

whose age and infirmity disqualified them for the real business of life.<sup>16</sup>

The Peruvians had knowledge of one or two constellations, and watched the motions of the planet Venus, to which, as we have seen, they dedicated altars. But their ignorance of the first principles of astronomical science is shown by their ideas of eclipses, which, they supposed, denoted some great derangement of the planet; and when the moon labored under one of these mysterious infirmities, they sounded their instruments, and filled the air with shouts and lamentations, to rouse her from her lethargy. Such puerile conceits as these form a striking contrast with the real knowledge of the Mexicans, as displayed in their hieroglyphical maps, in which the true cause of this phenomenon is plainly depicted.<sup>17</sup>

But, if less successful in exploring the heavens, the Incas must be admitted to have surpassed every other American race in their dominion over the earth. Husbandry was pursued by them on principles that may be truly called scientific. It was the basis of their political institutions. Having no foreign commerce, it was agriculture that furnished them with the means of their internal exchanges, their subsistence, and their revenues. We have seen their remarkable provisions for distributing the land in equal shares among the people, while they required every man, except the privileged orders, to assist in its cultivation. The Inca himself did not disdain to set the example. On one of the great annual festivals, he pro-

<sup>16</sup> "Ansi mismo les hicieron señalar gente para hechizeros que tambien es entre ellos, oficio publico y conocido en todos, . . . los diputados para ello no lo tenian por trabajo, por que ninguno podia tener semejante oficio como los dichos sino fuesen viejos é viejas, y personas inaviles para trabajar, como mancos, cojos ó contrechos, y gente así á quien faltava las fuerzas para ello." Ondegardo, Rel. Seg., MS.

<sup>17</sup> See Codex Tel.-Remensis, Part 4, Pl. 22, ap. Antiquities of Mexico, vol. I., London, 1829.

ceeded to the environs of Cuzco, attended by his Court, and, in the presence of all the people, turned up the earth with a golden plough,—or an instrument that served as such,—thus consecrating the occupation of the husbandman as one worthy to be followed by the Children of the Sun.<sup>18</sup>

The patronage of the government did not stop with this cheap display of royal condescension, but was shown in the most efficient measures for facilitating the labors of the husbandman. Much of the country along the sea-coast suffered from want of water, as little or no rain fell there, and the few streams, in their short and hurried course from the mountains, exerted only a very limited influence on the wide extent of territory. The soil, it is true, was, for the most part, sandy and sterile; but many places were capable of being reclaimed, and, indeed, needed only to be properly irrigated to be susceptible of extraordinary production. To these spots water was conveyed by means of canals and subterraneous aqueducts, executed on a noble scale. They consisted of large slabs of freestone nicely fitted together without cement, and discharged a volume of water sufficient, by means of latent ducts or sluices, to moisten the lands in the lower level, through which they passed. Some of these aqueducts were of great length. One that traversed the district of Condesuyu measured between four and five hundred miles. They were brought from some elevated lake or natural reservoir in the heart

<sup>18</sup> Sarmiento, Relacion, MS., cap. 16.

The nobles, also, it seems, at this high festival, imitated the example of their master. "Pasadas todas las fiestas, en la ultima llevavan muchos arados de manos, los cuales antiguamente heran de oro; i échos los oficios, tomava el Inga un arado i comenzava con el a romper la tierra, i lo mismo los demas señores, para que de allí adelante en todo su señorío hiciesen lo mismo, i sin que el Inga hiciese esto no avia Indio que osase romper la tierra, ni pensavan que produjese si el Inga no la rompía primero i esto vaste quanto á las fiestas." Conq. i Pob. del Piru, MS.

of the mountains, and were fed at intervals by other basins which lay in their route along the slopes of the sierra. In this descent a passage was sometimes to be opened through rocks,—and this without the aid of iron tools; impracticable mountains were to be turned; rivers and marshes to be crossed; in short, the same obstacles were to be encountered as in the construction of their mighty roads. But the Peruvians seemed to take pleasure in wrestling with the difficulties of nature. Near Caxamarca a tunnel is still visible, which they excavated in the mountains, to give an outlet to the waters of a lake, when these rose to a height in the rainy seasons that threatened the country with inundation.<sup>19</sup>

Most of these beneficent works of the Incas were suffered to go to decay by their Spanish conquerors. In some spots the waters are still left to flow in their silent, subterraneous channels, whose windings and whose sources have been alike unexplored. Others, though partially dilapidated, and closed up with rubbish and the rank vegetation of the soil, still betray their course by occasional patches of fertility. Such are the remains in the valley of Nasca, a fruitful spot that lies between long tracts of desert; where the ancient water-courses of the Incas, measuring four or five feet in depth by three in width, and formed of large blocks of uncemented masonry, are conducted from an unknown distance.

<sup>19</sup> Sarmiento, *Relacion*, MS., cap. 21.—Garcilasso, *Com. Real*, Parte 1, lib. 5, cap. 24.—Stevenson, *Narrative of a Twenty Years' Residence in S. America*, (London, 1829,) vol. I. p. 412; II. pp. 173, 174.

“Sacauan acequias en cabos y por partes que es cosa estraña afirmar lo: porque las echauan por lugares altos y baxos: y por laderas de los cabeços y haldas de sierras q̄ estan en los valles: y por ellos mismos atrauiessan muchas: unas por una parte, y otras por otra, que es gran delectaciō caminar por aquellos valles: porque parece que se anda entre huertas y florestas llenas de frescuras.” Cieza de Leon, *Cronica*, cap. 66.

The greatest care was taken that every occupant of the land through which these streams passed should enjoy the benefit of them. The quantity of water allotted to each was prescribed by law; and royal overseers superintended the distribution, and saw that it was faithfully applied to the irrigation of the ground.<sup>20</sup>

The Peruvians showed a similar spirit of enterprise in their schemes for introducing cultivation into the mountainous parts of their domain. Many of the hills, though covered with a strong soil, were too precipitous to be tilled. These they cut into terraces, faced with rough stone, diminishing in regular gradation towards the summit: so that, while the lower strip, or *anden*, as it was called by the Spaniards, that belted around the base of the mountain, might comprehend hundreds of acres, the uppermost was only large enough to accommodate a few rows of Indian corn.<sup>21</sup> Some of the eminences presented such a mass of solid rock that, after being hewn into terraces, they were obliged to be covered deep with earth before they could serve the purpose of the husbandman. With such patient toil did the Peruvians combat the formidable obstacles presented by the face of their country! Without the use of the tools or the machinery familiar to the European, each individual could have done little; but acting in large masses, and under a common direction, they were enabled by indefatigable perseverance to achieve results, to have

<sup>20</sup> Pedro Pizarro, *Descub. y Conq.*, MS.—Memoirs of Gen. Miller, vol. II. p. 220.

<sup>21</sup> Miller supposes that it was from these *andenes* that the Spaniards gave the name of Andes to the South American Cordilleras. (Memoirs of Gen. Miller, vol. II. p. 219.) But the name is older than the Conquest, according to Garcilasso, who traces it to *Anti*, the name of a province that lay east of Cuzco. (*Com. Real*, Parte 1, lib. 2, cap. 11.) *Anta*, the word for copper, which was found abundant in certain quarters of the country, may have suggested the name of the province, if not immediately that of the mountains.

attempted which might have filled even the European with dismay.<sup>22</sup>

In the same spirit of economical husbandry which redeemed the rocky sierra from the curse of sterility, they dug below the arid soil of the valleys, and sought for a stratum where some natural moisture might be found. These excavations, called by the Spaniards *hoyas*, or "pits," were made on a great scale, comprehending frequently more than an acre, sunk to the depth of fifteen or twenty feet, and fenced round within by a wall of *adobes*, or bricks baked in the sun. The bottom of the excavation, well prepared by a rich manure of the sardines,—a small fish obtained in vast quantities along the coast,—was planted with some kind of grain or vegetable.<sup>23</sup>

The Peruvian farmers were well acquainted with the different kinds of manures, and made large use of them; a circumstance rare in the rich lands of the tropics, and probably not elsewhere practised by the rude tribes of America. They made great use of *guano*, the valuable deposit of sea-fowl, that has attracted so much attention, of late, from the agriculturists both of Europe and of our own country, and the stimulating and nutritious properties of which the Indians perfectly appreciated. This was found in such immense quantities on many of the little islands along the coast, as to have the appearance of lofty hills, which, covered with a white saline incrustation, led the Conquerors to give them the name of the *sierra nevada*, or, "snowy mountains."

The Incas took their usual precautions for securing the

<sup>22</sup> Memoirs of Gen. Miller, ubi supra.—Garcilasso, Com. Real., Parte 1, lib. 5, cap. 1.

<sup>23</sup> Cieza de Leon, Cronica, cap. 73.

The remains of these ancient excavations still excite the wonder of the modern traveller. See Stevenson, Residence in S. America, vol. I. p. 359.—Also McCulloh, Researches, p. 358.

benefits of this important article to the husbandman. They assigned the small islands on the coast to the use of the respective districts which lay adjacent to them. When the island was large, it was distributed among several districts, and the boundaries for each were clearly defined. All encroachment on the rights of another was severely punished. And they secured the preservation of the fowl by penalties as stern as those by which the Norman tyrants of England protected their own game. No one was allowed to set foot on the island during the season for breeding, under pain of death; and to kill the birds at any time was punished in the like manner.<sup>24</sup>

With this advancement in agricultural science, the Peruvians might be supposed to have some knowledge of the plough, in such general use among the primitive nations of the eastern continent. But they had neither the iron ploughshare of the Old World, nor had they animals for draught, which, indeed, were nowhere found in the New. The instrument which they used was a strong, sharp-pointed stake, traversed by a horizontal piece, ten or twelve inches from the point, on which the ploughman might set his foot and force it into the ground. Six or eight strong men were attached by ropes to the stake, and dragged it forcibly along,—pulling together, and keeping time as they moved by chanting their national songs, in which they were accompanied by the women who followed in their train, to break up the sods with their rakes. The mellow soil offered slight resistance; and the laborer, by long practice, acquired a dexterity which enabled him to turn up the ground to the requisite depth with astonishing facility. This substitute for the plough was but a clumsy contrivance; yet it is curious as the only specimen of the kind among the American aborigines, and was perhaps not

<sup>24</sup> Acosta, lib. 4, cap. 36.—Garcilasso, Com. Real., Parte, 1, lib. 5, cap. 3.

much inferior to the wooden instrument introduced in its stead by the European conquerors.<sup>25</sup>

It was frequently the policy of the Incas, after providing a deserted tract with the means for irrigation, and thus fitting it for the labors of the husbandman, to transplant there a colony of *mitimaes*, who brought it under cultivation by raising the crops best suited to the soil. While the peculiar character and capacity of the lands were thus consulted, a means of exchange of the different products was afforded to the neighboring provinces, which, from the formation of the country, varied much more than usual within the same limits. To facilitate these agricultural exchanges, fairs were instituted, which took place three times a month in some of the most populous places, where, as money was unknown, a rude kind of commerce was kept up by the barter of their respective products. These fairs afforded so many holidays for the relaxation of the industrious laborer.<sup>26</sup>

Such were the expedients adopted by the Incas for the improvement of their territory; and, although imperfect, they must be allowed to show an acquaintance with the principles of agricultural science, that gives them some claim to the rank of a civilized people. Under their patient and discriminating culture, every inch of good soil was tasked to its greatest power of production; while the most unpromising spots were compelled to contribute something to the subsistence of the people. Everywhere the land teemed with evidence of agricultural wealth, from the smiling valleys along the coast to the terraced steepes of the sierra, which, rising into pyramids of verdure, glowed with all the splendors of tropical vegetation.

The formation of the country was particularly favorable,

<sup>25</sup> *Ibid.*, Parte 1, lib. 5, cap. 2.

<sup>26</sup> Sarmiento, *Relacion*, MS., cap. 19.—Garcilasso, *Com. Real.*, Parte 1, lib. 6, cap. 36; lib. 7, cap. 1.—Herrera, *Hist. General*, dec. 5, lib. 4, cap. 3.

as already remarked, to an infinite variety of products, not so much from its extent as from its various elevations, which, more remarkable, even, than those in Mexico, comprehend every degree of latitude from the equator to the polar regions. Yet, though the temperature changes in this region with the degree of elevation, it remains nearly the same in the same spots throughout the year; and the inhabitant feels none of those grateful vicissitudes of season which belong to the temperate latitudes of the globe. Thus, while the summer lies in full power on the burning regions of the palm and the cocoa-tree that fringe the borders of the ocean, the broad surface of the table-land blooms with the freshness of perpetual spring, and the higher summits of the Cordilleras are white with everlasting winter.

The Peruvians turned this fixed variety of climate, if I may say so, to the best account by cultivating the productions appropriate to each; and they particularly directed their attention to those which afforded the most nutriment to man. Thus, in the lower level were to be found the casava-tree and the banana, that bountiful plant, which seems to have relieved man from the primeval curse—if it were not rather a blessing—of toiling for his sustenance.<sup>27</sup> As the banana faded from the landscape, a good substitute was found in the maize, the great agricultural staple of both the northern and southern divisions of the American continent; and which, after its exportation to the Old World, spread so rapidly there, as to suggest the idea of its being indigenous to it.<sup>28</sup> The Peruvians were well acquainted

<sup>27</sup> The prolific properties of the banana are shown by M. de Humboldt, who states that its productiveness, as compared with that of wheat, is as 133 to 1, and with that of the potato, as 44 to 1. (*Essai Politique sur le Royaume de la Nouvelle Espagne*, Paris, 1827, tom. II. p. 389.) It is a mistake to suppose that this plant was not indigenous to South America. The banana-leaf has been frequently found in ancient Peruvian tombs.

<sup>28</sup> The misnomer of *blé de Turquie* shows the popular error. Yet

with the different modes of preparing this useful vegetable, though it seems they did not use it for bread, except at festivals; and they extracted a sort of honey from the stalk, and made an intoxicating liquor from the fermented grain, to which, like the Aztecs, they were immoderately addicted.<sup>29</sup>

The temperate climate of the table-land furnished them with the maguey, *agave Americana*, many of the extraordinary qualities of which they comprehended, though not its most important one of affording a material for paper. Tobacco, too, was among the products of this elevated region. Yet the Peruvians differed from every other Indian nation to whom it was known, by using it only for medicinal purposes, in the form of snuff.<sup>30</sup> They may have found a substitute for its narcotic qualities in the coca (*Erythroxylum Peruvianum*), or *cuca*, as called by the natives. This is a shrub which grows to the height of a man. The leaves when gathered are dried in the sun, and, being mixed with a little lime, form a preparation for chewing, much like the betel-leaf of the East.<sup>31</sup> With a small supply of this *cuca* in his pouch, and a handful of roasted the rapidity of its diffusion through Europe and Asia, after the discovery of America, is, of itself, sufficient to show that it could not have been indigenous to the Old World, and have so long remained generally unknown there.

<sup>29</sup> Acosta, lib. 4, cap. 16.

The saccharine matter contained in the maize-stalk is much greater in tropical countries than in more northern latitudes; so that the natives in the former may be seen sometimes sucking it like the sugar-cane. One kind of the fermented liquors, *sora*, made from the corn, was of such strength that the use of it was forbidden by the Incas, at least to the common people. Their injunctions do not seem to have been obeyed so implicitly in this instance as usual.

<sup>30</sup> Garcilasso, Com. Real., Parte 1, lib. 2, cap. 25.

<sup>31</sup> The pungent leaf of the *betel* was in like manner mixed with lime when chewed. (Elphinstone, History of India, London, 1841, vol. I. p. 331.) The similarity of this social indulgence in the remote East and West is singular.

maize, the Peruvian Indian of our time performs his wearisome journeys, day after day, without fatigue, or, at least, without complaint. Even food the most invigorating is less grateful to him than his loved narcotic. Under the Incas, it is said to have been exclusively reserved for the noble orders. If so, the people gained one luxury by the Conquest; and, after that period, it was so extensively used by them, that this article constituted a most important item of the colonial revenue of Spain.<sup>32</sup> Yet, with the soothing charms of an opiate, this weed so much vaunted by the natives, when used to excess, is said to be attended with all the mischievous effects of habitual intoxication.<sup>33</sup>

Higher up on the slopes of the Cordilleras, beyond the limits of the maize and of the *quinoa*,—a grain bearing some resemblance to rice, and largely cultivated by the Indians,—was to be found the potato, the introduction of which into Europe has made an era in the history of agriculture. Whether indigenous to Peru, or imported from the neighboring country of Chili, it formed the great staple of the more elevated plains, under the Incas, and its culture was continued to a height in the equatorial regions which reached many thousand feet above the limits of perpetual snow in the temperate latitudes of Europe.<sup>34</sup> Wild

<sup>32</sup> Ondegardo, Rel. Seg., MS.—Acosta, lib. 4, cap. 22.—Stevenson, Residence in S. America, vol. II. p. 63.—Cieza de Leon, Cronica, cap. 96.

<sup>33</sup> A traveller (Poeppig) noticed in the Foreign Quarterly Review (No. 33) expatiates on the malignant effects of the habitual use of the *cuca*, as very similar to those produced on the chewer of opium. Strange that such baneful properties should not be the subject of more frequent comment with other writers! I do not remember to have seen them even adverted to.

<sup>34</sup> Malte-Brun, book 86.

The potato, found by the early discoverers in Chili, Peru, New Granada, and all along the Cordilleras of South America, was unknown in Mexico—an additional proof of the entire ignorance in which the respective nations of the two continents remained of one

specimens of the vegetable might be seen still higher, springing up spontaneously amidst the stunted shrubs that clothed the lofty sides of the Cordilleras, till these gradually subsided into the mosses and the short yellow grass, *pajonal*, which, like a golden carpet, was unrolled around the base of the mighty cones, that rose far into the regions of eternal silence, covered with the snows of centuries.<sup>35</sup>

another. M. de Humboldt, who has bestowed much attention on the early history of this vegetable, which has exerted so important an influence on European society, supposes that the cultivation of it in Virginia, where it was known to the early planters, must have been originally derived from the Southern Spanish colonies. *Essai Politique*, tom. II. p. 462.

<sup>35</sup> While Peru, under the Incas, could boast these indigenous products, and many others less familiar to the European, it was unacquainted with several of great importance, which, since the Conquest, have thriven there as on their natural soil. Such are the olive, the grape, the fig, the apple, the orange, the sugar-cane. None of the cereal grains of the Old World were found there. The first wheat was introduced by a Spanish lady of Trujillo, who took great pains to disseminate it among the colonists, of which the government, to its credit, was not unmindful. Her name was Maria de Escobar. History, which is so much occupied with celebrating the scourges of humanity, should take pleasure in commemorating one of its real benefactors.

## CHAPTER V.

PERUVIAN SHEEP.—GREAT HUNTS.—MANUFACTURES.—  
MECHANICAL SKILL.—ARCHITECTURE.—CONCLUDING  
REFLECTIONS.

A NATION which had made such progress in agriculture might be reasonably expected to have made, also, some proficiency in the mechanical arts,—especially when, as in the case of the Peruvians, their agricultural economy demanded in itself no inconsiderable degree of mechanical skill. Among most nations, progress in manufactures has been found to have an intimate connection with the progress of husbandry. Both arts are directed to the same great object of supplying the necessaries, the comforts, or, in a more refined condition of society, the luxuries of life; and when the one is brought to a perfection that infers a certain advance in civilization, the other must naturally find a corresponding development under the increasing demands and capacities of such a state. The subjects of the Incas, in their patient and tranquil devotion to the more humble occupations of industry which bound them to their native soil, bore greater resemblance to the Oriental nations, as the Hindoos and Chinese, than they bore to the members of the great Anglo-Saxon family, whose hardy temper has driven them to seek their fortunes on the stormy ocean and to open a commerce with the most distant regions of the globe. The Peruvians, though lining a long extent of sea-coast, had no foreign commerce.

They had peculiar advantages for domestic manufacture in a material incomparably superior to any thing possessed by the other races of the Western continent. They found a good substitute for linen in a fabric which,