

GEOLOGIST-MINING COMMUNICATION COMMUNITY: MAIN APPROACHES AS MINING HERITAGE OF CHROME-MOA

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SUMMARY

The link between community communication and promotion of Chromium mining heritage industry in Moa were studied based on the use of research methods such as analysis-synthesis, induction-deduction, and document analysis as well as participatory observation. Important heritage evidence that shape the culture of chromium mining was obtained. It is concluded that participatory communication and the media constitute a facilitating fortress for the message exchange process to achieve its preservation for future generations.

KEYWORDS: Community communication; mining geological heritage; promotion.

RESUMEN

Se estudiaron los vínculos entre la comunicación comunitaria y la promoción de la industria del patrimonio minero Chromium en Moa a partir del uso de métodos de investigación como el análisis-síntesis, la inducción-deducción, el análisis de documentos y la observación participante. Se obtuvieron

evidencias patrimoniales importantes que conforman la cultura de la minería de cromo. Se concluye que, la comunicación participativa y los medios de comunicación constituyen fortalezas facilitadoras del proceso de intercambio de mensajes para lograr su preservación para las generaciones futuras.

PALABRAS CLAVES: Comunicación comunitaria; patrimonio geológico minero; promoción.

INTRODUCTION

Since ancient times men have made use of communication, first in its crudest forms, then, due to the emergence of social relations linked essentially to productive activities, these forms were improved to consolidate much more complex and profound processes.

The geological-mining activity emerges with the appearance of man on the planet, and from the stone age, the bronze. Age until our days geological and mining activity has made enormous progress. All this heritage development allows us to study its historical evolution, and that is where communication has been the core for knowledge and advancement.

Geo-conservation generates various communication processes, and together with the mining geological heritage, encourages promotion from different activities:

- ✓ Inform society about the importance of geodiversity and geological heritage, as well as the need for its conservation and sustainable use.
- ✓ Fosters execution of inventories with standardized models that facilitate knowledge of geodiversity and geological heritage.
- ✓ Define objective criteria for evaluating cultural geo-resources that allow cataloged as «Points of Geological Interest» and propose «inventory of geological heritage» with legal protection.
- ✓ Promote the declaration and preservation of local, regional and national Geological Heritage, ensuring consideration in the legislation as a fundamental part of Natural Heritage.

- ✓ Ensures protection of geological heritage and geodiversity especially when they are affected by human activities, supporting initiatives for their protection, regardless of promoting them.
- ✓ Promotes forms of exchange of knowledge and experiences on any aspect of geodiversity, geological heritage and geoconservation.
- ✓ Encourage the inclusion of the teaching of mining geology and geological heritage in all levels of education and extracurricular activities related to culture, tourism and the environment.

Most of the facts geological and mining heritage character especially about projections are related to communication; Vázquez (2005: 5) states that «the need to communicate was the driving force of all kinds of expressive encodings» which in ancient times they were associated among others to the use of stone or clay as carriers of messages. Later, new inventive printing as provided numerous changes in forms of communications.

Today, social technologies contribute to the development of large-scale community communication in mining areas. The following work constitutes an establishment of communication links between mining communities and heritage; in our case, and the geological chrome mining industry in Moa.

Based on the above and considering that mineral resources are finite, and that exhaustion can slow the progression of these communities, it is important to consider the heritage bequeathed by these productive society spheres, emphasizing its potential for reuse not only from the economical, but social and cultural views.

This matter also requires an optimistic look towards the organization of communication processes aimed at achieving community cohesion, its institutions and socializing agents, so that the momentum towards designing local development projects and its implementation lacks of brakes and barriers, on the contrary, contribute to significantly improve the lives of everyone.

Methodological elements of communication studies in mining communities as geomining heritage resource

In social settings community communication and particularly, the mining geological is the bearer tools that bring about a territorial progress, under

completely new development approaches. An example of it is found in Punta Gorda town and its inhabitants, whose identity is due to the chromium mining boom in the last century.

Based on this activity, a series of facts and sociocultural characteristics that determine a great part of everyday life in the population of this mining region, lifestyle and consumption, organization forms (work and leisure), beliefs' world, myths, language, music, idiosyncrasy and cultural heritage have come up (Montoya, 2019).

The geologist-mining community communication represents the transition from local through different stages, it is referred to the multiple interaction processes and personal, group and social ties intended by the geologist-mining activity that have been involved in the community formation from their beginning. These processes are manifested at different levels and have played an important role in the growth of mining activity and the cultural identity formation. They are quality bearers distinguished from similar processes; therefore, they are considered part of these communities' cultural legacies.

Related to community Muñoz (2004), Herrero (2005), Morfa and Sol (2012) and et al, analyze it as the site where a variety of interrelated systems converged, that is to say, people, roles, organizations, and events. Hence the oral and written tradition, previous experiences, the geological mining company culture and values created in its evolution, constitute guidelines that contribute to the image geology structure, Moa's mining territory and its patrimonial heritage.

As part of the sustainable development policies in mining communities, whose geology and mining are its main productive practice, it is emphasized on creating new areas in order to develop a mining culture in correspondence with the traditions, strengthens the sense of belonging and community-mining company ties.

Geological mining cultural promotion is by nature a way of perceiving the geological mining activities as a community oriented towards sustainable growth culture. It is understandable as a communication and participation process. Therefore, strategies should be defined from stated policies so that establish in each context forms and ways to develop promotional actions with educational, recreational and other purposes. The level of participation and

the degree of the community integration in such activities will be depending on the characteristics of the group or region, the culture peculiarities and interest generating options to be promoted.

Taking into account the above mentioned, any communication activity as a generator of mining geological heritage is based on:

- ✓ Appreciate and establish cultural and social values that the geological and mining activity generates for community development;
- ✓ Won a responsible mining attention (cost-benefit-market) on certain geological-mining results;
- ✓ Create social and cultural alternatives from the existence of products that geologists and miners generate themselves;
- ✓ Form the geological-mining spirituality, call the attention and expand cultural horizons in the population in which it is done;
- ✓ Stimulate rescue talents and potential or genuine values existing in the participant population.

Thus, communication as a generator of mining geological heritage has great significance in the cultural and social environment of mining communities. Being well supported, on the basis of professional creation, it is an ideal alternative to promote respect values and sense of belonging for the environment, mainly to the mining geological heritage.

Since the approach to communication methodological elements as generator of the mining geological heritage, it was determined functions to promote, disseminate, spread, inform, which act as important mechanisms for the creation of cultural values in some dimensions of communication context: public, institutional and massive (Figure 1).

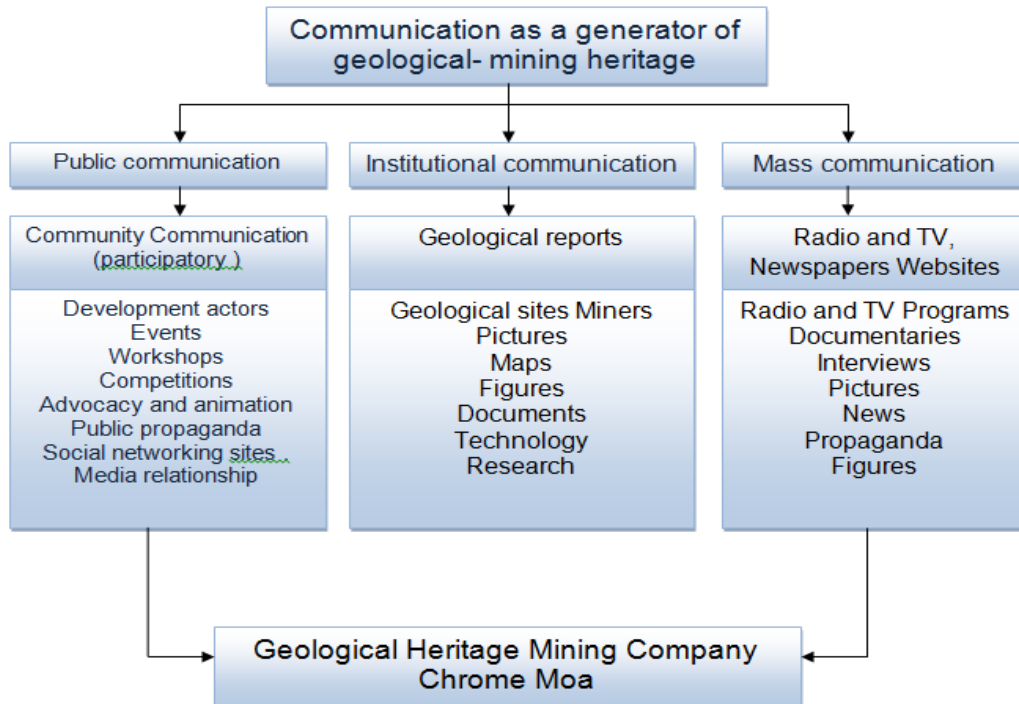


Figure 1. Conceptual model representing the methodological elements for incorporating communication and social technology to the mining geological heritage.

Community communication: One of the most pressing issues in the context of mining communities is related to its patrimonial heritage, rescue, conservation and mainly promoting these values to contribute to their social recognition, in order to be preserved for future generations. Events, workshops, competitions among others, are components that favor the emergence of communicative products with certain values that in time they are shown as cultural historical elements, afterwards becoming heritage of the community.

Institutional communication: The heritage of geological mining communication, is therefore the product of a historical, dynamic process, it is a category that is formed from the interaction of different geological and mining situations that require taking a long-term look both in the design and in the use of resources. Geological reports, maps, profiles, cuts, photos, mineral and rock samples, reports and some others constitute patrimonial elements of the mining geological work of a particular industry and the region in general.

Mass communication: Mining production has a significant value in the Cuban context, so that this issue is of great importance since there are mining communities buried in identifying their geologist-mining heritage, recognition, care and protection. So that these contexts are scenery where the mass media play a significant role; without their support and specialists' dedication, this effort would lack solidness. Moa is one of these communities whose mining heritage covers a large part of its territorial infrastructure.

Mining community and territory study: Chromium-Moa

In 1598 it was done the first geological recognition of the island in Cuba, which was spread to the Eastern part and brought the discovery of various minerals. Since these studies, national and foreign interested in the topic began an economic activity that marked the emergence of mining in Moa and therefore its mining community. It is assumed as «mining community» an organized group of people who are noticed as a social unit, located or not in the area of mining influence, whose members are directly or indirectly involved in mining activity as a means to achieve individual and collective needs satisfaction, developing a common cultural base (Riverón, 2002).

Potosí deposit, having a high content of chromium and other minerals that it is located in the Western part of Jiguaní River, was discovered in 1890 by a citizen of the region, object of this analysis, and he made a formal complaint to give him permission to their exploitation. However the discoverer did not do it, but in 1904 he sold the rights to a company owned by the Americans Harbinson and Walter, who in 1905 began to work in the mine, being the first site in Moa region which chromium was extracted.

It was very little the extraction volume due to the difficulties to send the ore because of the absent of roads. In 1910 work stopped in Potosí mine where it was possible to extract very little ore. Since this moment it begins a transculturation of the first region inhabitants and element incorporations related to mining in everyday life of Moa inhabitants.



Figure 2. Chromium mining town, Cayo Guam.

It is not until 1940 that it is done a large-scale exploitation of these deposits whose raw material was sent from Punta Gorda town. This mining was stimulated by the Second World War military conflict and so these ores were used in the manufacture of weapons. Gerardo Aulet Morales, the Cuban capitalist, has participated with the American companies who have exploited Cayo Guam mines for several years. The first workers who had worked in mining came from Baracoa, Sagua de Tánamo and Santiago de Cuba. In addition, they were 385 workers.

Mining was done manually: with shovels, picks, hammers and they illuminated with carbide lamps, highlights or torches in the galleries. Miners lived in houses made of guano and boards without floors on the banks of Cayo Guam River. Thus, it appears one of the first settlements of miner's chromium (Cayo Guam town) (Figures 3 and 4).



Figures 3 and 4. Mine gallery chromes and sloped plane for ore transportation before the triumph of the Revolution in 1959.

In 1961, the workers' chrome living conditions were still very precarious, this situation was verified by Commander Ernesto Che Guevara, at that time he was the Minister of Industry, so he visited the town on May 26, 1961; immediately it began to make decisions in order to change the reality of Punta Gorda and Cayo Guam miners. This significantly contributed to community development of this mining settlement (Figure 5).



Figure 5. Punta Gorda town after the triumph of the Revolution.

Communication as mining geological heritage of Chromium industry-Moa

Communication as mining geological heritage is a subject that has developed since the end of the nineties, and it is associated to researches on geological mining field with educational, research, cultural use, and its influence on mining areas. Communication in mining communities is a challenge not only for companies related to the activity, but for people who participate in their activity (Fernández, 2006: 39).

However, it is impossible to talk about geology and mining patrimonial heritage in this region regardless of its influence on the cultural view outlined by this activity during the course of the years. In this respect, it is necessary to legitimize not only knowledge that exists in relation to what it is stated here, but its transfer, the communication of its usefulness to create the knowledge society regarding mining geological development and its impact in society.

Community communication: It has been the most widely used and effective element at the same time to mining development in the region, particularly mining chrome. Santiago de Cuba and Guantanamo, although distant areas of the Moa community, contributed by that time with direct communication, contacts, workshops that would promote chromium underground mining, employment, housing, salaries, etc. Many people from Santiago, Guantanamo and Baracoa arrived in the region within these communication processes achieved (Figure 6).



Figure 6. Natural amphitheater built in 1976. It was scenery of many political and cultural activities in the region.

La Mercedita chrome mining was located at 38 km from Moa-Baracoa road; it was also at 281 meters above the sea. Today its ruins belong to Sagua-Baracoa mountains and it is one of the few underground mines in the country, a feature that grants to it a great importance. It is situated in Alejandro de Humboldt National Park, a park that was declared World Heritage (Guarat, Begue and Villaverde, 2011: 24). It is significant the legacy of mining geologist activity in this place of the local geography and those communication processes that were developed there (Figure 7).



Figure 7. The entrance of La Mercedita mine, Chrome Moa, an important mining geological place as heritage.

So that community communication also brought about the region progress in the new geological mining sceneries emerged in Moa in the twentieth century what constitutes one of the most important dimensions in terms of the interaction forms that allows the relation between community and mining companies and a group operation toward the achievement of certain development goals.

Even though and taking into account what Alonso and Bel (2013: 79) analyzed about it, it is important to notice community development as a complex process which is generated in its own field where a local society takes place, there is also a human space having living beings with peculiar interests and experiences, opinions, beliefs and values that are going to feedback the collective ones learned by themselves and where communication plays an important role in a participatory atmosphere.

Commander Ernesto Che Guevara, the minister, was sponsor of a community communication in his relationship with miners, workers and residents of this area, from an open and transparent dialogue that enabled a better understanding for the creation and promotion of the mining activity at that time (Figure 8).

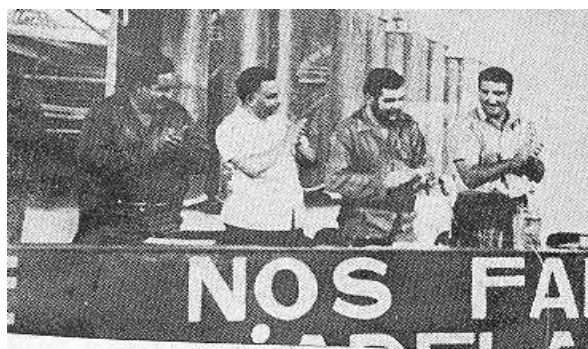


Figure 8. Commander Ernesto Che Guevara, Minister of Industry, and Commander Armando Acosta in a meeting with the miners in Moa.

Institutional communication: In 1911 the media, through an American publication specializing in mining, announced that Spanish miners explored the northern regions of the Eastern part and confirmed the existence of large lateritic soil volumes. It is necessary to highlight that these lands were geologically researched in the 1860s. The idea that Moa and Mayari's red grounds were ochers with own paint pigment was introduced during the Spanish colony, first, people had not heard a lot about the chemical and mineralogical composition of deposits, and second, the widespread use of ochers at that time.

Geological and mining reports are another form of patrimonial communication that is involved in the community. Between 1880 and 1890, attention was directed to those minerals with high iron tool, ferruginous concretions and blocks of the same material. They took no interest in anything. However, nickel and cobalt contents and other metals in the laterite ores were not known in the nineteenth century. During this period no significant exploitation reports or mining development in Moa's deposits are reported (Anexo 1).

Mass communication: The management of the mining geological heritage makes special use of promotion as a communication tool to achieve the proposed purposes. To reflect these heritage components it is necessary to point out that communication in this area envisages actions to promote, disseminate, or announce certain geological mining fact, its mapping, mining technology, exploitation machineries, historical development, etc., that in many cases it is insufficiently known for a population or community to which it may be important in the region, province, nation and internationally (Figure 9).



Figure 9. Publication in The Contemporary Eastern newspaper. It is highlighted chrome mining as the richest in the country. The map appears with the areas of greatest geological mining perspective of the chrome region.

Mass communication can spread by different media mining geological elements of Moa. It is also a cultural result, a product whose value is available to the society. How can we understand the mining geological development without mass communication?

From this view, it is stimulated the results of geological action, its mapping and detailed research for mining excavation. The press is a source of mining heritage. In Moa it was published several newspapers that brought a large volume of content related to geological mining activity and have grown in patrimonial wealth in time (Figure 10).



Figure 10. Weekly newspaper «The Nickel» founded on June 13, 1979.

In the case of radio, it systematically establishes «the geologist-mining promotion», being a cultural way that takes on the set of geological and

mining actions from the informative view in order to make the mining region development viable and visible. Television is a great strength that allows covering as picture and sound geological and mining activities highlighted the sense of identity in the region and the country.

Moa has the contribution of radio, television, the press (printing and digital) to the geological and mining heritage management. Communication of events related to the region's geology and mining form the basis for the creation of certain programs such as The Nickel Voice broadcasting and Moa TV nowadays. During their broadcasting it was mainly included journalistic works like interviews, testimonies and reports related to mining geological activities (Table 1 and 2).

Table 1. Mass communication through community radio: spaces included in the programming of The Nickel Voice broadcasting since its foundation on July 24, 1979 and up to now

Year	Title/ Program	Authors/ Filmmakers	Observations
Between 1979 and 1995	A new day	By Informative Writing The Nickel Voice broadcasting (Elias Valentín Noa, Yolanda Reyes Castillo, Eloy Laurencio, Felix Ramon Lobaina, Maira Hernandez, among others).	It was on the air at six o'clock. Pablo Velazco Mir was a special collaborator.
Between 1979 and 1995	Miners and Mining	Informative writing and other filmmakers	It was broadcasted four programs per month: two from Mayarí municipality and two from Moa. They were on the air on alternate Saturdays.
Between 1980 and 1995	With men from Nickel	Pablo Velazco Mir (Journalists and filmmakers)	A historical program with high patrimonial value. It is taken up again in 2013 to now.
Between 1980 and 1998	People from Moa	Pablo Velazco Mir (Journalists and filmmakers)	A historical program with high patrimonial value.
From 1994 to now	La Portada	María Esther Pupo (Journalists and filmmakers)	A historical program with high patrimonial value.

Table 2: Mass Communication through television: programs in Moa TV schedule at different times since its foundation on November 7, 2006 and up to now

Year	Title / Program	Authors / Filmmakers	Observations
From 2006 to 2014	Ventana Moa	Iris Domínguez Matos, Yanixa Gómez Almaguer, Nancy Almaguer Laurencio and a team of journalists.	It is treated activities related to industry and personalities from geology and mining region were interviewed.
From 2006 to now	Actualidades News	Iris Domínguez Matos, Yanixa Gómez Almaguer, Nancy Almaguer Laurencio and a team of journalists.	It has given news coverage to the activities in Moa's geology and mining context and some various journalistic genres have broadcasted up to now. (Testimonies, reports, interviews related to this industry)
2008	Compatriot	Yanixa Almaguer Gómez and Adisleydis López Cuenca	Considered a unique testimonial program.

Another important communication component is implicit in the social technologies. These are identified as all kinds of technologies (infrastructure, hardware, software, web services) that are susceptible to being used for citizen empowerment, and especially for the autonomous development of collaborative projects (Domínguez et. al; 2019).

It is a social technology when user communities incorporate them into their daily practices and give them innovative uses. But at the same time, we can wide this concept to incorporate new practices and production methods that create a new economy and therefore new communicative relationships

In the project called Geologist-mining community communication: as Chrome-Moa mining heritage, social technologies are used in order to reuse/recycle as much material as knowledge, technologies and methods which are implemented in geology and mining. It is a recycle to recover objects and ideas that can still be useful in our society; it is to reuse these elements to give them the same use or a new one.

Therefore, these projects are aimed to achieve material and social sustainability through citizen cooperation. It is understood that the reuse/recycle strategy is a way to sustainability, both in terms of reducing dependence on resources, and the effectiveness for the use of intellectual resources. An innovative society can only be fully developed if it works and learns from shared knowledge.

Among these approaches, there are projects especially working on at least one of these three cores:

- ✓ Impartiality: analysis of social diversity, recognizing the different subjectivities that make up the communication based on geological mining activity in a region. Here, working with social groups is included (for example geology and mining veterans in the region, gender, etc.), as well as narrative projects where people tell their life, the history of the community or territory.
- ✓ Infrastructure: infrastructure development for the people independent and creative use.
- ✓ Economy: projects that favor the development of a social economy in which marginalized sectors of the population and/or with limited resources can develop new economic activities. These are projects where economic profitability is accomplished by non-financial social benefits (social economy).

CONCLUSIONS

Community communication is a strength for promotion as chromium industry heritage in Moa and some elements that could be considered part of the heritage of this industry such as: geological-mining knowledge, traditional techniques used in mining, oral expressions as myths and legends, as well as the appropriate language of the mining environment.

Cultural promotion may be strength for heritage communication but through the use of different possibilities it offers a group of significant knowledge to the public to whom it is addressed.

Communication is itself an essential component in the mining productive activity. It has contributed since its wide variety of historical, social and

scientific links to the formation of a cultural influence around chromium exploitation that it is from the deposit opening to the industrial closing creating a patrimonial perspective which it is worth studying, so that this phenomenon constitutes a heritage that must be preserved for present and future generations.

Establishing a methodological element based on community, institutional and mass communication which allows a better mining geological heritage approach in Moa.

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Anexo 1

Table. Institutional communication: researches related to geology and mining chrome in Moa. Historical heritage geomining assessment since the beginning of mining chromium in Moa (Republican epoch)

Year	Title	Author	Observations
1905	"Report on Iron Ore Deposits in the North Coast of Santiago de Cuba Province "	By T. V. Church. (T.)	It is mentioned the presence of chromium in the northern part of the Cuban Eastern area.
1908	"Deposits of Residual Iron Ore in Cuba"	By A. C. Spencer Survey, Bullet. 340	(It includes deposits from Moa and Mayarí and Cubitas, Camagüey). US Geological.
1911	"The Mayarí and Moa Iron Ores Deposits in Cuba"	By Ch. W. Hayes, Am. ins. Min. Eng.	It is mentioned chromium and iron-nickel complexes in the area.
1911	"Mining Possibilities of Island of Cuba"	By H. H. Nicholson, Mining Science	
1911	"Documents related to the classification of Iron Ore from Mayarí's mines in Cuba"	Published in Madrid. It contains the opinions of C. K. Leith, A. C. Spencer, J. W. Dougherty, C. M. Weld, F. W. Wood, J. S. Cox, R. Adam de Yarza, R. Sánchez Lozano, V. Kindelan, F. Kuntz and J. R. Villalón. (The last one was published in the Cuban Society Of Engineers Journal, in 1912)	It is started a mining geological development in the northeastern region, Holguín province.
1915	"Mining in Cuba"	By A. Calvache	Handbook, printing of the School of Engineering in

			Lima, Peru. It is about chromium in Moa-Baracoa region.
1919	"Chromium and Manganese Minerals in Cuba"	By Albert E. F. Burch and Burchard, Mine Bulletin No. 5, in Spanish and English	It is stated mining and geological features about chrome of the region.
1919	"Chrome-Ore Deposits in Cuba"	By E. F. Burchard. (Discussion, Mining and Metallurgy), Am. Inst. Min. and Met. Eng.	
1925	"Summary about Cuban Mining History"	By A. Calvache, Minis Bulletin No. 8, Secretary of Agriculture	Reports about Cuban mining heritage
1929	"Elements of Natural Sciences"	By A. Calvache. (Text Work for Eastern Industrial Technical School) Mineralogy topic is about Cuban mineral deposits	
1929	"The First Steps of the Cuban Mining"	By J. I. Corral, Cuba Geographical Society Magazine	Exactly, Moa's chromium mining activity came up in 1936, seven years before nickel, unique Cuban product, on a worldwide scale.
1931	"World Production and Resources of Chromite, Cuba"	By A. Smith. Trans. Am. Inst. Min. Eng	
1936/37	"Nickel and its Industrial Applications, Nickel's Minerals and Metallurgy. "Cuba Mining Wealth scheme in 1936"	By A. Calvache	