

**MINERAL RESOURCES
OF MINAS GERAES
(BRAZIL)**

Published @ 2017 Trieste Publishing Pty Ltd

ISBN 9780649649068

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Edited by Trieste Publishing Pty Ltd.
Cover @ 2017

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BY

ALBERT F. CALVERT, F.C.S., ETC.,

*Knight Grand Cross of The Royal Order of Isabel
the Catholic, Knight Grand Cross of The
Royal Order of Alfonso XII., etc.*

AUTHOR OF

*Mineral Resources of Western Australia, South-West Africa,
Nigeria and its Tinfields, The German African Empire,
Salt in Cheshire, My Fourth Tour in Western Australia,
The Exploration of Australia, Editor The Spanish Series, etc.*

UNIVERSITY OF
CALIFORNIA

LONDON :

E. & F. N. SPON, LIMITED, 57, HAYMARKET.

NEW YORK :

SPON & CHAMBERLAIN, 123, LIBERTY STREET.

1915.

PREFACE

EVERY writer who has made a study of the mineral resources of Brazil has been struck by the amazing anomaly that proportionately as the incalculable extent and richness of those resources has become better known, the mining industry of the country has diminished. Many reasons have been advanced to explain the enigma that the facts present. The liberation of the slave-workers, bad legislation and exorbitant taxation, lack of railway communication, political unrest and financial instability, and the incompetence and dishonesty that have attended the exploitation of the mines and the management of the companies that have been formed to work them, are among the numerous disabilities from which the industry has suffered in the past; but while these drawbacks are being steadily removed, the disfavour, into which mining enterprise in the Republic has fallen, remains. The Brazilians themselves, apparently indifferent to the enormous national asset which these minerals represent, have devoted their activities to agricultural advancement, and it would almost seem that these people, with a score of potential gold-fields at their very doors, are immune from that "gold fever" which has rendered possible the recent stupendous progress that has been made by a host of other countries less rich in minerals than their own.

The diamond industry of Brazil is a dwindling enterprise in the hands of individual prospectors and ill-equipped bands of miners, although for a century and a half which succeeded the discovery of the first brilliant in Diamantina, Brazil's output of diamonds exceeded that of any other country. Before the development of the "basket reefs" of the Rand and the "deep levels"

of Australia, Brazil held the world record for gold production. One of her mines has yielded gold to the value of over eleven and a quarter millions since it was acquired by an English Company, another nearly two and a quarter millions, and a third over a million and a half. Still another property made possible the distribution of over 100 per cent. dividends for three successive years, and in 1868 produced two and a half tons of gold. Professor Soetbeer has estimated that the total gold production up to 1875 was £144,668,475, exclusive of the enormous quantities which were smuggled out of the country, paying no taxes and leaving behind no record of its recovery or removal. There is not an auriferous deposit in the country that has been exhausted or anything like it, yet scores of mines have been abandoned, and the industry at the moment is practically moribund. In the extent and purity of her ferruginous ores, Brazil possesses more important iron reserves than any other country, yet very few of the deposits are being systematically developed, and the manufacture of iron is limited to the operations of two smelters. Platinum, manganese, mica, and almost every variety of mineral and of coloured stones have been located in the State of Minas Geraes alone, but only the most desultory endeavour has been made to work them and bring them to market.

All the testimony of geologists and metallurgists of world-wide repute is agreed upon the extent, variety and richness of Brazil's practically inexhaustible mineral treasure, and superlatives have been lavishly employed to describe the individual mines and districts and deposits. Monsieur Henri Gorceix, the eminent French scientist, described the State of Minas Geraes as "a heart of gold in a breast of iron." Signor Alcides Medrado says that "experts who have visited Minas Geraes declare that it is one of the richest gold-fields on earth," and Monlevade, the French engineer, speaking of the iron reserves, affirms that a

single one of the gigantic iron ore deposits of Minas Geraes contains more iron than all the mountains of Europe put together. Mr. W. H. Herdsman has described the Pico d'Itabira as "a real mountain of iron," and Signor Arrajado Lisboa asserts that "when the manufacture of iron by electricity becomes an economic reality, no country in the world will offer more advantageous conditions for the development of the industry, not only because of the abundance and superior quality of the ores, but also because of the available sources of hydraulic power." This authoritative opinion is confirmed by that of Mr. H. Kilburn Scott, who writes: "I have examined the Lake Superior deposits, as well as extensive beds of ore in other places, and I am decidedly of opinion that the Brazilian deposits exceed, in a very appreciable degree, any I know, both as regards the quantity and quality of the ores, as well as in the facility of mining." Mr. E. C. Harder, the well-known mining engineer, gives the average result of 89 analyses of the Minas Geraes hematite ores at over 69 per cent. of iron, and adds that "in few places in the world has iron ore been found in marketable quantities which even approaches this in grade." Mr. William Selkirk and Dr. de Campos, of the Brazilian Geological Service, are no less emphatic in their conclusions. "The quality of the ore," writes the former, "is, without exception, the finest I have ever seen in the whole of my experience, and finer than any I have ever heard of," and the latter declares that "as regards the percentage of metallic iron, and particularly the purity of the ore, we believe it to be unrivalled in the world."

Referring to the possible content of iron ore in the region of Minas Geraes, Dr. Derby states that any attempts to estimate it must be extremely fallacious. For the purposes of the International Geological Congress (Stockholm, 1910) he placed the total tonnage at two

billion tons. Professor Gorceix estimated it at five billion tons, but considered he would not be exaggerating if he doubled that estimate. Messrs. Leith & Harder state that "the tonnage is probably not far short of the total reserve of available ores in the Lake Superior region to-day" (1911). It is possible that Gorceix's revised estimate of a probable ten billion tons will be nearest to the actual output, for the Government mining engineers calculate that the 52 outcrops they have surveyed contain not less than twelve billion tons of ore of the highest possible grade.

The fact that, in the face of such enthusiastic and unanimous scientific testimony, these gold mines have been abandoned, and these iron deposits have been ignored, only shows to Monsieur Touzeau that the mining history of Brazil forms no exception to the rule of mining that repeats itself in every country. The first stage is marked by the rush to participate in the scramble for the rich alluvials. Then follows the period of ill-advised expenditure of capital and the flotation of worthless and unproved properties, and the consequent interval of discredit, when sound and unsound ventures suffer alike, and this is terminated by the process of weeding out the bad concerns and the prosecution of the good ones on legitimate lines. Brazilian mining reached the discredited stage and stopped.

But in the meantime the obstacles that frustrated the early development of the industry are being overcome or removed. The Central of Brazil Railway from Rio de Janeiro, the only system at present serving the mineral zone, is duplicating the track and adapting the road for ore-carrying purposes. The Victoria to Minas line has already been completed to Baguary, and a powerful group of English and French financiers are arranging to connect up the iron district with this system, and to spend a considerable further sum of money on

improving the loading facilities at Port Victoria. A concession has already been granted for yet another railway from the iron district to a deep-water port, south of Port Victoria, which will bring the deposits a hundred miles nearer to the coast, but this scheme will not be carried out until the war is over. But with these improved means of transport, with the introduction of modern plant and machinery, and new methods of treating the ores, we have a combination of facilities that will enable Brazil to enter upon her last period and complete the history of her mining industry with every prospect of success. She may never recover her proud position as the greatest diamond-producing country; it may be that her period as the world's record gold producer is also irrevocably past; the tales of the streams "running over sands of gold" are not likely to be repeated; but she will, I am convinced, only exchange the reputation of her former glories for a record sounder and more enduring.

Brazil has suffered all too long from the explicable but entirely undeserved neglect of the practical, the scientific and the capitalist branches of the mining fraternity. Her interests, to employ a phrase understood in the City, got into wrong hands, and the venue became unfashionable. When Lake Superior was recognised as a fashionable field for investment, the necessary capital for the exploitation of her iron ores was quickly forthcoming; when Coolgardie acquired favour on the strength of startling but unproved discoveries, a railway was immediately thrust into the West Australian desert to convey electrical plant and modern appliances to the scene of mining operations; fashion unlocked the coin required to mint the auriferous deep levels of Australia and the Rand; and it more recently built trunk and branch lines for the idle purpose of burying millions of pounds of investors' money in the illusory tin-fields of