EL TEIDE IN HUMBOLDT'S WORK:

THE FUTURE OF TENERIFE AND ITS ENVIRONMENT

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When my friend Alexis Sicilia called to press me to take part in the opening session of this International Conference on Soil and Compost Eco-Biology ´´ I was just leaving the Rancho Pilila Orchid Gardens in Soroa, province of Pinar del Rio, in western Cuba. The island had suffered the buffetings of two Caribbean hurricanes, *Gustav* and *Ike,* and one could notice the concern of workers to repair the damage these had caused. I was on my way to the Fundación Hermanos Loynaz to pay tribute to the Adopted Daughter of the touristic city of Puerto de la Cruz and winner of the 1992 Cervantes Prize for Literature, the poet Dulce María Loynaz, who spent some of her summers between 1947 and 1958 in the Canary Islands, an experience which would later take shape in her travelogue novel "Un Verano en Tenerife" ("A Summer in Tenerife"), published in Madrid fifty years ago. The Cuban writer spent her summers in Puerto de la Cruz at what was then the Hotel Taoro, from which she would walk about the coastal city, stroll through its gardens and enjoy the view of El Teide. In the hotel itself she would every day see, as she read and wrote, a picture on one of the walls of the resplendent figure of the German naturalist Alexander von Humboldt. She would ask herself why the Prussian baron knelt down when he reached the La Oratava Valley. She also read the notes he had taken on the district of Taoro, La Cañadas, the El Teide volcano and the Canary Island peasantry. She herself wrote fascinating things about the banana plantations, the terraces, the search for water in the bowels of the earth, the stone walls, the countryman´s dialogue with the stars and the plants, the way the earth seemed to set out to charm, even flirt with her.

At the Fundación Cultural Loynaziana I presented a book entitled "Tomás Felipe Camacho, a Learned Twentieth-Century Canary Islander". He had emigrated to the largest island of the West Indies at the beginning of the twentieth century and, after reading law at the University of Havana", devoted himself to the sugarcane trade. In 1943 he founded the most famous orchid garden in Cuba, 700 species and over 20, 000 beds of this jewel of tropical nature. Camacho was from La Palma, a man who, for family reasons, was devoted to the world of plants and enjoyed life growing orchids in what is today Sierra del Rosario, a Biosphere Reserve.

Curiously, when Tomás Felipe Camacho died in 1961, a Tenerife journalist called Luís Álvarez Cruz wrote an obituary notice comparing Camacho with Humboldt. The common denominator was their love of plants, two very singular flowers, the Teide violet in the case of the German baron and the tropical orchids of Cuba in that of the La Palma lawyer.
It is quite clear that Alexander von Humboldt, the younger of two brothers, always wanted to travel to the south. With this mind, he first went from Berlin to Paris to sign on his friend the botanist and doctor Aimé Bonpland and then to Madrid to obtain an official safe-conduct enabling him to travel to the equatorial regions of the new American continent. In 1779 he reached the islet of La Graciosa off Lanzarote before disembarking in the port of Santa Cruz de Tenerife. Humboldt sailed right round the Canaries' biggest island, Tenerife, hugging the coast, noting altitudes, meridians, parallels, promontories, inlets. He lived the experience very intensely, exerting enormous energy over the course of hardly a week. On 24th June he left Santa Cruz de Tenerife to cross the ocean, arriving

first in Venezuela and months later in Cuba, the pearl of the West Indies. He travelled on to Colombia, Peru and Ecuador before returning to 19th century Europe via the United States and Cuba. But his books make it quite clear that Humboldt liked the south, both in the Canary Islands and in colonial Hispano-America. And I don´t think it was only the weather.

Humboldt was a very curious character. Born in the Prussian Berlin of the end of the 18th century, an inexhaustible source of knowledge, a man obsessed with travel as an adventure with nature, this Berliner, who would become a naturalist, a geologist, an explorer, a scientist, a geographer, a volcanologist, a demographer and an authentic encyclopaedist, became an enthusiast of El Teide in his native Germany at the end of the eighteenth century after visiting the Swiss Alps and learning of the interest of some European mountaineers in such singular "accidents"of nature. Perhaps we can find here one of the reasons why he wanted to get to know El Teide for himself on his way to the Americas in the summer of 1799, taking advantage of his stay in the Canary Islands, where he arrived when he was only thirty.

On his return from Hispano-America years later, Humboldt would refer to his arrival in the port of Santa Cruz de Tenerife on 19th June 1799, on board La Pizarro. He wrote: "The peak of El Teide then appeared in a patch of clear sky above the clouds, and the first rays of the sun, which for us had not yet risen, illuminated the summit of the volcano. We went to the bow of the sloop to enjoy the majestic spectacle."

In another account of his stay in the island we read: "The view of the Peak, as one beholds it above Santa Cruz, is much less picturesque than that which one enjoys in El Puerto de la Oratava. A charming and richly cultivated plain makes a vivid contrast with the wild appearance of the volcano. From the groups of palm and banana trees that border the coast to the region of the arbutus, laurel and pine, the volcanic rock is covered with vigorous vegetation." Humboldt is giving us what is essentially the first lesson on the environment when he describes the layers of vegetation that he found on his tour following the vertical gradient of the north of the island, the La Oratava valley, between Puerto de la Cruz and El Teide.

Because of its relevance to our subject, one should quote the message that Humboldt left us, also on his return from Hispano-America, which now forms part of the natural tradition of Tenerife and its ecological diversity: "Descending the valley of Tacoronte, one enters that delightful country of which the travellers of all nations have spoken with enthusiasm. In the torrid zone I have found places where nature is more majestic, richer in the development of organic forms, but after having travelled along the banks of the Orinoco, across the mountain ranges of Peru and through the beautiful valleys of Mexico, I confess that I have never seen anywhere a more varied, more attractive and more harmonious picture thanks to the distribution of the masses of verdure and the rocks."

We find ourselves therefore in an island setting, one of those islands that writers see in their imaginations as an example of the combination of solitude and refuge, port of call and expiation, with monsters and fairies, thresholds and treasures, the beginning and end of journeys, hells and paradises. With the sea everywhere. But in Humboldt's case El Teide figures as a natural point of reference to justify a journey to the equatorial regions of the new continent. It was the first of the mountainous and volcanic structures that he would see in his Hispano-American adventure. He came to know thirteen mountains but El Teide was the one that marked him and that he singled out in his chronicles. It was also his Atlantic point of departure for the Americas. Humboldt had studied Christopher Columbus and knew a great deal about our natural wonder. He was also accompanied by

the flower of the island's culture, both native citizens and foreigners, the latter mostly Frenchmen who had settled there.

From Puerto de la Cruz Humboldt climbed to La Oratava and from there to the Summit, leaving behind El Dornajito, El Portillo and Las Cañadas. From sea-level he went up to mountain level, taking in the lower altitudes where potatoes and vineyards, woods and laurel grew, passing on through the Canary Island pine forests until he arrived in El Portillo and entered Las Cañadas, where broom abounded. Among the pumice-stone of Montaña Blanca he found the El Teide violet which many years before had been discovered by another European naturalists, the Frenchman Louis Feuillé. He enjoyed the minerals, the basalt and the obsidian, the pumice and the sulphur; his memories of the eruption of Chahorra; he observed the bees buzzing around the broom and the wild goats that he later compared with those he had seen in Cumaná, Venezuela; he checked the scientific instruments he had brought from Germany to the peninsula and the Canary Islands: the barometers, the thermometers, the sextant, the longitude clock, the telescope, the theodolite, the compasses; he enjoyed the natural values of the ecosystems, the landscape, the geological resources, the climb to the Peak, his stop at the Estancia de los Ingleses, his visits to the Cueva del Hielo, la Rambleta, El Pilón de Azúcar, the crater of El Teide. He described dawn seen from the Peak and began his return to Puerto de la Cruz after contemplating the morning spectacle of the majestic Canary Island landscape.

Humboldt's writings about his journeys led the German geologist Leopold von Buch, the Norwegian botanist Christiansen Smith, the English evolutionist Charles Darwin and the ecologist Ernest Haeckel, among others, to wax equally enthusiastic about El Teide and its natural resources at different moments of the nineteenth century. Something similar happened to the Scotsman Piazzi Smith when he developed his passion for astronomy. Others to come under the influence of Humboldt were the botanists Sabine Berthelot, whom the former met in Paris on his return from his Hispano-American travels, and Philip Webb, authors of "Histoire Naturelle des Îsles Canaries", required reading on the anthropology and natural life of the Canary Islands in which El Teide and Las Cañadas receive ample treatment.

Talking about Charles Darwin leads me to recommend the reading of his last work, "The Formation of Vegetable Mould, Through the Action of Worms". This work gives a vivid impression of the inquiring English naturalist, exhaustive and painstaking in exploring every path, who leaves nothing to chance and devotes all his time and energy to ratifying his theories with the utmost critical zeal.

And as fertility is going to figure importantly in our discussions, let us remember that the soil is the foundation of the wood and, as they taught me at school, the features of trees depend on the quality of this soil, in which worms play a valuable role. Darwin himself declared that it was doubtful that any other animals had played such an important part in the history of the world as these simple organisms.

Humboldt combined nature and culture, natural resources and people, following the pattern he found in the work of the Spanish Jesuit José Acosta "Natural and Moral History of the Indies", NMH. That is to say, he combined N+M with the H of History. For that reason, when Humboldt spoke of Tenerife he spoke of the nature of both the island and the Canary Islanders, of their customs, of the island skies, of the volcanoes, El Teide in particular. He examined the work of the great English astronomer Edmond Halley and his explanation of prevailing winds between the subtropical regions and the equator. He also read George Hadley, an English lawyer and meteorologist, who studied these atmospheric

motions and sought to understand why the trade-winds in the northern hemisphere always blow towards the west without being deviated southwards. He explained the nature of this circulation on the vertical plane, including the effect of the earth's rotation, with which he established the concept of the Hadley cell.

Humboldt also carried out aerological measurements,encouraging his German compatriots at the beginning of the twentieth century to set up a meteorological observatory in the Cañada de la Grieta and to bring over the so-called Casetas del Kaiser. This provoked the Spanish administration to build the Izaña Observatory, which was inaugurated in January 1916 and today contributes to the study of climate change.

Humboldt's arguments concerning the volcanic nature of the Canary Islands and his descriptions of the landscape and natural life of El Teide were used by the forestry engineer Arturo Ballester in a report to the ministry in Madrid, on the strength of the Royal Decree of 23rd February 1917, calling for El Teide to be declared a National Park. As we know, this official protection would have to wait until January 1954, when a decree to this effect was issued by the then Head of State. A few years ago Canary Island territorial legislation made the volcano-stratum of El Teide a Monument of Canary Island Nature.

The twenty-first century started off with the desire to make El Teide part of the World Heritage. A technical report submitted invokes, among other matters, the plutonic volcanism thesis that Humboldt put forward after his ascent of El Teide as an argument for its inclusion in the UNESCO's list of Natural Sites, with positive results.

And, as landscape is accumulated history, in the words of Professor González Vicens, it would seem in place to evoke the impressions which Humboldt wrote down after sitting with his companions on the outer edge of the crater and looking north-west, where the coast is dotted with town and villages: " At our feet they presented the most varied spectacle, accumulations of vapours, constantly agitated by the winds. A uniform layer of clouds had been pierced at various points by the effect of small currents of air that the sun-heated earth began to return towards us. El Puerto de La Oratava, its anchored ships, the gardens and vineyards surrounding the city, showed through an opening that seemed to close at every instant. From the heights of these solitary regions our gaze plunged into an inhabited world; we enjoyed the significant contrast presented by the stark sides of the Peak, its escarpments covered with volcanic ash, its high plateaus bare of vegetation, with the charming appearance of the cultivated land: we saw the plants divided into different zones, according to the fall in temperature at the higher levels.

The question of future eruptions drew Humboldt's attention and in fact, down in La Oratava after descending from the Peak and on his way to the port, he said that he heard a discussion about whether one could take it for granted that in the course of the centuries the crater could rumble into life again. His own answer is that, in such a doubtful matter, analogy can be one's only guide...

Why did Humboldt climb El Teide?

El Teide is a volcano, or more exactly a volcanic stratum, situated excentrically on the summit of Tenerife, the most central island of the Canary archipelago, the largest and highest island of Macaronesia, the Euro-African biogeographic region of the North Atlantic and also that of the greatest biodiversity. The volcanic structure rises on the platform of Las Cañadas, 2,000 metres high, which truncates the summit of the island. The Peak rises to a height of 3,717 metres above sea-level. The Teide-Pico Viejo volcanic complex

extends over the north of the island along the valleys of Icod, La Guancha and La Oratava, being protected on the south by battlemented heights from Boca de Tauce to Portillo de la Villa.

It is well known that Humboldt gave an account of his journey to the summit of the Tenerife volcano, El Teide. He wrote: "*on the morning of the 21st of January we were already on the way to the summit of the volcano. Mr. Le Gros, whose generous courtesy we cannot sufficiently praise, Mr. Lalande, secretary of the French consulate in Santa Cruz de Tenerife and the gardener of El Durazno, the Scotsman Mac Manur, shared the fatigues of this excursion*". Humboldt continues that on this excursion to the Peak one only saw everywhere what had been seen and described by other travellers.

This journey is not only interesting because of the large number of phenomena of interest to our scientific research, adds the young and inquiring German naturalist. It is even more so on account of the picturesque beauties which it offers to those who feel intensely the majesty of nature.

It seems to me a little unlikely that Humboldt should have wanted to climb these heights merely to enjoy landscapes he had never seen, when they had already been described by other explorers. Or for simply touristic reasons. Students of the German scientist believe that he did it for two reasons: the first, to try out the scientific instruments he carried with him for his observations in the Americas. To measure El Teide from far and near both to calculate the angular distances and triangulations and the atmospheric pressure.

The second reason, in order to understand the essence of volcanoes, since for him vulcanology was an important and crucial chapter of geology. Seeing volcanoes was for Humboldt what an archive is for a historian, as the Romanian professor Ciaronescu, a La Laguna resident and author of "*Humboldt in Tenerife*", put it. The fact is that on El Teide Humboldt hoped to find the school of nature that he had dreamt of to confirm the reigning theory on volcanism. He was converted from neptunism to plutonism. From the sea he leapt into the fire!

I think this is the moment to read an extract from the letter that Alexander wrote to his brother Wilhelm on the afternoon of 23rd June:

"*I returned from the Peak yesterday, at night! What a wonder! We went to the bottom of the crater, possibly further than any other naturalist. My God! What a sensation at this height; above us, the vault of the intense blue sky; old streams of lava at the foot of the mountain; below, in the distance, the sea and all the seven islands, among which La Palma and Gran Canaria possess very high volcanoes which appeared below us as in a geographical map..*

" For this reason it is not surprising that he should finish this letter to his brother on a very sentimental note: "*I am leaving almost with tears in my eyes; I should have liked to set up here and I have hardly left Europe*".

Apart from these letters to his brother, he showed how much he enjoyed scientific correspondence with his European friends. As well as his adventures and his experiences with science and nature. Proof of this are his many scientific and geographical books with their constant references to El Teide and the comparisons he made between it and other mountains around the world. We find an example of this in "*Pictures of Nature", "Geography of Plants" and "Kosmos*" among others. What I am quite clear about is that Humboldt placed El Teide on the highest pedestal of volcanic giants, comparing it with the highest and most significant mountains in the literature written by the naturalists and

travellers of the eighteenth century. It also enabled him to establish for the first time the relationship between plants and the physical environment in which they grow, as well as to study the climate as he rode on mule-back along the paths of the valley of La Orotava on 21st June 1799, the summer solstice, trying to reach the Peak of El Teide, guided by Canary Island experts.

Days later, after enjoying St. John's Eve in the gardens of Sitio Litre, Alexander von Humboldt returned to Santa Cruz de Tenerife to leave the island and set sail for the Caribbean coast, Venezuela and Cuba. The German naturalist thus said farewell to Tenerife and in its turn El Teide said farewell to the Age of the Enlightenment with the visit of one of the greatest travellers of all time, the real hero of travel literature.

In 1999, the bicentenary of Humboldt's journey to the Hispano- American equator, excellent and varied studies were published and there were also exhibitions celebrating the event both in Germany and Spain and in the Hispano-American countries that figure in Humboldt's work. In one of these publications the former president of the Federal Republic of Germany, Roman Herzog, gave an accurate picture of Alexander von Humboldt. He referred to the Germans' special recognition of someone who combined his studies of regional and general geography with the defence of Human Rights and with the most total rejection of slavery and the oppression of the peasants; and he emphasized that his scientific analysis went hand in hand with tolerance and still more with the acceptance of other cultures and his moral commitment.

If Humboldt were to repeat his Canary Island travels he would see for himself that tourism has made its appearance even in La Graciosa. That the volcanic eruptions of the Montañas de Fuego have been studied by a number of foreign and Spanish authors. That in the nineteenth century there were other eruptions in the island of volcanoes and that in the twentieth Tenerife experienced the eruption of El Chinyero in 1909 and later La Palma suffered that of San Juan in 1949 and that of Teneguía in 1971. One of Humboldt's greatest admirers, the Puerto de Santa Cruz geologist Telesforo Bravo, studied these last two eruptions in depth. He gave his last lecture in the National Park of El Teide when the Asociación Humboldt de España, chaired by Marino Barbero, went to Tenerife to celebrate the bicentenary of his stay in the island and enjoy the endorphins that the Canary Islands generate especially when one goes up from the sea to the mountains, from the Atlantic to El Teide, when one strolls among the broom and admires the landscape. We were thus led to remember Humboldt's lessons on the relationship between living beings and their relationshipwith the physical environment in which they live. Years later, another German who climbed El Teide, Ernest Haeckel ,would call this *Ecology*.

Humboldt would also have learnt that the laurel woods of La Gomera were included by UNESCO in the list of World Heritage Sites after being made a National Park in 1981; also that the city of San Cristóbal de La Laguna was declared a World Heritage Cultural Site in 1999 on account of its singular layout and construction, which would serve as a model for the colonial cities of Spanish America.

Humboldt would further see that the Canary Islands are an Autonomous Community of the Spanish State and that its regional government is led by a countryman of the Tenerife municipality of El Sauzal, who knows a lot about the ins and outs of politics and the guidelines of Canary Island legislation and tourism, which talk about many things but always in general terms when it comes to sustainable development. Because if the damage caused in the past by deforestation and housing estates on the coast in the main farming districts and on natural resources were important, the present pattern of growth may have consequences of even greater importance.

It is generally accepted that if things are allowed to go on this way the archipelago will lose a significant part of its natural and cultural heritage, with all that this might mean for the social and economic life of the Canary Island Community. That is why attempts are being made to find solutions regarding natural resources, biodiversity, the quality of the air, the water, the geological and forestry resources. Solutions too for energy and wastes, town and country planning, the model to be followed, the protection of farm land, of infrastructures, of the cultural heritage and the landscape, of economic activities and land use, among other questions. Naturally, all these things require the planning of activities, the definition of basic criteria, the establishment of goals and strategies, apart from adequate legislation and a clear and resolute political will.

In Tenerife, on arriving at the municipality of El Sauzal, Humboldt could still distinguish the different greens of the fields and the forests in spite of all the time that has passed and the urban development in the north of the island; he would enjoy the company of the vine-growers of the district of Tacoronte-Acentejo who have been capable of producing a wine that bears his name, Humboldt, and winning international prizes for its quality.

It might be a good and positive thing for Canary Island society if Humboldt were to meet Chief Minister Rivero, once he is recovered from his illness, to analyze this socio-economic and environmental situation and he could perhaps give him some advice on sustainability, and in particular talk to him about the care that has to be taken with the Urgent Measures Law. I am sure that Humboldt would present the Chief Minister with a picture of the dragon tree that he got to know and grew in the gardens of Franchy, in La Orotava, and he would remind him that the culture of peoples is measured by their love for trees, for nature in general. He would talk about the importance of the fundamental ecological cycles and processes and convince him that their closure represents the basis and support of so much natural beauty, in which organic and mineral fertilization proper to the volcanic rocks affected by specific microorganisms takes part.

Humboldt would learn that the tourist sector has been a feature of the islands since the end of the nineteenth century. He himself contributed significantly to this when he started the first marketing plan with the publication of the letter that he sent to his brother Wilhelm, in which he said that he was leaving the island of Tenerife with tears in his eyes and that he would like to live here.

After reaching the district of Tacoronte-Acentejo and discovering that *Bodegas Insulares* are making wines with his name and winning prizes, he would go down to Puerto de la Cruz and read the correspondence they have left him in La Paz about a literary gathering organized in the Asociación Cultural Humboldt of Venezuela to talk about a new book *The Measurement of the World*, half dreams, half reality, that describes the extraordinary enterprise of two young Germans, Alexander von Humboldt, naturalist and traveller, and Carl Friedrich Gauss, mathematician and astronomer, who at the end of the eighteenth century set out to measure the world.

Humboldt would also enjoy reading the notice of the First International Alexander von Humboldt Meeting bearing the name *KOSMOS,* to be held next year in the building which bears his name in the historic city of Havana, the capital of Cuba, the island he so much enjoyed visiting on his tour of the Caribbean, as also that of another planned in the German university called after the Humboldt brothers in his native city, Berlin.

He would realize that Puerto de la Cruz, Tenerife and the Canary Islands in general have become a tourist destination for the European market. That the kingdom of Spain joined

the European project that Germany had led fifty years ago after overcoming, together with France, the crisis of World War II, and that the Canary Island archipelago appears as an Ultraperipheral Region of the European Union on account of its distance, insularity and high dependence on the outside world, especially for energy.

He would learn that in1916 King Alfonso XIII sanctioned the law on national parks, permitting the Teide and the Caldera de Taburiente to be declared a National Park in 1954. That in 1945 the law on the Forestry Heritage was passed allowing the state administration to agree with town councils and private persons on the reforesting of many estates, as was the case with the woods of La Orotava and Los Realejos. This led to the creation of a large area of forest land, Canary Island pines and *radiata* pines, which has corrected the erosion problem and is no doubt helping to reduce the effects of climate change that, together with other natural disasters and migration, are the most important problems of our new international order in the twenty-first century.

It was in this valley of La Orotava that Humboldt discovered that the form of plants and vegetation in general was a function of altitude and climate and gave the first lesson on the environment, which made him a pioneer in the geobotanical world. After his Hispano--American travels he described and reinterpreted the layers of vegetation that in northern Tenerife pass from the bottom layer with its dragon and palm trees to that of the mountains above 2,000 metres high, including on the way the layer of Monteverde and the laurel woods, between 800 and 1,500 metres up, which receive the impact of water-laden clouds in that fascinating and important phenomenon called horizontal rain which made such an impression on the Swedish botanist Sventenius, as also the Canary Island pine which grows on totally volcanic soil.

Fortunately, the limits of public forest are maintained today and have been included in the legislation as Crown forest lands, while the lowest level is occupied by the residential and tourist population along the coast, which has had its own specific legal framework since 1988. For its part, the palm and dragon-tree zone is taken up by banana plantations below and by vineyards and potatoes a little higher up. Humboldt would see that there are no longer jets of water or channels transporting the water from the springs of Agua Mansa through the farmsteads and neighbourhoods of the La Orotava valley. The technology has changed along with the labour structure and municipal services have even been privatized through administrative concessions.

Humboldt would also get to know the interest of some experts in studying the fixation of CO2 by the plant species of the island, together with new prospects for relations between soil and tree in forest soils.

He would learn too of the thesis of the well-known geologists Telesforo Bravo and Juan Bravo on the role of the fanglomerates of the valleys of La Guancha and La Orotava in the geological formation of Tenerife, which spread over the coast of northern Tenerife on both sides of the Tigaiga slope. This name was given by EnriqueTalg, an adventurous hotelier of Puerto de la Cruz, to an ecological hotel. He also started the practice of hiking in the valley. Humboldt could now enjoy walking along the present network of paths and reach the sun from the Instituto Astrofísico de Canarias (IAC) on the heights of Izaña, which together with that of El Roque de los Muchachos on La Palma make up the most important network for astronomical and astrophysical observation in the European area of influence.

Returning to Tenerife, Humboldt's spirit would once again ascend the Teide, as every June, and once again he would be amazed by the butterflies on the mountain which the surrealist painter of La Laguna, Oscar Domínguez, drew. He might smell the broom in Las

Cañadas which, together with the landscape of El Teide, make up a very special phenosystem. He would once again realize the importance of the island's sky and would go to Izaña to see it for himself and check the climate change registered there.

In any case, Humboldt would feel proud to have been a pioneer of what today is understood as ecology, as biodiversity, as phytogeography, as encyclopaedism; to have been a man who implemented operative meteorology, astronomical observations and comparative studies of Europe and the Americas.

For that reason he would be enthusiastic about this technical meeting which looks southward and will deal with fertility in hot climates as also the role of organic matter in the soil and environment of the twenty-first century; which will deal with ecobiology and compost improvements, soils, crops and the foodstuffs that allow us to enjoy a healthier life. The valley of La Orotava and the island of Tenerife in general could become an international point of reference for nutritional health tourism with good food for watchword and education in healthy eating for social goal. From sea to summit, from the Atlantic to El Teide.

I am sure Humboldt would not fail to visit Pinolere, to find out about the start-up of an educational programme on sustainable agriculture, nature and tradition in the upper part of La Orotava. Here every year students are taught about the importance of trees and forests to the life of the island and the planet in general as reserves of biodiversity, regulating humidity and temperature, maintaining the water and carbon cycle by purifying the air, promoting the formation of humus and averting soil erosion.

He would be happy too about the inauguration by the Ministry of the Environment of the Administrative and Interpretation Centre of the National Park built recently in El Mayorazgo de La Orotava, very near to the emblematic Franchy Gardens where his beloved dragon-tree grew.

I do not think Humboldt would have been surprised by the visit of the American politician Al Gore to the Canary Islands to talk about climate change and renewable energy or by Obama's victory in the recent U.S. presidential elections. At the beginning of the nineteenth century, on his return to Europe, he met President Jefferson in the United States and talked to him of the need to build the Panama Canal, the silver resources of colonial New Spain, the present Mexico, and put him in the picture about many things he had learnt in his equatorial travels.

Perhaps Humboldt, if he were alive today, would have gone to the White House to talk to President Obama about the new world order with its financial and environmental crises. On their agenda would be renewable energies and the need for the United States to sign the Kyoto Protocol as part of the global struggle against Climate Change. Obviously he would talk about this Second International Conference that brings us together in Puerto de la Cruz today.

We should not forget that Humboldt was a pioneer in general geography and the most important explorer of modern times; he brought together nature and man in the manner of the Enlightenment and he studied them in accordance with seven global principles: the forms of the earth, terrestrial magnetism, climatology, hydrography, the geography of plants, that of animals and people in the economy, trade, migration, demography and human settlements. And when he dealt with them in a single country he talked about regional geography, as in his political studies on Cuba and Mexico.

For all these reasons the organizers of this conference on *Soil and Compost Eco-Biology* are to be thanked for continuing to think of symposia of this kind in order to talk about soil and health, about people of the humanistic and liberal stature of the great naturalist Alexander von Humboldt. I end by inviting you to raise your glasses in a toast to Humboldt, who by the way himself enjoyed the odd glass of red wine. Let us trust that he will return to the Canary Islands in June next year to mark the 210th anniversary of his journey. His spirit has inspired us today to open this Second International Conference and to encourage us to look more deeply into the secrets of humus and organic fertilization, study the role of organic matter to close once again the essential cycles, relating them to health, nutrition and tourism, and conclude with minerals and their applications.