuanaco, on the southern shore of Lake Titicaca.

At this early period, however, every thing is involved in darkness, until Lloque Yupanki, the third of the Incas (1091-1126), in a war against the Aymaras, overran the entire district, situated on the western side of the lake of Titicaca, inhabited by these Indians, and annexed to the Inca dominion the whole of that portion of the Aymara country at present included in the republic of Peru. Although his victorious progress was stopped by the river Disaguadero, which runs southward from the Lake of Titicaca, his successor, the fourth Inca, Mayta Capac (1126-1156), continued the war, crossing the Disaguadero and taking Tiahuanaco, which at that time appears to have been the seat of government of the Aymaras, and extending his conquests southwards, over the provinces of Caquiaviri, Huarina, Larecaja, Huaichu, and Chuquiapu, now called La Paz.

The victories of the fifth and sixth Incas carried their arms still further southwards; and under the seventh Inca, Yahuar Huaccac (1249-1289), the subjugation of the Aymara-speaking or Colla Indians was completed by the conquest of Caraugas, their most southern province; after which his successors on the throne extended the Peruvian empire northwards, westwards, and still further to the south, so as to annex not only the remainder of Peru and Bolivia, but, traversing the desert of Atacama, to include the greater part of Chile, as far south as the river Maule, before the arrival of the Spaniards in 1526.

With the exception only of the Aymaras, all the other Indian tribes thus brought under the rule of the Incas seem to have been quickly deprived of all traces of a separate national existence, losing even their language and adopting that of their conquerors, the Quechua or, as it was called by the Spaniards, the "Lengua general del Peru," and otherwise becoming in every respect identified with the conquering race. The Aymaras, on the contrary, never submitted tamely to their Peruvian masters, but from time to time gave them much trouble by attempts to recover their independence, which, however, always proved unsuccessful, and invariably were punished with extreme severity.

According to an old tradition, the entire population of the province of Aymaraes, after an unsuccessful revolt, were forcibly removed into exile by the Incas, and the country repopulated by Quechua-speaking colonists from a distant part of the Empire. One of the last attempts made by the Aymaras to throw off the Peruvian yoke appears to have been by the inhabitants of

the province of Carangas not many years before the arrival of the Spaniards in the reign of the twelfth Inca, Huayna Capac (1475–1525), and was only put down after much bloodshed; according to a tradition still preserved in the district, a great number of the prisoners taken in this rebellion were, after having had their throats cut, thrown into a lake, which from that time has retained the name of “Yahuar Cocha” or the Lake of Blood.

Whatever may have been the condition of the Aymaras under the Incas, it became infinitely worse after the Spaniard conquest; it is all but impossible to convey in words a true picture of the barbarous treatment which they, as well as the neighbouring Indian tribes, experienced at the hands of the Spaniards. Treated infinitely worse than slaves, they were torn from their homes and families to be driven like cattle either to the coca plantations and gold-washings in the Yungas, or hot unhealthy valleys to the east of the high Andes (where they rapidly fell victims to a climate altogether unsuited to their constitutions), or to the silver mines of Potosi, Chayanta, Oruro, &c. (where from forced labour, ill-treatment, and insufficient food they succumbed equally fast, only to be replaced by fresh supplies similarly obtained).

The statements made by some of the old writers on this subject seemed altogether incredible until a personal acquaintance with the country showed that they were not exaggerated. Everywhere proofs are seen of a former dense population: deserted villages are met with at every step; and the sides of the mountains even, in many parts up to the very line of perpetual snow, are covered with walled-in enclosures, fields, and terraces which had formerly been cultivated but now lie desert and abandoned; and the traveller who journeys day after day through such districts cannot but believe that the Aymara country, which does not now contain a population of much more than three quarters of a million, must in former times have contained several million inhabitants.

Notwithstanding the naturally submissive character of the Indians, the cruelties of the Spaniards at last drove them, in 1780, into open rebellion; the Aymaras under the Cataris, joined soon after by some of the Quechuas under Tupac Amaru, rose up against the whites and all but effected their entire extermination; as it was, more than 40,000 Spaniards perished, and the country was only saved to the crown of Spain by the arrival of an army sent from Buenos Ayres to the rescue.

The effect of this insurrection was, as might be expected, to paralyze and in great measure destroy the commerce and industries of the country, more especially the mines, to such a

degree that they have never yet recovered. Soon after, the war of South-American Independence broke out, continuing until 1826, and followed by the endless civil wars and internal dissensions in the new republic, which still continue, and have resulted in this rich country retrograding instead of advancing with the age.

In these wars, the fighting fell all but entirely to the whites and mixed races, the pure Indians looking on and abiding their time until the governing powers should have exhausted themselves: and as during this period, if not better treated, the Indians had at least been left more to themselves, they rapidly increased in numbers and became every day more confident in their own strength. In 1854 it was discovered that they had made preparations for an immediate rise; and had they done so, they must have completely overpowered the whites, had not, fortunately for the latter, a terrible epidemic (a species of typhoid fever) broken out amongst the Indians and, without attacking the whites, committed such havoc amongst them as to all but depopulate entire districts. In 1860 an attempt to rise was made on a small scale by the Aymara Indians of Tiquina, in which some horrible cruelties were committed on the unfortunate whites who fell into their hands; this rising, however, was entirely local, and was very quickly suppressed by some Bolivian troops under Colonel Flores.

There can be no doubt, however, that the Aymara Indians cherish the most deep-rooted and inveterate hatred towards their white oppressors, and console themselves with the hope that sooner or later they will be enabled to repossess themselves of the country of their ancestors.

The condition of the Aymara Indians under the Republics of Peru and Bolivia, although no doubt infinitely better than in the time of the Spaniards, is nevertheless still very deplorable. Although declared free by the constitution, they in reality are only serfs, being ill treated and imposed upon in all manner of ways* by both the civil and military authorities, as well as by the white population in general, who all combine to plunder them whenever an opportunity occurs; so that it is no wonder that the poor Indian is never happier than when he is up amongst his mountains far away from the white man.

The Aymara Indians in the country generally live in little straggling villages or clusters of houses, and are associated in what are called "Comunidades," to which the governments of the Republics have apportioned the major part of the land not

* Cortes, in his 'Ensayo sobre la historia de Bolivia,' Sucre, 1861, p. 300, says, "Los indios, a causa de su ignorancia, no saben hacer valer sus derechos, que no son mas que un nombre, y todo el mundo se cree facultado a abusar de aquella clase degradada de nuestra sociedad."

occupied by the whites, and in return impose upon the Indians an annual contribution or, as it is termed, "tributo," amounting to some 4 to 10 Bolivian dollars per annum, payable half-yearly. At the head of each of these *Comunidades* is an Indian (one of themselves), who has the title of *Alcalde*, and carries, as a mark of office, a sort of wand not unlike a thick long English carter's whip (without the lash), and like it usually decorated with numerous ferrules, or flat rings, often of silver. The *Alcalde* is responsible for keeping the Indians in order, and is the medium of communication with the white authorities of the district. All their internal affairs are managed amongst themselves, including the subdivision of the lands amongst the families, in which the widow always takes her share with the others. The white population are exempt from the "tributo;" and since about the year 1856, the Peruvian government, rich from their Huano deposits on the islands of the coast, have not enforced this contribution from their Indians. In Bolivia, however, it still remains one, if not the, most important item of the revenue.

The public works of a district, such as roads, bridges, churches, &c., are all executed by the compulsory and unpaid labour of the Indians in the vicinity.

The Aymara population of Bolivia and Peru together probably does not exceed three quarters of a million, if so much; but I have endeavoured to obtain as near an approximation as possible in countries where not much reliance can be placed in their statistics.

In Bolivia the entire population, as taken in the census made during the summer of 1854, of the Aymara-speaking provinces, eleven in number, was as follows:—

Name of Province.	Pure Indians (Aymara).			White and mixed races.	Total population.
	Male.	Female.	Total.		
La Paz	28,155	31,974	60,129	29,353	89,482
Omasuyos	41,206	45,547	87,753	4,565	91,318
Ingavi	33,459	32,381	65,840	5,870	71,710
Sica Sica	24,111	24,697	48,808	4,509	53,317
Muñecas	16,493	18,319	34,812	6,210	41,022
Yungas	13,082	11,641	24,723	8,802	33,525
Larecaja	10,060	10,380	20,440	6,067	26,507
Inquisivi	8,793	8,454	17,247	3,844	21,091
Oruro	9,483	9,822	19,305	6,249	25,554
Paria	21,907	21,115	43,022	1,330	44,352
Carangas	9,846	10,821	20,667	681	21,348
	216,595	225,151	441,746	77,460	519,226

from which it will be perceived that the total admixture of whites and half-castes is not more than 15 per cent.; and of these the large portion are in the city of La Paz, Oruro, and some of the other larger towns. Since the above census was taken, another was made in La Paz, in 1858; but up to the date of my departure from Bolivia, in 1864, nothing but the total numbers of the inhabitants of each province had been published, without particulars as to race: these were as follows:—

La Paz.....	99,059
Omasuyos	103,976
Ingavi	83,699
Sica Sica	57,666
Muñecas	40,872
Yungas	36,823
Larecaja	31,647
Inquisivi	19,930
Oruro	28,340
Paria	52,618
Carangas	29,973
Total	584,603

and if from this number we deduct 87,236, or the same relative proportion of whites and mixed races as were found by the former census, we shall have the pure Aymara Indians of Bolivia as about 497,367, more or less, in 1858.

In Peru the statistics of the population are far less to be depended upon than in Bolivia; for there seems to have been no census published between 1795 and 1850. In the former year the *Guía de Forasteros* gives the numbers of the Aymaras as follows:—

Provinces.	Pure Aymara Indians.	Half-caste Aymara Spanish.
Aymaraes	10,782	2,255
Arequipa.....	5,929	4,908
Camaná	1,249	1,021
Condesuyos	12,011	4,358
Caylloma.....	12,872	1,417
Moquegua	17,272	2,916
Arica	12,870	1,977
	<hr/>	<hr/>
	72,985	18,852

If, however, we take the census of the population of these districts taken in 1850, by Dr. Buenaventura Seoane, as follows:—

Department.	Province.	Population.	Total.
Cusco	Aymaraes	18,221	18,221.
Arequipa ...	{	Cercado	50,040
		Camaná	11,270
		Caylloma	23,449
		Condesuyos	21,170
		Union	15,659
			121,585.
Moquegua...	{	Arica	18,642
		Cercado	32,380
		Tarapaca	10,418
			61,440.
Puno	{	Azángaro	54,333
		Carabaya	22,138
		Chucuito	35,957
		Huancaná	56,765
		Lampa	76,488
			245,681.
			446,927.

and from this number we now deduct, as in the case of the Bolivian census, some 15 per cent., or 67,038, as belonging to mixed races and whites, we shall have the numbers of the Aymara race approximately as follows:—

Peruvian	379,884
Bolivian	497,367

or a total of..... 877,251

a number which seems to me considerably higher than the reality, more especially as regards Peru: the total number of pure Aymara Indians cannot, I imagine, be above three quarters of a million.

Under the Spanish *régime*, owing to the cruel treatment experienced, the Indian population appears to have been reduced to its minimum. After the War of Independence it recovered rapidly up to 1855, when it again became greatly reduced by the epidemic which raged for some years and in parts almost cleared away the entire inhabitants; during the last ten years, however, it has again been augmenting rapidly.

If we consider the total superficial area occupied by this nation as 45,000 square miles, as before mentioned, then the numbers above given will represent about nineteen inhabitants to the square mile. If numbers be taken into the calculation, the Aymara will be the third of the South-American races, coming after the Guarani and Quechua; but, if the superficial area of their country be alone compared, then they will probably rank

about fifth or sixth, since the tribes of the plains of Brazil and Patagonia, although much less numerous, occupy a greater area of country, owing to their nomadic habits—the very contrary of the Aymaras.

Upon my first visit to the highlands of Peru and Bolivia, I was struck with the very characteristic and peculiar appearance of the Indian population in general, as it seemed to me to differ greatly, in many respects, from that of any of the other races of South America or Polynesia with whom I had previously become acquainted. A great difference in the external proportions of the body could be remarked at a glance, especially when an Aymara Indian was seen sitting down or on horseback, and still more strikingly if by the side of a European similarly mounted: the greater part of the entire body seemed to be raised high up above the horse's back, perched up on the legs in a curious manner; and other peculiarities of outline showed themselves, which made me extremely interested in finding out how these differences could be accounted for.

A subsequent residence of some three years in the very centre of the country inhabited by the Aymara Indians, with whom I was brought into immediate and daily contact, offered excellent opportunities for studying them more closely; and, although I now perceive with regret that I could have profited much more than I did by the facilities thus afforded me, still I believe that any details relating to this very remarkable and so little known race of men cannot fail to prove interesting to ethnologists, and I now submit the following abstract of my notes made during the years from 1859 to 1863 inclusive.

The general build of the Aymara Indians may be described as massive without being large; short, thickset, beardless men, who, as far as my measurements enable me to judge, do not average above 5 feet 3 inches English, and rarely exceed 5 feet 4 inches in height; they are a somewhat large-headed, small-eyed, square-built, broad-shouldered, long-bodied, short-legged, and small-footed race, whose form is more indicative of strength than of beauty or flexibility.

The contours are, as a rule, full and rounded off, rarely, if ever, angular, the breasts being often prominent in the male as well as the female, and the whole outline conveying a somewhat effeminate impression, as is the case with many of the other South-American tribes; so that in youth the sexes are often not easily to be distinguished in appearance from one another, except by dress.

The men are generally well-formed, and sometimes even handsome; but the women, who appeared to average about 4 feet 8 inches in height, are seldom so, being usually far too

robust, as well as heavy in their movements, to possess any thing like grace; yet, occasionally, exceptions are to be met with, who, if washed and dressed up, might, even when placed alongside Europeans, be considered pleasing and good-looking. Neither men nor women, although very robust, appear ever to become corpulent; I cannot call to mind having seen a single instance of a fat person amongst the pure Indians; yet amongst the "Cholada," or half Indian half Spanish race, this is frequent enough.

Throughout the whole of the Aymara-speaking country these Indians present a remarkable uniformity as well in their habits and customs as in their outward appearance; and this seems to have been so from time immemorial, since the representations on ancient sculptures, pottery, and the little images found in the Indian graves are, in many cases, but copies of what the Indians themselves are at the present day, and in some instances not only show the exact character of the face, but also indicate the peculiarities of the relative proportions of the body as seen in the Aymaras at present.

The appearance of the face and head of what I regard as the normal Aymara of the highlands or Titicaca region may be seen (male and female) on reference to Plates XVII. & XVIII., which represent very correctly an Aymara man and woman of the Department of La Paz, in Bolivia*, and were drawn from life by Mr. Isidore Müller expressly for me. In some parts of the country, however, especially in the north, where the Quechua-Indian race commences, another type of face is also seen amongst the men (it is rarer in the women), represented in Pl. XIX. This, however, is quite a subordinate type; and, as will be perceived, the shape of the head is somewhat rounder, and the expression far from being so good as in the normal type; excepting only the head, I found that the proportions of all the other parts of the body were identical in both these types.

The facial angle differs but little from that of the European; and the features and profile of the normal Aymara are decidedly good. The head always appears to be somewhat long from behind to before, and, if any thing, somewhat large when compared with the body; it appears to be less wide than the Quechua head: the cheek-bones are seldom very prominent, except in old age, and the face is only slightly oval, the hair on the forehead in the men, and still more so in the women, descending very low.

The extraordinary elongated skulls (many of which have been received in Europe and have been frequently figured as

* The figure given in Smith's 'Natural History of the Human Species,' of an Indian of the Oto tribe, in North America, is almost an exact likeness of Conduri, an old Aymara man, some time in my service.



J. M. Dole.

Weller's Photo.

AYMARA WOMAN

well as described) which are met with in the ancient graves on the islands in the Lake Titicaca, in the Aymara country, have been described and regarded by Tschudi as natural and peculiar to what he calls the Titicaca or Inca race. As before mentioned, the Inca or Quechua race cannot be correctly termed a Titicaca race, since the entire shores of Lake Titicaca have even from pre-incarial times been solely inhabited by the Aymaras, although subsequently conquered by the Incas. Elongated skulls are not confined to this district*, or even entitled to be considered natural productions; if the evidence to prove their artificial origin is allowed due weight, the partial or total obliteration of the sutures in all those skulls which I examined must be regarded as so many proofs of the application of compression in infancy; and Bolivians who have disinterred them assure me that in the same graves (family or tribal burial-grounds) many other skulls of the usual form were always found along with them, and that the general opinion was that these elongated skulls belonged to the families of chieftains, amongst whom it was considered a mark of distinction to so distort the head (of the male only) in childhood. Although Tschudi mentions that he could not find any evidence to show that such practice of compressing the head was usual amongst the ancient Peruvians, I found full proof to the contrary upon searching the 'Ordinanzas del Peru,' Lima 1752, where, in tomo primero, lib. ii. tit. ix. ord. viii., we find the decree:—

“Iten mando, qui nigun Indio ni India apriete las cabezas de las criaturas recien nacidos como lo suelen hazer por hazerlos mas largas, porque de averlo hecho, se lesa recrecido, y recrece daño, y vienen amorrir dello, y desto tengen gran cuydado los Justicias, sacerdotes, y alcaldes y caciques en que no se haga †,” which may be considered as settling this question.

The superoccipital or interparietal bone, the *os Inca* of Tschudi, cannot be considered peculiar to any Titicaca race; for not only was it deficient in all the skulls which I examined from this district, recent as well as ancient, but it was found present in some of the skulls out of the graves on the Pacific coast (out of 111 skulls examined by me at Arica and further south I found 3 with this bone); it seems to me probable, however, that it is somewhat more common amongst the American races than amongst those of other parts of the world, at least so far as our knowledge at present extends.

The general expression of the Aymara face is sad and reflective, melancholic, with at the same time a strong admixture of

* In 1863 I disinterred three fine specimens of elongated skulls from graves on the very edge of the Pacific, at Pisuqua, in the province of Tarapaca, in Peru.

† Spelling as in original.

determination, as if a continual struggle was going on within to conceal the emotions under the appearance of stolid indifference, which, however, is far from real; the expression of stupidity often seen and described by travellers is altogether assumed. The Aymara Indian is always grave, and rarely seen to laugh or even smile; whilst the Quechua Indians are in these respects very different.

The profile is good, the nose being invariably aquiline, except in the instances before alluded to; and in all the ancient figures the nose is also, as a rule, aquiline. In many cases, especially in women, it is often somewhat curved inwards at the point; the nostrils are usually broad at the base, open, and expanded.

The mouth is somewhat large, but not excessively so, the lips being of a yellowish or brownish red colour, often full, but not flabby or thick as in the negro. The teeth, usually very regular and almost vertical, are generally fine and white, unless coloured by coca-chewing; they resist age well, and caries is not very common.

The eyes are always small, black or deep brown in colour, the cornea being, however, never pure white, but invariably more or less yellowish in tint; they are brilliant and generally deep-set, the eyelids being fringed with long, fine, black lashes. The angle made by the central line of the eyes is very slightly inclined inwards, not nearly so much as in the Mongol, yet not altogether horizontal as in many of the Chinese. The eyesight is very good and enduring; the eyebrows are black or brown black, and usually somewhat sparse.

The hair of the head commences very low down on the forehead, and is extremely abundant and long, in the men as well as the women. It is of a deep black-brown or black colour, perfectly straight, without any attempt to curl, and rather fine in texture; on comparison I found that it was never so coarse as the black hair of the Spaniards or half-castes. It is said never to fall off* or become grey or white in old age; and, as far as my own observation extended, I cannot remember ever having seen a pure Indian man or woman, however old, with white or grey hair.

The men wear their hair drawn backwards over their heads, and plaited into a long pigtail, sometimes reaching behind down to their knees; occasionally the hair, after having been drawn back, is first divided into several portions (I often noticed five), each of which are separately plaited for a short distance, and

* The Indians have the custom of washing their hair in urine, which, they imagine, nourishes it; and this disgusting practice is also adopted and generally followed by the Spanish-American women of these parts of South America.

then the whole united into one long pigtail, as before. This same mode of hair-dressing appears also to have been used in more ancient times, as the hair of several mummies which I dug out of ancient graves was put up in a like manner. The women also draw their hair backwards, but then divide it into two portions, which are both plaited into pigtails, one hanging down on each side of the back.

The men are beardless, and, beyond the eyelashes and eyebrows, rarely have any trace of hair on the face, although in some older men I have occasionally seen a few straggling short hairs on the upper lip, but never so much as could be entitled to the appellation of a moustache. Neither men nor women have any hair on or under the arms or legs, nor on the body, excepting only that the men have occasionally a little tuft or fringe of soft black hair on the pubes*. It is not the custom to pull out or otherwise eradicate the hair from any part of the body; on the contrary any straggling hair or tuft which might make its appearance is more likely to be encouraged and regarded with something akin to pride. The men especially prize their pigtails, and, I believe, often introduce false hair when plaiting them, in order to make them appear longer and thicker at their feasts.

When not exposed to the weather or hard work, the skin of the Aymara Indian is always extremely smooth, fine, soft, and, as if polished, having no trace of hair upon it, and never clammy, but, on the contrary, somewhat cool to the feel. Its odour did not, at least when in good health and cleanly, appear to be stronger than in the European—in fact, is so slight as to be all but imperceptible. The Indian, however, whose sense of smell is highly developed, notwithstanding the state of dirt in which he lives, has particular names to denote the natural odour of the white, black, and Indian man respectively.

The colour of the skin in the new-born infant is of a reddish tint, and did not appear to me to be very much darker than in the white infant; but it becomes rapidly darker, and soon acquires the permanent hue of the race. This colour, however, seemed to me to vary greatly with the locality, no doubt from causes due entirely to the climate. In the moist, cold highlands the colour is a light somewhat coppery brown resembling much in tint that of many of the North-American Indians. In the dryer highlands and the rainless valleys of the western range this colour becomes much less red, and more of a blackish-brown; whilst in the hot humid valleys of the eastern slopes of the Andes, looking towards Brazil, all trace of the red dis-

* The women have no hair on the pubes even in old age.

appears, and the skin has a much yellower hue, a sort of bilious-looking light-brown tint, often silky in appearance. As a rule, the darkest and blackest-looking skin is always found in the driest localities, independent of the amount of sun to which it may be exposed. The influence of the sun, as on the skin of the European, appears to be, in greater part at least, only momentary; thus one of the redder-coloured Indians becomes much darker in tint after remaining some time in the hot dry district of the Pacific (as, for example, at Tacna), or attains a more yellowish-brown hue when employed in the gold-workings or coca plantations in the hot humid valleys of eastern Bolivia; yet upon his return to his native mountains the original ruddier tint gradually asserts itself in a short time. Although in the white race the skin of the face and parts exposed to the light become invariably the darkest, this, at least with regard to the face, very much to my surprise, was not the case with these Indians; for in all the instances where I had opportunities for comparison, the face was as a rule lighter in colour than the other, covered parts of the body*.

The Spanish writers have always maintained that the Indian cannot blush: this is without doubt incorrect; for although, from the very colour of the skin, it is impossible that a blush should be so visible as in the white, still, under such circumstances as would raise a blush in the latter, there can always be seen the same expression of modesty or confusion on the countenance of the Indian, and even in the dark a rise of temperature of the skin of the face can be felt, exactly as occurs in the European. On many Aymara Indians I noticed, more particularly in women, a red tinge on the cheek, something like what might be termed a permanent blush, and reminding one of the hectic tinge on the cheek which often accompanies ill-health in the white: whether this in the Indian owes its origin to a similar cause or not I have not been able to verify.

The great size of the body of the Aymara Indian, when compared with his other dimensions, cannot fail to attract immediate attention; and a closer examination at once shows that of this the major part is occupied by the region of the chest; the neck is not long, oftener short, but always thick; the shoulders, although always broad, convey to the eye the impression of their being even broader than they are found to be upon actual measurement. The space occupied by the breasts is both broad and high, *i. e.* longer than usual—besides projecting much more,

* The skin of the nipples of the mammæ in the women and the organs of generation in the men was deepest in colour, but that of the inside of the prepuce and glans usually flesh-coloured.



J. M. Dole.

AYMARA MAN

G. Weller. Lithog.

being unusually large in circumference, which consequently indicates a great internal capacity, affording space for an immense development of the breathing-organs. The circumference of the body both at the waist and navel is unusually large; but at the pelvis, although still large, is not extraordinarily so, except in the Indian women, who consequently bring forth with great ease*.

The relative proportions of the extremities are equally remarkable with that of the body itself, although this is less conspicuous in the case of the arm than in that of the leg.

The arm is, as a rule, well formed, full, and rounded, the muscles, although well developed, not producing that angularity of outline so commonly seen in the European. The arms are short, but chiefly so with respect to the upper arm; and the hands are small, but somewhat broad.

The lower extremity is decidedly short, its height from the ground to the hip (tip of the trochanter major) being, on an average of a number of measurements, exactly one-half of the entire stature. The relative proportions of its subdivisions are curious; for instead of the thigh being, as in all other known nations, longer than the leg, it would appear to be, on the contrary, slightly shorter, giving a peculiar appearance to the Indians of the highlands of Peru and Bolivia, especially when seen unclothed. In several of the ancient figures found in the tombs these relative proportions are distinctly indicated, as also in the rude pictures and caricatures which the Quechua Indians of Cochabamba paint and sell about the country, in which Spaniards and Indians are seen depicted together: the Indians are always figured with longer bodies and shorter legs than the whites, and with the thighs looking very short when compared with the length of the leg.

These remarkable differences in the proportions of the body and extremities appear also to be present in such of the Quechua race of Indians as inhabit the highlands to the north of the Lake of Titicaca—but as a whole is most characteristic of the Aymara race, more especially those who inhabit the great elevated basin of Titicaca, as the Aymara colonies in the lower regions of Yungas did not exhibit these proportions in nearly so marked a degree.

* The symphysis pubis seemed to differ somewhat from the European in its angle, being apparently somewhat more elevated above the fork of the legs. The male organs appear to be placed somewhat higher up; the penis is usually less in its dimensions than in the white, although the testes are about of the usual size; in some instances the raphe of the scrotum was observed to be continued like a thread of flesh attached outside the skin all the way up to the prepuce; but this may be exceptional.

All the joints in the Aymara Indian had the appearance of being somewhat large, the knee-joint in particular; as the measurements of the circumference around this joint did not quite bear this out, I imagine that the greater width of the joint in front was alone the principal reason of this appearance.

The legs are perfectly smooth and free from hairs, and are well developed, full and rounded in outline, without any muscular angularity. The thickest part, or calf, of the leg is situated somewhat lower down than usual (the exact reverse of the negro), at least in the men; and this, in conjunction with the effect of the dress, which is a sort of knee-breeches of llama wool, open and flapping about at the knees (below which the leg is bare), caused upon me at first the impression that the peculiar appearance and gait of these Indians were due to the leg being in reality extremely short, whereas upon seeing the entire leg bared it was perceived and proved by measurement that the reverse was actually the case.

The calf of the leg is generally well developed; and in the Indians of the highlands the surface veins are usually seen to be extremely prominent, and particularly so in the middle-aged men, projecting from the surface like varicose veins in Europeans; yet I am not aware of any evil consequences, although this was the case with many of my Indian messengers, who would accomplish extraordinary distances on foot in an almost incredibly short space of time.

My attention was directed to the structure of the Indian foot, which is probably one of the smallest known, from observing that a pair of woollen stockings which had been knitted for me by an Indian woman were shaped so that there was absolutely no projection allowed for the heel as usual in those of European make. Upon examination, I noticed at once that the heel in the Indian was but very little prominent, and did not project backwards at all, or, at any rate, not to any thing like the extent met with in most other races of men, the leg itself rising up almost straight from the ground at once; and it is extremely rare to see amongst the Aymaras the graceful swell of the ankle, so enticing in what we in Europe regard as a well-made leg.

Another peculiarity of the foot is the position in which it is, so to speak, set on to the leg: in the Aymara, by far the greater mass of the foot is placed altogether in front of the leg, the result of which is, that although the sole or total length of the foot itself from the heel to the extremity of the great toe is extremely short, and possibly even more so than in any other race of men, the back of the foot, *i. e.* the upper part, measured from the extremity of the great toe to the nearest part of the leg, is comparatively very large.

The height of the foot, *i. e.* the distance from the ground to the tip of the inner ankle, is not great; but its breadth is considerable, as well as its circumference measured round the instep. The great toe is usually very large, and directed outwards, which most probably is principally due to the effect of the thong of the sandals worn by these Indians. Curiously enough, the foot of the Aymara seems to be about the least sensitive part of his body; however cold or wet it may be, they, as a rule, never seem to feel it, or attempt to cover their feet, and will walk for miles in the snow and sludge without taking any precautions or appearing to suffer in the slightest degree from the damp or severity of the weather. In such cases all their attention seems directed to keeping their heads, not their feet, warm.

To the preceding observations, which are as it were a *résumé* of my notes on the general appearance and proportion of the Aymara Indians, I have added in the Appendix, Table A, a detailed tabular statement, containing the results of a number of measurements of their bodies, made when in Bolivia and Peru. These I regard as the more important, since the figures themselves will tell their own tale more correctly than any description in words, founded merely upon the impressions which the external appearance of these Indians in their costumes could convey to the mind of the traveller.

As it is obviously impossible, by a mere reference to measurements stated in inches, to form any correct idea of the relations which the various dimensions of the different parts of the body bear to one another, or to compare the size of any one member of the body of, say, a small with that of the same member of a large individual, a supplementary column of figures is in each case added, which enables all such comparisons to be made at a glance, since the numbers in these columns are those which represent the proportion which each individual measurement bears to that of the entire body or stature of the person, supposing this to be represented by the number 1000*.

In order, however, to facilitate a comparison between the general proportions of the Aymara Indians of the highlands and the low valleys, both with one another and also with the white and black races of Europe and Africa, the annexed tabular statement has also been drawn up in a more condensed form, the actual measurements in inches having been omitted, and in their place the proportional numbers before referred to alone inserted, so that a mere examination and comparison of these figures with

* This calculation is made simply by multiplying each separate measurement by 1000, and then dividing the product by the whole stature or height of the individual.

one another will show in what respects and to what extent the Aymara Indian differs in external configuration from these races, as well as indicate the relative ratios of the dimensions of the different members of the body to one another.

In this Table the first three columns are devoted to the Aymara :—1 being the average proportional numbers, based on the measurements of all the Indians of the Puna or cold highlands of the Titicaca region in both Peru and Bolivia, given in the Table before referred to; 2 the average of two Indians of the Aymara colonies, in the low hot valleys to the east of the high Andes, both being colonists of the second generation, *i. e.* who themselves, as well as their fathers, had been born in these tropical regions; and 3 the general average of both the preceding columns; column 4 gives the proportional numbers derived from the average of the measurements of two young Englishmen in robust condition of health, but of two different types, the Saxon and Celtic, the fair-haired robust and black-haired slender forms of body respectively; and lastly, the fifth column gives the average figures obtained from the measurements of three fine specimens of the Menas negro on the west coast of Africa,—all in excellent health and condition. When comparing these figures, however, it must be remembered that, as it naturally follows that every circumferential measurement made round the body or any of its members must altogether be dependent upon the condition and general state of health of the individual at the moment of being taken, such circumferential measurements are naturally less suited for reliable comparison with one another than are those straight measurements taken of the limbs or other parts of the body not so affected*.

* In reference to both these Tables I may state that, having been quite unable to find any system of human measurement in general use, or to meet with any published (detailed) measurements of even a single white or black individual for comparison, I was entirely thrown upon my own resources, and constructed, when in South America, the above scheme of 71 measurements, of which 60 are direct (from nos. 1 to 60) and 11 indirect (*a* to *l*) measurements. These appeared to me to take in all the main features of external human configuration. With regard to the standard white and black races, or rather the numbers representing the relative proportions of their bodies, given in the Table, I was obliged, for the same reasons, to content myself with such averages as in my travels I found myself enabled personally to obtain.

Measurements*.	Aymara.			European white (England).	African negro (Menas, W. coast).
	Normal high cold mountains.	Abnormal low hot valleys.	Average of both.		
	1.	2.	3.		
1 Stature	1000	1000	1000	1000	1000
2 Extreme distance between finger-tips, arms horizontally extended	1015	1062	1038	1034	1085
3 Head, greatest circumference	337	341	339	326	302
4 —, " width (with callipers)	87	94	90	92	86
5 —, " antero-posterior diameter (with callipers)	115	105	110	129	107
a —, " height from under chin to vertex (6+7 +8+11+12).....	142	136	140	143	139
b —, height without lower jaw (6+7+8+11)	114	111	113	111	112
6 —, distance perpendicularly from vertex to growth of hair	33	35	34	26	33
7 —, forehead from growth of hair to orbit	38	32	35	43	37
8 —, Nose from orbit to nostril, vertically.....	26	33	29	31	26
9 —, " projection at nostrils	11	12	11½	11	11
10 —, " breadth " "	23	23	23	20	27
11 —, Jaw, upper (upper lip), from nostrils to centre of mouth	17	12	15	11	16
12 —, " lower (under lip and chin), from centre of mouth to below chin	28	25	27	32	27
13 —, Face, breadth between cheek-bones (with callipers)	82	80	81	73	76
c —, " length from growth of hair to below chin (7+8+11+12)	106	101	103	117	136
14 —, Eye, distance between inner corner of eyes	22	19	20	18	22
15 —, " " " " outer	68	63	65	59	61
d —, " length of orifice of eye ($\frac{15-14}{2}$)	23	22	22½	21	20
16 —, Mouth, breadth	34	33	33½	30	31
17 —, Ear, length	34	31	32	36	33
18 Neck, length from chin to semilunar notch of sternum measured upright	52	35	44	48	41
19 —, breadth across from semilunar notch to 7th vertebra of neck (with callipers).....	83	72	76	82	83
20 —, circumference.....	211	198	205	204	195
e Head and neck, from vertex to semilunar notch of ster- num (6+7+8+11+12+18)	194	171	184	191	180
21 Trunk, breadth across between outer tips of shoulders in a straight line	230	238	234	250	241
f —, front length from semilunar notch of sternum to fork of legs (30+33)	354	...	...	363	326

* In the above Table the direct measurements, sixty in number, are numbered from 1 to 60; the indirect, or deductive measurements, eleven in number, are marked *a* to *l*, and in parentheses are placed the numbers of the direct measurements from which they are obtained. The circumferential measurements, which are only useful when the exact state of health of the individual is known, are printed in italics. As it is sometimes difficult to get the exact distance from the umbilicus to the symphysis pubis, the distance to the fork or division of the legs, always easily obtainable, is also given; the circumference of the body is given both at the narrowest part, or waist, as well as at the navel, as these dimensions, although sometimes the same, are not always so.

TABLE (continued).

Measurements	Aymara.			European white (England).	African negro (Menas, W. coast).
	Normal high cold mountains.	Abnormal low hot valleys.	Average of both.		
	1.	2.	3.		
22 Trunk, Back, length from 7th vertebra of neck to os coccygis	363	...	...	347	323
<i>g</i> ———, Side, length from shoulder-tip to trochanter major (35+37)	337	...	...	334	322
23 ———, Breasts, breadth between nipples of mammæ	127	143	135	122	123
24 ———, " height from below mammæ to semilunar notch of sternum	125	98	112	99	88
25 ———, Chest, breadth across between armpits, in straight line	190	197	194	207	188
26 ———, Chest, height in front from semilunar notch to tip of sternal cartilage	128	123	126	118	113
27 ———, Chest, height at side from tip of shoulder to lowest rib	228	215	222	175	179
28 ———, Chest, <i>circumference under armpits</i> , respiration at ease	580	...	...	518	494
29 ———, Waist, <i>circumference</i> of the smallest part of body	473	...	...	433	447
30 ———, Distance from semilunar notch of sternum to umbilicus	226	197	212	227	220
31 ———, Abdomen, <i>circumference</i> at navel	490	...	...	465	441
32 ———, " distance from umbilicus to symphysis pubis in a straight line	81	...	...	87	89
33 ———, Abdomen, distance from umbilicus to fork of legs in a straight line	129	...	...	136	106
34 ———, Abdomen, distance from umbilicus to anterior superior spine of ilium	88	94	91	97	98
35 ———, Distance from shoulder-tip to anterior superior spine of ilium	267	231	249	251	248
36 ———, Pelvis, breadth straight across between the anterior superior spines of the ilium	172	203	188	168	164
37 ———, Pelvis, height from anterior superior spine of ilium to trochanter major	70	...	...	83	74
38 ———, Pelvis, <i>circumference round ala</i>	460	...	...	458	443
39 Upper extremity, arm, upper, length of humerus	179	179	179	188	195
40 ———, " " <i>greatest circumference</i>	145	141	143	161	155
41 ———, " " <i>least</i>	143	121	132	127	144
42 ———, " lower, length of radius	148	146	147	147	176
43 ———, " " <i>greatest circumference</i>	148	137	143	154	153
44 ———, " " <i>least</i>	102	96	99	93	94
45 ———, Hand, length from wrist to tip of forefinger	108	107	107½	107	117
<i>h</i> ———, Hand, length exclusive of fingers (45-47)	56	54	55	50	51
46 ———, " breadth exclusive of thumb	55	49	52	52	60
47 ———, " forefinger to knuckle-joint	52	53	52½	57	66
<i>i</i> ———, entire arm from shoulder-joint to tip of forefinger (39+42+45)	435	432	433½	442	488
48 Lower extremity, thigh, length from trochanter major to knee-joint (femur)	211	220	215	244	258

TABLE (continued).

Measurements		Aymara.			European white (England).	African negro (Mensa, W. coast).
		Normal high cold mountains.	Abnormal low hot valleys.	Average of both.		
		1.	2.	3.		
49	Lower extremity, thigh, length inside from fork of legs to knee-joint	191	...	...	204	218
50	—, thigh, <i>greatest circumference</i>	283	...	...	300	292
51	—, " <i>least</i> "	204	197	200	200	223
52	—, Knee-joint, <i>circumference</i>	202	201	201½	204	211
53	—, Leg (tibia), length from knee-joint to ankle	252	227	240	230	241
54	—, <i>greatest circumference</i> , calf of leg	188	187	187½	206	204
55	—, <i>least</i> "	127	121	124	121	129
56	—, Foot, length of the sole from heel to tip of great toe	137	143	140	148	153
57	—, Foot, back or ridge from leg to tip of great toe	98	92	95	93	102
58	—, Foot, <i>greatest breadth</i>	56	57	56½	56	...
59	—, " height from ground to tip of inner ankle	37	43	40	47	41
60	—, Foot, <i>greatest circumference</i> around instep	149	147	148	138	156
<i>k</i>	—, entire (thigh, leg, and foot), from trochanter major to ground (48+53+59)	500	490	500	522	540
<i>l</i>	—, entire (thigh, leg, and foot), inside from fork to ground (49+53+59)	444	...	...	495	502

In examining a tabular statement of this character in order to compare the relative proportions of the different members of the body of the Aymara Indian both with one another and with those of other races, one of the first points which demand attention is the ratio which the lower extremities or legs bear to the entire height or stature. From measurement *k* in this Table it will be seen that the height of the legs in the Aymara, measured from the trochanter major of the femur down to the ground, is 500 thousandths of the stature, *i.e.* exactly one-half; whilst in both the European and Negro it is much greater, being respectively 522 and 540 thousandths, so that the Aymara and African are the two extremes. In the white infant I understand that the stature is divided into two equal parts by a line drawn through the symphysis pubis, thus the same proportion as in the adult Aymara Indian, but that subsequently the lower extremities in the white increase more, becoming relatively longer with age up to puberty.

With regard to the upper extremities or arms, a similar rule

seems to hold good; for upon reference to the measurement No. 2 it will be seen that in the Aymara Indian the distance between the tips of the fingers, when the arms are held out horizontally, is also considerably less than in the white or in the black man, these proportions being respectively 1015, 1034, and 1085 thousandths; and, as seen in *i*, the length of the entire arm from shoulder to tip of finger is 435 in the Aymara, 442 in the European, and 488 thousandths in the African; so that here again the Indian and Negro are the extremes, and it is perceived that the Aymara has the shortest and the African the longest arms and legs of the three races.

If now the details of the measurements of the upper and lower extremities be examined in order to compare their relative proportions one with another, some interesting results, difficult of explanation, are obtained. Thus, taking the arm, the proportions of its different members, when stated in thousandths of the stature, are given in the Table as follows:—

	Indian.	European.	African.
39. Upper arm.....	179	188	195
42. Fore arm	148	147	176
h. Hand without fingers.....	56	50	51
47. Longest finger..	52	57	66
	435	442	488

from which it will be seen that the proportions of the fore arm and entire hand are nearly the same in the Aymara and European, yet both are shorter than in the African; also that the upper arm, both in the white and negro, is much longer than in the Aymara,—the Indian and African being again, as also in the length of their fingers, the two extremes; and further that the reason why the entire arm of the Aymara Indian is so much shorter than in the white, lies mainly in the shortness of his upper arm.

In the lower extremities the results are still more curious, the different numbers being as follows:—

	Indian.	European.	African.
48. Thigh	211	244	258
53. Leg	252	230	241
59. Foot	37	47	41
	500	521	540

Here we find the extraordinary instance of the thigh being shorter in length than the leg, which, as far as I am aware, is not the

case in any other race of men as yet described*. The African and Indian are still the extremes with respect to the length of the thigh; but the leg appears to be proportionally longest in the Aymara and shortest in the European.

The great peculiarity of the Aymara foot consists in the absence of the considerable protuberance at the heel, so common in other races, and which appears to attain its maximum development in the negro, who, consequently, here again, as well as in the total length of the foot, is the opposite extreme when compared with the Aymara. Another curious point about it is that a greater portion of its total length is placed in front of the leg than in the European, as will be seen by reference to the figures in No. 57, which are respectively 98 and 93 thousandths, although the sole of the foot is as 137 to 148 thousandths, and consequently much longer in the European than in the Aymara. The Aymara and Negro are again the two extremes when the total length of the foot is compared. Coming now to the details of the trunk, which is so large in the Aymara when compared with his stature, we also find that it is divided in very different proportions between the thoracic and abdominal regions than in either the white or the black man; and what specially deserves attention is, that the region of the chest occupies a much larger portion of the whole both in height and bulk, thus giving a vastly greater space for the development of the respiratory organs.

If the height of the side of the chest be measured from the shoulder down to the lowest rib, the numbers given in No. 27 are 228, 175, and 179 for Aymara, European, and African, whilst that of the entire trunk from the seventh vertebra of neck to the os coccygis was found to be 363, 347, and 323 respectively. These differences, great as they are, are however, in reality, much greater; for in addition to the mere height of the chest-region, its two diameters must also be taken into due consideration; and as the circumference of the Aymara chest when measured under the same conditions of health and respiration was always found to be considerably greater than in either the white or negro (in the Table No. 28 gives the figures 580, 518, and 494 respectively), it naturally follows that the capacity of the thoracic cavity must be much more voluminous in the Indian.

* When making my first measurements of an Aymara Indian, who died in the hospital of La Paz in February 1860, I was so surprised at this result that I got Dr. Lopera of that city to verify the measurements; and subsequently, in order to avoid deceiving myself, I obtained in several other instances the assistance of Dr. Cooke, of London, then residing in Bolivia. The measurements of the thigh were all taken from the trochanter major to the knee-joint as correctly as these points could be distinguished in the living subject by the touch.

From the above observations it will be perceived that the more prominent differences in the configuration of the Aymara Indian from that of the European or Negro consist mainly in the greater length of the trunk, the enormous development of the chest, the shortness of the arms, legs, and feet, and in the great differences in the relative proportions of the parts which make up these several members.

The inquiry into the causes which have brought about these abnormalities, if they may so be called, is one of great interest; but this I must leave to the ethnologists at home, contenting myself with having furnished data upon which they may found their explanations; it is right, however, that I should direct their attention to some points which cannot but have a strong bearing upon such researches, and which appear to throw some light upon more than one of the peculiarities of the build of these Indians.

It must, in the first place, be borne in mind that the Aymaras in their normal condition are more or less confined to the high table-lands of Bolivia and Peru, and consequently live at a greater elevation above the level of the sea than any known or at least as yet described race of people; and as the air at such great altitudes is extremely rarefied*, it follows as a natural consequence that it would require a larger development of the lungs in order to take in an amount of oxygen at each respiration equal to the volume found necessary to keep up the same activity of circulation at the level of the sea; for this reason, therefore, we might expect to find the region of the chest more prominent in a race living under these exceptional circumstances; and it is probably from this reason that the Indian does not suffer from the so-called Puna or Sorochi† which so frequently

* It is also not improbable that the prominent or varicose character of the surface veins of the legs so often seen, as before mentioned, is connected with the rarity of the external air in which the Indian lives.

† The affection known in different parts of Pacific South America by the names of Puna, Sorochi, Veta, or Marea, appears to be a species of inflammation of the lungs, brought on by over-exertion in working the lungs at so much quicker a rate than ordinarily, in consequence of the very attenuated state of the atmosphere at these elevations; and this is necessarily aggravated by the exertions attendant upon travelling in these rude countries. Usually it commences with more or less severe headaches and a feeling of, as it were, swelling of the head; the sense of smelling is often lost; and the symptoms occasionally become so aggravated as to end in death. Three instances of Europeans having died when suffering from Puna came under my notice; amongst these, the last case was that of Lieutenant Wallace, who, when crossing the Cordilleras by the pass of Tinogasta, was taken ill at an elevation of 14,500 feet above the sea, and died on May 2, 1869. These symptoms appear to be much aggravated by the use of spirits, often taken as a remedy, although in reality they seem to augment the inflammation. Onions are universally recommended as a good remedy, both for man and beast; for the

attacks the white traveller, whether European or South-American, when he ascends from the Pacific coast to the higher parts of the Andes, and which even when he has become in a measure acclimatized, is likely to attack him whenever he may happen to over-exert himself.

I particularly noticed the difficulty in breathing and distress of the white (Hispano-American) officers in the Bolivian infantry when the troops happened to march up hill or somewhat faster than ordinarily, whilst at the same time the soldiers themselves (half-breed or nearly pure Indians) would be quite unaffected, and those in the band of music would be blowing away lustily at their wind instruments without apparently the slightest inconvenience to themselves.

Although several outlying colonies of these Indians are seen situated at lower altitudes, it may be considered that normally the Aymara Indian is not met with below 8000 feet in elevation, but that, on the contrary, he is only truly at home in the high plains and mountain-sides ranging in height from 10,000 feet up to the very line of perpetual snow, which in this part of the world, lat. 17° S., may be regarded as about 16,500 feet above the level of the Pacific Ocean.

On descending from these heights, the Aymara Indians, like their llamas and alpacas*, find themselves altogether out of

mules, when taken up from the lowlands, suffer greatly from Sorochi, and the arrieros have a practice of rubbing the mouth and nose of their mules with a sliced onion when at high elevations. With respect to myself, I seldom suffered from Puna at all, and never to any extent, except upon the occasion of the ascent of Tacora (Chipicani), 19,740 feet; but I occasionally suffered from a sense of fullness in the head and headaches, and felt the impossibility of making any continued exertion, such as running, without being often pulled up for want of breath, as it is vulgarly called, having to sit down to recover very much oftener than under the same circumstances at a lower elevation. Tschudi considers the first effects of Puna to commence at 12,600 feet elevation; but this seems dependent on the state of health of the individual at the moment, as well as on the locality: whilst I never suffered at all under 15,000 feet, my servant was on one occasion laid up with it at Palca, only some 9000 feet above the sea: and it is commonly believed in this part of South America that certain localities are more "Assorochado" than others. The natives believe it due to what they call "antimonios" or metallic exhalations; from my own experience I found that I suffered from Puna only when amongst the high volcanic ranges nearer the western coast, and never, even at equal heights, amongst the western or high Andes. Tschudi mentions its extraordinary effects upon dogs, and relates that cats cannot live at these altitudes; but after having lived three years at about 15,400 feet elevation, my experience was quite the contrary, having been pestered with both these animals, who seemed to thrive well wherever man lived.

* When brought down to the coast the llama or alpaca seldom lives any length of time; and as the main trade of Bolivia and the interior is principally carried on by llamas, the mortality which occurs amongst these animals after descending with their loads from the heights of the Andes is a

their natural element, and if they do not soon return, die off in large numbers in climates so unsuited to their constitutions. This is the case both in the dry regions of the Pacific coast and in the humid valleys to the east of the Andes. On the Pacific side the pure Indian population (which is not at all numerous) of such provinces as Arica, Tacna, Tarapaca, &c. is only kept up by continued fresh arrivals from the interior; whilst in the east the same may be said; for the great mortality amongst the Aymara Indians who are induced, now by high pay but formerly by compulsion, to descend from their hills in order to work at the coca plantations of Yungas, the gold-workings of Tipuani, or the quinine-bark trade of the eastern forests, affords ample evidence of how unfitted they are to inhabit these lower regions: as a rule, but an extremely small percentage of such colonists survive their transplantation.

In order to examine whether the descendants of such Aymara colonists differed or not in appearance and proportions from the normal Indian of the highlands, I made, in 1861 and 1862, journeys to the Tipuani and Yungas districts, to the foot of the high Andes in the department of La Paz, in Bolivia, and was so fortunate as to obtain measurements of two individuals who, as well as their fathers before them, had been born in these lower tropical regions. These measurements are given in full detail in the Appendix, Table A; but for the purpose of comparison, the proportional numbers, which alone are introduced in the former table (p. 213) are more convenient for reference, as they show at a glance that the proportions of at least several members of their bodies have already experienced a considerable change from what they were in the parent stock, as before explained.

These Indians, besides being as a rule somewhat taller men, appear to have lost very much of their massive build, and become more slender and flexible in their forms and movements, whilst the colour of their skins had lost all shade of red, and assumed a yellowish brown, a very different and, at the same time, less healthy-looking tint.

very serious item in the cost of transport. Of late years this has been considerably reduced by the establishment of stations like those at La Portada, Palca, &c., situated at the commencement of the descent from the Bolivian table-land, where the llamas stop and deliver up their cargoes to mules, who take them down to the Pacific harbours, and *vice versa*. The original alpacas which were brought by Mr. St. Leger from the Bolivian highlands at Chuluncayani to the coast of Chili, notwithstanding that several years were occupied in driving them that distance, in order to acclimatize them gradually, all died off on the road, so that those which eventually were shipped off to Australia from Caldera were already of the second and third generation from the stock started with from the highlands.

From the Table it will be seen that, in the case of the lowland Indian, the division of the stature or entire height made by the length or, rather, height of the lower extremities or legs, remained the same as before, being still 500 thousandths, or exactly one-half of the stature, but that the trunk did not now take up so much of the other half; for, if the measurement No. 35 be referred to, it is seen to be only 231 instead of 267 thousandths in the highland Indian; and of this, again, the chest-region did not occupy so great a proportion as before, as will be seen on referring to the measurements Nos. 24 and 25.

Although the length of the arm was not found to differ much, the distance measured between the finger-tips, when the arms were held out horizontally (No. 2), was somewhat greater in the lowland Indian; but, as is seen from measurement No. 21, this was in reality due to the greater breadth across the shoulders, as also was the case between the nipples of the breast and across the pelvis; in the lowland Indian, however, this increased breadth was accompanied by a decrease in width, for, although not shown in the Table, the body of the highland Aymara was much wider from back to front than that of the colonist.

The relations between the lengths of the component members of the entire arm did not seem to have undergone much change, being as follows:—

	39, upper arm.	42, forearm.	45, hand.	i, total.
Highlander.....	179	148	108	435
Lowlander	179	146	107	432

but, in the case of the leg, the difference was much more pronounced, being—

	48, thigh.	53, leg.	59, foot.	k, total.
Highlander.....	211	252	37	500
Lowlander	220	227	43	490

which shows that, although the thigh in the lowland Indian still continues to be somewhat shorter than the leg, it is so in a very much less proportion than in the highland Aymara, or, in other words, it much more approaches, or has returned to, the proportions usual in other races.

The foot also, as will be seen from the measurements Nos. 56, 57, and 58, has undergone an equally great change; for it has now, in the lowland Indian, become proportionately both longer and broader than before; besides which, the back of the foot has become shorter if measured from the tip of the great toe to the leg, and consequently the heel has become more prominent

than in the foot of the highland Aymara, in which, as before observed, it is very slightly pronounced*.

To place too much reliance upon figures derived from the measurements of only two individuals would not be prudent; yet, when these are taken in conjunction with the general appearance of the Aymara Indians of the lowlands as a whole, it seems to me not only all but certain that we have here very confirmatory evidence that the remarkable configuration of the highland or normal Aymara must be in great measure dependent upon local circumstances, more particularly those of climate and elevation above the level of the sea, but also that we have strong proofs, when these circumstances again become changed, that the relative proportions of the body may again return in their dimensions, so as to approximate more closely to those found in other races of men living under similar and more ordinary conditions.

The mixed race of Aymara and white have always been derived from the intercourse of Indian women with men of Spanish extraction; and although in external appearance they may be regarded as an improvement upon the Indian, my belief is that, in moral character at least, the Cholada, as they are called on the Pacific coast (*cholo*, man; *chola*, woman), are, if any thing, inferior to either of their parents, from having retained most, if not all, the vices of both with but very few of the virtues of either race.

I now regret that I did not avail myself of the opportunities afforded me for obtaining a series of measurements of the mixed races; but, judging from their external appearance, I should imagine that the chest- and trunk-region were longer, and the extremities shorter than in the white, although probably not so much so as in the pure Indian. The general features of the half-caste are usually more Indian, and generally more pronouncedly so in the man than in the woman. Occasionally pretty, and sometimes even handsome, half-caste women, as well as men, may be met with; and they often become very corpulent, which is never the case with the pure Indian.

* The measurements made on several individuals pertaining to the Tacana and Muchani tribes of Indians, to the east of Aymaras, who inhabit the lower tropical slopes of the Andes looking towards Brazil, as also of the Peguenche Indians of the Pampas of the Argentine Confederation, showed that these races were not characterized by any of the remarkable peculiarities of the Aymara configuration, such as the great length of body and chest, shortness of extremities, absence of heat, &c.; and measurements of the bones of mummies taken out of graves near Arica and Pisuquia, on the Pacific coast of Peru, proved that in these instances the thigh could not have been shorter than the leg, since the femur, when measured from its lower extremity to the tip of the trochanter major, was always longer than the tibia.

The cornea of the eyes always remains yellowish in colour; and they usually possess but very little hair on the face or body, although the hair of the head is extremely abundant and long: it is of a dark brown-black to black colour; and, although not coarse in texture, I have several times observed that it appeared to be coarser than in the pure Indian. The colour of the skin is seldom darker than in the darker inhabitants of southern Europe; but on the body I noticed that it was not unfrequently patchy and irregular in tint*.

Although no great reliance can, as before remarked, be placed on the statistics of the population of these countries, it appears to me, even after making due allowance for the mortality amongst the half-castes caused by the interminable civil wars, which have lasted ever since the independence of Spanish America was secured, during which the mass of the combatants were drawn from this class, that the Cholada or mixed race do not increase in numbers in such proportion as they might have been expected to do, provided they had really been *inter se* a fruitful race.

Without being able to advance absolute proof, I still retain the impression that the half-caste of the first generation, *i. e.* those resulting from the intercourse of the white man with the pure Indian woman, are not amongst themselves very prolific, and that the Cholada are really but a floating population whose numbers are kept up, at least in major part, by the direct offspring of the white man and Indian woman, and of both white and pure Indian with the half-caste woman, and not, as is usually imagined, the progeny of the Indian half-caste with the Indian half-caste †.

It seems to me difficult otherwise to explain why we still meet in Bolivia with three, as it were, quite distinct races, and do not find any complete fusion of the inhabitants of the country into one uniform mixed race,—or to understand how an Indian tribe like the Aymaras could have retained, as it were, a distinct and separate existence all but unmixed with, and apart from, either the Cholada or the white population of Bolivia or Peru.

In the time of the Spaniards many negro slaves were introduced into Bolivia; but they seem to have quickly died out, owing to this highland climate being quite unsuited to their constitutions, so that it is now very rare to meet with half-

* Dr. Haygarth, of La Paz, informs me that in the nearly white crosses the last trace of Indian blood is indicated by the dark colour around the nipples of the breast, and anus, and in a black line or groove extending from the pubes to the umbilicus and upwards, in children of both sexes.

† What I have seen of the mulatto or negro half-caste makes me inclined to believe that this is also the case with them, and that such a thing as a true mulatto or half-breed race does not exist in actuality.

breeds between the negro and Aymara; on the eastern side of the Andes, in the tropical valleys of Yungas, however, I have met some few examples; and, to judge from their appearance, they seemed rather a fine race. The colour of the skin was of a rich dark-brown tint, smooth, and glossy; the nose straight, and the features rather good, yet with the mouth and lips much fuller than in the Indian; the eyes black and brilliant, and the whole expression intelligent and infinitely more animated than in the Aymara; the hair glossy, jet black, and with a slight tendency to curl.

On the Pacific coast are to be seen a few half-breeds resulting from the intercourse of Chinamen with Indian women; and certainly their external appearance would lead to the conclusion that they were far from being an improvement upon either of the parent races; for they were intensely ugly, both in features and expression.

The Aymara Indians of the "Puna," as the highlands of Bolivia and Peru are termed, generally enjoy robust health, and, notwithstanding that they are exposed to a very trying and severe climate, and are poorly clothed, lodged, and nourished, both men and women, as far as I could learn, frequently attain to an advanced age. One great reason for this, however, is that, owing to the great mortality which takes place amongst the infants, a sort of natural selection asserts itself, and only the very strong children survive the first few years after birth: this is, no doubt, also the cause why deformed individuals are rarely or ever seen.

There seemed to be but few large families—very seldom more than four children, and more often less than that number. The infants are kept to the breast always for one year, and frequently until they are two years of age, and are swaddled up in llama-wool cloths, and bound round so as to be quite unable to move their limbs in any direction; in this state they are carried about, slung in a poncho behind their mother's backs, as with the peasantry in some parts of Ireland. At the religious feasts, when women as well as men usually contrive to attain a state of beastly intoxication, these living bundles are often left lying about on the ground, exposed to the inclemency of the weather, and not unfrequently perish before their wretched parents come to their senses. On the morning after such a feast I found the little child of one of my Indians dead from exhaustion, after having been left out in the rain all night; and such scenes are far from uncommon.

In some districts, particularly in the provinces of Larecaja and Mufecas, the Indians suffer from wens or goître, which often attain a great size. Amongst the inhabitants of Quiabaya

and Sorata it is so common that they have received from their neighbours, not so affected, the nickname of "Ccotosos," from Ccoto, the Aymara word for goître. Although the Cholada as well as the pure Indians suffer much from this disease, I did not hear of any instances in which whites were affected; yet I had previously found it common enough amongst the white inhabitants of the province of Mendoza, in the Argentine Confederation, where also Dr. Edmund Day informed me of a case of an infant born with decisive symptoms of goître. Animals are also stated to be affected; and Doña Toribia Bernal, of Sorata, informed me that she had an instance in two kids born with incipient goître.

In Bolivia, dried seaweed from the shores of the Pacific is employed in the cure of goître. In March 1859 I saw large quantities being collected for this purpose at Cobija, and forwarded some 300 miles into the interior, where it is sold at the rate of 4 Bolivian dollars per arroba, of 25 pounds, or about sixpence per pound. The employment of this substance in medicine is remarkable, as showing how similar results may be arrived at in far distant parts of the globe; for it is quite evident that the curative properties of the seaweed are due to the iodine contained in it; yet in Europe the discovery and employment of preparations of iodine in the cure of goître are comparatively of but very recent date.

An epidemic, known as the "Peste," committed terrible havoc amongst the Aymara Indians of Peru and Bolivia, in the years from 1855 to 1858, without at the same time appearing to attack the white inhabitants; I understand, from Drs. Haygarth, Cooke, and Lopera, that this was a species of fever closely allied to typhus, and raged with greatest violence during the months from June to September. It was accompanied by the appearance of spots on the skin of the body, and by intense hæmorrhage from the nose and anus. The Indians usually recovered from the first attack; but most frequently this was followed by a second one, to which they generally succumbed. Don Pedro Saientz, of Corocoro, informed me that he believed he had saved a great number of his Indians by compelling them to bathe daily in a large tank of water.

Both gonorrhœa and syphilis are known amongst the Aymara Indians, and treated by themselves without foreign medical assistance. Their treatment of syphilis would seem to be attended with success, since, although it is known to be common, the general health of the Indians appears to be good, and I have never met with any instance of an Indian disfigured by the disease. I was informed, on good authority, that these Indians employ mercury, both in the metallic form and as a chloride (calomel), in the

cure of the disease, and that they now procure these substances from the apothecaries or merchants (who sell mercury to the silver-amalgamating establishments) in the large towns; as they are also acquainted with cinnabar, which in several parts of the country is found in the native state as a mineral in veins, it has been surmised that they may also employ this compound of mercury as a medicine.

Some of the medical men in La Paz assured me that the Aymara Indians who chew coca are not salivated by mercurial preparations, even when administered in great excess; how far this is correct is worthy of inquiry. It was proposed in La Paz to employ cocaine to prevent salivation; but there are some doubts as to whether the substance so called really represents the true active principle of the coca-leaf.

It would appear probable that syphilis has been known amongst these Indians from a very early period, because they have in their language a name for this disease ("*Cchaca-usu*," literally translated "bone-disease" *Huanti*, a bubo), because they are apparently quite familiar with its treatment, and, lastly, from the occasional occurrence of skulls taken out of graves dating from a period antecedent to the Spanish conquest, on which may be seen depressions or scars pronounced by several medical men to have resulted from syphilitic caries of the bone, and which in two instances which came under my observation afforded proof that the disease had been arrested in its progress and new bone formed during the lifetime of the individual.

A very remarkable circumstance also is, that the Alpaca, an animal altogether peculiar and confined to these highlands of Bolivia and Peru, also suffers extensively from a disease which, in all its symptoms and effects, appears to be identical with syphilis in man, and which is treated by the Indians by a precisely similar mode of cure, consisting principally of inunction with mercurial ointment. Several white landed proprietors of Bolivia and Peru with whom I have frequently spoken upon this subject, have assured me that the prevalence of this disease is the sole reason why they have such a repugnance to occupying themselves with the culture of alpaca wool, which as a commercial speculation, although an extremely lucrative one, has still been left entirely in the hands of the Indians themselves: the mortality amongst the alpacas caused by the disease, when not extremely carefully treated, is said to be very great indeed; and the bones of the diseased animals are stated to be affected by caries exactly as in man*.

* The question whether this disease may have been communicated from the Alpaca to man, or *vice versa*, is an open one. It is well known, however, that such unnatural intercourse is common, and that under the Incas severe

The character of the Aymaras is a peculiar one, not easy to describe; they rarely smile or laugh, and always appear to be sad and serious, reflective, silent, and uncommunicative, intensely suspicious and distrustful, never forming attachments until after long acquaintance.

Although they are patient under suffering and submissive to the laws and governing powers, they at bottom possess a dogged determination which nothing can shake, and which enables them to support torture and even death rather than confess. In my own experience, I have seen an Aymara Indian, who stole a mule, expire under the lash rather than reveal where he had concealed the animal; and in former times many an Indian has been tortured or put to death by the Spaniards for not pointing out the localities of the gold- or silver-mines from which he had procured these metals.

Impotent as they know they are at present, there can be no doubt that the Indian still lives cherishing the hope of one day crushing his oppressors. With an intense hatred to the white man, he has if possible a still deeper hatred to the Negro, although at present these latter, who were much more numerous under the rule of the Spaniards, have since the independence all but disappeared from the country, or at least from the highlands. Their hatred to the white was so strong that, during the insurrection in 1780 they swore to destroy even all the white animals in the country, and as far as possible carried this oath into effect.

When, however, the treatment which these Indians have received at the hands of the Spaniards and their successors is recollected, no one can wonder at the depth of these feelings, or be surprised at the influence which so many generations of oppression has had on the original character of the race.

Secretiveness seems also to be a well-developed trait in their character. The Indian, except possibly on his feast-days, looks as if reduced to a state of the most abject poverty, if one is to judge from their clothing, habitations, and mode of living. They, as a rule, hide all their riches, *i. e.* their silver or gold, generally burying it in earthen pots in the ground; and as the Indians rarely confess before death, a large part at least of such hoards remain concealed, although not unfrequently such "tapadas," as they are called by the Spaniards, are come upon accidentally. It is also well known that after the battles in the eternal civil wars of Peru and Bolivia, a large portion of the arms disappear, having been carried off by the Indians and concealed by them, no

laws were enacted against it. Even after the Spanish conquest, an old law not permitting the llama-drivers to start on their journeys unless accompanied by their wives was retained in force; and this regulation was understood to be intended as a safeguard against such abuses.

doubt with a view to their ultimate employment against their oppressors.

The amount of silver so buried or hidden by the Indians must be enormous; for they rarely part with any silver money, when once it comes into their hands. In later years, when the demand for the wool of the alpaca became so great and the price rose proportionately, the amount of hard cash (Bolivian silver dollars, which until lately were the only currency in this part of the world) received by the Indians was extremely large; and as the major part of it at once vanished from circulation, it has been calculated by well-informed merchants of Tacna and La Paz that more than some ten millions of Bolivian dollars must in the course of but comparatively few years have been hidden away by the Indians of the highlands of Peru and Bolivia.

The Aymara Indians seem to have a natural preference for solitude; and it is strange to come suddenly upon solitary Indians, as it were ruminating for hours together, when unobserved, in some out-of-the-way spot in the mountains, or to see the Indian women sitting crouched up the whole day as if motionless, on the top of some heap of stones or other elevation, herding their llamas. Often I have sent an Indian to watch the mules at night, and found him in the morning squatted down on his haunches with his knees up to his chin and his arms clasped round his knees (in almost the exact position of a mummy in an ancient grave), in which position he has remained all night, almost without moving, more than to renew his quid of coca-leaves.

The character of the Aymaras cannot at bottom be bad; for it is rare to find any of the greater vices much developed amongst the pure Indians: murder is extremely rare; and theft, except of a very petty character, is not common. I have myself repeatedly sent large sums of money long distances in charge of a single Indian on foot, but never had occasion to repent of so doing—although I knew of an instance in which an Indian did murder another who was carrying a sum of money from Sorata to the gold-washings of Tipuani. This, however, was quite an exceptional case; and the arrieros who travel between Tacna and La Paz, and other parts of the country, often with large amounts in money and gold dust, are as a rule never molested, even during the civil wars which are the curse of this unhappy country.

As servants, the Aymara Indians, to judge from my own experience, do well as long as they remain in their own district; but if taken elsewhere they soon get homesick and run away without notice. When, however, they do form an attachment to their masters, they are reported to be very faithful, and more particularly so when brought up from youth; so that a system

of purchasing or, rather, kidnapping young Indians is common, they being sent to the coast districts or to distant towns, where they are bought into the families of the landed proprietors or merchants. On several occasions during my residence in Bolivia I was requested by friends in Tacna to send them a young Indian boy as a present, which, although not openly permitted by the law, is still often done.

Although the Aymara Indian the moment he comes into contact with or is employed by the white at once puts on an expression of stolid indifference and stupidity far from real, and only moves step by step, so as religiously, it may be said, to do the least possible amount of work with which he can escape, he is far otherwise when amongst themselves; for there he is seldom or never idle; even the llama-driver as he walks along side his animals always has his distaff in his hand, spinning coarse yarn of llama-wool as he goes along; they do not, as many other and especially North-American tribes, throw all the burdens on the women's backs; and the Indian at home, although never animated or merry, is apparently sociable and probably even amiable in his family relations.

They particularly excel in walking, and can keep up on foot with the quick walk of the mule for a long time and distance. In March 1860, an Indian on foot accompanied my mule at a sort of trot, for a distance of twenty-three leagues (69 miles) in one day; and the Indians who fetched my letters from La Paz have on several occasions made the journey to and fro (a reputed distance of 60 leagues) in three days, during which their only food would be a small bag of parched Indian corn and another of coca-leaves; the post from La Paz to Tacna, a reputed distance of 250 miles, was during my residence in Bolivia regularly carried by a single Indian on foot in five days. I have reason, however, to believe that the extraordinary story given by Dr. Scherzer, of the Novara expedition, of the custom said to be prevalent amongst these Indians, of standing on their heads after such long journeys, in order to allow of the blood returning to the feet*, is somewhat of a hoax played on the learned Doctor when in Tacna; and, further, I am also inclined to believe that the virtues generally attributed to the use of the coca-

* Bd. III. p. 349, when speaking of an Aymara guide who had already marched 30 leagues on foot, he adds, "fühlte Herr Campbell, obschon er ein vortreffliches Thier geritten, schwer ermüdet; der Führer dagegen, nachdem er sich einige Minuten auf den Kopf gestellt und ein Glas Brantwein zu sich genommen hatte, trat unverweilt, ohne weiter auszuruhen die Heimreise an;" and remarks further: "Es ist dies eine eben so allgemeine als wunderliche Sitte der Aymara-Indianer nach langen, beschwerlichen Märschen, um, wie es scheint dem Instincte folgend, der gewaltigen Andrang des Blutes nach unten zu mildern."

leaf are very considerably exaggerated in most of the accounts given by travellers and others, both because I found by experience various of my Indians who did not use coca to be equally good walkers, and as capable of enduring fatigue as those who habitually indulged in it, and because I was assured by General Belzu (the President of the Republic of Bolivia, and nearly a pure Indian himself) that, although in the Bolivian army coca was never allowed to the soldiers, they were quite as good, if not better walkers than the average of the other Indians; and as a proof of this I may mention that when in the months of January and February 1860, owing to a number of almost simultaneous revolutionary attempts breaking out in different parts of Bolivia (La Paz, Oruro, and Potosi) at great distances from one another, the walking-powers of some of the most reliable companies of infantry were severely taxed in order to repress these movements, I saw the first battalion of the Bolivian army arrive in Biacha in excellent condition, notwithstanding that, upon summing up the lengths of the different marches they had made during the previous three weeks as detailed to me by Colonel Flores their commander, it appeared that they must have marched on an average during this period something like forty-five miles English per day; yet their entire list of casualties only included one man who had dropped dead on the road, and three left behind from illness.

What the religion of the Aymara Indian at the present time is, is a question difficult if not impossible for even one of themselves to answer definitely; it seems to be a curious and confused jumble of their ancient belief with some slight admixture of Christian doctrines. Outwardly the Roman Catholic form of worship has been forced upon them by the Spaniards ever since the conquest, the infants being all obliged to be baptized and named after some saint in the calendar, whether their parents wish it or not; and consequently the white inhabitants regard the whole of the Aymaras as "Indios Christianos," in contradistinction to the so-called "Gentiles" or Pagan Indians, although it seems quite certain that but very few of these Indians have any clear conception of what the Christian religion really is.

The worship of the Sun does not seem at any epoch to have played a prominent part amongst the Aymaras, if even at all acknowledged by them, before the Incas, after their conquest of the country, introduced this form of religion, and built temples on the islands in the Lake of Titicaca dedicated to the sun and moon. The sun in Aymara is called *Lupi*, not *Inti* as among the Quechuas or Inca race; and in some of the old Spanish writers it is expressly mentioned that the Colla Indians were neither allowed to enter the grand temple of the sun, nor to assist at the

ceremonies, being regarded by the Incas in the light of heathens. Idols seem, however, to have been common with them; but it would appear that these idols had more a local signification, *i. e.* were regarded more as the guardian saints of the different districts or places than as representing the universal or almighty God, who seems to have been at all times, both ancient and modern, acknowledged by the Aymara Indians, and to whom they sacrificed and made offerings, especially of their esteemed coca, as well as poured out libations of chicha, both of which latter customs they still continue to keep up, in out-of-the-way districts. They are also equally firm in their belief in the existence of an evil spirit or devil, whom they appear to think it necessary to propitiate at times, and call by the names of Auca, Huantahualla or Supay; they also believe in several attendant or administering angels of the devil, one of whom is called by them Caricari, and is supposed to be a messenger sent by the devil to kill men and remove the fat from their bodies, for what purpose, however, I could never get them to explain.

The Aymara, moreover, acknowledges the immortality, or rather the existence of the soul in the next world, and in ancient times always buried the dead along with a supply of food and sometimes clothing to take along with them; even at the present day Cortez states that this custom is kept up in certain districts of Bolivia. Under certain circumstances, it is believed by them that the souls of the dead may return to this earth; and it is known that the Indians of the Puna occasionally put an end to the sufferings of their relatives when about to die, by strangling them with a rope, under the impression that by so doing they can prevent the ghost of the defunct returning to this world to haunt and trouble them.

The symbol of the cross (always rectangular and equal-sided) is very common on the ancient Aymara ruins at Tiahuanaco; but it seems to have been used only as an ornament, since, notwithstanding that they now employ the cross as a symbol of Christianity, and commonly place crosses of wood in a conspicuous position on the roof or at the eaves of their houses, on the bodies of the dead, and on the graves afterwards, they appear to do so merely out of fear of the Catholic priests, as they are always ready to swear by the cross, (or by Jesus Christ or the Virgin Mary,) yet evidently have not the slightest respect for such oaths, which they never scruple to break when convenient. In order to make an oath binding on an Aymara, it is customary, at least in some districts, for the Alcalde of his community to lay his staff of office on the ground, and then make the Indian step over it before giving his declaration.

As a remarkable instance of how in a perverted form some of

the doctrines of Christianity may become grafted into the present Aymara belief, I may mention that the so-called "Indio Cristiano" of the Puna of La Paz still believes that on one day in the year, which is Good Friday, he may commit any crime short of murder with impunity; and on this day instances are known where they have even violated their own daughters in presence of their mothers, as I have been assured by a trustworthy Indian of Omasuyos, who explained at the same time to me that it could be no sin, as on that day God was dead, and consequently could not possibly on the next day remember any thing which happened the day before—rather a strange application of a Christian dogma!

When Roman Catholic churches have been built in this country, it has not unfrequently been found subsequently that the Indian masons have concealed in the walls or in the altar itself small idols, as if to put the church itself under the protection of their ancient gods also. The small idols or figures found in the Indian graves seem to have stood in the same relations to the Aymaras as the Lares and Penates or household gods amongst the ancient Romans, and appear to have been kept by each family in their huts.

The influence exercised by the parish priests over the Aymara population is an extremely powerful one. This must certainly be attributed more to a sort of innate sense of duty inherited from their ancestors, than to any true respect for the present priesthood, whose morals (or rather want of morals) are not often such as would engender any great amount of reverence for their cloth. This power, however, too often exercised to bad purposes, always seemed to me to be founded more on fear than on any true respect or love for their spiritual leaders.

I often found it advantageous to avail myself, in my dealings with the Indians, of the power possessed over them by the priests. On one occasion, when a number of Indians who had agreed to carry a heavy and important piece of machinery up an almost inaccessible path to the mines and had found the task so difficult as to have at last abandoned it in despair, I as a last resource appealed to the parish priest to assist me, which he did most effectually, by at the next mass giving them such a thundering sermon in Aymara, in which he threatened them with all manner of pains and penalties in this and the next world, that the Indians in their fright ran out of the church and did not return until they had effected my object.

Under the rule of the Incas, and probably even from a much earlier period, the religion of these Indians had always been intimately connected with their fêtes or religious feasts; and a similarity in this respect no doubt greatly facilitated the intro-

duction of the Roman Catholic form of Christian worship amongst them, since the Indians did not feel that there was any very great revolution in the order of things when they still were allowed to retain their "fiestas," which, if somewhat altered as to date, were otherwise more changed in name than in reality, and most probably still retain much of the character which they had even before the Spanish conquest.

The priests were on their side only too glad to encourage the Indians in these tastes; for they soon found out that the weak side of the Indian was his attachment to his feasts, for which alone he can be induced to part with his money, which otherwise he would only continue to hoard up, grudging even the most necessary comforts to himself. Encouraged by the priests, the Indians of many districts are urged on to a rivalry in getting up feasts, one more magnificent than the other, all of which naturally puts money into the pockets of the priest himself.

The impression made upon my mind upon first witnessing one of these feast-days celebrated by the Aymara Indians is quite ineffaceable. Arriving in the evening at La Paz, in Bolivia, after a long and wearisome journey of seven days on muleback from the Pacific coast of Peru, this city (of about 70,000 inhabitants, of which some 40,000 are Indians, whilst the remainder consists of the Cholada, and still fewer whites of a rather dusky tint in general) seemed to me, at least that evening, very much like some of the older towns in Southern Spain. Next morning, however, which (unknown to me) happened to be a feast-day, my slumbers were broken by music of an unearthly but certainly not heavenly character, and I beheld the streets filled with troops of Indians, men and women, dancing energetically to the accompaniment of numerous drums, pandean pipes, Indian flutes, and long trumpets, which together produced a most doleful and monotonous sound, loud enough indeed, but hardly entitled to the appellation of music. The Indians themselves were attired in the most grotesque costumes: many of the men had enormous head-dresses of ostrich- or condor-feathers, often dyed of various colours, some erect and others drooping down so as entirely to conceal the head; others had masks representing the heads of animals, or were attired in the hides of oxen with the horns projecting from their heads, whilst many had cuirasses made of the skin of the jaguar, or American tiger, as it is commonly called. The women were decked out in all their finery; and many had enormous bunches of flowers hung as if from their ears, but actually supported by being looped up on each side by their pigtailed of hair, or had similar pendants of oranges, lemons, red-pepper pods, or ring-shaped cakes incrustated with sugar.

The effect altogether was most extraordinary and surprising, especially from the great contrast between the appearance of the Indians themselves and the almost European buildings and streets in which they moved; for it seemed like a dream to behold them occupied by so incongruous a population.

In the vicinity of the towns, the Indians on these occasions usually crowd in, and pass the first day perambulating the streets with their music and dancing before the various churches and in the squares of the town; afterwards they generally retire to their own hamlets, where they continue their diversions during the remaining feast-days.

These diversions are kept up, without any interruption, day and night, as long as the feast continues, or until the Indians literally drop down from sheer exhaustion or intoxication. It is perfectly astonishing, however, to observe how long both the men and women can, hour after hour, without any cessation, keep on dancing round and round like lunatics, whilst all the time not a smile can be perceived on their countenances, which, on the contrary, never indicate the slightest trace of excitement or hilarity, but retain the same sad and melancholy expression characteristic of their features in their most serious moods. In fact, the Aymara Indians are a paradox; for they seem to amuse themselves without ever appearing gay, and to dance without becoming animated.

On these occasions also it is common to find the Indians burlesquing any new fashion which may come into vogue amongst the whites: thus, for example, when the use of crinoline became introduced amongst the ladies of La Paz, this custom was immediately caricatured by Indians, who danced at their feasts in would-be imitations of enormous volume.

The name's day of the patron saint of the town or village is always kept in great style by the Indians, who, no doubt, recognize in it the feasts which their ancestors celebrated in honour of their local gods or saints. Besides the usual fêtes common to the Roman Catholic religion, some, which are held by the Indians under the auspices of the priests, appear to have been introduced into the calendar after the Spanish conquest, no doubt for the sake of securing the goodwill of the Indians and facilitating their adoption of Christianity, by allowing them to hold religious feasts corresponding, or nearly so, to their ancient ones. This appears, for example, to be the case with the "Fiesta de la Cruz," held in La Paz on the third and following days of May, which I am informed is not known in other parts of the Catholic world, and which is evidently only a replacement of the great feast called "Aimoray" held in this month by the Indians before the arrival of the Spaniards.

On St. John's eve it is usual to see bonfires lighted on the hills, and even in the streets of La Paz ; but I cannot say whether this custom has been introduced by the Spaniards or was prevalent before the conquest.

The three days of the carnival are a great time amongst the Indians in all parts of the country, as also the feast of Corpus Christi, which is specially celebrated in the towns by the erection of huge altars in the plaza or before the churches, covered by coloured cloths, and decorated by pictures of the saints, mirrors, bunches of fruit, and by all the valuables which the Indians possess or can borrow for the occasion. The Indians vie with each other in the size of these altars, which are frequently several stories in height, and occasionally so carelessly put together (being constructed only of wooden poles tied together with ropes made of llama-wool) that they tumble down during the ceremony, and sometimes cause the loss of life in their ruins.

The Indians themselves make great preparations for these feasts, which may be regarded as their only luxuries ; they will not part with money, if they can help doing so, except in the purchase of materials for the decoration or brandy to be consumed at them. Rich Indians have been known to spend even some hundred dollars for fireworks, and they pay highly for the feathers of the condor or ostrich for their head-dresses,—as much, for example, as nine dollars for a jaguar skin, of which they make their ornamental cuirasses worn in the dances.

These feasts are attended with great drunkenness and immorality*, and, as might be expected, frequently end in fights, in which sometimes, but very seldom, lives may be lost. In the villages, the priest, when at hand, is usually appealed to in such disputes ; and it has amused me to see the summary mode in which the holy (but often rather unsteady) man administers justice, by laying about him promiscuously with a heavy pair of tapir-skin reins, or any other thing at hand, to the dire confusion of the Indians around.

At these feasts in the towns, or at the celebration of some national event, bullfights are occasionally arranged by the authorities of the district ; as, however, they have no bull-rings, the animals are simply let loose in the square (*plaza*), and allowed to be tormented by the Indians, without any further ceremony or precautions being taken than the temporary erections which

* In the midst of the dances men and women are frequently seen to exchange head-gear, by which is understood a mutual arrangement to become partners for the night of the feast. The Indians, however, are not a lascivious race in general, although Dr. Cooke informs me that this was due only to their rarely removing their garments at night, sleeping completely clothed, and usually all the family together, on the earthen floor of their huts.

most of the dwellers around put up in all haste, in order to protect their doors and windows, and enable them to look on in safety. As might be expected, lives are often lost, when the enraged bulls charge at the Indians and Cholos, who irritate them on all sides, and who are often too much excited by drink to take much care of themselves. At Achecache and other towns in the Puna it is common on these occasions for the Indians to bring forward and set at liberty wild animals, such as vicuñas, foxes, viscachos, wild rabbits, &c., the smaller animals being placed in holes made in the ground and loosely covered over by stones, which, on being kicked aside by the bull in its charges, allow them to jump out, to the great delight of the spectators.

The Aymara Indian is extremely superstitious, and is a firm believer in omens and witchcraft*. I am told that they have a custom, similar to what in Europe was common up to a very recent date, of making small images of clay of those whom they wish to injure, which, after piercing through with a thorn, they leave in some out-of-the-way place, believing that the individual in question will then suffer as long as the thorn remains sticking in the effigy.

They also have the idea that the possessor of any part of the body, or any thing pertaining to them, can, as long as he holds it, exercise an influence for good or evil over them. For this reason I found it very difficult to obtain samples of the Indian hair for comparison. This was more particularly the case with the men, who could not be persuaded, like the women, that you might like to keep it as a memento.

To cut off the pigtail of an Indian is one of the heaviest punishments which can be inflicted on him. On two occasions, in which this was done for theft, the Indians offered what to them was a very large sum to obtain the severed pigtail back again. An Indian whose hair has been cut short is always regarded with great suspicion by his comrades, and rarely admitted afterwards to their society or confidence. In like manner I found it, in some out-of-the-way districts, occasionally very difficult to persuade them to sit for their photograph or portrait, as they always retained the idea that the possessor of even their likeness must retain some power over them.

When the Indian is about to commence any undertaking, such as building a house, marking his llamas, or starting upon a journey, he always puts great faith in what he considers

* It occasionally happens that individuals supposed to practise witchcraft have been put to death with terrible tortures by the Indians of the remote districts. This is also the case amongst the Pampa Indians.

good or bad omens (such as the appearance of the heavens, the flight of birds, dreams, &c.), and usually pours out a propitiatory libation of chicha, brandy, or even water, before beginning his labours*.

When the Indians in 1854 were arranging their plans for a general rising against the whites, one of them, on his death-bed, confessed to the parish priest that the insurrection had been deferred because the omens had been unfavourable, and informed him that a council of the principal Indians had selected three llamas, one of each colour, white, black, and brown, which were respectively intended to represent the white, black, and Indian races, and had forced them to swim across the river Ilave, which runs with a rapid current into the Lake of Titicaca, on its western side. The white llama got across all right, the black managed also to do so, but was so exhausted as to drop down dead upon reaching the shore, whilst the third, or brown llama, was carried away by the stream and drowned. From this result the Indians had drawn the conclusions that the white race was still too powerful, that the blacks were not to be feared, and would soon die out, but that the Indians must wait longer, since they were not as yet so strong as their white masters. The outbreak of the "Peste" epidemic soon after, and the great mortality caused by it amongst the Indians, contributed to make them respect this verdict.

As a means of freeing themselves from the "Peste," the Indians of some districts (in 1857) loaded a black llama with the clothes of the infected persons, sprinkled them with brandy, and then turned the animal loose on to the mountains, in the vain hope that it would carry the disease off along with it.

When an animal, as a cow or llama, is killed by lightning, they regard it as a mark of the displeasure of God, and carry the carcass to the summit of some neighbouring hill, where they bury it, placing along with it, at the same time, an earthen jar of chicha or aguardiente, apparently as a peace-offering to God.

Upon arriving at the top of a steep hill, the llamero, as the llama-driver is called, commonly places a stone upright, or leaning against the side of the hill, as a token of thanksgiving for having arrived so far with his llamas without their having been knocked up by fatigue. All along the roads, or rather tracks, especially in the higher and little-inhabited parts, numerous heaps or cairns are encountered, often of very considerable di-

* The Indian fishers, before commencing operations, drink a little of the water with reverence, and mutter a prayer. When rain is desired, it is said that they often make little images of frogs and other aquatic animals, and place them on the top of the hills, as a means of bringing down rain by propitiating their deities.

mensions (where loose stones are abundant in the vicinity); these are called *apachetas*; and the Indian, when he passes them, invariably adds a stone; and if he has his quid of coca in his mouth, he takes it out and throws it against the cairn, on which he occasionally sticks feathers or places one or more of his leather sandals, and mutters some words, probably a prayer. When he passes these cairns, the Indian is sometimes seen to pull a hair or two out of his eyebrows or eyelashes, and, placing them before his mouth, to blow them away in the direction of the sun, probably as an offering. As these cairns or *apachetas* were considered remnants of Pagan worship, the Lima Council pronounced against them*; but I regard them as originally instituted to mark the line of road.

When travelling from Tacna to La Paz, I noticed, on the Bolivian side of the Pass of Huaylillos (14,650 feet above the sea), numbers of small erections, put together with loose stones, and upon inquiry was informed, by the *arrieros*, that these were put up by the Indian *llameros* when descending to Tacna with their loads, and that upon their return they examined them, in order to see whether they still remained standing, in which case they regarded them as proofs of their wives having remained faithful to them during their absence, and the contrary if the stones had tumbled down.

Some of these are sketched in Pl. XXI. fig. 2. A glance at the style of some of these little erections makes one almost fancy oneself capable of distinguishing between the characters of the men who had put them up. The confident husband would no doubt content himself with putting one or two stones on the top of one another, so as to be not easily displaced; whilst the anxiety or jealousy of another would be likely to tempt him to still further risk his own happiness by erecting a flimsy structure in two or three stories, very likely to be upset accidentally.

I am sorry to add that my muleteer, a Cholo or half-breed, who, by-the-by, are almost as much hated by the pure Indians as the whites themselves, before I could expostulate with him, backed his mule purposely so as to kick over a number of these little structures, remarking with malicious delight, "Won't there be a row when those fellows get home again."

The Aymara Indians celebrate the birth of an infant, as also marriages, but, curiously enough, appear (although they have the verb *marmasiña*, from *marmi*, a woman) to have no word in their language to signify the act of marriage, and always use the Spanish substantive "*casamiento*" and the verb "*casar*," putting to the latter an Aymara termination, thus:—" *casarasña*, to

* El Concilio Limense segundo, in su parte 2ª, capitulo 29.

marry oneself; "*casaraña*," to marry one to another, *i. e.* perform the ceremony of marriage; and *casarayaña*, to make to marry, or give in marriage.

Although the ancient Aymaras had their family or tribal places of burial, as may be seen in the islands of Lake Titicaca, Caranhas, &c., the Indian at present seems to be quite indifferent as to where a corpse may be buried, interring it anywhere most convenient, and not troubling themselves to transport it any distance for the sake of burying it in holy ground. In the various instances which I have witnessed they place the corpse, in its clothes, lengthways in an ordinary grave, dug out apparently in any convenient direction, the hands being tied (at the wrist) across the breast, and a cross, made of a couple of twigs tied together, placed on the body. On the grave itself a simple wooden cross is placed, probably only out of deference to the priests.

In ancient times, however, the position of the body in the tomb (*chulpa* or *huaca*) or grave was always that which the infant had originally occupied in its mother's womb, the knees being drawn up to the chin and the arms placed crosswise over the breast—the whole usually sewed in a species of sack, generally made of a species of grass (*ichu*) or of reeds (*Totorá*) sewn together. In the *chulpas* at Carahuara in Caranhas, I was informed by Messrs. Bode and Savalla that the mummies there are all found in baskets, and, curiously enough, have invariably a stone about 5 inches in length placed *in ano*. In some parts the *chulpas* are square towers, about 14 feet high, and from 7 to 8 feet on each side, built of unburnt sun-dried clay, tempered with straw; those at Palca had, I found, their sides placed in the direction of the cardinal points of the compass; at many other parts, as in Caranhas and around the Lake of Titicaca, they are built of stone, and round as well as square in shape; several of these have been figured and described by Mr. Squier in his memoir on the primeval monuments of Peru*.

High up on the sides of the mountain Illampu, more commonly known as the Nevado de Sorata I found (in 1861), at Marcomarcani, at an elevation of more than 16,000 feet above the level of the sea, two graves within a few feet of one another, on a narrow ridge connecting two great spurs of this mountain; both of these were about 4 feet deep, quite empty, and lined with stone walls neatly put together: the one had a direction nearly east and west, was 3 feet 8 inches long and 1 foot 8 inches wide in the centre, but tapered to each end, which was only 15 inches wide; the direction of the other was about north-east

* The American Naturalist, vol. iv. 1870.

and south-west, and its shape a rectangle 5 feet long by 1 foot in breadth. No tower or other erection appeared to have marked their site.

Occasionally, as in the island of Quebaya, in the Lake of Titacaca and elsewhere in that district, the chulpas or burial-towers have two or even more stories, as if the chamber in each story was intended for the interment of a different member of the same family. In some districts, as in Caranhas, these monuments are so abundant as even to form what might be termed villages of the dead. Many of these graves have been opened and ransacked for the gold and silver articles which they so often contain, as it was the general custom to bury along with the corpse articles of pottery, wood, and metal, especially small images or figures of men and animals made of gold, silver, or copper. A gold ornament, represented in Pl. XXI. fig. 1, evidently intended to be worn round the neck, was found in a chulpa near Corocoro, along with a silver spoon-shaped ornament called a "pichi" (Pl. XXI. fig. 11), such as at present are worn by almost all the Indian tribes of the Pacific coast down to Araucania; mace-heads of magnetic oxide of iron occurred in some of these tombs; but the most curious article which came under my notice during my residence in the country was the small solid silver image represented in full size in Pl. XX. figs. 1 *a* and *b*. This was placed in my hands by M. Ramon Doux, who took it out of a chulpa in Caquinhora, about four leagues from Corocoro, in the department of La Paz, Bolivia. What makes this figure extremely interesting is the fact that it has in its left hand what appears to be a telescope, or rather a tube, evidently intended to assist the vision, since the one end of it is held to the eye, whilst the other is apparently directed to the heavens. Although, like the rest of the figure, this part also is of solid silver, and not really tubular, there can be no doubt that it was intended to represent a tube, since the outer end is hollowed out. The right hand of the figure holds a mask, as if this had been just removed from the face in order to permit of the telescope being brought up to the eye. The features and proportions of this figure, the aquiline nose, long body, short thigh, and long legs, are quite characteristic of the Aymara; the peculiar head-dress may possibly indicate the rank of chieftain or priest, whilst the instrument held to the eye would indicate that the use of some such tubular arrangement to assist the vision was known to these Indians at a very early period.

The custom of burying things with the dead was carried on long after the Spanish conquest, and is, as before mentioned, not altogether extinct in the present day. A wooden chicha cup given to me by Mr. Thackeray, who obtained it from an old



Fig. 5.

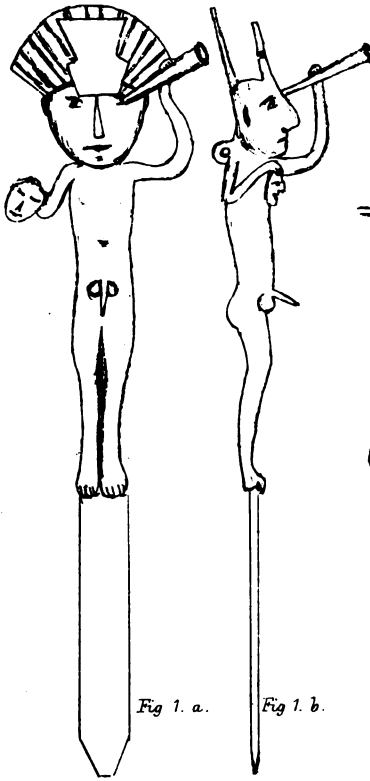


Fig 1. a.

Fig 1. b.



Fig 3.



Fig. 2. a.



Fig 2. b.

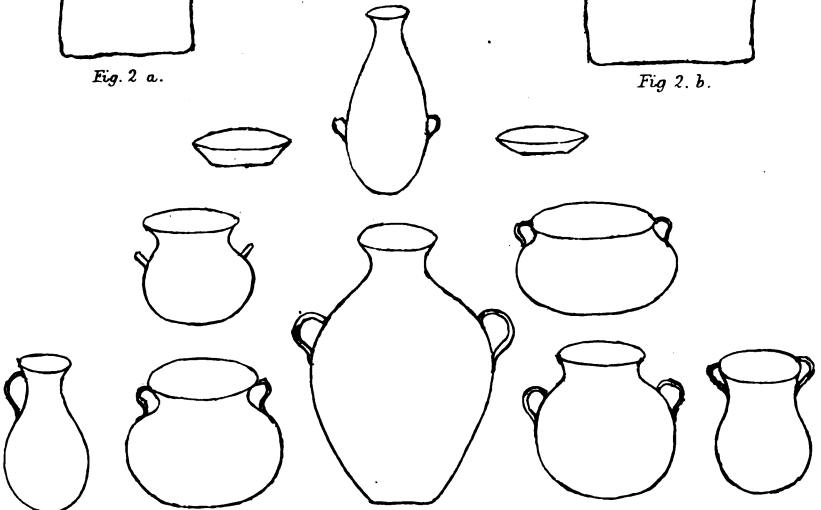


Fig 4.

tomb near Puno, on Lake Titicaca, is inlaid with figures painted like mosaic, in red, green, and yellow, evidently representing the arrival of the Spaniards in their vessels; and another wooden cup, also in my possession, of probably much more recent date, has, standing up inside from the bottom, rude projecting figures of the heads of two oxen yoked together, and is the only example of one turned in a lathe which I have seen in any of the graves. Both of these must naturally have been made subsequently to the arrival of the Spaniards, who first brought horned cattle and turning-lathes into Peru. These chicha-cups were apparently filled and emptied by those at the funeral to the memory of the dead, and then thrown into the grave. They are very commonly found of pottery also.

It is now a matter of difficulty, if not an impossibility, to tell with any certainty what the dress of the Aymara Indian was before the Spanish conquest. The only article of costume which is without doubt of thoroughly ancient origin, is the woollen poncho, which appears, however, to have been in general use amongst all the South-American tribes on the Pacific, from New Granada down to Araucania, even from the oldest times; all the other articles of clothing at present employed by these Indians are of much more doubtful origin.

In the Aymara highlands the men wear on their heads a large-brimmed hat, made (apparently felted) of llama wool, or, preferably, vicuña wool, of the natural colour of the animal. Under this they generally have one or even more knitted woollen caps, like old-fashioned night-caps. As before mentioned, the Aymara has no care for his feet, however inclement the weather may be; but he takes every care of his head, often placing two, and I have even seen at times three, of such woollen caps one over the other. Sometimes these are made so as even to reach over the face, leaving orifices for the eyes, nose, and mouth; such I have seen occasionally in Norway or the Welsh Mountains. The body is protected by a coarse shirt of unbleached white llama or sheep's wool, whilst the legs are clothed in a sort of breeches or drawers made of black or white llama wool, which reach down to the knees, below which the leg is nearly always bare, the sole of the feet alone being protected by a sandal, called *ojota* or *usuta*, of leather, usually made from the skin of the neck of the llama, which, together with the thongs which hold it on, is cut out of one piece. Stockings are rarely seen, even among the well-to-do Indians, and, when used, generally have no feet, reaching but to the ankle. Over all is the universal poncho, generally only a square piece of cloth of undyed, usually black, llama wool, with a slit in the centre to put the head through. The llameros commonly carry in their hand a short wooden

whip, the handle of which is somewhat ingeniously inlaid diagonally with strips of lead, which look like silver, and makes it extremely heavy and almost as formidable as a life-preserver*.

The women, when at home, go about bareheaded, their long black hair being plaited into two pigtailed, which hang down one on each side of the back. Next the skin they wear a chemise of wool or cotton, over which from the waist downwards hangs a short petticoat, made of thick woollen stuff, black or deep-blue in colour. Across the shoulders they throw an oblong piece of coarse black llama-wool serge or of baize, which is dyed of the brightest colours, as orange, red, yellow, blue, or green, and fastened in front with the "pichi," a sort of spoon-shaped ornament usually made of silver. Two of these are often seen, one on each side of the breast, sometimes of very great dimensions; the handles, being pointed, serve as bodkins, whilst the other end or bone is very commonly used as a spoon when eating. This ornament is not confined to the Aymaras, being used by most of the Indian races of Western South America, and is shown in Pl. XXI. fig. 11.

The women are nearly always barefooted, being but rarely seen with stockings or with sandals like the men.

Like the fair sex in many more civilized countries, the Aymara women seem to consider it a special beauty to appear more than ordinarily massive about the haunches, notwithstanding that naturally they are far from being deficient in this respect; when in full dress, as at their feasts, they consequently do not fail to place thick woollen skirts one over another, the number being a mark of the wealth of the lady, until their actual dimensions are wonderfully exaggerated.

When at their feasts or on a journey, the women wear a peculiarly shaped hat (*montera*), generally made of black or dark-blue cloth or velvet lined with some red stuff. It is in the form of a cylinder, or rather a cone, expanded greatly at the top, the lower part for a short distance cylindrical, fitting close on to the head, whilst the upper part is turned down in the form of a square, so that the part turned down has the appearance of flaps hanging down on to the face on all four sides. I at first imagined that this peculiar head-dress might be a remnant of their ancient costume, but was told by General Sagarnaga, of La Paz, that he believed that it was derived from an old Spanish woman's head-dress long ago introduced into Peru.

Neither men nor women are cleanly in their habits, rarely removing their clothes at night, often leaving them on until

* The lead is secured by cutting grooves into the whip-handle, wider at the bottom than at the surface, after which melted lead is poured into them, and fixes itself in when cold.

worn to pieces ; and even then some of the Indians would draw their new pair of breeches over the old ones, allowing the latter to remain on the body. They sleep on the ground or earthen floor of their huts, or on a sort of bench of earth raised some eighteen inches above the ground—their only bed-clothes being a few skins, and a poncho (or thick quilt) of llama wool, called *ccanieri*.

The food of the Aymara Indian is much more of a vegetable than animal character. Of the flesh which he consumes, that of the llama is the most important ; but from my own experience I did not consider it well flavoured, except when the animal was only about a year old, when they are called *chuchos* by the Indians. A considerable quantity of the llama flesh is prepared by being sprinkled with salt and air-dried, and is then known as *charqui*. A very important article of consumption and of export to the mining-districts and the coca-plantations and gold-workings to the east are the "*chalonas*" or dried mutton, being the whole sheep, which, after being skinned and the head removed, is split open, flattened out, and dried in the air, after having been sprinkled with a little salt. Beef is rarely seen or consumed by the Indians, who often keep a few domestic fowls. Around the Lake of Titicaca many wild fowl and a good supply of their eggs are obtained, as well as some nine species of fish, several of which are excellent eating, especially the *boga*, which in taste and appearance much resembles a small herring or large sardine.

Salt is obtained by the Indians from springs which have their origin in the saliferous marls, probably of triassic age, the water being allowed to run into clay moulds and spontaneously evaporate, the operation being repeated until cakes of salt, about one foot square and some three inches thick, are left behind, and are of tolerably good quality.

As before mentioned, however, the staple of the Aymara food are the vegetable productions of his country, a summary of which may be given as follows* :—potatoes of several varieties, in-

* The above are such productions as are either peculiar to the highlands or are there grown by the Indians for their own use ; for I may mention that it is extraordinary, when examining the markets, say of La Paz or Sorata, where the snow lies close at hand all the year round on the peaks, to observe the extraordinary admixture of tropical products from the hot valleys below with the alpine ones peculiar to the district itself : thus, in addition to the above, there are abundant supplies in the markets of oranges, sweet and sour lemons, limes, paltos (fruit of the *Laurus persica*), bananas, pine-apples, prickly pears, granadillas, pacays (pod of a species of *inga*), cherimoyos (fruit of the *Anona cheremolia*), sweet potatoes, rice, yam, gualusa, aricomá or yacona, &c., as well as (from the intermediate zones) strawberries, grapes, melons, pears, apples, and peaches ; but, with the exception possibly of some ill-looking small green apples and pears, few of these products ever reach the hut of the Indian.

cluding the *Papa amarga* or bitter potato, called "luki choque" in Aymara; maize or Indian corn; beans; ocas, called in Aymara "apilla;" ullucos, the tubers of the *Ullucus tuberosa*; onions; garlic; chichchipa, a variety of fennel; quiñoa, the Peruvian rice or seeds of *Chenopodium quinoa*; ysaño, the tuber of the *Tropæolum tuberosum*; chuchuchu, a freshwater plant from the Lake of Titicaca; and several other minor vegetables, including the soft white lower part of the Totora or great Titicaca reed, which is eaten as a salad.

Here I may remark that not only have the peculiarities of the country inhabited by the Aymara Indians determined to a great extent the nature of their nourishment, but, particularly those of altitude and climate, have also exercised a great influence upon the methods found necessary to be employed for the culinary preparation and conservation of many of the articles of food.

Owing to the great elevation which this part of South America has above the mean level of the sea, it follows that the atmospheric pressure is greatly diminished, and consequently that the temperature of water when boiling is very much lower or, in other words, less hot than on the coast—in fact, so much so that several ordinary articles of consumption cannot be thoroughly cooked even by prolonged boiling with water in an ordinary open pot. For this reason the dry small beans which elsewhere in South America are almost everywhere the favourite and one of the principal articles of food, especially of the lower classes, for the reason that they cannot be thoroughly boiled in the whole state, are not used in any quantity, and are always first ground to fine powder before being cooked. Peas have to be treated in a similar manner, as also the dry maize or Indian corn; so that before every hut there is always seen an Indian grinding-apparatus, "parara" (it cannot be called a mill), which only consists of two rough stones, the lower being a heavy one fixed in the ground, with a flat smooth surface upwards, whilst the other is a semicircular piece, which is rocked in seesaw fashion by the Indian women, so as to crush up the substance placed beneath it.

I remember the delight of a Bolivian family in La Paz upon their first trying a cooking-pot made with a lid so arranged as to convert it into a sort of digester, and thus to raise considerably the boiling-point of its contents, which had been sent up from the coast as a present, and which they found did enable them to cook beans, &c. thoroughly in their whole state. On another occasion, when on an exploring-expedition, accompanied by two arrieros from the coast who had never before been very high up in the mountains, I left them with the mules at an ele-

vation of about 17,000 feet, to make a fire and prepare their meals, whilst I ascended higher on foot; on my return, some hours after, I found them in a good state of fear and excitement, insisting that we should at once leave a place which must be bewitched, since they could not get a dish of beans cooked, notwithstanding that they had seen the water in the pot boiling away lustily for several hours.

The potato, which is cultivated on a large scale by the Aymaras, and forms the most important article of their food, is, owing to the severity of their climate in these highlands, often frozen before its tuber has arrived at maturity—a circumstance which has given rise to its being subjected to a preservative mode of treatment quite unknown in other countries, and well worthy of being imitated, particularly in the northern parts of Europe, where the summers are short and severe.

The method of preparing the potatoes to convert them into “*chuñu*” (or “*chuño*,” as it is called in Spanish) is, as far as I could observe, somewhat as follows, although I understand that there are minor differences in the procedure in almost every district. The potatoes, after being dug out of the ground, are, in the months of May and June, steeped in or sprinkled with water, and spread out on a thin layer of straw (*ichu*) placed on the ground. They are then exposed to the frost, turning them occasionally by hand some three or more nights and days consecutively, until they are quite frozen throughout their substance. During the congelation they become covered with blisters filled with a watery fluid, and when thawed have a somewhat spongy consistence. They are now steeped in water, and trampled out by men’s feet to remove all soluble matter, after which they are spread out in the air until perfectly dried, when they are ready for use, and known in the market as black *chuño* or *chuño negro**.

When thus prepared the potatoes are much reduced in volume, being shrivelled up to the size of about musket-balls, of a somewhat deep-brown colour and not very inviting appearance. The white *chuño* (or “*ttunta*,” as it is called in Aymara), which is much better, in outward look at least, both when raw and boiled, is prepared in the same way, except that after the potatoes have been frozen they are steeped in water for from two to four weeks, changing the water frequently, or, what is better, allowing a current of clean water continually to run through them, after which they are dried as before; when cut through they show a

* It must be remembered that the climate of these highlands is very favourable to carrying out this operation, both from the night frosts and the drying-quality of the air itself, which very rapidly removes all the water from the *chuños* by evaporation, and in a very short time completely dries them up into hard balls.

thin tough external skin, filled with a white matter exactly like, and in actuality nothing more, than a form of potato-starch. In this state both the varieties of chuño will keep for any length of time, even for years, if only stored in a tolerably dry place, and require merely to be steeped in water (the white for about a day and a half, and the black for from four to eight days) in order to soften them, after which they are boiled like an ordinary potato before being eaten. Although the white chuño when cooked looks extremely tempting, being in external appearance of a pure white colour, even more enticing than a nice new potato, I never got quite reconciled to its taste, as it always seemed, at least to me, somewhat soapy; and, with the Indians themselves, I agree in preferring the cheaper or more common black chuño (or merely chuño, as it is called, in contradistinction to the other, to which the name "ttunta" is, as before mentioned, applied), which is free from this savour, and, although somewhat insipid and crisp in the mouth, has a taste which, even if not at first relished, one soon acquires a liking for.

The theory of this process appears to be a purely chemical one. When the potato, which is mainly composed of potato-starch, along with a small amount of gluten or other such nitrogenous compound, becomes frozen, upon thawing a species of decomposition or fermentation is immediately set agoing, the nitrogenous ingredient acting the part of yeast or ferment, and changing a portion of the starch first into dextrine and then into sugar, which explains the sweet taste recognized when potatoes which have been touched by the frost are eaten. This fermentation, when once it has commenced, proceeds rapidly to putrefaction, and destroys the potato. The Aymara Indian, however, without understanding the *rationale* of his procedure, has found out the means to arrest the fermentation in its first stage, by dissolving out the dextrine, sugar, and nitrogenous ferment, leaving the potato-starch alone behind in a form but little susceptible of further alteration as long as it is kept dry; and by this means is enabled to keep the farinaceous matter of the root for an indefinite period.

The object of the Indian in thoroughly freezing his potatoes before washing out the soluble matter, appears to be to get the whole of the nitrogenous matter into a state capable of being washed out by the water, and so prevent any germs of fermentation being left behind.

It has always struck me as very remarkable, that the uncultivated Indian could thus have invented a process, founded on the most correct chemical principles, which has enabled him to use and conserve as food the frozen potato, which otherwise would be quite worthless, had not this discovery converted it

into his most valuable article of food, especially during the winter months, and without which he would not only not have been able to reap the full benefit of his most important harvest, but also could not have availed himself of a variety of this esculent, the *Papa amarga*, or bitter potato, which is not regarded as edible until after it has been converted into chuño.

The bitter potato (or "luki choque," as it is called in Aymara) is a very important vegetable for the Indian, since it grows well in the very coldest parts of the highlands, which will not produce any other crop. Whether it is a different species, or merely a variety of the common potato, I was not sufficient botanist to decide; but the only external difference which I noticed was, that the tuber appeared to be somewhat longer and flatter than the small round ones of the ordinary potato grown in the district, and that the plant had a blue instead of the more usual white flower. It is not cultivated or eaten by the whites; and I have eaten it only in the state of chuño. I am told, however, that it has only a very slightly bitter taste, but that this taste cannot be removed even by prolonged boiling, which also does not render it soft like the ordinary potato. I am uncertain whether the Aymaras ever eat it in its natural state when simply boiled; but converted into chuño it has no unpleasant taste, and is a very important article of their consumption.

Several varieties of the ordinary potato, "choque," are cultivated by the Aymaras; but none of them appear to attain to any size, probably never coming to full maturity in this climate; the wild potato, called "lillecoya," also occurs. The Aymara women understand the boiling a potato in their earthen pots to full perfection. Occasionally the ordinary potato is preserved by being dried in the air, after having been first boiled and peeled. It is then called "cucupa" by the Indians.

The oca (or "apilla" in Aymara) is another root, well suited to the climate, much cultivated by the Indians, and is the tuber of the *Oxalis tuberosa*, of which several varieties, red and white, are grown. The white, called queni-apilla, or floury ocas, are the best. As I can testify, this root when simply boiled is hard and has a horrid acid taste,—in fact, is quite unfit for consumption, unless it also has undergone a previous preparation. This is effected by the Indians by exposing the ocas to the sun and air for from six to twelve days, which causes, as it were, a species of ripening, after which the oca, when boiled, is a very agreeable farinaceous vegetable.

If exposed in this manner for a much longer period (several weeks, or even months, is, I believe, necessary), taking care not to let them freeze, they become still sweeter, and taste very

much like sweet potatoes. In this state they are called "caui," and should not be boiled in water, but merely steamed. The Indians cook them by placing them on the top of a pot full of straw, with a little water at the bottom, to which they apply the heat. Another preparation of the oca is called "caya," and is obtained by freezing, and treating them much in the same manner as in the preparation of chuño from potatoes, as before described. Although much esteemed by the Indians, this substance did not quite suit my palate.

As another example of how the culinary preparation of the articles of food used by these Indians has been influenced by the peculiarities of the climate, may be mentioned the "isañu," the tubercle of the *Tropæolum tuberosum*, a variety of Indian cress or nasturtium, cultivated particularly about La Paz. When removed from the ground, this is so acrid and nasturtium-like in its flavour as to be uneatable, or at any rate unpalatable; here, however, they eat the boiled tuber in a frozen state, when it possesses a very agreeable taste, and is much appreciated by the whites also, being sold frozen, kept from thawing by being wrapped up in woollen cloths, and covered with straw, under the name of "taiacha."

Another important article of food is the quinoa (*hupa* in Aymara), the seeds of the *Chenopodium quinoa*, or Peruvian rice, as it is sometimes called. These are exactly of the form and size of an ordinary mustard-seed, and are of a red, yellow, or white colour in different varieties of the plant. The seeds must always be first well washed with water, to remove a bitter principle they contain, before cooking. When boiled, they make an excellent porridge or pudding. The leaves of the young plant are eaten as salad; and a sort of chicha or fermented drink is also made from the seed, called "hupaccusa."

Beans are cultivated to a considerable extent, but are always ground to powder on the stone before being cooked, or are eaten whole after having been parched over the fire in a pot. Indian corn or maize does not grow in the puna and higher lands, but in the sheltered valleys grows well, and is largely bought by the highland Indians, who exchange their dried llama- and sheep-meat, wool, salt, and chuño for Indian corn. When dried, it is either ground up or toasted, in which latter state a small bag of it is usually the entire sustenance taken by the travelling Indian. Several varieties are known, amongst which a sweet, shrivelled-up, semitransparent, yellow one, called "chulqui," is especially esteemed for eating raw or parched; another variety, of a mulberry colour, is called "culli," and often used to give a colour to their drinks.

The beverages employed by the Aymara are but few in

number ; and, except on grand occasions, the pure water from his native hills quenches his thirst. His national drink is the chicha, made from the Indian corn fermented, called in Aymara "ccusa." It is made in different ways ; but the most esteemed is the so-called "chicha mascada," or chewed chicha, the preparation of which is nothing less than disgusting ; but having been often described by former travellers, since it is in common use in many parts of South America, I need not further refer to it than to state that it is not alone appreciated by the Indians ; for the whites and Europeans in Bolivia, as a rule, take to it with apparent relish. Chicha is also made from the quinoa seeds. In some parts a fermented drink is made by the Indians from the sweet stalk of the young green Indian corn, called "huiru" (wiru) : this is the name of the stalk. Of late years, however, the establishment of large manufactories on the coast of Peru for the distillation of "chancaca," or unrefined sugar and molasses, has sent in great quantities of a very inferior white rum, or "aguardiente" as it is called, amongst these Indians, and is rapidly doing great mischief amongst them.

The two main dishes of the Aymara cuisine are the *chupe* and the *chairo*. The former of these is common all over the northern countries (at least of the Pacific coast) of South America, and consists of a soup made with potatoes and any flesh or fowl which may be to hand, as well as any other vegetables convenient, never omitting to add some red-pepper pods. The *chairo*, however, is peculiar to the highlands of Bolivia and Peru, its fundamental ingredient being chuño instead of potatoes ; and to this, as in the case of the *chupe*, any flesh (generally of the llama or sheep) or fowl is added. Although, from the dirty-looking leather-like fragments of chuño which mainly compose it, the *chairo* has at first a far from inviting aspect, which certainly would not recommend it at a European table, a taste for it is soon acquired, and it is even relished by the traveller who visits the inhospitable Puna of Bolivia and Peru.

The Aymara Indian, in his cuisine, is not, however, content merely with the productions of the vegetable and animal kingdom, amongst which I forgot to enumerate the aquatic larva of a species of diptera called "chichi," which is found in abundance in the rivers of the Puna, and from which he makes a ragout seasoned with red pepper said to be excellent. He also applies to the mineral kingdom, not only for the salt which he employs as a condiment, but also for the clay which, extraordinarily enough, he adds, often in considerable quantity, to the *chupe* or *chairo* before described.

In the city of La Paz I found that clay prepared for this purpose was regularly sold in the market, under the name of

“ppassa” (the Aymara name for crude clay being “llinque”); and going amongst the Indians myself when they were cooking their dinners in the streets near the market-place, I saw how they added it to and mixed it with the other constituents of their chupe, eating the whole apparently with good relish. Afterwards, when I purchased from them a large bag of this “ppassa” for the purpose of bringing it to England, I continually found that my own Indians pilfered from it, to add to their own food, and declared to me that they considered it to improve greatly the taste of the soup.

When in La Paz I went to see the Indians digging out this clay from the deposits in the alluvial formation through which the Rio de la Paz runs, the only preparation which it received on the spot being to separate as much as possible all the small stones and fine gravel by hand, or by a sieve; before being sold in the market, however, it undergoes some further preparation, which appears to consist in kneading it up between the hands into doughy lumps, which looked as if they had been mixed with a minute quantity of lard or some other fatty matter; in this state, although it still feels very gritty when tried between the teeth, it is used and sold for immediate consumption.

The idea having been put forward that the clays or earths known to be eaten by certain Indian tribes contain a small quantity of organic matter capable of being assimilated by the human system, I, in order to see whether this might be the case with the clay eaten by the Aymaras, made a complete analysis of a sample taken with my own hands at La Paz, and obtained the following results:—

Silica	50·64
Alumina	30·19
Lime	1·09
Magnesia	0·87
Protoxide of Iron	9·64
Protoxide of Manganese	0·49
Potash, with trace of Soda	3·75
Water.....	2·28
Organic matter and loss	1·05

100·000

from which it will be perceived that this clay, which geologically is a product of the wearing-down of the clay slates, and the granite intruded amongst them, of the Silurian formation of the high Andes, really contains no element of nourishment; and therefore I imagine that the custom of eating it is merely for the purpose of keeping the stomach more distended,

and retaining the food longer under the action of the gastric juice, so as to make the most of the extremely small allowance of food which the Indians of the Puna exist upon when they have to provide for themselves; for I have practically proved that they can and always will take in a very large supply when they can procure it at the cost of the white man.

The so-called "calcareous earth," which, according to Humboldt*, is sold in the streets of Popayan and several parts of Peru as an eatable, is evidently not an earth at all; but only the ashes of wood or plants commonly sold in order to be used along with the coca-leaf chewed by the Indians.

This ash is prepared for that purpose. That from the wood of the quenua tree, which grows in abundance on the Puna, and is something like a wild olive tree in appearance, is generally considered the best, from its being strongest in alkali; the ash of the banana is held to be next in quality: but all sorts of ash from cacti, shrubs, or trees are employed; and in the north of Peru even burned lime is used, although not considered equally good for the purpose.

The ash is usually made up with a little water, and kneaded into small pieces, sticks, or cakes, sometimes with the figure of a saint stamped upon them; and they are regularly sold in the market under the Aymara name of "llucta."

The use of a substance like vegetable ashes containing alkali, or an alkaline earth like lime, along with the coca-leaf by the Aymara and Quechua tribes of Peru and Bolivia is altogether analogous to the custom so prevalent in the East Indies of adding lime when chewing the betel nut (*Areca catechu*) or betel leaf (*Piper betel*); and in both cases the object of this addition appears to be for the purpose of setting free the vegetable alkaloid of the plant. The Indians declare that the coca-leaf will not yield up its virtues when chewed alone.

The coca plant (*Erythroxylon coca*) does not, however, grow in the higher regions, and is not even known as a wild plant (at least as far as I could learn) even in the Yungas or tropical valleys to the east of the Andes, where it is cultivated by the Aymara and Quechua colonists on a very considerable scale. Although used by all the Indian tribes of this part of South America, it is consumed in larger quantities by the Aymaras than by any other nation; and its name appears to be of Aymara origin, the word "coca," as it is usually spelt by the Spaniards, being evidently only the Aymara word "ccoca," signifying a plant, bush, or tree, apparently applied to it as the plant *par excellence*, just as amongst the Hispano-Americans the Para-

* 'Aspects of Nature.' Philadelphia edition, 1849, p. 159.

guay tea is always called only "Yerba," *i. e.* the herb. From the oldest times it seems to have been esteemed as the most precious of all vegetable productions, the Indians, as before mentioned, always making it a part of their offerings to their gods; and even at present they hang on the altars of the Virgin or Roman Catholic saints small packages of coca-leaves bound up nicely in maize husks into the form of the letter V, as offerings likely to be acceptable, at least, according to their ideas. Under the dominion of the Incas the coca was held in very great esteem, and, being regarded as a luxury, was not allowed to be an article of general consumption amongst the lower classes.

The Aymara Indian, especially when travelling, is rarely if ever seen without his "istalla," or small bag, which contains his supply of coca-leaves, from which he takes out a pinch of the leaves (say, about from 1 to 2 drachms) at a time, in order to form his quid or "aculli," as it is termed in his language. Before doing so, however, (or, as the Spaniards say, beginning to "acculicar,") he generally sits down at ease on the ground, always relieving himself of any load or other object he may be carrying; and then, picking out leaf by leaf, he turns them in his mouth so as to moisten them well, and forms them into a small ball or quid, which he carries, when conversing, inside his left cheek*. This he now takes out; and, opening it, he places inside of it a small quantity of the "llucta" or alkaline ash, and then, returning it to his mouth, he commences chewing it for an hour or two, until he considers it exhausted, when he again repeats the operation as before, continuing to do so with such regularity that amongst themselves the Indians often describe the distance between two places as being equal to so many "accullis." The verb "acculicar" is used amongst the Bolivians to denote this operation; and, as far as I could perceive, the Indian, as a rule, seems to swallow the saliva, and not to expectorate, as in the case of chewing tobacco. Having had to provide the coca necessary for a large number of Indians in my employ, I found that, on an average, each Indian used about $\frac{1}{2}$ of a pound per week, but occasionally more: my old Aymara man-servant Mateo always took his one pound per week; but he admitted himself that it was too much, and it is generally considered among the Indians that more than this amount is injurious to the system. The whites, negroes, or Cholos in Bolivia and Peru do not as a rule make use of coca; and it is stated that when they do commence chewing it they generally carry its employment to a very injurious excess. Cholos are said to occasionally take as much as three pounds per

* In most of the little images of silver or gold found in the ancient graves the left cheek is shown to be swelled out by the coca quid.

week; and I was told that a Negro who took as much as one pound per day became demented in consequence; but I cannot vouch for the truth of these statements.

The women amongst the Aymaras, at least as far as my own experience goes, never employ coca, nor are the Bolivian soldiers allowed to use it; the Peruvian soldiers, although not furnished with rations of coca, are not prohibited from occasionally purchasing it at their own expense when on the march; the Quechua Indians of Cochabamba, Chuquisaca, and Santa Cruz do not chew coca; nor is it employed by the tribes of the lower tropical regions of Bolivia; so that the custom is in great measure confined to the highland Indians of Peru and Bolivia. I found that the coca-leaf when used as tea, only taking care to throw away the first water or infusion, which contains a bitter principle, was refreshing, and somewhat stimulating to the weak stomach.

A somewhat careful study of this habit of chewing the coca-leaf does not at all convince me that its true properties have anything like the marvellous characters commonly ascribed to it by previous travellers in general; for, as before mentioned, I found quite as much power of endurance under similar circumstances amongst those of this race who did not chew the leaf at all as amongst those who did; and it must be remembered that amongst the Indians themselves it is never regarded in the light of a necessity, but always as an indulgence (in other words, as a luxury, like tobacco in Europe), and that they often apply the Spanish word "vicio," or vice, when speaking of its employment.

Just as in many out-of-the-way parts of Europe men can be bribed to do little services by what is called "a drink" more easily than by the offer of payment in coin, so I found with these Indians, that by carrying with me a small bale or "cesto," as it is called, of coca-leaves, and giving them a handful on such occasions, I could supply the deficiency of small change (so difficult to be obtained in these countries), and get what I wanted both more cheaply and cheerfully performed at the same time.

In the highlands of Peru and Bolivia it is only at rare intervals that any trees are seen, or even brushwood; so that no reliance can be placed on a supply of fuel from the vegetable kingdom. The combustible all but universally employed is "taja," or the dried llama-dung. As the excrements of these animals are in the form of small round balls like those from the sheep, it is fortunate that these animals, as also the allied species the Alpaca, Huanaco, and Vicuña, when pressed by the calls of nature, do not scatter their dung at random, but if left to themselves (*i. e.* not driven) always resort to fixed spots, so that little heaps of a bushel or more are found at each spot, very con-

venient for the Indian, who otherwise would find it an endless task to collect a similar quantity. Owing to the dry winds and peculiar climate of the highlands, the dung rapidly loses the water it contains, and forms an excellent fuel, giving a good red heat with little or no smoke; it is not only employed in culinary operations, but on a larger scale is used for smelting the copper-ores (100 lbs. dung smelting 80 lbs. copper ore) and casting bronze for bell- or cannon-metal or other purposes.

The vessels made use of by the Aymaras in cooking are invariably of baked clay; and it is perfectly astonishing to see how expert the women (and even the children) are, without the assistance of a potter's lathe, in making them merely with their hands. The shapes in general use at present amongst them are given in fig. 4, Pl. XX.; whilst fig. 3, Pl. XX. represents one of the small earthen cooking-stoves which the women put up at the door of their huts, erecting them in an extraordinarily short space of time. When the clay is quite dry it is burnt whilst in position, and answers remarkably well for heating the earthen pots placed in the orifices. I have often been amused when the Indian women quarrelled amongst themselves, to see that they, as one of the first symptoms of anger, generally make a rush at each other's stoves, kicking them to pieces with revengeful pleasure.

The dwellings of the Aymara Indians are small, rude, square, oval, or circular huts, usually of rough stone put together with clay and thatched with "ichu," a species of long coarse grass, something like esparto grass. In the towns and villages the houses are usually square, with gables, but rarely possess any window at all, or at most only a small sighthole, ordinarily stopped up with some few stones; the doors of the houses are always extremely small. In the town of Santiago de Machaca, I had the curiosity to measure the dimensions of the door of the house in which I lodged, and found it to be only 3 feet in height by 15 inches in extreme width, the angles at top and bottom being somewhat rounded off, so as to give the opening a slightly oval shape. The door itself is made of a couple of boards, or more often of a raw hide stretched and dried over a wooden frame; but in the out-of-the-way districts no door is used beyond a poncho, which is hung up across the opening when the hut is tenanted; when the family is absent the entrance is blocked up by loose stones placed one on another.

Furniture is rarely or ever used even in the houses of the richer Indians; a chair or table is rarely if ever seen, as the Indians invariably take their meals whilst squatting down on their haunches (never crosslegged however), with the dishes placed on the ground beside them. Whenever a table is seen, it is usually a little thing standing about 15 inches high from the floor. On

one occasion at San Andres I noticed a chair with the figure of a double-headed Eagle carved upon it, which puzzled me for some time, until I remembered that the iron bottles used for exporting quicksilver from Idria, and which occasionally come to the amalgamating-establishments attached to the Bolivian and Peruvian silver-mines have the Austrian Eagle stamped upon them ; and no doubt this had been copied from them.

The walls of the huts are always quite bare, and the floor merely the natural soil of the spot—often (in fact, more commonly) somewhat lower than the level of the ground outside the hovel. There is never more than one room in a house ; and along one side of this a raised sort of bench of mud, about twenty inches high and broad, is usually seen, which is used as a bench, as a bed, or for sitting upon, whilst a similar one, about six feet long and some four feet broad, at the end of the room is employed as a bedstead to sleep upon.

In the out-of-the-way places I observed circular or oval stone huts ; such have been called beehive houses, the stones forming the roof and sides not being arched, but approaching one another little by little until they meet in the form of a dome ; I found an excellent example of this construction, well and neatly put together, on the slope of the mountain of Illampu. This measured, internally, $9\frac{1}{2}$ feet long by 5 feet broad, and 5 feet in height ; the door, which was on the longer side of the oval, was straight, 3 feet high and 18 inches broad ; no chimney or other opening for smoke was visible.

Notwithstanding that the present dwellings of the Aymara Indians are so wretched and rude in their construction, the Aymara appears nevertheless to have a natural talent for architecture ; and I am informed by Bolivian architects, and have myself also proved, that he is very quick in picking up any thing novel in masonry when shown to him. Some of the churches met with in out-of-the-way districts, although built entirely by the Indians, with their "cura," as the village priest is called, at their head as architect, and without plans or tools, except such as are of the rudest conceivable nature, occasionally show proofs of considerable skill. In 1863 I was surprised to see some hundred Indians rebuilding the church at El Disaguadero, on the Lake of Titicaca, in Peru, and dressing the stones for the edifice with no other implements than stones and a few pickaxes and other rude agricultural instruments made of iron ; such a thing as an iron hammer or chisel was not to be found amongst them.

Señor Muños, the architect of the Cathedral of La Paz, further informed me that the beautiful Corinthian columns made of hard white granite, finished in a style which would not disgrace a first-rate European establishment, were all made by the

untaught Indian masons after his drawings; they, however, would not make use of the hammers he provided them with, but accepted his steel chisels, which they hit with a round stone held in the palm of the hand, in a similar manner to that in which their ancestors had no doubt been accustomed to work at Tiahuanaco and elsewhere.

In ancient times *i. e.* (before the eleventh century, or Inca conquest) the Aymaras possessed an architecture peculiar to themselves, apparently of a much higher character than that of any of the other nations of South America: full evidence attesting this is to be seen at the present day in some of the magnificent ruins at Tiahuanaco, near the southern extremity of Lake Titicaca; an examination of which, however, leads to the conclusion that they are probably of two very different dates, the one being evidently earlier and of a much ruder character than the other, which is of vastly superior workmanship. Although these ruins are by the older Spanish writers represented as being of immense antiquity, or, as they frequently express it, works of a period before there was a sun in the heavens*, it appears that part of these were not even completed, and were probably in course of construction, at the time of the conquest of that part of the Aymara country by the third Inca, Lloque Yupanki, some time before his death in 1026; so that the downfall of the Aymara civilization may be reckoned from about this date.

When at this place, I took drawings, on a considerable scale, of the principal features of these interesting ruins; but upon my return to Europe I found that various figures and descriptions of several of the more important sculptures and monoliths had already been published by other writers; so that at present I purpose only to add a few remarks upon points which, as far as I am aware, have not as yet received any attention. In the first place I may mention that the stone of which the buildings and sculptures are formed is of two very different characters. The one is a light red sandstone, which forms the hills in the immediate neighbourhood, and is probably the equivalent of the Devonian formation, since I obtained fossils of undoubted Devonian age from the beds of similar sandstone at Aygatchi, not far distant from Tiahuanaco. The other stone, however, is very different in nature, being a hard, tough, and compact volcanic rock, precisely the same as what was originally called Andesite by G. Rose, from a specimen brought home from Cotopaxi by Humboldt, and which is a true Trachydolerite. Notwithstanding its great hardness, most of the sculptured

* Diego D'Avalos y Figueroa, in *Miscel. Austral.* (Lima, 1602) p. 145: "Obra de antes que hubiese sol in el cielo."

work, the great monolithic portals and some of the finer figures, are made of this rock ; and to this day they retain all the sharpness of their edges, and, to a considerable extent, even the original polish on their surfaces ; whilst a few others, made of the sandstone before alluded to, are in a very dilapidated condition.

The size of some of the great blocks of stone employed in one of these buildings* is very imposing. I measured one which appeared to be of the largest, and found it to be about 27 feet long, 13 broad, and 7 thick, so that, as it was of sandstone, it could not have weighed less than one hundred and sixty tons. It seems very difficult to explain how these Indians, with their imperfect mechanical appliances, and no beasts of draught, could handle and transport such masses from their original sites, in order to place them in their proper positions in palaces or temples situated on the top of artificial mounds raised some 40 feet or more above the level of the plain itself.

Although the sandstone has evidently been taken from the hills seen at but a few miles distance from Tiahuanaco, the volcanic stone of which the two great monolithic portals &c. have been constructed has been conveyed a very great distance from the volcanic mountains on the other or western side of Lake Titicaca, where the quarries are still visible ; and there still remains at the edge of the lake an immense block hewn out into the form of a sort of sofa or divan, which has received from the Spaniards the appellation of "La Piedra Cansada," or stone which got tired, which no doubt had been left behind when on its road to Tiahuanaco, at the time that the invasion of the Inca Lloque Yupanki put an end to the building of the great palace there.

An examination of the situation of the ruins of Tiahuanaco shows them to be in a narrow plain (bounded at the sides by two small ranges of hills) which, although extending a considerable distance from the present shore of the lake, is but very slightly elevated above the level of its waters, makes me believe that the lake (or, more correctly speaking, an arm of it) in former times extended to Tiahuanaco, and that, probably, the rise of its waters in the rainy season inundated the plain itself, and thus enabled the Indians to transport the great blocks of stone previously alluded to from the other side of the lake on rafts up to the very site of the edifices themselves. This view seemed to me to be confirmed by my finding in a small pool of water situated in the midst of these ruins, the *Titora* or great Titicaca

* I was told by one of the Cholos there that this had been called the palace of Pumapunku (of the gate of the Puma) ; but whether this is correct or not I am unable to say.

rush growing luxuriantly, although I understand that it is never found elsewhere than in the lake itself or the Disaguadero river leading from it; the great artificial mounds on which the buildings themselves are placed also seemed to favour the idea of the plain being at times inundated.

When we remember that the Indians were unacquainted with steel or iron implements, it seems perfectly unexplainable how these Indians could work the hard volcanic rock to such perfection; the Aymaras have, it is true, a word for iron, "*quella*," in their language; whence *quella-cahua* a coat of mail, and *quellahuisca* an iron chain; but it seems to me that this word, before the arrival of the Spaniards, was in reality only applied to iron-ore, *i. e.* the black heavy magnetic oxide of iron commonly found native in Peru and Bolivia, and employed by the Indians for clubheads, one of which is depicted in Pl. XX. fig. 5, from a grave at Calacota, was some $2\frac{1}{2}$ inches long by $1\frac{3}{4}$ inches thick, neatly worked with a groove around it by which to fasten it to the handle*. Some of their tools of bronze were capable of taking a pretty good edge, but would stand a very short time if used for cutting stone; we must remember, however, that the wonderful patience and perseverance of these and many other of the South-American tribes would, with unlimited time at their disposal, enable them to overcome difficulties otherwise seemingly insurmountable. In 1863 I was extremely astonished to see the Indians rebuilding the church at El Disaguadero work hour after hour, one might almost say day after day, in order to square or dress the sides of a rough stone, with the aid only of another one used as a hammer, when a few strokes of a civilized mason's hammer and chisel would have effected the same result in as many minutes.

Everywhere in both Peru and Bolivia the idea prevails that in ancient times all these stones were cut after having been previously rendered soft by the application of an herb called by the Indians *uscra*, and by the Spaniards *garbancillo*; this is said to have been used along with urine, and left upon the stone for some time before cutting it. If the stone in question was of a calcareous nature, such as might possibly be acted upon by the vegetable acids which might be formed by the acid fermentation of the juices of plants, this explanation might be entitled to some consideration; but as the stones used at Tiahuanaco are all either composed mainly of silica or silicates quite unaffected

* In like manner the Aymaras have a word for glass, "*quispi*," whence *quispinaira*, spectacles, literally glass eyes; since they were quite unacquainted with the artificial product, this term was no doubt formerly applied only to quartz or rock crystal, just as in Europe it is at present common to use the word crystal to denote certain varieties of glass.

by even the stronger acids, excepting only such as contain fluorine, I imagine that this commonly received supposition has no foundation, but that it may possibly have arisen from seeing the Indians employ the Mare's-tail, a species of *equisetum*, for rubbing the stones in order to give the exterior a final polish, for which this plant is well qualified, from the amount of sharp silicious matter contained in its rind and substance.

One distinctive feature in the Aymara architecture is the constant use of the right angle; an acute or obtuse angle is rarely if ever seen in any of the buildings, the blocks of stone being as a rule dressed on all sides at right angles to one another and then fitted together with perfect accuracy, often, when very large, being held fast by cramps of copper fixed into holes with melted tin or lead. Every corner, slot, or depression in these stones is cut in the most clean and workmanlike manner, the angles being as it were as mathematically correct and the surface as plane and smooth as if made by the most perfect machinery of the present day. The cross (especially when sunk into the stone) is extremely common as an ornament, but, as far as I observed, has its arms always of equal length. In respect to architecture, at least, the Aymaras seem to have been far in advance of their conquerors the Quechuas, whose cyclopean masonry about Cusco and elsewhere, although put together with such consummate skill that the blade of a knife can scarcely be introduced between the joints of the stones, is but of a rude character when compared with the beautiful dressed stonework and sculptures seen in the Aymara ruins at Tiahuanaco; the two styles of architecture are altogether different and distinct, one striking peculiarity being that the form of the portals or doors in the Aymara masonry is invariably rectangular and upright, whereas in the Quechua the sides are inclined inwards at the top, exactly as in the ancient Egyptian.

Many ruins of ancient Aymara towns, from the time before the Spanish conquest, called by the Spaniards "Pueblos de Los Gentiles," can still be seen in various parts of Bolivia, some of them being now in almost exactly the same condition as when last inhabited; they are usually situated on the summits of hills, probably for facility of defence. One of these, called by the Indians Himoco, on the east side of lake Titicaca, between Carabuco and Ancoraimes, is of considerable extent, surrounded with walls having gateways, and with streets, some of which seem to have been paved, arranged at right angles to one another, and leading into several squares or market-places. The houses are tolerably well built of red sandstones, with stone roofs, and are small rectangular rooms, most of which have a sort of stone shelf, like a mantelpiece, in one

corner. The only traces of inhabitants seen at present are the occasional occurrence of straggling bones or of an entire skeleton. In one or two of the houses little rude effigies of men, made of clay, hung up by a string round the neck, or pierced through the body with a thorn, were met with—evidently remnants of witchcraft.

In the high mountain-passes of the Eastern Andes near Sorata, which lead down to the tropical valleys of Tipuani &c., I noticed considerable ruins, like fortresses, perched up on the sides of the precipices overlooking the valley, in the most wonderfully inaccessible positions, and probably at an elevation of more than 16,000 feet above the sea, since they were on the very edge of the perpetual snow. These looked as if originally intended to guard the passes from invasions of the Indians from the east; yet, at the same time, I can hardly imagine any inducement in the cold highland regions which could tempt the far less hardy races of the tropics below to make such raids.

Excepting the ruins of palaces or temples previously noticed, the country of the Aymaras presents but few traces of public works, such as roads, aqueducts, reservoirs, &c., more common amongst the Quechuas. The roads are but rude llama-tracks, and never seem to have had such attention directed to them as is shown by the Inca government in Peru. Permanent bridges are seen nowhere; but the rivers, when not fordable, are crossed by rafts made of rushes tied together in bundles, or by what is called a "maroma"—that is, a rope (made of raw hide or of llama-wool in the highlands, and of "llianas" or long vines or creepers in the tropical valleys) which is stretched across the river from bank to bank, and has a crosspiece or cradle suspended, in which the passenger seats himself and hauls himself along, or is pulled over with a cord. The Rio Disaguadero, which runs south from lake Titicaca, is crossed in several places by floating bridges, formed by attaching one to another numerous "balsas" or rafts, formed of bundles of totora, the great Titicaca rush, upon which a sort of platform is made by spreading a large quantity of the loose rushes. No wheeled vehicles being used in these parts of South America, these primitive bridges serve very well for the passage of the llamas, mules, and other animals, as well as for men on foot.

The chief occupations of the Aymara Indians, now as in more ancient times, are agricultural and pastoral. The metallic riches of the country seem to have been comparatively little attended to before the arrival of the Spaniards. They were, however, well-acquainted with the metals gold, silver, copper, and tin, and made use of several alloys of these metals: one of gold and copper, called "champi," was much used for making small

images and certain ornaments and tools. Bronze was also in very general use. The analysis made by me of a bronze head of a chieftain's club or mace, which was found at Sorata, and is about $3\frac{1}{2}$ inches across the extreme tips of the spikes, of which there are thirteen in all, showed its composition to be as follows:—

Copper	88·05
Tin	11·42
Iron	0·36
Silver	0·17
	<hr/>
	100·00

from which it is evidently quite identical with many of the ancient bronzes of Europe. This club had been cast, and has a socket in which there is a crosspin for attaching the handle by means of a leather thong. The Aymaras evidently understood the art of soldering metals; for I found many little figures of llamas and men, some of which, in the British Museum, can be seen to be hollow, and made of thin plate silver nicely soldered at the joints.

Tin, called in Aymara "causi" or "titi," has been from time immemorial obtained from the stream tin-ore worked at Carabuco on the east side of Lake Titicaca, and in the district Oruro, where it is still obtained in large quantities. Gold, "chocque," is generally found in the alluvial deposits of the rivers, whence many of the Aymara names of places, Chuqueapo (now La Paz), Chuqueaguillo, Chuquesaca (now Sucre), which denote respectively the valley, river, or plain of gold. Silver, "colcqui," found native in veins, appears to have been also worked out of certain beds amongst the cupriferous sandstone series of Corocoro, in which it occurs finely disseminated in a native state, whilst the main supply of native copper was evidently furnished from those same deposits, which appear to have been worked from extremely ancient periods.

The domestic industries, as spinning, weaving, dyeing, &c., are carried on by the women, who still continue to furnish the greater part of the clothing of the household, although, at least around the larger towns, cotton and woollen fabrics of European manufacture have come into considerable use amongst the Indians. I have occasionally noticed spinning-wheels and looms of an extremely rude construction; but in the majority of instances I found that the wool was spun into yarn by the hand; and afterwards, when stretched out on the ground by pegs, it is woven by hand into cloth, without the aid of a loom at all. They, as a rule, sell all their alpaca and sheep's wool, but reserve the llama-wool, which is of a very inferior quality, for making their clothes, as well as their cords and ropes. The llama is to

the Indian what the reindeer is to the Laplander; for, besides being his sole beast of burden, its wool and hide serve for clothing, the flesh for food, the bones for his tools, musical instruments, &c., whilst its dung is the general, and in many places the only combustible at command. The Indian women are very clever in dyeing their wools, and also in knitting, and at their fairs often bring for sale curious little bags, purses, &c. made in the shape of llamas, turkeys, and other animals, very ingeniously knitted in wool of divers colours. Around the lake of Titicaca I have seen socks and gloves for children made of the down of the waterfowl, which had apparently been first spun into yarn and then knitted.

Fishing is pursued chiefly on the Lake of Titicaca. The Indians, not having any boats, or wood to make them of, use as a substitute the totora or great Titicaca rush, which they tie together in bundles to form a "balsa" or species of raft.

Hunting can hardly be said to be followed at all by the Indians, although there are large herds of vicuñas running wild over the mountains and plains, and also the huanaco, deer, biscacho, skunk, fox, weasel, and the puma, as well as a bear, which last animal, however, I never came across, and, I believe, it is rarely seen. Amongst the birds are numerous condors (quite unfit for food, as I have found upon trial), the S. American ostrich, flamingo, numerous species of ducks, water-hens, divers, geese, ibis, snipe, &c., many of them very good eating.

As the Indian, however, has neither firearms nor bows and arrows, he has no means of following the chase; the only weapon which he uses is the sling ("huaraca"), made of llama wool, which occasionally he employs with some dexterity. The fox is caught in a rude stone trap, shown in section, plate XXI. fig. 9, in which the bait is tied on with a piece of raw hide, which, being gnawed away, causes the stone door to fall and imprison the fox, which is afterwards taken out through the hole at the other end of the trap, closed by a stone. When a puma has committed any ravages amongst their animals, the Indians of the district follow up its tracks in parties, relieving one another night and day, without allowing it a moment's rest, until the animal is literally run down, brought to bay, and despatched with sticks and stones. In March, 1862, at Illabaya, I saw an instance of such a turn-out, the animal being hunted down, and literally knocked to pieces by the Indians, who drank up its blood, under the belief that it implants courage in the person who does so.

The culture of the ground, which is the main and most laborious occupation of the Indian, is effected by very rude implements. The plough, called "arma," is driven by one or two oxen, tied to it by a lasso or rope of untanned leather, and is of

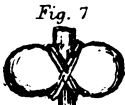


Fig. 7.

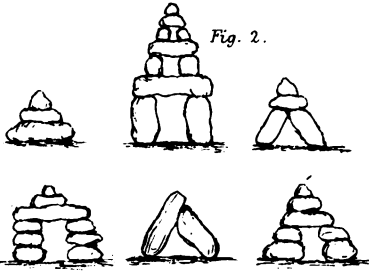


Fig. 2.

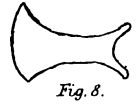


Fig. 8.



Fig. 4.

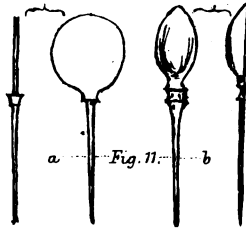
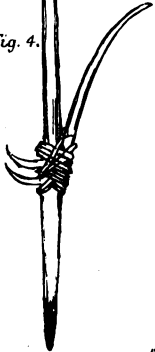


Fig. 11.

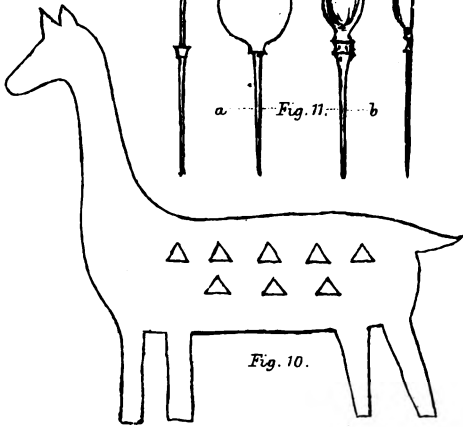


Fig. 10.

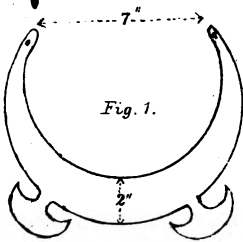


Fig. 1.

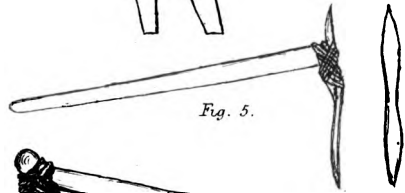


Fig. 5.



Fig. 6.

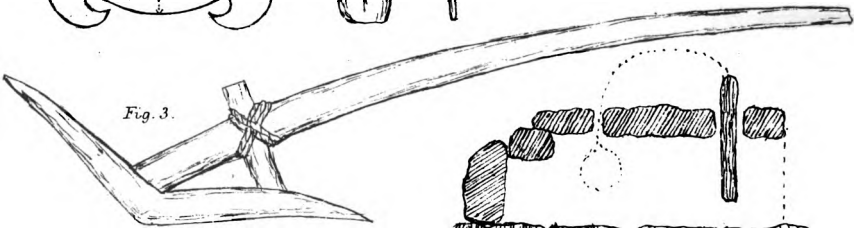


Fig. 3.

Fig. 9.

D.F. Delc.

a very simple construction, consisting, as shown in plate XXI. fig. 3, of three pieces of wood tied together by thongs of raw hide, and, as might be expected, does little more than scratch the surface of the soil. The Aymara representative of the spade, fig. 4, pl. XXI., called "oiso," is but a pole of hard wood, about 7 feet long, sharpened and hardened at the end by charring the wood externally. It has a curved handle, and a support for the feet, like a couple of horns, on the right side of the handle, tied on to it with raw hide. The next important implement is the *ocana*, a sort of pickaxe, fig. 5, pl. XXI., which is now always made of a piece of flat iron, tied on with raw hide to a hooked stick as a handle, whilst in the out-of-the-way places a hoe, "asadon," sketched in fig. 6, pl. XXI., is still used, formed merely of the shoulder-blade of the llama, tied on to a hooked stick, as shown in the illustration. Besides these, they also employ a sort of mace or club, fig. 7, pl. XXI., consisting merely of a stone tied on to a stick, as a clod-crusher*, and an axe of iron or steel, which in the out-of-the-way districts is still made by the Aymara smiths in precisely the same form (fig. 8, pl. XXI.) as the ancient ones of copper or bronze, being merely a flat piece of metal of the form shown in the figure, placed in a cleft stick, which serves as a handle, and secured in it by a thong of raw hide bound tightly around it.

I was informed that, in some very much out-of-the-way districts, bronze and, even, stone axes may occasionally be seen employed by the Indians; but I have not personally fallen in with such implements, yet can believe that this may actually be the case.

The Indians, as a rule, make their fields of a very small size, usually surrounding them with walls of dry stone. On the mountain-sides they build up small terraces one above another, in some cases up to very great altitudes. Since they appear never to manure the land, they make a rule of only sowing it with crops once every fifth year, allowing it to remain fallow for the intermediate four, in order, as they say, that it may repose or recover itself. This circumstance must naturally be taken into due account when the traveller in these districts judges as to the number of inhabitants from the amount of land enclosed or under apparent cultivation. The crops generally sown are potatoes, ordinary and bitter, *ocas*, quinoa, and beans, along with maize or Indian corn in the more sheltered valleys or lower grounds. A bearded variety of wheat is also cultivated in some parts; but I do not think it is very productive. In the more temperate parts, lucern is grown as a green fodder for the beasts. Barley is also sown as fodder in considerable quantity; but,

* One of these may be seen in the Christy collection of the British Museum.

except what is required for seed, it is not allowed to come to maturity, being cut down before it is ripe, and employed for the cattle whole, *i. e.* along with its straw.

A great expense and trouble to the traveller in these districts is the difficulty experienced in obtaining from the Indians a sufficient supply of barley to keep his animals alive; threats, and even physical force, must sometimes be resorted to; for the Indians are so accustomed to be cheated that they can hardly be convinced that you are really willing to pay them for what they furnish. When a detachment of the army passes through the country, the *corregidores*, or heads of the district, summon the *alcaldes* or foremen of the Indians, and require them, within a certain time, to bring forward the amount of barley necessary for the beasts, for which they are paid far less than its real value. On one occasion, at Ahecaché, when I was present, the barley, which was extremely scarce that year, was only paid by the cavalry at 3 rials a quintal instead of 15, which was the actual price ruling in the district; besides which, instead of weighing a quintal, they still further imposed upon the Indians by measuring it in the following, to me, somewhat novel manner:—Two of the tallest soldiers of the troop were made to stand upright, so far apart that their forefinger-tips could just reach one another when one of the arms of each was extended at full length; all the barley which could be packed into the space between their bodies from the ground up to under the arms was then taken as a quintal, although in reality much more; but (as the unfortunate Indian well knew) complaints were useless.

The practice of cutting barley before it arrives at maturity, although common in many parts of South America, where it is done in order that the straw itself may be sweeter and more palatable to the animals, seems in these highlands to be, as it were, enforced by the severity of the climate, since only in more sheltered spots does the grain fully ripen before the frosts commence.

The coca-leaf, so much employed by these Indians, does not grow in the higher regions of Bolivia and Peru, and is chiefly cultivated in the hot valleys of the province of Yungas*, to the east of the high Andes, by Indian colonists, who formerly were forcibly sent there for the purpose, but now, since the independence, are enticed there by high wages, to engage themselves for longer or shorter periods. The mortality among these colonists is very great; so that since they have not been compelled to go there, great extents of the plantations or *cocales*, as they are called, formerly planted with coca, have been abandoned and

* The word "yungas" is not Aymara, but Quechua, in which language "yunca" signifies *hot*.

become overgrown with forest, owing to the impossibility of obtaining hands to cultivate them. In Yungas all the slopes of the hills, at an elevation of from 3000 to 6000 feet above the sea, the soil of which is composed of a disintegrated Silurian clay-slate, are covered with small terraces or, as they are termed by the Spaniards, *Andenes*, rising one above another, like the seats in an ancient amphitheatre, and covered with the small coca bushes, about from 20 to 30 inches in height, planted in single rows along each little terrace, which is about 12 inches in width, and supported by a little wall of stone in front. When the coca is grown on level ground, which is more seldom the case, the plants are placed in furrows ("uachos") separated from one another by little walls of stone called "umachas."

Before being transplanted into *cocales* arranged on either of the before-mentioned systems, the plant is raised in separate nurseries, from seed, which, when frequently watered, makes its appearance above the ground in from ten days to a fortnight; the next year these plants, which will then have attained a height of from 12 to 15 inches, are ready for transplanting to the *cocal*, and are sold in large quantities for this purpose, at the rate (when I was in Yungas in 1861) of two dollars Bolivian per what is called the "head," *i. e.* the bundle of plants in size equal to the circumference of the purchaser's head; so that the planter with whom I was residing told me that he always chose one of his men who had the largest head to buy coca plants for him. Old plants, however, are much dearer, and were at that time valued at three rials per plant.

When the plants are between two and three years old, the leaves first commence to be picked for consumption, and are stated to yield the most abundant crops between the ages of three and six years, yet to have an economical life of from twenty to forty years, and occasionally even more. The plant is said to be most productive when not allowed to attain a greater height than about 30 inches, although when not cultivated it is said to attain double this height.

The first time the plant is picked the leaves are found to be coarser in quality, and are seldom exported, being used up by the Indians on the plantations; afterwards, in the larger plantations, the pickings (or *mitas*, as they are called) take place three times a year, in March, July, and October, which are known respectively as the *Mitas de Marzo*, *San Juan*, and *Santos*; the first of these, taking place immediately after the rainy season, is the most abundant, and that of July the least prolific. In the little plantations owned by Indians more care is taken to pluck the leaves as soon as they are full-grown, and not according to fixed times; by this means they are enabled to get

four crops a year. The pickings are done by girls, each leaf being plucked separately from the plant, and great care being taken that none of the top shoots are injured, as otherwise the plants would die. It is a curious sight to see these girls, often in great numbers, arranged in rows; and the noise made by their nimble fingers when picking the leaves, in which they acquire wonderful dexterity, is very strange, the sound keeping distinct time, and being sometimes like the rustle made by the wind among dry leaves.

The plantations are, as a rule, not irrigated or watered, notwithstanding that this is known to develop the leaves much more rapidly, and to ensure the bare plant being covered again with leaves in even less than two months, so that as much as five pickings can be obtained from well-irrigated plantations; it is considered, however, that such leaves are much inferior in quality: their colour is not so rich; and in drying they do not retain the fine green tint, but acquire a blacker hue, which is not liked in the market.

The women and children who pick the leaves place them in a poncho or cloth hung in front of them, and then take them to the hacienda, where they are spread out in a yard floored with slabs of slate, turning them frequently in the sun until perfectly dry. If the weather has been fine, the leaf, when dry, retains its form and colour, on which the value of it in the market depends. The dried leaves are then put up in small bales called *cestos*, which weigh about an *arroba* (or 25 pounds) each, and are in this state sent up to the highlands for the general consumption of the Indians; on the road, however, the Bolivian government exacts a duty upon each bale.

The coffee and cacao plantations of these tropical valleys are also worked by Aymara Indians, of whom a few also engage in the search of *Cascarilla*, *i. e.* the bark of the *Cinchona* tree, which also is found in quantity in the hot humid forests on the eastern slopes of the high Andes, the *cascarilla* bark of this part of South America being the most esteemed of all the varieties, fetching by far the highest price in the market, and being considered the richest in quinine*. Notwithstanding the great inducements

* Most of the men employed in the bark trade are not pure Indians, but *cholos*. When, in 1861, I was in this district, I obtained from the *cascarilleros* a quantity of the seeds of what they considered the most valuable of all the very numerous kinds of this tree, and forwarded them to Sir Roderick Murchison, who, however, did not receive them before 1864; they were sent by him to Kew; but the reply was discouraging, since it was to the effect that they must be far too old to germinate. In June 1866, however, Sir Roderick wrote to me that he had heard from Dr. Hooker that they had been successfully raised at Kew; but further information I have not received.

held out to the Aymaras by the extremely high rates of wages, the Indians will not enter these regions until all other resources fail them; for they have an intense horror of these warm climates, where they, as a rule, die off so very rapidly that but a small proportion of those who enter ever return. For this reason, therefore, it is that the vegetable riches and the rich gold-deposits of this vast tropical region remain as yet quite undeveloped; the cultivation of the coffee, cacao, &c. is carried on on a very small scale; and the great extent of abandoned and now overgrown coca plantations attest the unwillingness of the Aymaras to colonize regions so prejudicial to their health, now that they have been freed from the Spanish tyranny which previously forced them away from their homes like slaves, to cultivate these plantations for the sole benefit of their oppressors.

The animals domesticated by the Aymaras are the llama, alpaca, sheep, and horned cattle; the horse, mule, and ass, but more especially the latter, are also reared by them. All of these animals, with exception of the llama and alpaca, are very different in appearance from the fine beasts found in the lower regions of South America; the horse especially, although originally of the same Andalusian parentage, degenerates greatly, becomes in these highlands a small scraggy pony, with but little strength or endurance, and altogether a very inferior animal to what it is either in the mountainous Chili or the level pampas of the Argentine Republic. Notwithstanding Tschudi's statement that the dog will not live in the very high regions, this animal is everywhere found in abundance, and, as a rule, is a surly beast, apparently much resembling his Indian master in character, and usually a very mongrel-looking animal. Cats are also abundant; and occasionally I have noticed some of very great size. Pigs and domestic fowls are also common; but I do not remember having seen a tame goose or duck amongst the Indians. Their huts often swarm with guinea-pigs, which are great favourites with them, and whose dirty-yellow-looking flesh is considered a delicacy by the Indians, although I never liked it. Cows are rarely seen in large numbers, and milk is seldom procurable except near towns; oxen are used in ploughing. Upon asking an Indian why they did not milk their alpacas or llamas, he replied that they gave more kicks than milk. The llamas are shorn with shears, in the ordinary way, for the sake of their wool; but the wool of the alpacas, for what precise reason

Although living in the interior of Bolivia when I collected these seeds, I had not at the time the remotest idea that Mr. C. Markham was then in Peru, sent out by the government of India for the purpose of obtaining Cinchona plants.

I do not know, is cut off with a knife, the animal lying down, with his head held by a woman between her legs, while the man all the time cuts off the long hair or wool: the Indians declare that, unless a woman holds them in this position, they cannot keep the animal quiet. The flesh of the alpaca is eaten, but not unless killed by accident; I do not think that the Indians make a rule of slaughtering them for food, probably because of their greater value, since the wool, especially of the white alpaca, is extremely sought after, and when I was in Bolivia fetched from 60 to 80 dollars per quintal of 100 Spanish pounds, and even more, whilst the price of the animal itself in Bolivia varied from 5 to 8 dollars.

From the immense difference between the native climate of the alpaca, which is cold and wet, with a moist and extremely attenuated atmosphere, and that of the dry, hot, denser atmosphere of Australia, I always maintained that the experiment of introducing alpacas into that country could not prove a commercial success, believing that, even if the animal in the course of some few generations could be so far acclimatized as to be able to live under so different circumstances, the wool must change its nature, so as to become shorter and more hairy, like that of the camel, and consequently more suited to the animal's comfort in a hot climate, and that it could not retain the long soft silky character evidently provided by nature to keep the animal warm up in the cold highlands of Bolivia and Peru.

The alpaca in Peru and Bolivia has never been thoroughly tamed, and is left in a semi-wild state to graze up amongst the highest mountains close to the borders of perpetual snow, its fleece improving in quality in proportion as the country which it inhabits is more elevated.

As beasts of burden the Indian, except in the immediate neighbourhood of towns, seldom possesses either horses or mules, but in the more temperate parts often has asses, which are generally very small and inferior specimens of the animal; his true beast of burden is still, as in the most ancient times, the llama*, or, in Aymara, "ccaura," on which he carries not only

* In Humboldt's 'Aspects of Nature,' 1849, p. 140, it is stated, "Since the introduction of the more useful mules and asses, the custom of rearing and using the llama or alpaca as beasts of burden in the mountains and amongst the mines has much decreased." This is altogether incorrect; for although it is true that the number of mules in employment is probably now greater than before, it must be remembered that the traffic itself has greatly augmented; and whilst I was in Bolivia the llamas used for transport, so far from having diminished, were probably greater in number than at any previous period. As for the alpacas, they are never used, or even attempted to be used as beasts of burden—and, as far as I could learn, never were, even in the most ancient periods. Further, on pp. 139 and 140, herds of tame llamas

all his agricultural and other produce at home, but transports the metallic ores, wood, iron, salt, and other exports and imports of the trade of the country,—the cascarilla or quinine bark, which is packed up in hide bales called serons, too large for the animal, as well as other bulky articles, being, however, always carried to and fro by mules.

The cargo or load for a llama, when on a long journey, does not exceed 100 lbs. in weight; and since no packsaddle is employed, the load being equally divided on each side of the back, and tied on to the animal's back by a soft rope of llama wool, with or without a cloth or skin under it, it must be also of such a nature as not to hurt or tear the skin of the llama. For short journeys I have known llamas to take 122 lbs. wool, but not more. To each 33 loaded llamas one driver, or *llamero*, as he is termed in Spanish, is required; all contracts for carriage of goods by llamas are consequently made by the "*piara*," or 33 quintals or llama-cargoes.

The llama travels very slowly, and will not be forced out of his natural pace; if too much urged or if overloaded, they immediately stop and kneel down, and then cannot be persuaded to go on unless relieved. When thus kneeling down, they look exactly like so many small African camels. The Indian driver walks alongside them, usually spinning llama wool into yarn with his distaff as he walks along; as these animals will never eat at night, they browse as they proceed on their way, and consequently, at the pace they go, do not make a longer average journey than four leagues, or about twelve miles, per day: one of the most sagacious old llamas in each *piara* goes at the head of the troupe and has a small bell suspended round his neck. The cost of a llama is from four to five dollars; the white llamas, which are more esteemed than the others, are often decorated with tassels of red wool attached to their ears, and sometimes to their sides or breast also; the greater number of the llamas, however, are black or deep brown; yet occasionally parti-coloured ones are seen. When meeting others or any travellers who may pass them, they stretch out their long necks and stare at the passers-by with their large eyes. If offended, they will stamp their feet

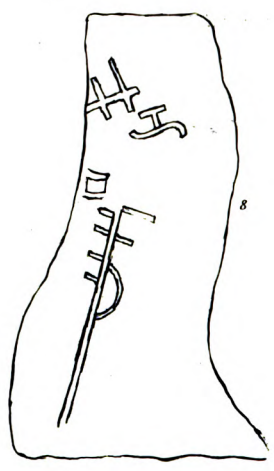
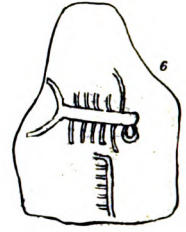
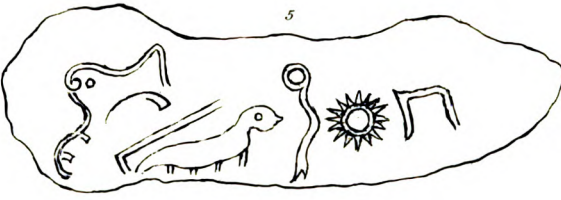
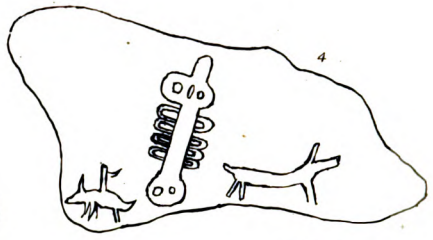
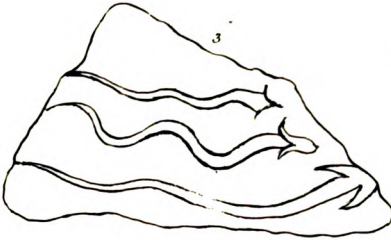
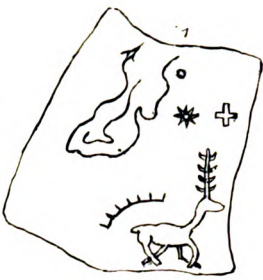
in Chili, are mentioned; it is added that "the moromoro of Chili appears to be a mere variety of llama," and that in that country the wild and tame huanaco are distinguished by separate names—the wild being called "*luan*" and the tame "*Chilehueque*:" these remarks are also incorrect, since llamas of any kind are not even known in Chili, nor are there any tame huanacos; the name *Luan* or *Lluan* is applied in Chili to an artificially brought-about hybrid between the sheep and the goat, cultivated, especially in *Aconcagua*, for the sake of its fur, which is much esteemed for saddle-cloths, owing to its great strength, length of hair (not wool), and durability.

with rage, like a woman, and spit at their opponent's face, which, as the saliva is very acrid, usually makes the skin smart.

The Aymara language is one which as yet has attracted but very little attention, and has even by some writers been spoken of as a dialect of the Quechua or language of the Incas, notwithstanding that there are many reasons for believing that it must be by far the older of the two languages; and as many words are identical or very much allied in both languages, and as the general features of the grammars are much alike, I am inclined to the opinion that the Quechua language was of a very mixed character, like our present English, and that it had its origin in the Aymara,—also that, taking all circumstances into due consideration, the probability is that Manco Capac, the founder of Cusco and of the Inca dynasty, was an Aymara, who, after leaving the lake Titicaca, the home of the Aymara nation, founded a colony in the more genial region about Cusco, where he and his successors established themselves and extended their conquests or annexations on all sides, incorporating with themselves the numerous minor tribes which then held the country, into one great Peruvian or Inca empire, whilst at some time their languages became grafted on to and assimilated with the original Aymara to form a much richer and more perfect language, the Quechua—"La Lengua general" (or universal language) of Peru, as it was called by the Spaniards—which still retains many traces of its parentage. The original language of Manco Capac, or secret language known only to the members of the Inca families, would, according to this supposition, have been Aymara. Having conquered the greater part of the tribes of Western and Northern Peru, the Incas turned their arms southwards, where they also overran and annexed the Aymara country around Lake Titicaca, from which, according to their own traditions, the founder of their nation, Manco Capac, had originally proceeded.

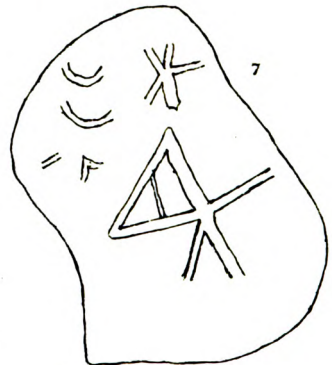
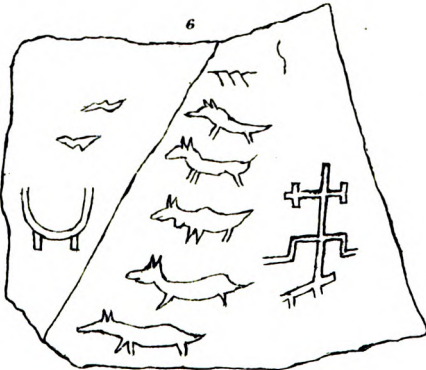
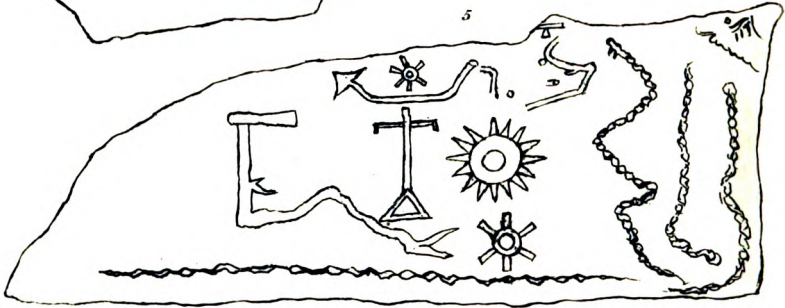
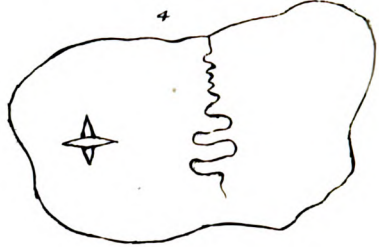
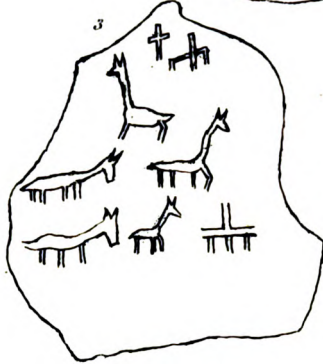
Neither the Quechua nor Aymara Indians appear to have ever possessed a written language*; and it is uncertain whether the latter ever made use of the Quipus, or system of recording events by knotted cords, which is said to have attained a great degree of perfection amongst the Quechuas in the time of the Incas. In many parts of the Aymara country, however, representations, usually on a very large scale, are seen, cut into the mountain-sides, of llamas, pumas, men, circles, rectangles, crosses, and other figures, several of which have already been described by Bollaert. Some of these figures appear to have been intended to mark places of burial, since mummies have been found in-

* Nevertheless the Aymaras have in their language a word, "quelcaña," signifying to write.



D. E. Dalc.

HIEROGLYPHICS - SOUTHERN PERU



D.F. Det.

tered close to them ; whilst others are supposed to serve as indicators, to point out the direction of roads : thus the path to the pass across the Andes, at Cabeza de Vaca, in the south of the Desert of Atacama, is, I am informed, pointed out by figures of llamas cut in the side of the rocks, with their heads all turned in its direction. This also, I imagine, is the case with the figure of a llama, shown fig. 10, Plate XXI., which I saw on the side of a hill at Peña, in the saline desert, or pampa, of Tamargual, in Tarapaca, the eight triangular marks on the body of the animal possibly signifying the number of hours' journey to the next inhabited place.

Besides these, however, there are seen at several places in Peru rocks or large loose stones, more or less covered with a species of hieroglyphic markings ; and through the kindness of Professor Boeck, of Arequipa, who copied them for me, I am enabled to give an example of these in Pls. XXII. and XXIII., which show the figures on the sides of fifteen large stones (amongst others) which are situated between Uchumaya and Vitor, in the south of Peru, and have been called by the Spaniards 'Las Campanas,' or 'La Biblioteca del Diabolo,' *i. e.* the Bells, or the Library of the Devil, the former name having been given because these stones are very sonorous when struck by a hammer or stone. Whether these symbols are of ancient Aymara origin, or were engraved by Quechuas subsequent to the Inca conquest of this part of the country, is uncertain ; and I do not make any attempt in the present communication to decipher them, or explain their possible signification, my object being to bring them before the attention of those who have made such matters a special study.

The Aymara language is probably one of the most guttural in the world, much more so than even the Quechua, which is probably considerably richer in words ; many of the Spanish writers, both ancient and modern, have described it as a beautiful and manly language—according to them, "as sonorous as the Spanish, yet as energetic and laconic as the English." The Aymaras themselves are evidently proud of their language, and in some parts, as about La Paz, are said to hold meetings for the purpose of keeping up its study, and discussing the purity or pronunciation of words or dialects spoken in the various districts ; and I have been assured that some of the speakers at these reunions have not at all been deficient in the powers of oratory.

The Aymara alphabet may be regarded as represented by the following twenty-three letters (of which four, *cc*, *ñ*, *pp* and *tt* may be looked upon as double sounds) :—A, C, CC, K, E, H, I, J, L, M, N, Ñ, O, P, PP, Q, R, S, T, TT, U, W and Y. The consonants B, D, F, G, V, X and Z are altogether wanting,

whilst the letters E, R, Ñ, and probably also J, are never used in the commencement of a word.

The letters *a, e, i, j, l* (both when single and doubled), *m, n, ñ, o, p, q, r, s, t, u,* and *y* are pronounced as in Spanish, the *h** and *w* as in English; but as the Spanish do not have the latter, they replace it, when writing Aymara, by the letters "*hu,*" which, in order to prevent confusion, is retained in the vocabulary given in the Appendix C.

The double letter *cc*, or *ck* (as it is sometimes written), is also known in Quechua, and is much harsher than either *c* or *k*, being a combination of a deep guttural with a sound from the roof of the mouth at the same time: we have no identical sound in any European language; and it is very difficult to acquire, causing much trouble to the beginner in Aymara, especially as the words spelt with *cc* are quite different in signification from those with the single *c*, which is pronounced as in Spanish or English. Thus, for example, we have:—

<i>Camiri</i> , Creator,	and	<i>ccamiri</i> , rich.
<i>chaca</i> , a bridge	„	<i>cchaca</i> , a bone.
<i>tonco</i> , Indian corn	„	<i>toncco</i> , a locker or small box.

Although a third sound, or "*k*," is usually enumerated amongst the letters of the Aymara alphabet, I confess that I was in the majority of instances quite unable to make any distinct separation between it and the ordinary *c*, and therefore have put most of the words in which these letters occur under the latter. The only examples I am quite sure of are the following:—

Karitha, lied, *caritha*, tired, and *ccaritha*, cut; as also *kisimira*, a large wasp, *kinchata*, heart-disease, &c. A few more are given in the vocabulary.

pp in Aymara is a very strongly accented *p*, being an intensely labial sound; *tt* is what may be termed an exaggerated or very forcibly-pronounced and drawn-out *t*. For example:—

<i>tanta</i> , together, united;	<i>ttantta</i> , bread;
<i>tacana</i> , to seek;	<i>ttacana</i> , to hate;
<i>taque</i> , for;	<i>ttaque</i> , a road.

When writing Aymara, the Spaniards express the sound of *w* by the letters "*hu,*" and frequently place *g* for *h* or *c*, *o* instead of *u*, or *l* for *r*. Thus they write *huah-hua* (a baby) for *wawa*,

* The Aymaras in some districts occasionally, like the Cockneys, add the "*h*" when not required: thus they often pronounce "*uma*" water, as if spelt "*huma*," and when speaking Spanish will say "*hutil*" for "*util*," "*have*" for "*ave*," &c.

guanaco and *guano* for *huanaco* and *huano*, *yungas* for *yuncas*, *punco* for *puncu*, &c.

The noun in Aymara has but one declension, the cases being effected by the addition of a termination, thus *auqui*, a father; *auquina*, of a father. The plural is formed by the addition of "naca," thus *auquinaca*, fathers; *auquinacana*, of fathers. The difference of gender is expressed either by distinct words, as *chacha* or *haqui*, a man; *marmi*, a woman; or by the addition of the words *urco* male, and *ccachu* female; thus *anocara urco*, a dog; *anocara ccachu*, a bitch; *atahualpa urco*, a cock; *atahualpa ccachu*, a hen. The Aymara language is, like the Quechua, extraordinarily rich in family nouns, *i. e.* those denoting degrees of relationship: I made a list of no fewer than 43 separate words, signifying each some distinct degree of family connexion; and I have no doubt that there are many more beyond this number. The termination "collo" when added to a substantive magnifies its meaning, thus, for example, *achaco*, a mouse, gives *achacollo*, a large mouse or rat; *ccoca*, a tree, affords in like manner *ccocacollo* a forest, or aggregation of many trees.

The pronouns are declined like the nouns; there are, however, two plurals to the pronoun *na*, I,—*nanaca*, we, being the exclusive one, used, for example, when it is said *we shall teach another*, in contradistinction to *huissa* we, the inclusive one, employed when it is said *we shall teach ourselves*. The possessive pronouns, *ha*, my, *ma*, thy, *pa*, his, *ssa*, ours, are declined almost the same as nouns, and are attached to the end of the substantive, thus *uta*, a house, *utaha*, my house, *utahana*, of my house, *utanacahana*, of my houses. The addition of "self" is expressed by placing "quiqui" before the possessive pronoun, thus *quiquiha*, I myself, *quiquima*, thou thyself, &c.

Adjectives when alone are declined like substantives, but if placed before substantives are unaltered in all the cases, whether the nouns be masculine or feminine; thus, *amauta chacha*, a wise man, *amauta marmi*, a wise woman, and in the genitive *amauta chachana*, not *amautana chachana*.

The Aymara numerals are as follows :—

1, maya.	10, tunca.
2, paya.	11, — mayan.
3, quimsa.	12, — payan.
4, pusi.	13, — quimsan.
5, ppisca.	14, — pusin.
6, sojta.	15, — ppiscan.
7, pacalco.	16, — sojtan.
8, quimsacalco.	17, — pacalcon.
9, llatunca.	18, — quimsacalcon.

19, tunca llatuncan.	80, quimisacalcotunca.
20, patunca.	90, llatuncatunca.
30, quimsatunca.	100, pataca.
40, pusitunca.	500, piscapataca.
50, ppiscatunca.	1000, patacatuncani, or
60, sojtatunca.	hachu.
70, pacalcotunca.	

Although there is only one conjugation for all verbs in the Aymara language, many circumstances combine to render it extremely difficult for a foreigner to acquire any thing like a correct or complete knowledge of this part of the grammar*, especially from the use of particles which modify the sense, and the system of formation of what are called by the Spaniards “transitive” verbs, in which a combination of the verb and pronoun is expressed. The construction of many irregular verbs which require to be syncopized, under certain circumstances, in order to modify or vary their signification, and the tendency in some districts to shorten, or cut out letters, or even syllables, although to be regarded only as a local or dialectic corruption, is nevertheless extremely perplexing to the student in a country where all must be learned from actual *visd voce* contact with the Indians themselves. In order to show that the language is a rich one in synonyms, or rather in words expressing but very slight differences in meaning, I will take the verbs in Aymara signifying “to bring” or “fetch” as an example, which, it will be seen, vary according to the nature of the thing referred to, thus:—

Apanima is applied when the object is held in the hand, as a jug of water.

Hiscanima, when, as with a horse, it must be lead by a lasso.

Iriptanima, when moved like a chair, table, &c.

Aptanima, when lifted up after having fallen down.

Yunima, when the animal or person is brought along, whether he will or will not come.

Catatimima, when it requires to be dragged, like a large stone &c.

* On the whole I imagine there are not more than four or five publications in this language; and I am satisfied that, in greater part, at least, the sources from which these have been compiled have been far from pure Aymara; for I have found that a large number of words employed in them are of Quechua origin, not used by the Aymaras, except in the provinces bordering on the Quechua-speaking districts; and the works themselves contain abundant proofs that the authors have been more versed in that language than in pure Aymara. Although I made all possible efforts during my residence in Bolivia, and advertised in the papers that I would pay the high sum of 50 dollars for a copy of an Aymara dictionary or grammar, I found it impossible to procure one.

Yanima, when the thing is proportionally very long, like a pole or tree.

Iranima, when it is round: this word is always applied to money.

Asinima, when hollow or concave like a bowl, plate, or trough.

Apakanima, when removed altogether from a place.

Apsunima, when it has been taken out of a place which it fits.

Unkutayema, when it, as it were, is shifted from one place to another.

Irpanima, when to be brought to another person.

Iscanima, when the thing, or person, requires guiding, as, for example, when a blind man is brought to another*.

And it is probable that others might be added to this list of fourteen, which I made in the district of Omasuyos.

Although the Aymaras make a rule of appearing as undemonstrative as possible before whites, they have, nevertheless, various interjections in their language, which are as follows:—to denote imploration, *A!*; admiration, *Huay!*; grief, *Atach!*; joy, *Añay!*; disgust, *ytity!*; unconcern, coldness, or indifference, *alala!*

In the Aymara there is the same tendency as in the Quechua and many other of the South-American languages (in common also with some of those of North America and Australasia) to repeat words, as *corocoro*, *caricari*, *ninanina*, *tiscotisco*, &c. In some instances it appears to be a form of plural, or of magnifying the signification; in others (like *mocco-mocco*, knotty, hilly, from *mocco*, a knot or hill; *umauma*, watery, juicy, from *uma*, water) it converts the substantive into an adjective; but I am not able to state any rule in reference to it.

In the scale of languages the Aymara does not by any means occupy a low position; it is, probably, only second to the Quechua in its powers both of description and expression, which are conveyed in the most terse, and yet at the same time precise language. From the character which I have given of the Indians themselves, one would not expect any great amount of sentiment to enter into their conversation; yet, in addressing one another, there is a good deal of what has been regarded as the figure of speech characteristic of eastern nations; thus an Aymara Indian would, when paying his addresses, be likely to make use of some such expression as the following: “*Suma pancara chuima churiricsma*” which, literally translated, is “Beautiful flower I desire to present you with my heart.”

The Lord’s prayer in Aymara is as follows:—

Nanacan auquia alajpachanacana cancta, sutima hamppati-

* All given in the imperative mood.

tapa, ccapaj cancañama nanacaru hutpana, munañama luratápana, camisa acapachan ucamaraqui alajpachansa. Urumjama hichurum ttanttaha churapjeta, huchanacahasti pampacharaqita, camisa nanacasa, nanacaru huchachacirinaca pampachapjeta hucama, haniraqui huatecaru tincufiahasti haitaristati, nancanacatsti qqespiaraqita. Amen*.

The first work † on the Aymara language known to have been printed was the 'Grammatica Aymara por Bertonio' in Rome, 1603; a second edition of this, called the 'Arte de la lengua Aymara,' appeared in 4to, in 1612, and was probably printed at Juli, on the lake Titicaca, in Peru, as in the same year Bertonio brought out in that town a 'Vocabulario de la lengua Aymara' in 8vo, which still is the only attempt at a dictionary known, and is now so scarce that I could not find a copy in Bolivia; subsequently in 1616, in Lima, there appeared a Grammar or 'Arte Aymara por Torrez de Rubio,' 12mo; and these works, along with two little pamphlets of a few pages each, published in La Paz, respectively entitled 'Catechismo de la Doctrina Christiana, traducido del Castellano en Aimará i Quechua por el Presbiter José Gregorio Jurado,' 1860, and a 'Breve Catalogo de Aymara de las voces mas usuales al Castellano,' 1857, complete, as far as I could learn, the entire literature of this so little studied language.

Being compelled by circumstances to live some years amongst these Indians in the most out-of-the-way part of the Aymara district, I was obliged (since all my efforts to obtain or, even, see a grammar or dictionary were fruitless) to form a vocabulary for my own use; and as the words in this were obtained direct from the Indians themselves, quite independently of any previously published sources, and as I believe many of them are not to be found in the dictionary of Bertonio, I have added this in the Appendix C., under the idea that it may prove useful in the future study of this very interesting language.

In concluding this communication, I have but to add that its entire substance was written down during my residence and travels in Bolivia and Peru, in the years from 1859 to 1863 inclusive, where I had no opportunity of consulting any works of previous travellers in these regions, and consequently had to

* This version was that which was authorized for general use in the department of La Paz, and published by the Presbyter Jurado in 1860; and therefore I should regard it as probably more correct than the version (which differs somewhat from it) given by Tschudi, 'Die Kechua Sprache' (Wien), p. 19, as taken from Bayer, in Murro, 'Journal für Kunst u. Literatur' iii. p. 173.

† Before this I understand that a series of questions in Aymara were printed in the 'Confesionario en la lengua Española, en la general del Cusco and en la Aymara, impreso en los Reyes, 1585, por Padre Diego de Alcobaca.'

content myself with recording only what fell directly under my personal observation. Since returning to Europe, however, I have consulted all the works relating to this part of South America which I could lay my hands upon, with a view to rewriting the whole; yet, notwithstanding that I find that in some minor points I differ from those who have gone before me, and that in others I have been, at least in part, anticipated, more especially by D'Orbigny, I have upon mature consideration considered it best to communicate the manuscript as it stands, with but a few remarks interpolated, in order to explain some discrepancies which otherwise would not be quite so clear to the reader.

APPENDIX.

A. *Table of detailed Measurements of Aymara Indians.* (See p. 282.)

The only reference to any previous measurement of the stature or relative proportions of these Indians is contained in D'Orbigny's work on 'L'Homme Américain,' tome i. p. 102, where he gives the extreme height of the Aymara men as 1.65 metre, equal to 64.96 English inches, the average height being, according to him, 1.60 metre or 62.99 English inches; whilst the average height of the woman he regards as 1.46 metre or 57.48 inches. As before stated, my measurements led me to the figures 63 inches for the average and 64 the extreme height of the men, and 56 inches as about the average height of the women. D'Orbigny does not report having made any measurements of the other proportions of the body.

The measurements of the different individuals given in the Table are stated in English inches, from which the proportional numbers, or thousandths of their entire stature, are in each case calculated and given in the next column; in addition, the following remarks were noted down when measuring the various individuals numbered in the columns of the Table.

No. 1. Bolivian Aymara from the Puna region near La Paz, about 14,000 feet elevation above the sea; age somewhere between 30 and 40; measured after death, in February 1860, in the hospital of La Paz, with the assistance of Dr. Lopera. As death had resulted from dysentery, the body was in an extremely emaciated condition, and consequently several of the measurements are naturally less than would be the case if the same individual had been in a good state of health.

The features and expression were good; nose aquiline; mouth not large, with fine teeth, although coloured from chewing coca; the hair of the head, which was abundant, was drawn backwards and

plaited into a long pigtail; it was black, perfectly straight, and rather fine in texture. No trace of hair under the arms or elsewhere on the body, except a mere trace of soft black hair on the pubes.

Owing to the emaciated condition of the body, the contours of the limbs were more than usually angular; but the muscles were not strongly developed; the surface-veins on the legs were prominent.

The arch of the lower jaw, measured from angle to angle, was $7\frac{1}{2}$ inches, or 120 thousandths of the entire stature; the shoulder-blade 6 inches, or 96 thousandths; and the height of head without the lower jaw was $6\frac{1}{2}$ inches, or 105 thousandths. The colour of the skin was a reddish brown, the face being somewhat lighter in hue than the rest of the body, which also possessed a much stronger odour than usual in these Indians, most probably due to dirt and disease.

No. 2. Bolivian Aymara from the highlands above Sorata, named Manuel Chuquimia, a perfect specimen of a fine-built young Indian, about 20 years of age and in a perfect state of health; measured on the 2nd of March, 1861, some eighteen hours after having been accidentally killed.

The features and expression were more than usually good and pleasing; the face rather round; nose aquiline; mouth not large; the teeth white and good; and the lips of a faint yellowish-red tint and not thick. The eyes were of a deep brown colour, somewhat lenticular in shape, and nearly, but not altogether, horizontal, being but very slightly inclined inwards; the eyelashes were black and thick-set, and the hair of the eyebrows black and rather abundant.

The hair of the head was drawn backwards and plaited into one long pigtail, and was of a deep brownish-black colour, abundant, perfectly straight, and not coarse in texture. No beard or hair otherwise on face, under arms, or on limbs or body, except a small fringe of soft black hair on pubes.

The arms and legs were well formed, the contours being well rounded off, smooth, with neither the muscles nor surface-veins at all prominent; the hands and feet small.

The skin was of a fine soft texture, and of a dirty yellowish-brown colour, that of the face being lighter in tint than the body or limbs. The nipples of the mammæ were only just visible, and the umbilicus quite superficial. The penis was small and apparently situated somewhat higher up on the pubes than usual. The measurements were all verified by Dr. Cooke.

No. 3. Peruvian Aymara of the Puna, from Yanapilla near Yungullo, on the borders of Lake Titicaca, close to the confines of Bolivia, named Simona Mamani, between 22 and 26 years of age, and apparently in a good state of health when measured, on the 27th June, 1861.

Although the face was pock-marked and the features decidedly ugly, the expression was neither bad nor repulsive; the eyes, which were brown, were very slightly inclined inwards, with long black eyelashes and rather abundant eyebrows.

The nose was rather turned up at the extremity, with expanded and

open nostrils; the mouth straight, not very large, with fine white teeth and lips, which were not flabby or thick, and had a brownish red tint.

The hair of the head was black, not coarse, and was drawn backwards and plaited in two divisions for a short distance, after which the whole was plaited into one long pigtail. No trace of hair on the face except a little down on the upper lip; and on the limbs, under the arms, or on the body no trace was seen, beyond a few black silky hairs on the pubes.

The limbs were rounded in outline and well formed, but neither the surface-veins nor muscular development were at all prominent; the hands and feet were small, and the second toe projected somewhat beyond the great toe.

Although the habits of the individual were apparently dirty, the skin did not possess any perceptible odour, and was of a brownish colour with tinges of yellow and red; the areolæ of the nipples of the breasts, and the skin of the penis and scrotum, were darker in colour, with a shade of black. The texture of the skin was fine, soft, and smooth, without any trace of hairs.

No. 4. Peruvian Aymara from Pomata, on the shores of Lake Titicaca, about 45 years of age, named Mariano Quispi; when measured, on the 26th of June 1861, appeared to be in good health; and when weighed, at same time, was found to be 130 lbs.

The expression of features was not very good, being somewhat sullen, the eyes very small and slightly inclined inwards,—the face, on the whole, being exactly that shown in Plate XIX., the nose not being aquiline, but the same as there represented, the nostrils being expanded and prominent. The hair of the head was of a deep brown-black, straight, and not coarse. The eyelashes were black, as also the hairs of the eyebrows, which were sparse. A few straggling short hairs were seen on the upper lip and under the armpits, but none otherwise on the body or limbs, except a little silky brown-black soft hair on the pubes.

The colour of the skin was dusky yellowish brown with a faint tinge of red, that of the scrotum, penis (including the glans) (which was apparently situated higher up than usual), and the nipples of the breasts being much darker and blacker in tint. The colour of the face was rather lighter than the general hue of the body, which emitted no perceptible odour and was smooth and soft in texture.

The contours of the limbs were rounded off, the muscles, although well developed, not producing any appearance of angularity in outline; the surface-veins were not prominent, and the feet and hands were small.

No. 5 gives the average of the four preceding measurements.

No. 6. Bolivian Aymara Indian from Timusa, in the tropical valleys on the eastern flank of the high Andes; both he and his father before him had been born and brought up in this district, his grandfather, however, having come from the Puna region as a colonist. His name was Manuel Calli; and when measured, on the 17th of June, 1861, he appeared to be in tolerable health and about thirty years of age.

The features and expression of countenance were good ; the nose aquiline ; mouth slightly curved, not large, with good teeth, and lips of a yellowish-red colour, not thick. The eyes were black, somewhat lenticular in shape and slightly inclined inwards, with short black eyelashes and sparse eyebrows.

The hair of the head was deep brown-black, perfectly straight, and not coarse ; it was drawn backwards and plaited into a long pigtail, hanging down the back. Except a little hair on the pubes, no beard or other hair was seen on the face, body, or limbs.

The colour of the skin was of a clear yellowish-brown hue, without a trace of red, the face being lighter and of a still more yellow tint than that of the rest of the body, which did not exhale any apparent odour.

The limbs, although thin and in poor condition, did not look angular ; neither muscles nor surface-veins were prominent.

No. 7. Rudisindo Perez, a Bolivian Aymara from Coroico, in the tropical valleys of the Yungas to the east of the high Andes, was born and brought up on the Hacienda de San Jose de Chicalulo, near Coroico, his father having also been born in Yungas ; when measured, on the 17th of June, 1861, he was evidently in a bad state of health, and appeared to be about forty years of age. He was considered to be the tallest man on the hacienda or in the neighbourhood, yet was only 5 feet 4 inches when measured, although he looked very much taller.

The expression of the features, although good, was sad and very dejected ; nose aquiline ; mouth not large, with thin lips of a brown-red colour ; eyes black, slightly inclined inwards, and had a melancholy expression ; eyelashes long and black, the hair of the eyebrows being black but sparse.

The hair of the head was black, but not coarse, and was drawn back and plaited into one long pigtail ; a few straggling short hairs were seen upon the upper lip, but none on the rest of the face ; a trace of hair occurred on the legs, but not on the arms or body, except on the pubes.

The skin had a soft texture and a yellow-brown colour, without any trace of red ; it had a disagreeable odour, probably due to disease. The muscles of the limbs were very little developed, and the surface-veins not prominent—the general outline being somewhat angular, evidently on account of the bad state of health of the individual.

No. 8. Average of the measurements of the last two Indians.

No. 9. General average of all the measurements of the Aymara men in this Table.

No. 10. Bolivian Aymara woman from the district of La Paz, probably about nineteen years of age, married, but with no children ; when measured, in March 1862, she was in a good state of health.

The expression of the features was less sullen than usual, being more lively and sly than in the generality of Aymara women ; forehead extremely low ; nose aquiline and somewhat curved in at lower extremity ; nostrils very open and expanded ; mouth not large, with

strong, white, but somewhat irregular teeth, and full but not flabby lips. The eyes were small, deep brown, somewhat inclined inwards, and had a peculiar sly expression. The eyelashes were long and black, whilst the hair on the eyebrows, also black, was sparse.

The hair of the head was very abundant and long, perfectly straight, and in texture very much finer than the black hair of the Spanish or Chola women; it was drawn backwards and plaited into two pigtales. No trace of hair elsewhere on the body, limbs, or under the arms, except a few silky hairs, like an eyelash, on the edge of the labiæ.

The skin was smooth and soft in texture, feeling cool and as if polished to the touch, and was of a yellowish-brown colour, with a slight tinge of red, which was most pronounced on the legs. The colour of the face was lighter than that of the body; the breasts were well-formed and firm, the nipples being surrounded with a dark blackish areola, about three-quarters of an inch in diameter. The contour of the limbs was slightly rounded off, neither muscles nor surface-veins being prominent.

This woman is below the average stature, and much less massive in proportions than the Aymara females in general, but otherwise may be regarded as a good specimen.

B. Substances used as Medicines by the Aymara Indians, and their names for Diseases.

Quinoa, the seeds of the *Chenopodium quinoa*. The water in which these seeds are steeped before being cooked for food contains a bitter principle, and is used as an emetic; about a tenth of the weight of a Bolivian dollar of the seeds are placed in a glass full of cold water, and allowed to stand (covered over) all night, when the seeds are strained off, and the water, taken by spoonfuls, acts as an emetic. The water in which a handful of seeds has been boiled, when taken internally, is said to cure gonorrhœa very quickly.

Huanapaco, a sort of soft thistle, similar in appearance to that common in England; the leaves are used as a poultice for wounds.

Pantipanti, a wild flower, pink-red, with a yellow centre; about twenty of the fresh or dried flowers, infused in warm water, are taken as a dose as a sudorific in colds or pleurisy.

Conduri, the Condor. The flesh of this bird is esteemed as a sort of universal remedy; and the fat is especially recommended in rheumatism and diseases of the joints.

Itapalu, a species of nettle, the leaf of which is longer, and the stinging-hairs more prominent than in the ordinary English plant; a decoction is used for cutting short the menses.

Quellhua, a species of white Gull, common around Lake Titicaca, the heart of which is used for bringing away the after-birth.

Opopo, a small plant (a species of wort) is, when dried, put into hollow teeth to cure the toothache,

Anuchape, a small thorny shrub, about 18 inches high, with prickly seeds; when boiled in water, the decoction is used to cure eruptions of the skin.

(Continued on p. 286.)

Measurements.		Aymara men. Cold highlands of Bolivia and Peru. Normal.			
		1. Bolivia. La Paz.		2. Bolivia. Sorata.	
		in.		in.	
1	Stature	61'50	1000	62	1000
2.	Extreme distance between finger-tips, arms extended horizontally				
3	Head, greatest circumference	19'50	317	22	354
4	—, " width (with callipers)	5'25	85	5'25	84
5	—, " antero-posterior diameter (with callipers)	7	113	7	112
a	—, " height from under chin to vertex (6+7+8+11+12)			9	145
b	—, " height without lower jaw (6+7+8+11)			7'25	117
6	—, distance perpendicularly from vertex to growth of hair			1'75	28
7	—, forehead from growth of hair to orbit			2'75	44
8	—, Nose from orbit to nostrils, vertically			1'75	28
9	—, " projection at nostrils			'75	12
10	—, " breadth			1'50	24
11	—, Jaw, upper (upper lip), from nostrils to centre of mouth			1	17
12	—, " lower (under lip and chin), from centre of mouth to below chin			1'75	28
13	—, Face, breadth between cheek-bones (with callipers)			5	80
c	—, " length from growth of hair to below chin (7+8+11+12)			7'25	106
14	—, Eye, distance between inner corners of eyes			1'25	20
15	—, " " " outer "			4	64
d	—, " length of orifice of eye $\left(\frac{15-14}{2}\right)$			1'37	22
16	—, Mouth, breadth			2'25	36
17	—, Ear, height or length			2	32
18	Neck, length from chin to semilunar notch of sternum, measured upright			2'50	40
19	—, breadth across from semilunar notch to 7th vertebra of neck (with callipers)			5	80
20	—, circumference			13	208
e	Head and neck, from vertex to semilunar notch of sternum (6+7+8+11+12+18)			11'50	185
21	Trunk, breadth across between outer tips of shoulders in a straight line	14	226	14'50	234
f	—, front length from semilunar notch of sternum to fork of legs (30+33)			23'25	375
22	—, back length, from 7th vertebra of neck to os coccygis	20'50	333		
g	—, side length, from shoulder-tip to trochanter major (35+37)			21	338
23	—, Breasts, breadth between nipples of mammae			7'75	125
24	—, " height from below mammae to semilunar notch of sternum				
25	—, Chest, breadth across between armpits in straight line			10'50	169
26	—, Chest, height in front from semilunar notch to tip of sternal cartilage	7	113	7'75	125
27	—, Chest, height at side from tip of shoulder to lowest rib			14'50	234
28	—, Chest, circumference under armpits, respiration at ease				

Aymara men. Cold highlands of Bolivia and Peru. Normal.					Aymara men. Hot low valleys of Bolivia. Abnormal.					9. Average of all the preceding Aymara men.		10. Aymara woman. Department of La Paz, Bolivia. Normal.			
3. Peru. Yungullo.		4. Peru. Pomata.		5. Average.		6. Bolivia. Timusa.		7. Bolivia. Coroico.		8. Average.					
in.		in.		in.		in.		in.		in.		in.		in.	
62	1000	61'87	1000	61'87	1000	64	1000	64	1000	64	1000	62'56	1000	55'75	1000
63	1016	62'75	1014	62'87	1015	68'50	1070	67'50	1054	68	1062	65'43	1038	54'50	978
20'50	331	21'50	347	20'87	337	22'50	347	21'50	336	22	341	21'25	339	21'50	386
5'37	87	5'75	93	5'37	87	6'25	98	5'75	90	6	94	5'62	90	6	108
7'12	115	7'37	119	7'12	115	7	109	6'50	102	6'75	105	7	111	6'75	121
8'75	140	8'87	142	8'87	142	9'25	144	8'75	128	8'75	136	8'75	141	8'50	152
7	112	7'12	114	7'12	114	7'50	117	6'75	105	7'12	111	7'12	114	6'50	116
2	32	2'37	38	2	33	2'75	43	1'75	27	2'25	35	2'12	34	1'75	31
2'25	36	2'25	36	2'37	38	1'75	27	2'25	35	2	32	2'25	36	1'75	31
1'50	24	1'62	26	1'62	26	2'25	35	2	31	2'12	33	1'87	29	2	36
62	10	62	10	62	11	75	12	75	12	75	12	75	12	50	9
1'25	20	1'50	24	1'37	23	1'50	23	1'50	23	1'50	23	1'37	23	1'75	31
1'25	20	87	14	1	17	75	12	75	12	75	12	87	15	1	18
1'75	28	1'75	28	1'75	28	1'75	27	1'50	23	1'62	25	1'62	27	2	36
5'12	83	5'50	89	5'25	82	5	78	5'25	82	5'12	80	5'12	82	5'25	94
6'75	108	6'50	104	6'75	106	6'50	101	6'50	101	6'50	101	6'62	107	6'75	121
1'62	26	1'25	20	1'37	22	1'25	19	1'25	19	1'25	19	1'75	21	1'50	27
4'25	69	4'25	69	4'12	68	4	63	4	63	4	63	4'12	66	3'75	67
1'37	22	1'50	24	1'37	23	1'37	22	1'37	22	1'37	22	1'25	22	1'12	20
2	32	2'25	36	2'12	34	2'25	35	2	31	2'12	33	2'12	34	2'50	45
2'25	36	2'25	36	2'12	34	2	31	2	31	2	31	2'12	33	2	36
3	48	4'25	69	3'25	52	2	31	2'12	39	2'06	35	2'75	45	2'50	45
5	81	5'50	89	5'12	83	4'75	74	4'50	70	4'62	72	5	79	5	90
13	208	13'50	218	13'12	211	13	203	12	187	12'50	198	12'87	205	13'50	242
11'75	188	13'12	211	12'12	194	11'25	175	10'37	167	10'81	171	11'50	186	11	197
13'50	218	15	242	14'25	230	15'50	242	15	234	15'25	238	14'75	235	12'25	220
20	322	22'75	367	22	354	.....	.....	.....	.....	.....	.....	22	354	19'12	363
24	388	22'75	368	22'50	363	.....	.....	.....	.....	.....	.....	22'50	363	21	377
20'50	331	21'50	344	20'87	337	.....	.....	.....	.....	.....	.....	20'87	337	19	341
7'50	121	8'50	137	7'87	127	9'25	145	9	141	9'12	143	8'37	114	7'25	130
7'50	121	8	129	7'75	125	6'50	102	6	94	6'25	98	5'62	111	6'25	112
12	193	13	210	11'75	190	13'25	207	12	187	12'62	197	12'12	193	10	179
8	129	9	145	7'87	128	8	125	7'75	121	7'87	123	7'87	126	6'75	121
14	226	14	226	14'12	228	14	219	13'50	211	13'75	215	14	223	10	179
34	549	37'75	610	35'87	580	.....	.....	.....	.....	.....	.....	35'87	580	31	556

TABLE

Measurements.		Aymara men. Cold highlands of Bolivia and Peru.	
		1. Bolivia. La Paz.	2 Bolivia. Sorata.
		in.	in.
29	Trunk, Waist, <i>circumference</i> of the smallest part of body .....	.....	.....
30	—, Distance from the semilunar notch of sternum to umbilicus.....	.....	14'75 238
31	—, Abdomen, <i>circumference</i> at navel .....	.....	27'25 440
32	—, " distance from umbilicus to symphysis pubis in straight line .....	.....	.....
33	—, Abdomen, distance from umbilicus to fork of legs .....	.....	8'50 137
34	—, Abdomen, distance from umbilicus to anterior superior spine of ilium .....	.....	5'75 93
35	—, Distance from shoulder-tip to anterior superior spine of ilium .....	.....	17 274
36	—, Pelvis, breadth, straight, between the anterior superior spines of ilium.....	9'50 154	10'75 173
37	—, Pelvis, height from anterior superior spine of ilium to trochanter major.....	.....	4 64
38	—, Pelvis, <i>circumference</i> round ala .....	.....	.....
39	Upper extremity, arm, upper, length of humerus.....	10 162	10 160
40	—, " " <i>greatest circumference</i> .....	.....	.....
41	—, " " <i>least ditto</i> .....	.....	.....
42	—, " " lower, length of radius.....	9'50 154	9'50 153
43	—, " " <i>greatest circumference</i> .....	.....	.....
44	—, " " <i>least ditto</i> .....	.....	6'25 108
45	—, Hand, length from wrist to tip of forefinger	6'75 109	7 112
h	—, Hand, length, exclusive of fingers (45—47) .....	.....	4 64
46	—, " breadth without thumb .....	.....	3'25 51
47	—, " forefinger to knuckle-joint.....	.....	3 48
i	—, entire arm from shoulder-joint to tip of forefinger (39+42+45)	26'25 425	26'50 425
48	Lower extremity, thigh, length from trochanter major to knee-joint (femur)	13 211	13 210
49	—, thigh, length inside from fork of legs to knee-joint.....	.....	12 193
50	—, thigh, <i>greatest circumference</i> .....	.....	.....
51	—, " <i>least ditto</i> .....	.....	11 177
52	—, Knee-joint, <i>circumference</i> .....	.....	11 177
53	—, Leg (tibia), length from knee-joint to ankle	14 226	14'25 230
54	—, <i>greatest circumference</i> , calf of leg .....	.....	11 177
55	—, <i>least ditto</i> .....	.....	8 129
56	—, Foot, length of the sole from heel to tip of great toe	7'75 125	8'50 137
57	—, Foot, length of back or ridge from leg to tip of great toe	6'50 105	5'50 89
58	—, Foot, <i>greatest breadth</i> .....	.....	3'25 51
59	—, " height from ground to tip of inner ankle .....	.....	2'75 44
60	—, Foot, <i>greatest circumference</i> around instep .....	.....	8'75 141
k	—, entire (thigh, leg, and foot), from trochanter major to ground (48+53+59).....	.....	.....
l	—, entire (thigh, leg, and foot), inside from fork to ground (49+53+59) .....	.....	29 467

(continued).

Aymara men. Cold highlands of Bolivia and Peru. Abnormal.				Aymara men. Hot low valleys of Bolivia. Abnormal.				9. Average of all the preceding Aymara men.		10. Aymara woman. Department of La Paz, Bolivia. Normal.					
3. Peru. Yungullo.		4. Peru. Pomata.		5. Average.		6. Bolivia. Timusa.		7. Bolivia. Coroico.		8. Average.					
in.		in.		in.		in.		in.		in.		in.			
26	420	32'50	525	29'25	473	.....	.....	.....	.....	.....	.....	29'25	473	27'50	493
13	209	14'50	230	14	226	12'50	195	12'75	199	12'62	197	13'50	214	11	197
28	452	35'75	578	30'75	490	.....	.....	.....	.....	.....	.....	30'37	490	27'50	493
	81	5	81	5	81	.....	.....	.....	.....	.....	.....	5	81	5'75	103
5	113	8'50	137	8	129	.....	.....	.....	.....	.....	.....	8	129	8'25	166
7	73	6	97	5'87	88	6	94	.....	.....	6	94	5'62	94	5'50	99
4'50	250	17'50	279	16'50	267	14	219	15'50	242	14'75	231	15'87	253	14'50	260
15'50	177	11'50	186	10'62	172	13'50	211	12'50	195	13	203	11'75	183	11	197
11	81	4	65	4'37	70	.....	.....	.....	.....	.....	.....	4'37	70	4'50	81
5	476	27'50	444	28'50	460	.....	.....	.....	.....	.....	.....	28'50	460	31	556
12	193	12'50	202	11'12	179	12	187	11	172	11'50	179	11'25	179	10	179
8	129	10	162	9	145	9	141	9	141	9	141	9	143	10	179
8'75	141	9	145	8'87	143	8'50	133	7	109	7'75	121	8'37	132	8'75	156
9	145	8'75	141	9'12	148	9'25	145	9'50	148	9'62	146	9'25	148	9	161
9'25	149	9'25	147	9'25	148	9	141	8'50	133	8'75	137	9	143	8'25	148
6'25	101	6	97	6'12	102	6'25	98	6	94	6'12	96	6'12	100	6	108
6'50	105	6	97	6'62	108	6'50	102	7	109	6'75	105	6'62	106	6	108
3	49	2'75	46	3'25	53	3	47	3'62	56	3'31	52	3'37	54	2'75	50
3'50	56	3'50	57	3'37	55	3	47	3'25	51	3'12	49	3'12	52	3	54
3'50	56	3'25	53	3'25	52	3'25	51	3'50	55	3'37	53	3'25	52	3'25	58
29'25	443	27'25	440	27'12	435	27'75	434	27'50	429	27'87	430	27'25	434	25	448
13'37	216	13	210	13'12	211	14	219	14	219	14	219	13'37	214	13	233
13	209	11	171	12	191	.....	.....	.....	.....	.....	.....	12	191	10'75	192
17	274	18	291	17'50	283	.....	.....	.....	.....	.....	.....	17'50	283	18'50	331
13	209	14	226	12'62	204	13'50	211	11'75	184	12'62	197	12'62	201	13	233
13'50	218	13	210	12'50	202	13'25	207	12'50	195	12'87	201	12'62	201	12'50	224
14'50	234	13'87	224	14'12	253	15	234	14	219	14'50	226	14'25	228	13'25	237
11'75	190	12'25	198	11'62	188	12'75	199	11'25	176	12	187	11'75	188	10'50	188
8	129	7'75	125	7'12	127	8	125	7'50	117	7'75	121	7'87	125	7'50	138
8'75	141	9	145	8'50	137	9'50	148	8'75	137	9'12	143	8'37	139	8	143
5	81	6	97	7'50	98	6	94	5'75	90	5'87	92	6	96	5	90
3'75	60	3'50	57	3'50	56	3'75	59	3'50	55	3'62	57	3'50	54	3'25	58
2'18	35	2'06	33	2'37	37	2'50	39	3	47	2'75	43	2'50	40	2'50	45
10	161	9'25	147	9'25	145	9'50	148	9'25	145	9'37	147	9'37	148	8'50	152
31'50	508	30'50	493	31	500	31'50	492	32'50	508	32	500	31'50	500	28'25	506
29'68	478	26'93	428	28'50	444	.....	.....	.....	.....	.....	.....	28'50	444	26'50	474

Añatuya, the Skunk; the heart of this animal, taken internally, is used under the impression that it assists labour.

Yaca-yaca, the Woodpecker; the tongue of this bird is placed in hollow teeth to cure toothache.

Anocara, the Dog; the hair of the dog, when burnt, and its ashes rubbed into the wound, is said to cure the bite of a dog.

Toucan; the tongue of this bird is considered so good a remedy against heart-disease, that the Indians pay as much as five shillings for the tongue alone.

Chusichusi, a plant with a viscid juice, much employed in the cure of recent wounds.

Ramo-ramo (? *lamo-lamo*), is a mineral used internally as an antidote against poisons; a sample, which I analyzed, was only a mixture of iron pyrites with quartz.

Molle-molle, the wild currant, which has both red and yellow fruit, and is used in catarrh, &c.

Chacacoma, a plant having a foetid smell, which is used internally in cases of colic and disorders of the bowels; it has a hot taste, and is used in small quantity by the Indians in their sauces as a condiment. Externally, when mixed with dried figs, they use it in the form of a cataplasm, applying it to the testicles in hernia.

Chich chipa, a species of fennel; the seeds are used as a stimulant, and are also added as a condiment to the Aymara soups.

Women's milk is used as a lotion in cases of injuries to the eyes.

As before mentioned, dried seaweed, obtained from Cobija, on the shores of the Pacific, is used in the cure of goitre; and mercury, principally made up with lard into a species of blue ointment, is used in the treatment of syphilis both in man and the alpaca. Mr. Falckenheimer, the German apothecary in La Paz, informed me that the Indians also purchased calomel largely for this purpose, and that they were never known to apply to the medical men, but always, and apparently with success, cured the disease themselves; they also employ cascarilla- or quinine-bark in the cure of Tertiana or intermittent fever, which, in the lower valleys, commits great havoc amongst the Indians.

The names of the principal diseases in Aymara are as follows:—*chucchu*, fever and ague; *huju* or *uju*?, a cough or bronchitis; *taycayestua*, a cold or catarrh; *chaca-usu*, syphilis; *ccoto*, the goitre; *caratchi*, eruptions or pustules of the skin; *chupu*, tumours, boils or carbuncles; *huanti*, bubo; *sirqui*, a wart; *macatiriusu*, contagion; *huntiusu*, fever; *suicho*, paralysis of legs; *cucillo*, paralysis of the arms; *kinchata*, heart-disease; *lacacama*, toothache; *yaca-taca*, stone in the bladder; *chocritacha* or *chocri*, a wound; *coyo*, a contusion; *tuluya*, club-foot; *nairahuisa*, short sight; *lerco*, squint-eyed; *occara*, deaf; *huico*, blind; *pejecora*, bald; *hinata*, dead; *huila*, blood, or the menses; *hualce*, pregnancy; *huahua-chaña*, childbirth; *ispaco*, twins; *tucu-usu*, madness; *ccolla*, medicine; *usu*, disease.

C. Vocabulary of Aymara Words.

The following Aymara words were collected in daily intercourse with the Aymara Indians of the northernmost provinces of Bolivia, and those of the Department of Puna, in Peru. In the latter district, owing to the relations with the Quechua Indians more to the north, many words of Quechua origin are used, which are seldom employed further south in Bolivia. In putting them on paper, they are written as if spelt according to the usual rules of Spanish pronunciation, at least as nearly as was found possible in the case of so extraordinarily distinct and guttural a language.

- A ! dah ! *interjection of imploration.*
 Aca, *this.*
 Acaacata, *from hereabouts.*
 Acaaja, *hereabouts.*
 Acahua, *here it is.*
 Acajpacha, *the earth.*
 Acama, *thus, in this manner.*
 Acampi, *with this.*
 Acana, *here.*
 Acanhua, *here.*
 Acaru, *here.*
 Acata, *from here.*
 Accanca, *any large or thick thing.*
 Achachi, *old (masculine).*
 Achachiha, *grandfather.*
 Achaco, *mouse.*
 Achacollo, *rat.*
 Achulla, *weazel.*
 Achuma, *thistle.*
 Aculli, *quid of coca-leaves.*
 Ahuatiña, *to graze.*
 Ahuatiri, *a shepherd.*
 Aiccoña, *to complain lamenting.*
 Aicha, *flesh.*
 Ainacha, *low, below.*
 Ainachata, *from below.*
 Ainiña, *to dispute or argue.*
 Airu, *a plant.*
 Ajipa, *an esculent root.*
 Ajlliña, *to select.*
 Ajllita, *a thing selected.*
 Ajsaraña, *to fear.*
 Ajsarayaña, *to terrify.*
 Akanu (ajanu), *the face.*
 Alacpacha (? Arajpacha), *heaven.*
 Alala ! *exclamation of coldness, indifference.*
 Alaña, *to buy.*
 Alata, *a purchaser.*
 Alcamari, *a sort of buzzard.*
 Alchiha, *grand-daughter.*
 Ali, *a branch.*
 Aljiri, *a seller.*
- Allchicha, *nephew of one's grandmother.*
 Alloja, *much.*
 Alloha, *a wife's younger brother.*
 Altaña, *to stoop or crouch down.*
 Altata, *dejected, low spirited.*
 Aliyaña, *to increase, or to make to grow.*
 Amauta, *wise, prudent.*
 Amaya, *dead.*
 Ampara, *hand.*
 Ampata, *high.*
 Amtosiña, *to arrange or agree.*
 Amu, amuta, *dumb, silent.*
 Amuquiña, *to be silent.*
 Anoco, *a woman's robe.*
 Anata, *the carnival.*
 Anataña, *to play,*
 Anaturi, *a player.*
 Anca, *toasted Indian corn.*
 Ancu, *a nerve or sinew.*
 Anccaru, *besides.*
 Anccaro, *without.*
 Anocara, *a dog.*
 Antutiña, *to loosen.*
 Antutata, *a thing loosened.*
 Anu, *a dog.*
 Anuchape, *a medicinal plant.*
 Añatuya, *the skunk.*
 Añay ! *exclamation of joy.*
 Apacaña, *to remove.*
 Apachi, *old (feminine).*
 Apacheta, *a cairn.*
 Apachiha, *grandmother.*
 Apaña, *to fetch or bring.*
 Apasanca, *a large spider.*
 Apichu, *sweet potato.*
 Apilla, *oca (root of Oxalis tuberosa), penis.*
 Apsuña, *to take out a thing.*
 Aptaña, *to fetch a thing fallen down.*
 Apu, *fiere, brave ; also used for Mr. or Master.*

- Aquiri, *this nearest.*
 Arcaña, *to follow.*
 Arctaña *to track.*
 Araja, *above.*
 Arajpacha, *heaven, the sky.*
 Ari, *sharp, pointed.*
 Aricoma, *an esculent root.*
 Armoña, *to forget.*
 Armosiña, *to forget oneself.*
 Arpi, *the lap.*
 Aru, *language, words.*
 Arujana, *to foretell.*
 Aruma *, *night.*
 Arumanti, *morning.*
 Arumaji, *in the morning.*
 Aruntaña, *to salute.*
 Arusiña, *to speak.*
 Arttaña, *to shout after.*
 Asaña, *to bring or fetch a hollow or concave object.*
 Asque, *good, well.*
 Atakh ! *exclamation of grief.*
 Atahualpa, *a fowl.*
 — ccachu, *a hen.*
 — urco, *a cock.*
 Atha, *seed.*
 Atipaña, *to overcome or conquer.*
 Atipata, *a thing conquered.*
 Atipari, *a conqueror.*
 Auca, *an enemy, the devil.*
 Auqui, *father.*
 Auquichiha, *husband's father.*
 Aya-aya, *Aymara nightingale.*
 Aylo, *race, tribe, penis.*
 Ca, *take hold of.*
 Caara, *tomorrow.*
 Caccaña, *to rub.*
 Cachomasi, *a friend.*
 Cachu, *husk of the Indian corn.*
 Cachua, *an Indian round dance.*
 Cachuaña *to dance in a ring.*
 Cahuaña, *to put in order.*
 Callaña, *to cure.*
 Callachi, *shoulder.*
 Calcu, *bitter, sour.*
 Cama, *until.*
 Camachiña, *to command.*
 Camachitaaru, *a command, law.*
 Camani, *worthy.*
 Camisa, *how.*
 Camisati, *how so.*
 Campu, *the Puna spider.*
 Canca, *roast flesh.*
 Cancana, *a roasting-spit.*
 Cancaña, *to possess.*
 Cantatiuriuri, *dawn, break of day.*
 Cañu, *a Titicaca fish.*
 Cañamiski, *treacle.*
 Capa, *a span.*
 Carachi, *skin disease, also a fish.*
 Carcatiña, *to tremble.*
 Carhuachincha, *opossum.*
 Caricari, *messenger of the devil.*
 Caruru, *tomorrow.*
 Catari, *a serpent, snake.*
 Catatiña, *to bring dragging along.*
 Catuña, *to take hold of.*
 Cauna, *egg.*
 Caucau, *fish-roe.*
 Cui, *sweet prepared ocas.*
 Cauqui, *where.*
 Cauquijata, *from whereabouts.*
 Cauquina, *in what place.*
 Cauquinhama, *very seldom.*
 Cauquipachaqui, *seldom.*
 Cauquiru, *whither.*
 Cauquita, *from whither.*
 Cauquitaatassa, *from where are you ?*
 Caya, *chuño of ocas.*
 Chaca, *a bridge.*
 Chaccaña, *to loose oneself.*
 Chacachaca, *a small snipe.*
 Chacha, *a man, husband.*
 Chachacoma, *a medical plant.*
 Chacasita, *choked.*
 Chactoña, *to nail.*
 Chacuru, *a pole.*
 Chahuichahui, *a large snipe.*
 Chahuaña, *to suckle.*
 Chaiña, *a goldfinch.*
 Chairu, *soup made of chuño.*
 Chajchuña, *to irrigate.*
 Chaillallapi, *close at hand.*
 Challa, *sand.*
 Challichalli, *cantharides fly.*
 Challua, *fish.*
 Chama, *force.*
 Chamaca, *dark.*
 Chamani, *strong.*
 Champa, *turf.*
 Chanca, *thread.*
 Chani, *value.*
 Chapi, *a thorn.*
 Chara, *leg.*
 Charqui, *dried flesh.*
 Chataña, *to denounce.*
 Checa, *true.*
 Checapuni, *truly.*

* The Indians, in conversation, say always "night and day," never "day and night."

- Chectaña, *to split or break up.*
 Checaptayaña, *to rectify.*
 Cheka, *left.*
 Checca, *a bird's wing.*
 Chenque, *vagina.*
 Chia, *measure of a span.*
 Chiaña, *to split up, to break.*
 Chiara, *black.*
 Chica, *united.*
 Chica aruma, *midnight.*
 Chichi, *aquatic larvæ eaten by the Indians.*
 Chichchipa, *fennel.*
 Chichillanca, *bluebottle-fly.*
 Chilua, *verdure.*
 Chihuaña, *to express.*
 Chihuancu, *a thrush.*
 Chigi, *danger.*
 Chijchi, *hail.*
 Chijmana, *head-gear of an animal.*
 Chilca, *ice.*
 Chilque, *a step, a pace.*
 China, *end, rump, buttocks.*
 Chinasca, *endly, lastly.*
 Chinanquiri, *hindermost.*
 Chinchí, *red pepper.*
 Chinqui, *younger sister.*
 Chinu, *a knot.*
 Chinuña, *to bind or tie.*
 Chinta, *arriero's assistant.*
 Chifí, *a bat.*
 Chipana, *bracelet.*
 Chirhuaña, *to express.*
 Chiroti, *a small bird.*
 Chitua, *shade, shadow.*
 Choca, *a water-hen.*
 Chocque, *gold.*
 Chocri, *a wound.*
 Chocricata, *wounded.*
 Chojni, *green.*
 Chojnibuacu, *green pepper.*
 Choque, *potato.*
 Choque, *raw.*
 Chora, *urine.*
 Choraña, *to make water.*
 Choriti, *a small bird.*
 Chua, *an earthen saucer.*
 Chua, *bar-silver.*
 Chucho, *a yearling llama.*
 Chucchu, *tertian fever and ague.*
 Chucuña, *to sew.*
 Chuima, *heart.*
 Chuisaña, *to be absent.*
 Chumapusa, *a hollow thing.*
 Chuluca, *a cricket.*
 Chulluncaya, *snow.*
 Chulpa, *a burial tower.*
 Chulqui, *a sweet variety of maize.*
 Chuma, *brushwood.*
 Chuñu potatoes prepared by freezing.
 Chupu, *a tumour or boil.*
 Chupica, *brown-red.*
 Churu, *a curve or circle.*
 Chusaca, *an owl.*
 Chusaña, *to be absent.*
 Cocahuanco, *a rabbit.*
 Cochamasi, *friend.*
 Colcque, *silver, money.*
 Collachaa, *elder sister.*
 Collaña, *to cure.*
 Collocaya, *prepared frozen ocas.*
 Concho, *dirty.*
 Conduri, *condor.*
 Coolu, } *a Titicaca fish.*
 Coolulu, }
 Coori, *gold.*
 Capanaira, *blue eyes.*
 Cora, *a leaf.*
 Coraña, *to release.*
 Corompila, *a small bird.*
 Coya, *a queen.*
 Coyo, *a bruise, contusion.*
 Cquca, *cotton.*
 Cqueiachaña, *to injure.*
 Cquenaya, *a cloud.*
 Cqueña, *to excite.*
 Cquepa, *a woof, a species of trumpet.*
 Cucata, *from above.*
 Cuchuña, *to cut.*
 Cuchicuchi, *a small bird.*
 Cuchuchu, *an edible aquatic plant.*
 Cucillo, *paralysis of the arms.*
 Cucupa, *dried boiled potatoes.*
 Cula, *air-dried brick.*
 Culcataya, *a dove, pigeon.*
 Culiaca, *sister.*
 Culli, *dark-coloured maize.*
 Cumu, *a load.*
 Cuna, *what.*
 Cunalaicu, *why.*
 Cunapacha, *when.*
 Cunata, *wherefore.*
 Cunataicu, *because.*
 Cunataque, *wherefore.*
 Cunca, *voice, throat.*
 Cupi, *right.*
 Cupiampara, *right hand.*
 Curcura, *cane.*
 Curihualuru, *three days ago.*
 Curmi, *a load.*
 Cusca, *equal.*
 Cuscachaña, *to match, to equalize.*
 Cuscusi, *spider.*

- Cusillo, *monkey*.
 Cusisiña, *to rejoice, enjoy oneself*.
 Cussi, *a witty saying*.
 Cutinaña, *to turn, return*.
 Cuuna, *this way*.
 Cuuro, *yonder*.
 Cuuta, *thereabouts*.
 Cuyu, *that*.
 Cuyuña, *to whistle*.
 Kariña, *to lie*.
 Kepi, *the lap*.
 Kinchata, *heart-disease*.
 Kirikiri, *a singing-bird*.
 Kisimira, *a large woof*.
 Kuitururui, *a water-beetle*.
 Ccachu, *female, wife, woman*.
 Ccahua, *Indian shirt*.
 Ccaica?, *how much*.
 Ccaira, *a frog*.
 Ccala, *a stone, a rock*.
 Ccalaña, *to commence*.
 Ccalauchaña, *to pave*.
 Ccamiri, *a thick coverlet*.
 Ccamaki, *a fox*.
 Ccana, *light, clearness*.
 Ccantayaña, *to illuminate*.
 Ccanaqui, *clearly*.
 Ccana, *how much*.
 Ccapi, *fierce, brave*.
 Ccapisiña, *to irritate oneself*.
 Ccapu, *distaff, spindle*.
 Ccapuña, *to spin*.
 Ccara, *morning*.
 Ccaruru, *morning*.
 Ccarurumaca, *until tomorrow*.
 Ccariña, *to tire oneself*.
 Ccatua, *son-in-law by husband's side*.
 Ccatabui, *lime*.
 Ccauca, *how much*.
 Ccaura, *llama*.
 Ccauralliki, *llama-fat*.
 Ccaysiña, *totora, Titicaca rush*.
 Cchaca, *bone*.
 Cchacausu, *syphilis*.
 Cchara, *a leg*.
 Ccoca, *a tree, plant*.
 Ccocacollo, *a forest, plantation*.
 Ccohoña, *to chant*.
 Ccolla, *medicine*.
 Ccollo, *a mountain*.
 Ccollina, *to plough*.
 Cconaña, *to grind*.
 Ceonari, *knee*.
 Ccorahua, *deep*.
 Ccorpa, *the end*.
 Ccorpauta, *a resting-place, inn*.
 Ccota, *a lake*.
 Ccoto, *a wen, godtre*.
 Ccoya, *a mine*.
 Ccu, *there*.
 Ccuca, *a corner*.
 Ccumu, *humpbacked*.
 Ccumuña, *to load a beast*.
 Ccuña, *to snow*.
 Ccuñu, *snow*.
 Ccuri, *that furthest*.
 Ccururu, *navel*.
 Ccusa *chicha*.
 Ccuti, *a flea, an illegitimate son*.
 Ccuyaña, *to have pity*.
 Ha, *my*.
 Hacaña, *to live*.
 Hacayaña, *to cure another*.
 Hacha, *great, large*.
 Hacha, *a tear*.
 Hachaña, *to cry*.
 Hachataña, *to revive*.
 Hachausu, *the pest*.
 Hachu, *a thousand*.
 Haccu, *flour, meal*.
 Habuiri, *a river*.
 Haitjaña, *to hang*.
 Haipu, *night*.
 Haipucama, *until to-night*.
 Hairu, *idle*.
 Haitaña, *to abandon*.
 Halla, *yes*.
 Hallam, *fly! run!*
 Hallaña, *to run*.
 Halpaña, *to lick or lap up*.
 Hallu, *rain*.
 Hallupacha, *rainy season*.
 Hulyataña, *to assault*.
 Hama, *thou*.
 Hamachi, *a bird*.
 Hamasata, *secretly*.
 Hamattanca, *scarabæus beetle*.
 Hampatiña*, *to kiss, to adore*.
 Hampatita, *a kiss*.
 Hampatua, *a toad*.
 Hamppi, *toasted maize*.
 Hamppiña, *to toast maize*.
 Hanco, *white*.
 Hanchi, *the body*.
 Hanceca, *quickly*.
 Hani, *no*.
 Hanicaruriri, *disobedient*.

* To kiss or adore are the same in Aymara; in ancient times they sent a kiss with their fingers to the gods or idols as a mark of adoration.

- Hanihuhiri, *immortal*.
 Hanihuchani, *innocent*.
 Hanirara, *not yet*.
 Haniraque, *neither, just as little*.
 Hapusnacaña, *to pride oneself*.
 Haqui, *a man*.
 Haquimasa, *neighbour*.
 Haquiri, *nephew*.
 Harapi, *rib*.
 Hararaña, *to untie*.
 Hararancu, *a lizard*.
 Harcana, *to hinder*.
 Hariluraña, *difficult*.
 Hariña, *to wash*.
 Harita, *almost*.
 Haru, *bitter*.
 Haya, *for*.
 Hayu, *salt*.
 Hayunchaña, *to salt*.
 Hemque, *pus*.
 Heuque, *smoke*.
 Hicani, *shoulder*.
 Hicha, *now*.
 Hichuru, *to-day*.
 Hichpacha, *this instant*.
 Hichpachahua, *this very instant*.
 Hichat-acaru, *in advance*.
 Hichi, *a handful*.
 Hicco, *hiccup*.
 Hihuaña, *to die*.
 Hihuayaña, *to kill*.
 Hihuasi, *us*.
 Hila, *a brother*.
 Hinata, *dead*.
 Hinchu, *ear, handle*.
 Hiñu, *orphan*.
 Hipilla, *entrails*.
 Hiquiña, *to bring or draw out*
 (iquina?).
 Hiquisiña, *to encounter*.
 Hisca, *small, little*.
 Hiscaña, *to bring along* (iscaña?).
 Hitiña, *to envy*.
 Huaca, *idol, ancient grave*.
 Huacahampatiña, *to worship idols*.
 Huacaichaña, *to keep the laws*.
 Huacana, *a heron*.
 Huachanca, *a vomipurge root*.
 Huachoca, *dishonest*.
 Huaculla, *a jug, jar*.
 Huacca, *a sash*.
 Huaccha, *poor person*.
 Huahua, *a child*.
 Huahuachaña, *to give birth*.
 Huahuataya, *a vegetable condiment*.
 Huaicu, *red pepper*.
 Huacataña, *to hang*.
 Huaina, *a youth*.
 Huaita, *plumage, feathers*.
 Huajra, *horn*.
 Hualique, *well, excellent*.
 Hualqui, *pregnancy*.
 Huallaque, *boiling*.
 Huallata, *wild goose*.
 Hualluru, *day before yesterday*.
 Huallusa, *an edible root*.
 Hualpa, *a fowl*.
 Huampu, *balsa, raft or boat*.
 Huaña, *to dry*.
 Huanapaco, *soft thistle*.
 Huanaña, *to amend*.
 Huancara, *a drum*.
 Huanco, *rabbit*.
 Huanichaña, *to warn, correct*.
 Huantahualla, *the devil*.
 Huanti, *bubo*.
 Huaraca, *a sling*.
 Huaraña, *to pull down*.
 Huarariña, *to shout*.
 Huarahuara, *star*.
 Huarapo, *juice of sugar-cane*.
 Huarini, *a kuanaco*.
 Huasara, *desert, wilderness*.
 Huasitorsqui, *another time*.
 Huasuru, *yesterday*.
 Huaticaña, *to waylay*.
 Huayacca, *a bag*.
 Huayronco, *a gadfly*.
 Hucanca, *this way, whereabouts*.
 Hucha, *fault, sin*.
 Huchapuchasiña, *to sin*.
 Huchha, *porridge*.
 Huchusa, *a thin thing*.
 Huccha, *the size of a thing*.
 Huccahuaro, *deep*.
 Huccanca, *a thick thing*.
 Hucja, *so much*.
 Hucjaqui, *enough*.
 Huju, *a cough* (uju?).
 Hucumari, *a bear*.
 Huichinca, *tail*.
 Huicu, *blind*.
 Huila, *blood, the menses*.
 Huiñaya, *ever, always*.
 Huiñayataque, *for ever*.
 Hiuntu, *the heel*.
 Huipuru, *day after to-morrow*.
 Huiru, *green stalk of maize*.
 Huisca, *a chain*.
 Huissa, *we*.
 Huma, *thou*.
 Humampi, *with thee*.
 Huntu, *hot*.
 Huntua, *heat*.

- Huntihitua, *sensation of heat.*
 Huntuchaña, *to heat up.*
 Huntuusu, *fever.*
 Hupa, *he.*
 Hupa, *quinoa.*
 Hupaccusi, *chicha from quinoa.*
 Huri, *wet.*
 Hurpuru, *day after to-morrow.*
 Icanu, *shoulder (?h),*
 Icha, *now (?h).*
 Icma, *widow.*
 Ichu, *long grass, thatch.*
 Ichuru, *to-day (?h).*
 Ihuicaña, *to lecture, to advise.*
 Ilicata, *farm-bailiff, river-bird.*
 Illapa, *lightning.*
 Imaña, *to hide away.*
 Imatisiña, *to hide oneself.*
 Imilla, *girl.*
 Inaja, *probably.*
 Inata, *uselessly.*
 Ipa, *aunt.*
 Ipasari, *nephew.*
 Iquiña, *to sleep.*
 Iquihancataña, *to wish to sleep.*
 Irama, *road on side of a mountain.*
 Iraña, *to bring something round.*
 Irnacaña, *to work.*
 Irpaña, *to carry to a person.*
 Isañu, *root of Tropæolum tuberosum.*
 Isapayaña, *to make oneself understood.*
 Iscallo, *cloak.*
 Iscu, *sandals.*
 Iscca, *small.*
 Isi, *clothing.*
 Iscaña, *to bring guiding along.*
 Ispaña, *to hear, to understand.*
 Ispaco, *twins.*
 Ispi, *a small fish.*
 Isquiña, *to ask, to inquire.*
 Istoraña, *to open.*
 Istalla, *bag of coca leaves.*
 Istasiña, *to clothe oneself.*
 Itapalu, *nettle.*
 Itacaña, *to retire.*
 Laca, *mouth.*
 Lacacama, *toothache.*
 Lacacchaca, *teeth, jawbone.*
 Lacca, *earth.*
 Lacco, *worm.*
 Lahua, *wood.*
 Laica, *witchcraft.*
 Laicaña, *to bewitch.*
 Laicu, *for, on account of.*
 Lajra, *the tongue.*
 Lampa, *spade.*
 Lancaña, *to stumble.*
 Lanccu, *fat, large.*
 Lanti, *representative.*
 Lappa, *louse.*
 Lappi, *a leaf.*
 Laquiña, *to distribute.*
 Larama, *blue.*
 Larca, *ditch, canal.*
 Lariha, *male connexions of the wife.*
 Laruña, *to laugh.*
 Lattaña, *to climb.*
 Latorraña, *to come down.*
 Lejhui, *brains.*
 Lepitchi, *skin.*
 Lercu, *squint-eyed.*
 Liga, *a plant.*
 Liuchu, *a cap.*
 Lillicoya, *wild potato.*
 Llacca, *a leaf.*
 Llaellaña, *to cut wood.*
 Llacota, *Indian garment.*
 Llacstata, *perverse.*
 Llalliña, *to benefit.*
 Llamaya, *harvest.*
 Llamcaña, *to touch, to try.*
 Llapocha, *thunder.*
 Llampu, *small powdery stuff.*
 Llampuchaña, *to powder, to smooth.*
 Llaqui, *affliction, pain.*
 Llaquisiña, *to suffer.*
 Llatayna, *envy.*
 Llatunca, *nine.*
 Llausa, *slavering.*
 Llica, *aid.*
 Lliki, *fat.*
 Llicella, *a woman's shawl.*
 Llicellic, *a bird (Charadrius resplendens).*
 Llinque, *clay.*
 Lloella, *inundation.*
 Llucta, *ash used with coca.*
 Locoto, *large green pepper.*
 Luccana, *finger.*
 Lukichoque, *bitter potato.*
 Lulli, *humming-bird.*
 Lupataha, *fact, thing done.*
 Lupi, *the sun.*
 Lupimactri, *sunrise.*
 Lupiusaracani, *sunset.*
 Luram, *do so.*
 Maa, *one.*
 Maacuti, *once.*
 Maamara, *next year.*
 Maaqui, *at once, quickly.*
 Macallo, *tasteless, insipid.*
 Macamaca, *a black ibex.*
 Macataña, *to approach.*

- Macatiriusu, *contagion*.
 Machaca, *new*.
 Machacamara, *new year*.
 Machacata, *again*.
 Machaña, *to get drunk*.
 Machata, *sober*.
 Malliña, *to prove*.
 Mallo, *corrigidor*.
 Mama, *mother*.
 Mamaccota, *sea*.
 Mamani, *falcon, hawk*.
 Mamoraya, *a fly*.
 Manca, *food*.
 Mancaña, *to eat*.
 Mancayaña, *to feed*.
 Mancataautjata, *hungry*.
 Mancca, *within*.
 Manccana, *inwardly*.
 Mancaro, *below*.
 Mantaña, *to enter, stoop, descend*.
 Mantayaña, *to make to enter, &c*.
 Mañu, *debt, debtor*.
 Manuiña, *to lend*.
 Manuuiña, *to owe*.
 Manutiña, *to lend oneself*.
 Manupocaña, *to repay*.
 Mara, *a year*.
 Marca, *a village*.
 Marcachaña, *to approach, to join*.
 Maripacha, *buttocks, anus*.
 Marmi, *woman, wife*.
 Marmiasaña, *to marry*.
 Maroma, *a rope to cross rivers with*.
 Masana, *once upon a time*.
 Masi, *comrade, like*.
 Massanoha, *husband, brother*.
 Masqui, *although*.
 Masuru, *yesterday*.
 Mati, *a small gourd or calabash*.
 Mauri, *a freshwater fish*.
 Maya, *one*.
 Mayampi, *another time*.
 Mayiña, *to ask*.
 Maymara, *last year*.
 Maymuru, *kidney*.
 Mayni, *one*.
 Maynimpi, *with another*.
 Mayniqui, *only one*.
 Maytaña, *to lend, to offer*.
 Maytasiña, *to ask a loan*.
 Mayurcu, *the other day*.
 Michá, *bad*.
 Michi, *bow and arrow*.
 Michiña, *to shoot with bow and arrow*.
 Minca, *a substitute*.
 Mincaña, *to substitute*.
 Miski, *treacle, syrup*.
 Misqui, *ounce, puma*.
 Mocco, *a knot, a small hill*.
 Mocomocco, *knotty, hilly*.
 Molle, *a tree, (Schinus molle)*.
 Mollemolle, *with current*.
 Morocco, *round*.
 Mpi, *with*.
 Mujlli, *elbow*.
 Mulla, *fright, alarm*.
 Munaña, *to love*.
 Muñapayaña, *to love at a distance*.
 Munasiña, *to love oneself*.
 Muñata, *loved*.
 Muquiña, *to smell*.
 Muspa, *pensive*.
 Muspaña, *to be pensive*.
 Mutuña, *to suffer punishment*.
 Mutuyaña, *to punish*.
 Muttu, *blunt*.
 Na, *I*.
 Na, prep., *in, with*.
 Nacaña, *to burn*.
 Nacata, *a thing burnt*.
 Nacuta?, *hair*.
 Nahatansa, *of my size*.
 Nanaca, *we*.
 Naña, *almost*.
 Nasa, *nose*.
 Naya, *I*.
 Nayampi, *with me*.
 Nayra, *first, in front, before*.
 Nayra, *eye*.
 Nayracata, *ahead, in front*.
 Nayra huisca, *short sight*.
 Nauccha, *of my size*.
 Nia, *presently*.
 Niapini, *only this moment*.
 Niapinihua, *in a moment, instantly*.
 Niaraque, *another time*.
 Nicota, *hair of the head*.
 Nina, *fire*.
 Ninanina, *dragon-fly*.
 Ninqira, *lately*.
 Ninqiraque, *very lately*.
 Nuaña, *to beat, to knock about*.
 Nucuña, *to shove, push*.
 Nuñu, *breast, teat*.
 Nuñuayaña, *to suckle*.
 Nuñuiri, *wet-nurse*.
 Nusaña, *to rot*.
 Nusata, *rotten*.
 Nusatahua, *to be decayed*.
 Nypa, *three days hence*.
 Oca, *a wave*.
 Ocana, *a pick*.
 Ocque, *ash-grey*.
 Ocquenaira, *light blue or grey eyes*.

- Occaña, *to tie in a bow.*
 Occara, *deaf.*
 Ocallo, *frog-spawn.*
 Ocoocao, *a muddy place.*
 Oiso, *a sort of spade.*
 Ojota, *sandal.*
 Opopo, *a plant used for toothache.*
 Oracci, *ground, land, estate.*
 Ouranypa, *in four days hence.*
 Pa, *two.*
 Paca, *eagle, vulture.*
 Pacalco, *seven.*
 Pacariña, *to waken.*
 Pacay, *fruit of a species of Inga.*
 Pacha, *time or place.*
 Pachacantati, *streak of day.*
 Pachacha, *gypsum.*
 Paco, *red.*
 Pacoma, *captive, prisoner.*
 Paccha, *fountain, waterfall.*
 Paccoma, *old wood.*
 Pacsi, *moon, month.*
 Pacuti, *twice.*
 Pallalla, *a small trowel, a flat thing.*
 Pallaña, *to gather.*
 Pampa, *a plain.*
 Pampachaña, *to smoothen.*
 Pana, *a waterfowl.*
 Pancara, *a flower.*
 Pancataya, *a beetle.*
 Pani, *two.*
 Panini, *between two.*
 Panisa, *we two.*
 Pantaña, *to err.*
 Pantipanti, *a flower used as a sudorific.*
 Paquiña, *to break.*
 Para, *forehead.*
 Parara, *stone for grinding on.*
 Paralueta, *a hand-barrow.*
 Parpa, *eyelash.*
 Pascana, *a storehouse.*
 Pataati, *a stone bench.*
 Pataca, *a hundred.*
 Patapata, *a ladder.*
 Patcaro, *above.*
 Patunca, *twenty.*
 Paura, *ear of corn.*
 Paurnachata, *corn in ear.*
 Paurnachasiña, *to shoot into ear.*
 Paya, *two.*
 Payampi, *two more.*
 Payaña, *to cook.*
 Payiri, *a cook.*
 Payla, *large pot.*
 Payco (?Pallco), *a species of Chenopodium.*
- Pejicara, *bald.*
 Piara, *the number of 33 llamas.*
 Pichi, *spoon-shaped ornaments.*
 Pichaña, *to sweep.*
 Pichitanki, *a swallow.*
 Picho, *a brand, a faggot.*
 Pichuichaya, *a sparrow.*
 Pillu, *a garland.*
 Pilpinto, *a butterfly.*
 Pinquillo, *a flute.*
 Pinquilluña, *to play the flute.*
 Pircuña, *to clean.*
 Pirua, *a granary.*
 Piruru, *a spindle, distaff.*
 Pisacca, *a partridge.*
 Pisi, *little, scarce.*
 Pituña, *to mix or knead up.*
 Poco, *an earthen pot or jar (Ppucu?).*
 Pocota, *a ripe thing.*
 Pongo, *a house-porter or male servant.*
 Poroma, *virgin ground.*
 Possocco, *froth.*
 Puchu, *enough, more than enough.*
 Pucyo, *a well.*
 Puma, *a puma.*
 Punku, *a door.*
 Puraca, *belly, stomach.*
 Puriña, *to arrive.*
 Puruma (poroma?), *virgin land, deserts.*
 Purtaña, *to lodge.*
 Pusaña, *to blow on an instrument.*
 Pusi, *four.*
 Pusini, *in four parts, between four.*
 Pusitunca, *forty.*
 Putisiña, *sad, melancholy.*
 Pututu, *a long trumpet.*
 Putuncu, *a hole.*
 Puyu, *a feather.*
 Ppampaña, *to bury.*
 Ppassa, *clay eaten by the Aymaras.*
 Ppala, *rope cord.*
 Ppapa, *marrow.*
 Ppekei, *head.*
 Ppia, *a hole.*
 Ppiaña, *to make a hole.*
 Ppiscca, *five.*
 Ppisccatunca, *fifty.*
 Ppisna, *a light thing.*
 Ppoco, *a full thing.*
 Ppocaña, *to fill.*
 Ppucha, *a daughter.*
 Ppucu, *an earthen pot.*
 Quajra, *horn.*
 Quelcaña, *to write.*
 Quelhua, *a white gull.*

- Quella, *ashes.*
 Quella, *iron, steel.*
 Quellacahua, *coat of mail.*
 Quellahuisca, *iron chain.*
 Quemisiña, *to discover.*
 Queni, *farinaceous.*
 Quenti, *humming-bird.*
 Quenua, *a tree.*
 Querari, *dirty, filthy.*
 Quesi, *a freshwater fish.*
 Quespi, *glass.*
 Quespinaira, *spectacles.*
 Quespiña, *to escape.*
 Quespayaña, *to liberate.*
 Quespiru, *liberator, saviour.*
 Quiatuha, *sister-in-law.*
 Quichiña, *to strip.*
 Quillimi, *charcoal.*
 Quillpiña, *to kneel.*
 Quilquiña, *a vegetable condiment.*
 Quimsa, *three.*
 Quimsacalco, *eight.*
 Quimsatunca, *eighty.*
 Quinocaya, *a species of diver.*
 Quiqui, *self.*
 Quistuña, *to chew.*
 Quitaña, *to envy.*
 Quiti, *who.*
 Quitisi, *who is it?*
 Sa (conj.), *and, as.*
 Sama, *rest.*
 Sampaña, *to rest.*
 Samca, *sleep.*
 Samcoña, *at night, whilst sleeping.*
 Samcasiña, *to snore.*
 Sana, *to say.*
 Sañu, *a comb.*
 Sanuña, *to comb.*
 Sapa, *alone.*
 Sapa sapa, *one by one.*
 Sapacal, *woodlouse.*
 Sapana, *a girl.*
 Sappa, *a basket.*
 Sappi, *a root.*
 Saraña, *to go on a journey.*
 Saram, *go! be off!*
 Sari, *agouti.*
 Sata, *seed.*
 Sataña, *to sow.*
 Satha or stha, *I wish, desire.*
 Sau, *cloth.*
 Sauña, *to weave.*
 Sauri, *a weaver.*
 Sauca, *nonsense, fun.*
 Saucosiña, *to make fun of.*
 Sayaña, *to stop.*
 Sayri, *tobacco.*
 Seposiña, *to live in concubinage.*
 Sepi, *a cockroach.*
 Sequei, *a freshwater fish.*
 Sillu, *finger-nail.*
 Simpla, *a maroma of hide rope.*
 Sinti, *much.*
 Sirca, *vein, lode.*
 Siripito, *cricket.*
 Sistasiña, *to stuff oneself in eating.*
 Socoso, *reed.*
 Sojta, *six.*
 Sojtatunca, *sixty.*
 Ssa, *ours.*
 Suchi, *a freshwater fish.*
 Suicho, *paralysis of legs.*
 Sulla, *dew.*
 Sullca, *elder brother.*
 Sullu, *miscarriage.*
 Sulluña, *to miscarry.*
 Suluqui, *a small diver.*
 Suma, *beautiful.*
 Suncca, *hair on the face.*
 Suni, *puna.*
 Suntiña, *to wallow.*
 Supay, *the devil.*
 Suri, *American ostrich.*
 Susuña, *to sift.*
 Suti, *name.*
 Sutiasiri, *a baptizer.*
 Suteyaña, *to name, to baptize.*
 Suyaña, *to hope.*
 Tacaña, *to search for.*
 Tachlli, *five fingers.*
 Tacsaña, *to wash.*
 Tacsiri, *a washerwoman.*
 Tahuaco, *young woman, girl.*
 Taiachas, *boiled frozen ysaños.*
 Taica, *mother.*
 Taipuru, *noon.*
 Taipi, *middle, centre.*
 Taiquichi, *mother-in-law.*
 Tajia, *Llama-dung.*
 Tajo, *Algarrobo tree.*
 Talaraña, *to shake a thing.*
 Tancatancca, *scarabeus beetle.*
 Tansa, *height.*
 Tanta, *united.*
 Tantaña, *to unite.*
 Tapa, *a nest.*
 Tapachaña, *to nestle, to dwell.*
 Tapathama, *suddenly.*
 Taparacu, *a butterfly of ill omen.*
 Taque, *all, every one.*
 Taqueatipiri, *almighty.*
 Taquesiña, *to suffer.*
 Taqui, *for.*
 Taquiña, *to kick.*

- Tarhua, *wool*.
 Taripaña, *to judge*.
 Taripiri, *a judge*.
 Taruja, *a stag*.
 Tasa, *calf of the leg*.
 Tata, *father*.
 Tatita, *do, diminutive*.
 Taya, *cold*.
 Tayhitua, *sensation of cold*.
 Taycayestua, *catarrh*.
 Tayutayu, *heel*.
 Thia, *outside boundary*.
 Thuca, *a clothes-moth*.
 Tica, *air-dried bricks*.
 Tilaña, *to weave*.
 Timpiña, *a workman's apron*.
 Tinca, *a filip*.
 Tincuña, *to fall*.
 Tincya, *a guitar*.
 Tipa, *dragon's-blood tree*.
 Tipusiña, *to get in a passion*.
 Tiquitiqui, *red-crested waterhen*.
 Tironcayu, *beard*.
 Tiscotisco, *grasshopper*.
 Titi, *wild cat, tin*.
 Tocoña, *to dance*.
 Tocoli, *a dancer*.
 Tonco, *maize, Indian corn*.
 Toncco, *a locker or cupboard*.
 Toqueña, *to wrangle, to degrade*.
 Toquero, *towards*.
 Touhouacoma, *female friend*.
 Tucsa, *stinking*.
 Tucsaña, *to stink*.
 Tuchichaña, *to finish*.
 Tujru, *a stick*.
 Tukuusu, *madness*.
 Tullca, *son-in-law*.
 Tunca, *ten*.
 Tunqui, *a red bird (Rupicola Peruviana)*.
 Tupu, *a measure*.
 Tupuña, *to measure*.
 Tutuca, *a hurricane*.
 Ttacaña, *to wean*.
 Ttacu, *rough, foul, entangled*.
 Ttanta, *bread*.
 Ttaqui, *a road*.
 Ttuca, *lean*.
 Ttucaptaña, *to become lean*.
 Ttucaña, *to admire oneself*.
 Ttuna, *dirt*.
 Ttuta, *moth*.
 Uacho, *a furrow*.
 Uarauara, *stars*.
 Uca, *that*.
 Ucalaycu, *therefore*.
 Ucamahui, *no more of this*.
 Ucampi, *more*.
 Ucampiru, *just lately*.
 Ucapacha, *then*.
 Ucasti, *also*.
 Ucata, *after*.
 Ucsa, *furthermore*.
 Uihua, *a domestic animal*.
 Uihuaña, *to breed*.
 Uju, *a cough*.
 Ujuña, *to cough*.
 Ullico, *tubercles of Ullicus tuberosus*.
 Ulpique, *smallest and strongest green pepper*.
 Uma, *water*.
 Umaña, *to drink*.
 Umahui, *drunkenness*.
 Umauma, *watery, juicy*.
 Umacaya, *steeped ocas*.
 Umachos, *ridges for planting between*.
 Umacollo, *duck*.
 Umanto, *fish from Lake Titicaca*.
 Unancha, *banner, signal, image*.
 Unanehaña, *to signalize, to advertise*.
 Unuctayaña, *to move to another place*.
 Uñjaña, *to look at*.
 Uñisiña, *to abhor*.
 Uru, *day*.
 Ururi, *morning star*.
 Uracque, *ground, foundation*.
 Urpi, *pigeon, dove*.
 Uscuña, *to place*.
 Usu, *disease, illness*.
 Usuña, *to be ill, to sicken*.
 Usuta, *sandals*.
 Uta, *a house*.
 Utamasi, *a neighbour*.
 Utjaña, *to sit down*.
 Utachaña, *to build*.
 Uyu, *a bed, an inclosure*.
 Yaca-yaca, *woodpecker*.
 Yacachaña, *to give birth*.
 Yacallachi, *bladder*.
 Yacona, *an edible root*.
 Yacca, *urine*.
 Yaccaña, *to make water*.
 Yaccana, *separate, apart*.
 Yahuiña, *to darken*.
 Yalliña, *to surpass*.
 Yaña, *a servant, domestic*.
 Yanaña, *to attempt*.
 Yanapaña, *to assist*.
 Yancca, *bad*.
 Yacpihaña, *to bind the hands*.
 Yapiña, *to tie up*.
 Yapu, *field, estate*.

Yareta, <i>Bolax glebaria</i> .	Yepocca, <i>thunder</i> (Llapocha?).
Yarhui, <i>arriero's needle</i> .	Yoaniha, <i>wife's connexions</i> .
Yarhuihuisca, <i>chain of wire</i> .	Yocachajiri, <i>midwife</i> .
Yasaña, <i>to believe</i> .	Yocca, <i>son</i> .
Yatjayaña, <i>to mend</i> .	Ysañu, <i>tubercle of Tropæolum tuberosum</i> .
Yatiña, <i>to know</i> .	Yupaichaña, <i>to obey</i> .
Yatichaña, <i>to teach</i> .	Yuta, <i>a partridge</i> .
Yatichiri, <i>a teacher</i> .	Yuyu, <i>a young herb</i> .
Yatiri, <i>an instructed man</i> .	Yyaña, <i>to grind</i> .
Yatiryi, <i>Creator (all-knowing)</i> .	

EXPLANATION OF PLATES XVII. TO XXIII.

PLATE XVII.

Portrait of an Aymara man of the normal type; from the Department of La Paz, Bolivia. Reduced from a drawing from life.

PLATE XVIII.

Portrait of an Aymara woman, from the Department of La Paz; more than usually good-looking, yet perfectly characteristic. Reduced from a drawing from life.

PLATE XIX.

Portrait of an Aymara man of less usual type; from the northernmost part of the Aymara country, in Peru, on the confines of the Quechua district. Reduced from a drawing from life.

PLATE XX.

Fig. 1, *a* and *b*. Figure (full size) of a silver image found in an ancient grave at Caquinhora, near Corocoro, in Bolivia.

Fig. 2, *a* and *b*. Representation of an idol at Tiahuanaco in Bolivia. This shows the character of the more primitive remains at that place when compared with the elaborately sculptured idols of later date and totally different character, some of which are figured in the atlas to D'Orbigny's 'Homme Américain.'

Fig. 3. Small clay stove used in cooking.

4. Forms of pottery in common use amongst the Aymaras.

5. Form of club-head of magnetic oxide of iron frequently found in the tombs.

PLATE XXI.

Fig. 1. Neck-ornament of thin gold plate; found in a tomb near Corocoro, in Bolivia.

2. Figures of some of the small stone erections put up by the travelling Indians at the pass of Huaylillos, or Tacora, in Southern Peru.

3. Aymara plough.

PLATE XXI (continued.).

- Fig. 4. Aymara wooden spade, or instrument for digging.
 5. " iron pick.
 6. " hoe, made of the shoulder-blade of llama or ox.
 7. " stone clod-breaker.
 8. " steel axe.
 9. " stone fox-trap.
 10. Figure of llama rudely cut on the side of a hill at Peña, in the desert of Tamarugal, Tarapaca, Peru.
 11, *a* and *b*. Spoon-shaped ornaments called *Pichi*. Usually the bowls are like ordinary spoons; but sometimes they are flattened out like round plates of metal: both shapes are shown in the figures.

PLATES XXII. AND XXIII.

Plate XXII. figs. 1 to 8, and Plate XXIII. figs. 1 to 7, represent the hieroglyphic markings seen on the sides of large stones (amongst others less elaborate) called *Las Campanas* or *La Biblioteca del Diabolo*, situated between Uchumaya and Vitor, in Southern Peru.

DISCUSSION.

The Hon. E. G. SQUIER, of New York, having been called on by the President, remarked that he found much to confirm, and little or nothing to criticize, in the elaborate paper of Mr. Forbes. His own investigations in Bolivia and Peru had been specially directed to the ancient monuments of these interesting regions, where once existed the grandest, and, in most respects, the most advanced of aboriginal American empires. He had nevertheless been able to give some attention to other matters—to the geography of the great Andean plateau, and the physical characteristics, habits, and languages of its occupants. The peculiar physical proportions of the people of Indian, and especially of Aymara stock, as pointed out by Mr. Forbes, had certainly impressed the speaker; but he had not tested his impressions by actual measurements, as Mr. Forbes had done. The speaker's own opportunities of studying the Aymaras had been far less than those of the author of the paper; but he probably possessed a somewhat better acquaintance with the Quichuas, the undoubted founders of the Inca empire, and alone entitled, of all the numerous families of which it was made up, to be called the Inca race. Between the Quichuas and the Aymaras were many marked physical and other differences. The peculiarities of the Aymaras, pointed out by Mr. Forbes, were probably less obvious in the Quichuas. These constitute a taller and better-proportioned race, with a much clearer complexion, and a more open and genial character, contrasting strongly with the smaller, darker, more reserved, sinister, and distrustful Aymaras. The basin proper of Lake Titicaca was undoubtedly the original seat of the Aymara family, being for the most part a high, cold, and barren region, with its severer features fairly reflected in the character of its occupants. Their conquest by the Incas was effected only after a severe and protracted struggle, and probably might not have been effected at all had the Aymara family been poli-

tically homogeneous; for, if we may judge from their descendants, the Aymaras were in no degree inferior to the Quichuas in warlike qualities. Indeed, the Aymaras are now regarded as among the best soldiers of all the mountain families. The Aymaras do not seem to have been, anciently, under a single head or authority, nor even to have had their various families or tribes united by any efficient alliance. Collectively, however, they were the most numerous of any of the various races or families that were brought under Inca rule, with the probable exceptions of the Scynis of Quito and the Yuncas or Chimus of the coast.

The territory occupied by the Aymaras, as already observed, does not appear to have extended much beyond the Titicaca basin—certainly not on the north, where their characteristic monuments are strictly limited by the “divide” between the head-waters of the Amazonian rivers and the streams flowing into Lake Titicaca. After their conquest by the Incas, the Quichuas seem to have pressed over this divide, and down the valley of the Pucura, almost or quite to the lake, besides flanking the Aymaras on the east, and lapping around them on the south. At present the region north of the city of Puno may be considered as having a nearly equal population of Quichuas and Aymaras. They exist in about even numbers in Puno itself, and there, as elsewhere, maintain a strict separation. The town of Huanacán, on the northern shore of the lake, is the last strictly Aymara town of importance in the direction of Cuzco. This was the centre of the last uprising of the Indians, only three years ago, which at one time threatened to become general throughout the ancient Collas. It is said that it would have become so, had it met with the cooperation of the Quichuas, who, however, kept entirely aloof.

Mr. Squier could not agree with those writers who derived Inca civilization from the Aymaras. One tradition of the Incas places the origin of Manco Capac, the alleged first Inca, in the island of Titicaca, in the lake of the same name; and that island was certainly regarded as sacred by his successors. But the weight of tradition gives the Valley of Paucartambo, to the east of the City of Cuzco, as the place whence the founders of the Inca empire came. The very name “Paucartambo” confirms the tradition, signifying birthplace or homestead. The evidence of language does not go far towards a solution of the problem of origins, for the undoubted strong resemblances between the Quichua and Aymara can most readily be accounted for by the known practice of the conquerors in imposing their language on the conquered,—a notorious practice of the Incas, and one of the leading features of their policy.

If we consult the monuments of the Aymaras and Quichuas respectively, we find scarcely a trace of resemblance. In point of fact, except in their *chulpas*, or burial-towers, and their rude stone *pucuras*, or hill-forts, the ancient Aymaras have left few if any remains of importance—none comparable in design, skill, and magnitude with the numerous and massive monuments of the Incas. The most important regular structures of which remains exist in the Collas, such as the

Temple of the Sun and the Palace of the Incas, on the island of Titi-caca; the Palace of the Virgins of the Sun, on the island of Coati; the structures at Arapa, and those found in connexion with the Aymara *chulpas* at Villustani, were erected by the Incas, and are unmistakable types of Inca architecture. Of the remains of Tiahuanaco Mr. Squier declined to speak, regarding them as equally unique and enigmatical. He was entirely at a loss to know on what authority Mr. Forbes accepted them as relics of an ancient Aymara capitol. As far as the speaker's observations extended, they are wholly unlike any other remains in the entire Aymara region. Indeed, excepting a few of the *chulpas*, the monuments of the Aymaras are exceedingly rude, comparable only with those early remains which we have lately come to regard as the first efforts of man architecturally, and in the way of fortifications, throughout the world. He had elsewhere pointed out the resemblance between them and what are called, in Europe, "megalithic" and "prehistoric" monuments, but to which the term "non-historic" would perhaps best apply. And as regards monuments of this kind, he must admit they are far more numerous in the Aymara country than in any other portion of Peru or Bolivia that he had visited; but he was not, therefore, prepared to say that they indicated a higher antiquity for the Aymaras than for several other Andean families, whose earlier monuments had probably been displaced by works of a more advanced kind.

On one other point Mr. Squier felt constrained to differ from Mr. Forbes, namely, as to the existence of sun-worship among the Aymaras. He believed that all the Andean families were solar-worshippers, and very naturally so. After having shivered for months in the Collao, where little or no fuel is to be found, and where the natural heat of the system can only be reinforced by the direct rays of the sun, he had himself come to regard that luminary as the most beneficent, as it is certainly the most splendid, object in the physical creation, to which he, and everybody else, paid involuntary worship by always seeking the sunny side of rocks in the *punas*, and of houses in the towns. He would not undertake to say how far, or how clearly, the various "intihuatanas" or stone "sun-circles" which he had discovered in the Collao, and described elsewhere, were evidences of the prevalence of sun-worship, nor was he prepared to agree with all the speculations of an ingenious French savan, M. Angrand, as to the significance of the sculptures on the great monolithic gateway at Tiahuanaco; but, whether of Aymara origin or not, he fully concurred with M. Angrand that they are only explicable on the hypothesis of being solar symbols. He was aware that it was the pride and glory of the Incas to compel the acceptance of sun-worship by all the nations and families brought under their rule; and it might, therefore, be inferred that these nations and families had originally an entirely different system of religious adoration; but Mr. Squier was disposed to believe that the Incas sought only to inculcate and impose a more spiritual worship of the sun, whose descendants and ministers they affected to be, than had existed before, and to substitute a refined for a gross and material worship of the Day-god.

Mr. Squier agreed with Mr. Forbes in protesting against the looseness with which the designation "Peruvian," as synonymous with "Inca," was applied to crania taken from the political area denominated Peru. The Inca empire was, as every student well knew, a grand mosaic of families, tribes, and principalities, some of which might better deserve the title of kingdoms than a number of such so called in Europe, and which differed widely among themselves in many respects—physically, mentally, in language, and in social and civil organization. Most of the crania, probably ninety-nine out of every hundred, in museums and private collections, labelled "Inca" or "Peruvian," were from the desert, sandy coasts extending from Guyaquil, or rather Tumbes, to Cobija, and which were either Yunca or Chincha (speaking generally), but not Inca. Those found in and about Arica might be safely denominated Aymara, differing in their style of deformation little if at all from those found in the Collao, and occurring often in *chulpas*, themselves differing only in respect of material, being composed of *mamposteria* or indurated clay, instead of stone, as in the central seats of the Aymaras. The coast-families deformed the head in distinct and easily-recognizable fashions, as did also the Aymaras, who, by means of bandages, &c., gave the skull an occipital extension, while the Yuncas and some others prolonged it vertically by "fore-and-aft" compressions, thus giving it also great lateral expansion. Although there is reason to believe that the Incas themselves did occasionally deform the skull, for purposes of family or other distinction, yet Mr. Squier never found an instance of such distortion in or around Cuzco, nor in the seats proper of the Inca families. And while general among the Aymaras, it was not universal, for he had found in the same *chulpa*, burying-place, or family-tomb, skulls of normal or natural shape, others but slightly changed by artificial means, while some were extravagantly distorted, constituting most striking examples of "the long-headed race," which rapid generalizers have located on the shores of Lake Titicaca. Mr. Squier had in his collection several of the ancient (*chulpa*) Aymara *female* skulls, evincing in a marked manner the popular deformation, so that this evidence of beauty or distinction was certainly not limited to the male sex.

Mr. Squier here exhibited a photograph of an Inca skull, from a cemetery in the Valley of Yucay, on which the delicate and difficult operation of trepanning had been performed during life, the subject having lived for several days, perhaps weeks, thereafter. The removed section of bone had not been sawn, but cut out as with a graving-tool or burin.

The efforts of the Incas to assimilate the families that were brought within their empire by force or alliance, in respect of language, religion, and modes of life, were powerful and well-directed; but, however potential they may have been for the time, and notwithstanding the later influence of the Spaniards in the same direction, they had not been of lasting influence. The primitive families, in spite of every kind of repressive circumstances and of altered conditions, had vindi-

cated themselves with more or less energy and effect, exhibiting a constant tendency to revert to their original type. Were it not for this, the dream of the Quichuas to reestablish the old Inca empire would not be difficult of realization; but the Aymaras will not heartily cooperate with them, and *vice versa*, nor will the remnants of aboriginal stock to the northward enter into the struggle that the attempts would involve. Should an understanding be come to by the various Andean families, and a general uprising take place, it may be regarded as certain that a great aboriginal state may once more be built up in the American Tibet; nor would such a result be greatly to be deplored by the civilized world. It would be a poor compliment to Inca civilization, or, for that matter, to the Inca system of religion, to say that they have been "*improved*" upon under Spanish dominion, imperial or republican.

Mr. R. CULL said that we had abundant information as to the habits and manners of the Aymaras, and were well informed as to their arts, religion, and language. D'Orbigny and Tschudi have described all these things of the present generation of Aymaras, as the Spanish authors described those of their ancestors three centuries ago. What we, as ethnologists, desire to know is the physical man. Now, all authorities are agreed that the Aymaras have large chests (by a large chest is commonly meant a broad chest), but Mr. Forbes spoke of the long body of the Aymara—indeed, so long as to be a deformity; and this great length of body is said to be the result of a chest which is disproportionately long. The speaker appealed to those gentlemen present who were familiar with this people to know if they agreed upon this point with the author of the paper.

Mr. W. BOLLAERT said that he became acquainted with the Aymaras in 1826, in the pampa of Tarapacá, South Peru, their villages commencing at an elevation of 4000 feet above the level of the sea, and extending to some 15,000. He agreed with Mr. Forbes in many of the details he had given, particularly in that they have short limbs and large trunks; and he admitted that the great capacity of the thorax might meet the requirements of better respiration at high elevations in the Andes. However, when surveying in 1826-7 on the boundary of Bolivia, and ascending the peak of Tata Jachura, its summit being some 18,000 feet high, the Aymara guides would not go higher than about 15,000 feet.

As to the antiquity of the Aymaras, it would seem that Manco Capac was of Aymara origin, and that the alleged secret language of the Incas may have been the Aymara.

The speaker's impression, as a polygenist, was, that the red man is peculiar to the New World, and that what he has produced in languages, &c., and particularly in architecture, is of his own creation; and probably he could not have made much further progress, even if he had been left to himself.

It is thought that the ruins of Tia-Huanaco are of an older date than are the people we know as Aymaras. The first Spanish writers speak of these Aymaras as the *Collas*-mountaineers, and as having been conquered by the fourth Inca, Mayta-Capac, who was the first Inca

to behold these ruins, and from him came the name of Tia-Huanaco. There is a tradition that a great chief named *Huyu-Sutu* built Tia-Huanaco, then called *Ohua-chua*, clear streams. *Huyu* may mean halls, palaces, or city; *Sutu*, the name of the chief.

Mr. CLEMENTS MARKHAM observed that a study of the earliest accounts of the inhabitants of the Peruvian Andes had led him to the conclusion that the different tribes remained isolated for centuries, and that each tribe developed such a form of civilization as the peculiarities of the region where its abode was fixed rendered possible. As a race, all the tribes were probably about equal as regards capacity for improvement.

Thus the Yncas, who finally became the dominant tribe, lived in a region blessed with almost every variety of climate. On its bracing uplands were flocks of llamas and abundance of edible roots, while its sunny valleys yielded large crops of corn, pepper, and fruit. Under such favourable circumstances the inhabitants attained the highest degree of civilization of which the race was capable, and eventually became the imperial tribe. The dwellers on the lofty plateaux of the Titicaca region, on the other hand, were confined to a cold and bleak country, yielding nothing but potatoes (converted when frozen into the insipid chuñu), the oca, and a grain called quinoa. These people gradually attained the physical characteristics so carefully recorded by Mr. Forbes; they multiplied enormously; their country became densely populated, and a civilization was developed peculiar to themselves, and not so high as that of the Yncas. There are vestiges of it in their beautiful monumental towers, and in the extensive ruins at Tia-Huanaco.

Mr. Markham spoke of the peculiar difficulties surrounding the ethnological study of these interesting Andean tribes, and especially as regards the dwellers in the basin of Lake Titicaca. It must be remembered that, for the last three centuries, they have been in a false position, owing to the domination of a foreign race, which has checked their natural development, and has had so baneful an effect upon their increase as almost to have annihilated them. When the Spaniards came, the Aymaras extended, in densely peopled villages, from Ayaviri to the provinces south of the lake. Now all that region is almost depopulated, and the Aymara race and language are not met with north of the little village of Paucar-colla, a few miles from Puno. But, even at the time of the Spanish conquest, the Aymaras were a conquered people in an unnatural condition. The very word *Aymara* is foreign to their language, and the earliest writers invariably call these people *Collas*. The name, too, by which their grandest monuments are now known is composed of two words foreign to their language, and commemorates an insignificant circumstance connected with their conquest. The real name of the ruins on the south of Lake Titicaca is lost. The object of these remarks is to show that the only way now left us of obtaining any correct notions respecting the Aymaras and other Andean tribes is a careful and critical study of the earliest Spanish records, combined with a knowledge of the languages, whereby not only all Spanish, but also all Quichua elements

may be eliminated. What remains, though the information may be small in quantity, will at all events be strictly connected with the Aymaras as a separate tribe. Our knowledge will be limited, but, as far as it goes, it will be accurate.

Mr. Squier seemed inclined to give the Aymaras a wider area than was assigned to them by Mr. Forbes, and spoke of having met with their remains within a short distance of the coast at Arica. This may be accounted for by the system of colonies introduced by the Incas, with a view to supplying the natives of the highlands with coca, pepper, maize, and other products of the low warm valleys. Thus the tradition is still preserved that the cholos of Arequipa are descended from colonists who were natives of the village of Cavanilla, near Puno. The colonists in Moquegua came from Acora and Ilave, on the shores of Lake Titicaca, and those of Tacna from Juli and Pisacoma.

With reference to the custom of flattening the heads of infants, Mr. Markham mentioned that both Cieza de Leon and Garcilasso de la Vega say that it prevailed among the Aymaras or Collas.

Mr. FORBES, after premising that the object of his communication was to place on record, for the use of ethnologists, the facts he had collected during a residence of several years amongst these Indians, confined his further remarks to those points on which the speakers appeared to differ from him.

Mr. Squier asked why he regarded Tiahuanaco as formerly the seat of government of the Aymaras. In reply, he did so in deference to the traditions of the Indians themselves; because they were, without exception, the most important of the ancient Aymara remains, and because, as D'Orbigny had also laid stress upon, the very name itself, taken in conjunction with the occurrence of the central figure in the great Monolithic Portal, which holds two sceptres, one in each hand, has long been interpreted as indicating that this was the seat of both the temporal and spiritual power of the nation*.

Again, Mr. Squier disputes the opinion that the Aymaras were not originally sun-worshippers like the Quichuas. Mr. Forbes, although he also believes that all these tribes had a profound veneration for this luminary, still does not think that its worship ever assumed amongst the Aymaras any such pre-eminent position as it did amongst the Quichuas under the Inca dynasty. It required too great a stretch of imagination to suppose that any of the figures on the Tiahuanaco ruins (a most complete set of illustrations of which were on the table before him) were actually intended to represent the sun, especially when it is remembered that the most unmistakably characteristic representations of the sun were common, and it might be said even peculiar, to the Incarial remains, but rarely or ever met with on those of undoubted Aymara origin. In addition to

* Tiahuanaco, from "*Tiahua*," seated, and "*naca*," both; or, according to another version, the name was due to one of the Incas having on this spot addressed *Tia huanaco*, "sit down Guanaco," to an Indian courier who had just arrived from Cusco in a wonderfully short time. The word "*huanaco*" is Quichua, the name for this animal in Aymara being "*huarini*."

this, all the words relating to sun-worship which he found in use amongst the Aymaras were derived from the Quichua "Inti," and not from the Aymara "Lupi," which fully confirmed the statements of old Spanish writers that the Incas had introduced this worship into the Titicaca region. Padre Alonzo Ramos, who wrote in 1620, after describing the temples built by the Incas for the worship of the sun on the Titicaca Islands, states that the neighbouring Indians, who appear to have been regarded as pagans, were not allowed to assist in the ceremonies or even to enter the temples of the sun.

In reply to the extraordinary remark of Mr. Markham, "that the very word Aymara is foreign to their language, and that the earliest writers invariably called these people Collas," I may state that the Aymara Indians of both Peru and Bolivia do not know themselves under, or admit that they ever were, called by any other name; and a mere reference to the earliest writers on the subject (such as, amongst others, Alcobaca, 1585, Bertonio, 1603, or, somewhat later, Torres del Rubio, Garcilasso de la Vega, &c.) will fully bear witness not only to the antiquity of this name and nation (admitted to be in all probability more ancient than the Quichua), but also show that the Aymara language was one of the first to occupy the attention of the early Spanish writers on Peru.

Any person acquainted with the history of Peru will at once perceive how the name "Colla," often used in older writers, has been misunderstood by Messrs. Markham and Bollaert. Every Aymara is naturally just as much a Colla Indian, as a Greek or Spaniard is a South European, although it does not necessarily follow that a South European must be a Greek or Spaniard; the term "Colla," or, more correctly, "Colla-suyo" (of much more recent origin than Aymara), being merely a geographical one, the name of one of the four great divisions or quarters of the Peruvian Empire, which were called respectively: Chinchasuyo, the Northern; Antisuyo, the Eastern; Cuntisuyo, the Western; and Collasuyo, the Southern, which last division, for shortness commonly called the Collao by the Spaniards, embraced the whole of the empire situated south of Lake Titicaca*, and inhabited by numerous distinct Indian nations, the names of which will be found in the 'Historia de Copacabana' by Ramos (1620), and who collectively were known as Colla Indians.

* At the time of the Spanish conquest, the Inca Empire reached as far south as the River Maule in Chile, lat. 35° S., or more than a thousand miles south of Lake Titicaca.

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