

manufactured from *raji*, which also contains bang; in addition to this they smoke bang. The Higras are met with in most of the towns of southern India, more especially where a large proportion of Mussulmans is found.

DISCUSSION.

Dr. A. CAMPBELL said that the system of having eunuchs in charge of the harems of Mohammedan princes was general all over India. The greater number of these eunuchs were Africans, and many of them attained to high positions of trust at native courts, as the Kojahs of Southern India are said to do by Dr. Shortt. They reach India mostly by way of the Persian Gulf. With reference to the operation of castration described by Dr. Shortt, Dr. Campbell said that at an early period of his service in India he was attached to the British embassy in Nipal. This was an independent state in the Himalaya, on the northern frontier of Bengal, and it was governed under the Hindoo law, by which the extreme penalty in cases of adultery with a woman of the highest caste by an outcast was castration, by the removal of the whole genital organs. The operation in these cases was performed with a common knife, the whole genitals being removed at one cut, and the criminal left to live or die unaided. On almost every occasion of these executions some of the survivors used to find their way to the British residency, where they received surgical aid and always recovered. Those who survived the hæmorrhage after the operation and sought refuge in their homes, Dr. Campbell was told, frequently died from unrelieved vesical inflammation and urinary obstruction.

The following paper was read by Dr. Carter Blake :

The PRIMORDIAL INHABITANTS of MINAS GERAES, and the OCCUPATIONS of the PRESENT INHABITANTS. By Captain R. F. BURTON, F.R.G.S., H.B.M. Consul, Trieste.

THE following papers are translated from the meritorious labours of M. Henriquez Gerber upon "Minas Geraes," the great central province of Brazil. Such monographs are of double value to the student, firstly, because they are written by men who have thoroughly studied the subject; secondly, because they serve as a standard of comparison between the present and the past.

COMPARATIVE ANTHROPOLOGY (ETHNOLOGY).

M. Gerber begins this chapter with a resumé of the paper upon the autochthones or primordial inhabitants of Brazil, presented in 1842 to the "Instituto Historico-geographico"* of Rio de Janeiro by the distinguished naturalist Dr. P. Lund.

* Vols. 4 and 6. It is an abstract of his work "Blik paa Brasiliers Dyreverden," etc.

The *Homo Americanus* cannot be derived from the Mongolian. The narrowness and flatness of the cranium and facial angle, the prominence of the zygomatic bones, and the form of the maxilla and the orbits give to the former a greater animality and thus show its inferiority.* Degeneracy will not explain community of origin. Firstly, the world proceeds from the imperfect to the perfect, and such retrogression is contrary to the course of nature. Secondly, if this hypothesis were true, the older the type the greater should be the physical resemblance between the races; but the calvaria of Lagôa Santa prove the contrary.

The discovery of human bones of both sexes, entirely preserved and partially petrified, in fact, truly fossil bones, mixed with those of gigantic and extinct animals, suffices to prove the antiquity of man in Brazil. The skulls show all the cranio-logical characteristics of the modern "Red race," especially the extraordinary depression of the coronal region, which in some specimens almost entirely disappears. On the other hand, the incisors are remarkable for having a plane and triturating superficies instead of a transversal cutting edge; this peculiarity is not found in any existing race, and only in the mummies of ancient Egypt. The similarity of the stone hatchets and implements of Brazil† with those of Europe, and the analogies of the Mexican monuments with those of Hindostan and Egypt, are undeniable points of contact between the early inhabitants of both hemispheres.‡

"We see then," concludes Dr. Lund, "that America was already peopled before the first ray of history had beamed upon the horizon of the old world, and that the oldest types belong to the same race which inhabited the continent at the epoch of its discovery."

The actual population of Minas, as of all Brazil, is composed of three elements, viz.—American, improperly called

* So in some ancient Mexican monuments the cranium retreats above the superciliary crests. This is supposed to be the work of art, but Dr. Lund has proved that upon the American continent there existed a race normally exhibiting the abnormal configuration.

† Dr. Lund found with the fossil bones a hemispherical piece of amphibole (hornblende), about ten inches in circumference, and smooth in the plane face, which served to bruise seeds or other hard substances.

‡ Here our author goes too fast. There is every reason to believe that in the most ancient ages Europeans and Asiatics were shipwrecked upon the eastern and western coasts of South America, and it is highly probable that these foreigners introduced the civilisation, of which curious remains existed at the time of the official discovery. Legends to this purport are found amongst all the tribes from Brazil to Peru. The stone implements were probably independent inventions, the offspring of necessity, and the similarity of form must arise from the similarity of men's brains. But such analogies will hardly justify the "ergo" which the author gives to Dr. Lund. The antiquity of the Brazilian would be the theoretical deduction from the early formation of his habitat.

“copper-coloured;” Caucasian, or white; Ethiopic, or black. The Portuguese family is the base of population, and upon it have reacted the two others in the ratio of their organisations, physical and moral, and in conformity with their numbers, power, and social position.

As in the United States the savage has retired before the advance of civilisation, the only remnants in Minas now hold the virgin forests of the River Doce and the Jequitinhonha. As usual, anthropologists divide them into two great different nations, which in the seventeenth century fought for the possession of the litoral.* These are the Tapuyas (Tapuias) and the Tupis.

The Tapuyas, driven from their ancient seats by the Tupis, a people coming from the south, took refuge in the far interior (Sertão) of Brazil. After some years sundry divisions of the former again appeared, under different names, upon the seaboard. Such, for instance, were the terrible Aimorés,† with the Abatiras and Potaxós, their confederates, now settled in the Serra des Aimorés, and the Goyatakazes, who hold lands in the actual municipalities of Campos and São Fidelis. This reaction would of course drive the Tupi family further to the south. The modern descendants from the Tapuyas are:—

1. The Machacalis, a small but agricultural and industrious tribe living on the Rebeirão dos Prates of the Jequitinhonha River (Aldeia or “Indian” village do Ferrancho).‡ Like those below, they are probably descended from the famous Aimorés.

2. Macunis and Malalis, whose remnants are settled (*aldeiados*) and cultivate the soil near the Alto dos Bois and the valley of the Upper Mucury. The Malalis are now reconciled to their ancient enemies, the

3. Botocudos, still the most powerful of the aboriginal natives, and which have hitherto resisted the exterminating wars of the Portuguese and attempts to civilize and domiciliate them. The true name was “Endgerekmung” (Captain Guido Marlière§

* This is clearly within the range of authentic history, which informs us that the wild men of America in that day, like the African savages of the present age, were always engaged in pushing their way to the sea-board. The negro's object is to trade direct with the white man; the American probably sought a more amene climate and plentiful diet. These would tend to enervate him and thus prepare his destruction by a stronger race.

† I would rather believe, with the old authors from whom Southey borrowed his materials, that the Aimorés were a distinct nation from the Tapuyas and the Tupis. They come, it has been conjectured, from the neighbourhood of the Arancanians of Chili.

‡ Possibly for “Ferrancho,” a medley of people.

§ Captain Guido Malrière (?) was a French officer in the local service who did much by kindness and consideration towards taming the savages of the Rio Doce. He is often mentioned by travellers of the last generation.

writes it "Crakmun"),* Botocudos meaning men with bungs in their lips, from the Portugese "botoque." There are several tribes, some tamed, others wandering wild in the wooded valleys of the rivers Mucury, Doce, Tambacury, Urupucá, and others. They are all greatly inferior in intellect to the Machacalis and Malalis. The chief clans of this nation now domesticated are,

A. The Naknenuks (= hill men), a confederation settled in the valleys of the Upper Todos os Santos, Poté and Mucury; in the villages of Capitão Felipe, in the forest of São João; of Capitão Poté, on the banks of the Poté rivulet; and of Capitão Timotheo, near the head waters of the Todos os Santos.

B. The Pojichá tribes, settled three leagues below Philadelphia.

C. The Giporok, on the banks of the lower Urucú and Mucury.

D. The Bakues, on the left bank of the Mucury.

E. The Aranans, on the banks of the Sorobim and Sassuh rivers.

4. The Coroados, direct descendants of the Goyatakazes, whose last remnants are domesticated and mixed with the whites in the south-east of the province, as near Aldeia da Pedra, in that of Rio de Janeiro.

The descendants of the victorious Tupis are:—

1. The Puris,† once a powerful people, and deadly enemies of the Coroados. They are now reduced to a few families, mixed up with the gross of the population in the municipalities of Ubá, Muriahé, and Leopoldina.

2. The remnants of various tribes who, domesticated and thoroughly mingled with the actual population, still exist in some of the western municipalities. Such are the Bororós, originally from Mato Grosso, who in the middle of the seventeenth century were subdued by the Paulista Antonio Pires de Campos. He enabled them to resist their enemies, the Cayapós (Caiapós), by settling them in the villages of Sta. Anna, Lonhozo, near Uberaba, and Das Pedras, near the existing city of Bagagem. Remains of the Cayapós are still found in the extreme north-west of the province, on the banks of the Carunhanha and the Urucua rivers, tributaries of the great Rio de São Francisco. The Araxás are settled about the modern Villa de Araxá, which borrowed from them a name.

It is impossible to obtain certain information concerning the present number of the Indians. The settled (*mansos*) are included in the general table of population, and M. Gerber is persuaded that the wild men do not exceed 8000 head.

* "Crak," in the language of the Botocudos, means iron.

† Also called Purus, and celebrated for atrocious cannibalism. The word means "man eater." They were found on the southern river till 1823.

The free population numbers, as a rule, four-fifths of the inhabitants.* This is also to be observed in other central provinces, whilst in Rio de Janeiro the cultivation of coffee and cane causes the servile almost to equal the free. The same is the case in the municipalities to the south-east of Minas, whence coffee is largely exported.

The following tables are based upon the interesting statistical labour which Major Ling Maria da Silva Pinto presented in 1855-6 to the Provincial Government, and the subsequent additions have been supplied by references to the respective authorities. The province of Minas had in the year

	Souls.	Increase.	
1776.....	319,769		according to Pizarro.
1786.....	394,0402·1 per cent.	" map of that year.
1821.....	514,7970·8 per cent.	" "
1823.....	563,6714·7 per cent.	" "
1847.....	908,8162·0 per cent.	" Silva Pinto.
1854.....	1,081,9092·5 per cent.†	" "
1856.....	1,219,2726·1 per cent.	" "

Thus during the eighty years between 1776 and 1856 the percentage of total increase was 1·70 per cent. per annum, and the absolute increase was 899,503.‡ It is difficult to explain the prodigious

* As the notes on climate (See Highlands of the Brazil) show, the temperature is not favourable to the negro; the land is too high, the air is too rarified; he finds white labour to compete with him, and, as a rule, he is not a favourite in the fishing and cattle-breeding countries. Hence of late years the slave population of Minas has not increased.

† Thus divided between 1854-61: Comarca of Villa Rica ... 78,618 souls.
 " Sabará ... 99,576 "
 " Rio das Mortes 82,781 "
 " Serro Frio ... 58,794 "

‡ From 1776 to 1786 the average increase was 2·10 per cent. per annum; from 1786 to 1821 it was 0·80; from 1821 to 1823 it was 4·70; from 1823 to 1847 it was 2·00; from 1847 to 1854 it was 2·50; from 1854 to 1856 it was 6·10.

To these figures, given by M. Gerber, I would add a few taken from other authors.

In 1808 Baron von Eschwege made the population of Minas to represent 433,049 souls.

In 1813 the "Patriota," quoted by Southey, gave 425,281 as the number of communicants in the diocese of Marianna, which then contained two-thirds of the provincial population.

In 1864 the "Almanak" of Minas gives 1,620,190.

In 1865 the Presidential Relatorio fixes it at 1,600,000, of whom one-third were slaves, to 20,000 square miles. This would be about 1·36th of the population ratio of France, and 1·50th of Holland.

In 1866 the Presidential Relatorio of the same year, gives as an approximation 1,620,190 souls. Also Lieutenant Eduardo José de Moraes offers the estimate of 1,600,000 souls; about one-sixth of the general population of the empire.

Thus, in that year the population of Brazil almost equalled that of the western states of North America in 1860. Ohio, Indiana, Illinois, Michigan,

advance made by the population between 1854 and 1856. Admitting, however, that between 1854 and 1861 the total increase was 10 per cent., and adding to this the colonists introduced by the companies "União e Industria" and "Mucury," we may calculate for the year 1861 a population of nearly 1,192,000 souls.

OCCUPATIONS OF THE INHABITANTS.

Industry and Productions.

"S'il existe un pays," says M. de St. Hilaire, "qui jamais puisse se passer du reste du monde, ce sera certainement la province des Mines." Hitherto the dissemination of inhabitants over a vast tract of land, and the want of good roads, have interfered with the march of improvement. As usual when slaves co-exist with free men, the latter are prejudiced against agriculture, holding it to be a servile toil; and the sudden arrest of the import slave-trade threw back production to a considerable extent. As, however, numbers increase, and communication enlightens men's minds, this aversion to an honourable occupation will vanish, and in due time the vast riches which lie in the bowels of the wealthy Mineiro soil, in the woods, and on the prairies, shall be turned to the use of mankind.

It is impossible to obtain exact statistics touching the number of men employed in the various branches of labour. We shall not, however, be far from the truth when, of the whole *male* population of free adults above eighteen years of age, we give 2 per cent. to the scientific and liberal professions, civil, military, and ecclesiastical, including also the employés of Government, 9 per cent. to mining industry, 11 per cent. to various manufactures, 26 per cent. to commerce and to the transport of goods, and 52 per cent. to agriculture and stock-breeding.

TITLES TO LAND.

Though by far the greater part of the province is uncultivated, the land is private property, and common lands (*terras devolutas*) are limited to the virgin forests and wild neighbourhood of the rivers Doce, Mucury, and others in the cantons (*Camarças*) of Jequitinhonha, Indaia, and Paraná. The titles to these lands were acquired either by settling upon them (*per posse, squatting*) or by donation charters (*Cartas de Sesmaria*), or it was granted in

Wisconsin, Minnesota, Iowa, Kansas, and Missouri, then numbered 9,141,390 souls, including, however, only 115,619 serviles. It exceeded that of the southern states. Texas, Louisiana, Arkansas, Mississippi, Alabama, Florida, Georgia, South Carolina, North Carolina, and Tennessee, numbered in 1860, a total of 7,649,660, of whom 4,574,429 were free, and 3,075,231 were slaves.

certain portions (*concedida em datas*), especially in mines, by the governors of Rio de Janeiro, São Paulo, Goyaz, and Bahia, before Minas Geraes rose to be a province.

In the old times grants of land were very unequal, ranging from a minimum of 60 square braças* to a maximum of 48 square leagues. The area of the whole province is thus distributed:—

Charters (Sesmarias), in square leagues of $\frac{1}{25} = 1^\circ$	5911
Grants (datas) given by the governors	2500
Squatting and arbitrary possession	9000
Common lands and those occupied by the Indians	2589

Total square leagues . 20,000

MINES.

The province derives its name from the gold and diamond washings which in early days occupied the greater part of the population. This industry has fallen off during the last forty years, when wages and rations began to have a higher value. Moreover, "pick and pan" can be no longer used, and expensive processes of extraction must take their place.† Besides diamonds, precious stones of different kinds, and gold, the only minerals now worked are iron, lime, and saltpetre.

Diamonds were discovered by Sebastião Leme do Prado, on the Ribeiro Manso, a tributary of the Jequitinhonha, in 1725, a little after the first gold-diggings were opened in the north of the province. They were not recognised as valuable till 1728, when the Netherlands consul at Lisbon saw a parcel brought there on trial by Bernardo da Fouseca Lobo. A royal letter of February 8, 1730, authorised the then governor, D. Lourenço de Almeida, to declare the diamonds crown property, and to demand from the washers a poll-tax of 5 \$ 000, which was afterwards gradually raised to 230 \$ 000 per annum — in those days a large sum. Another royal letter of October 30, 1733, established a superintendent of diamonds, and marked out as the "Diamantine District," a territory about 10 miles in diameter, circling the village (*Arraiat*‡) of Tejuco, now the "Cidade Diamantina." In 1735 the Government monopolised the diggings, and farmed

* There are 3000 braças to the usual league, which would reduce 5911 square leagues to 4257 leagues of 1-20th = 1°. D. João VI was the first who allowed strangers to hold sesmarias.

† Reichenstein's dry system of gold extraction by chlorine is, I believe, still unknown to Minas.

‡ In old Portuguese this Arabic corruption means a royal camp—head quarters. The original establishments in Minas Geraes took the name probably on account of their military organisation, and the necessity of fortifying stations against the "Indians."

them to João Fernandes de Oliveira for a yearly sum of 120,000 \$ 000, and after 1740 for 138,000 \$ 000. In January 1749 the privilege was conferred till 1753 upon Felisberto Caldeira Brant, and the latter was succeeded by the same Oliveira from 1753 to 1771. From January 1, 1772 the Government took the works into their own hands, until the law of October 25, 1832 threw them open to the public, establishing a certain tax. The law of September 24, 1845 created a new inspector-generalship of the Diamantine lands.

The quantity extracted has been considerable. In 1732 the fleet of Rio de Janeiro carried 1146 ounces to Lisbon. In the days of the contractors they sometimes washed more than 12,000 oitavas* each = 55,351.340 gr. avoird.) per annum. Between 1772 and 1774 the figures show 48,547 oitavas, besides 449,825½ oitavas of gold simultaneously washed. Baron von Eschwege (*Flora Brasiliensis*, p. 418) calculates from official documents that between 1730 and 1832 the extraction was registered at 165,760½ oitavas, besides the clandestine workings, which produced at least an equal quantity.

Diamonds are also found in other parts of the province, as in the southern watershed of the Serra Fria, the Serra de Grão Mogol, and principally in the streams flowing from the Serra da Mata da Cortia. From one of these, the Abuieté, came in 1800 the "Regent" diamond of the Portuguese crown, then valued at 7500 millions of francs. About twelve years ago (1863) appeared in the municipality of Patrocínio a large diamond digging. Here was presently built the village called "Bagagem Diamantina," which already in 1854 had 2815 hearths (fogos)† with 13,554 souls. In 1856 it was raised to the rank of a town (*Vila*), and it is now one of the most prosperous cities in the province. Amongst a number of valuable stones drawn from these grounds was the Estrella do Sul, weighing 18 oitavas, and now valued at £250,000.‡

There are actually in the province six inspectorships of diamond districts, namely, at Diamantina, Serra, Conceição, Grão Mogol, Patrocínio, and Uberaba, created by the decree No. 665 of September 6, 1852, which carried out with some changes the resolution No. 374 of September 24, 1845. Each district is divided into lots, which are farmed out. The price of stones, at the "Regulation of the Vintem,"§ is from 440 \$ 000 to 480 \$ 000 per octave (now nearly doubled).

* The oitava is about 17.44 carats.

† A truly archaic form of census, borrowed from the "Indians," who thus mustered their braves.

‡ The author might safely have added another cipher.

§ The vintem is the unity of measure = 2 grains, or half a carat. The "regulation of the vintem" means that every stone in the octave should average a vintem, or half a carat.

Besides diamonds, the province has produced the euclase, the chrysolite,* the aqua-marinha or beryl, the garnet, and especially the (white) topaz. All are however at present neglected on account of the low prices in the markets of Europe. The aqua-marinha (beryl) weighing 15 lbs., and presented in 1806 to D. João VI, was found in the Ribeirão dos Pingos, a tributary of the Mucury River. The so-called "diamonds" found (1861) in the River Matipoó, in the district of Abre Campo, were chrysolites, euclases, amethysts, topazes and other stones.

Gold was discovered in 1672 by Manoel da Borba Gato† upon the lands of Sabará. The "find" becoming public, hosts of adventurers, especially Paulistas, flocked to the lands lying near the range which runs north of the Stacohemi. In 1699 Antonio Dias, of Taubaté, found the rich diggings of Ouro Preto. Important settlements sprang up, and as population increased arose the troubles known as the Guerra dos Emboabas,* between the Paulistas and the Portuguese from Europe. These disturbances were at last put down in 1709 by the governor, D. Antonio d'Albuquerque Coelho de Carvalho. From that time the quinto, or fifth, due to the royal treasury, was carefully collected, and superintendentships of gold and smelting houses (*casas de fundição*—gold foundries†) were established in Villa Rica, Sabará,

* The ancient chrysolite was called topaz, from the eagerness with which it was sought (τοπαζειν) in an island of the Red Sea (Pliny, 37-8). The topaz in Minas is generally yellow, turning red when heated, and positively electric on one side whilst the other is negative. According to Mr. Walsh, the "topaz of Germany becomes white by a similar process, proving that the colouring matter of both is different." (Vol. ii, p. 188).

† The Almanak (1865) declares it proved by ancient documents that only in 1700 gold was discovered by Borba Gato, on the banks of the Rio das Velhas. But in 1573, a certain Sebastião Fernandes Tourinho washed the precious metal in the Sertão da Casca, an Indian village where the modern Cuiethé (Cuyeté) is. Also in 1693 Antonio Rodriguez Arzão, of Taubaté, found gold at Cuiethé, and showed three octaves to the Capitão Mór of Espirito Santo. Borba Gato, after sundry murders, fled to the Rio Doce; between 1695 and 1705 he was pardoned by the governor, Arthur de Sá e Menezes, on condition of his showing the "faisqueiras" or washings of the Rio das Velhas.

‡ The Portuguese called the white Brazilians "Caboclo," i. e., scraped, peeled, because the red men removed beards and eyebrows. The Paulistas retorted with "emboaba," poultry feathered to the feet, alluding to the breeches and hose of their rivals. This word is now forgotten, whilst caboclo is the general term for a cross with the red blood, as opposed to Bugre (lit. slave), a pure "Indian" in his wild state.

§ Each had a staff of fifteen or sixteen officers, assayers, smelters or founders, and writers. From the liberal measures of D. João VI, who permitted foreigners to expend capital in mines, resulted four decrees of the Imperial Government, two for Minas Geraes, and two for Mato Grosso. These orders granted concessions enabling strangers to possess mines and lands in Brazil, not only during the life-time of the grantees, but also during the existence of the companies. A decree of August 12th, 1825, restricted this to a term of twenty years. Mr. Edward Oxenford was the earliest concessionist in Minas Geraes. (Walsh, ii, 116).

and the towns subsequently built. Innumerable mines were afterwards discovered in different parts of the province. At present the precious ore is brought principally from the municipalities of Sabará, Caethé, Sta. Barbara, Marianna, Ouro Preto,* Itabira do Mato-dentro, Conceição, Serro, Diamantina, Grão Mogol, Minas Novas, and S. José d'El Rei.

According to authentic calculations, the total of the royal quint between 1700 and 1820 was 29,235,405 octaves = 7137½ arrobas (each = lbs. 32·3876). Calculating the octave at its then price of 1 \$ 500, the tribute to the Portuguese crown was £4,400,000 (= 114 millions of francs), and that which left the country, including the contraband, was £25,000,000 (= 700 millions of francs). Since the Declaration of Independence the production has greatly fallen off.†

The gold-crushing works in the province are about 100. The most important of them, and the largest industrial establishment is the "St. John d'El Rey Mining Company," at Morro Velho, 2½ leagues from Sabará. Established in 1830, it worked for some time near the city of S. João d'El Rei, and then began upon the present lands. The auriferous veins (*betas*) are pyrites injected into argillaceous schiste, and dipping to the south-east 45°. According to the director's reports, Morro Velho extracted during 1861 96,612 tons of mineral. Of these, 24,710 were rejected as poor, and the remaining 71,902 gave 499,064 octaves of gold = 6·94 octaves per ton. Adding to this the 26,690 octaves given by the "refuse works" (*engenhos da praia*), we have a total of 525,754 octaves, the greatest annual benefit then known. Between March 20, 1861, and March 20, 1862, were extracted 543,637 octaves, bearing a clear profit of £96,769 Os. 6d. and the dividend was ninety shillings per share of £20 (£15 paid up). During that year the mines employed 486 male slaves, 311 Brazilian, and 52 English workmen. In the mills (*engenhos*) were fourteen Europeans, 50 Brazilians, 96 male and 357 female slaves, a total of 1366 souls.

The principal mines explored at Morro Velho are those called the Cachoeira and the Bahú. The former was 1120 palms long in the horizontal section, 13 to 85 palms broad, and 1190 palms deep in March 1861, which became 1480 in February 1862.

* "Black Gold," where, according to Mr. Walsh, the precious ore has an alloy of silver, which oxidises by exposure. But iron, pure and degraded from mica slate, almost always accompanies gold in these diggings, and the oxide is found sufficient to tarnish the precious metal.

† Between 1832 and 1860 an improved system of working gave only six arrobas. According to the geography of Sr. Pompéo, between 1720 and 1820, the imperfect working gave 146,000,000 of oitavas (= 30,647 arrobas of gold). During that time Mato Grosso, Goyaz and S. Paulo together produced only 73,000,000 of octaves (= 17,647 arrobas).

The Bahú is about the same size.* Both have six inclined planes for hauling out and transporting the ore. In 1859 the mine employed 274 free Brazilians and foreigners, and 407 slaves, a total of 681 men. Amongst these were 242 borers (broqueiros), who in 311 working days extracted 89,000 tons of metal; 6119 tons were rejected as poor, and the remaining 82,881 were crushed in six stamping-mills and machines, worked by 134 hands. In the spalling works, the mills, and the amalgamation departments, during this year, were employed 9 Europeans, 21 male Brazilians, 24 women ditto, with 79 male and 254 female slaves, a total of 387. For a mining population the work-people are extraordinarily healthy. In 1859 the percentage of deaths was 2·76, and not including accidents only 2·14.

The average yield per ton was 3·9 octaves† = 215·9 grains. To each pounded ton, 70 lbs of mercury was employed, and the loss per cubic foot of amalgam was 0·58 ounces, about equal to 6 per cent.

In 1859 the total produce was 342,885 octaves, at an expense of 115,808\$067, that is to say, 0\$357 per octave. The capital of the shares paid up since 1830 was £128,400, which in thirty years (to 1860) produced a net revenue of £466,874 6s. 1d., besides which the works were valued at £100,000. The last dividend was £2 per share of £15—nearly 14 per cent.

The “Associação Nacional Brasileira de Mineração” (Cocoes Company) has explored since 1829 the mines of Macaubas; Cuiabá, and Cocoes. It has, however, been unfortunate, and its capital of 3,600,000\$000 (£360,000) was exhausted without giving a dividend. During the thirty-one years of its existence it extracted gold to the value of £150,000. Its only mills now employ 12 hands, whilst in the mines 21 free people and 21 slaves compose the total. In 1860 its expenses rose to 9,000\$000 (£900), and it hardly returned 693½ octaves of gold.

All the other establishments are upon a small scale. The ancient companies of S. José d’El Rei, Prados, Gongo Socco, Itabira do Campo, and others, have ceased to exist.‡

* In December 31st, 1866, the Bahú mine had 207 fathoms on the dip of the lode, and a length of excavation of 50 fathoms; in the Cachoeira these figures were 246 and 66. The average breadth of the Bahú was 44 feet, of the Cachoeira 29 feet; the minimum was 11 feet and the maximum 90 feet. There were 6 to 7 inclined planes.

† In 1829 Mr. Walsh calculated that a cubic foot of dirt (= 110 lbs.) gave 3 to 8½ oz. of gold. At Morro Velho, in 1866 the yield had reached 9 to 10 octaves per ton. The amalgamation was at the ratio of 1·60th of mercury per ton ore, and the loss was half an ounce per cubic foot of amalgam. The total produce of extraction in 1866 was 625,654 oitavas. The expense of extracting it was 4s. 6d. per ton treated, and 2s. 6d. and 3s. 8d. per ton received from the mine. The cost of extracting the gold was 228 reis to 6½d. per oitava.

‡ Those of Marianna and Passagem had not begun when the author wrote.

Platina,* silver, copper, and lead. All these are now neglected. Platina is found mixed with gold in many mines belonging to the municipalities of Marianna and Do Serro. Lead, generally argentiferous, exists in the vicinity of Sete Lagoas, Abaieté, and other places; and the Government does not work the rich galeniferous ores of Abaieté. Copper exists abundantly in various parts of the municipalities of Sta. Barbara, Serro, Sabará, and Indaiá. At one time it was highly thought of.

Iron is scattered over the whole province, and should be one of its chief exports. It was first extracted in the beginning of the present century by Manoel Ferreira da Camara Bitancourt. The works actually in use are now above 90, and are limited to the cantons of Ouro Preto, Piracicava, and Serro. The principle is that of M. Jean Antoine Monlevade, a few leagues to the south of Itabira de Mato-dentro, which in 1863 employed 96 slaves, and which annually produces 6000 arrobas of worked iron. There are others in the western municipalities, as Piumhy and Patrocínio, and between Ouro Preto and the city of Itabira the works employ about 2000 hands, and produce annually some 150,000 arrobas. None of these cast their metal with high-chimneyed air furnaces (*Fornalhas altas*), but make bars or worked iron in the "Stück-ofen" or Catalonian forge.† The combustible is charcoal.

Limestone is quarried in many parts of the province, and there is a quantity of marble for which some day use will be found.

Salt and saltpetre. The first effervesces from the ground in the municipality of Januaria, on the banks of the Rio de São Francisco: it also appears on the banks of the River Mosquito, in the arrondissement of Grão Mogol. Saltpetre in considerable quantities penetrates into the clay strata. The municipalities of Santa Luzia, Montes Claros, Piumhy, and Formiga supply the greatest quantity.‡

Besides these minerals there are large deposits of building-stone, clay fit for tiles, bricks, pottery, and even porcelain; true kaolin, in the municipality of Marianna; steatite (vulg. called Pedra de Sabão = soapstone), well fitted for pots; slate, plumbagine (plumbago, carburet of iron), for pencils and crucibles (*cadinhos*); pumice; sulphate of iron, popularly known as "Caparrosa," and ochres of different colours.

* According to some travellers palladium and tellurium (?) have extensively been mistaken for platina.

† It is the rudest possible contrivance; yet with the aid of charcoal fuel it turns out iron which equals, and has even excelled, English steel.

‡ There is an immense importation of salt into this province. Sabará alone (14 leagues from the capital) takes, per annum, 30,000 bags, each of 3½ kilos. The value is there 7 \$ 000 per bag; but it gradually rises at Curvello and the Barra do Rio das Velhas to 16 dollars.

AGRICULTURE—STOCK-BREEDING.

Agriculture, which might embrace the produce of the temperate and the tropical zones, is now confined to the produce consumed by the country, such as the cereals—maize, rice, wheat,* and rye—the latter two in very trifling quantities; fruits, as bananas, limes and sweet limes, peaches, jaboticabas, pineapples, quinces, guavas, etc.; vegetables, as beans, manioc, sweet potatoes, and yams; with coffee, tobacco, cotton, and Palma Christi. The vine and indigo are also cultivated, but to a very small extent.

Pigs, goats, and the minor domestic animals are found all over the country; the black cattle, mules, and horses are bred most in the campos or prairies of the west; sheep are few, although the plains offer good pastures. Apiculture progresses, but the utilisation of the silkworm is still in embryo.

Most of this produce is bred for consumption in the province, and thus the commerce is almost exclusively internal. The price and difficulty of transport prevent exportation. The yearly value of provisions here produced may be £5,000,000. Only the southern municipalities, whose communications are better, can afford to export, and the articles are usually those that combine lightness and value. Such are

1. Coffee, which flourishes chiefly in the municipalities of the Rio Preto, Parabybuna, Mar de Hespanha, and Leopoldina; less in those of Pomba, Ubá, and Muriahé. The total production, home consumption included, rises to a mean annual average of 1,300,000 arrobas.†

2. Tobacco, of which the best is grown in the municipalities of Baependy, Campanha, Christina, Itajubá, Lavras, and Pitanqui. The annual produce may be 400,000 arrobas, of which the province exports about 250,000.

3. Cotton was formerly the chief of Mineiro products, and was much cultivated in Minas Novas; it then declined to the wants of home consumption of 60,000-70,000 arrobas, of which about 23,000 are exported in woven stuffs strong and good.

4. Cane was also grown in many places for sugar and spirits. It is mostly consumed at home, and the exportation of sugar and hard brown cakes (*rapaduras*) hardly reaches 100,000-170,000 arrobas per annum.

* We are told that in 1829 several Comarcas grew considerable quantities of wheat. It was the same in the southern part of the old S. Paulo Province, now Paraná.

† The general average of the annual export of the province is as follows: coffee and tobacco 16,000,000 kilogrammes; maize, beans, rice, and farinha, 6000 litres; worked cotton 2500 metres; black cattle 150,000 (in 1881, 130,500) head; poultry about the same; cheeses 500,000; charcuterie 3,000,000 kilogrammes; 7000 sets of saddles, harness, etc.; hides, raw and prepared, both in considerable numbers.

5. Black cattle is best bred in the Prairie municipalities to the north and west of the Serra da Mantiqueira. These places send annually to the capital (a Côte) about 70,000 head.

6. Sheep form an annual exportation of 15,000 head.

7. Pigs are bred in great numbers, pork being a favourite food. The number annually fattened is nearly 4,000,000, of which 50,000-80,000 head may be exported, with 250,000 arrobas of lard (*toucinho*).

The number of agricultural and breeding establishments in the province exceeds 20,000.

COLONISATION.

There are three great nuclei of colonies, besides a number of foreign labourers, chiefly from the Açores Islands, who are scattered over the properties in the southern municipalities, viz. :—

1. Colony of Mucury. The Mucury Company (having opened a road from Santa-Clara, the terminus of steam navigation on the River Mucury, and the village of Philadelphia, founded by the same body) began in 1854 a colony for Brazilians and strangers. The first German detachments arrived in 1856, but a variety of difficulties, endemic disease, and discontent arrested progress. In the middle of 1859 the colony counted 591 souls, not including minors of five years, and the total population of the Philadelphia district was valued at 3500 souls. The land is of 15½ lots of 150,000 square fathoms, measured, marked out, and sold to the colonists—42 lots of 4000 square fathoms* for country houses (*chacaras*), and 172 of 5000 for houses in the village of Philadelphia. It possesses 12 sugar-works, 10 mills, 50 crushers (*monjolos*) for making manioc-meal (*farinha*), 5 smithies, and 2 cart-making establishments. The annual production, which, however, is all consumed by the colonists, is valued at £20,000. Another unprosperous colony, "Nueva Milano," was established by an Italian, M. Monteggia, under the auspices of the same company, on the banks of the Ribeirão de S. Matheos, three leagues below Santa Clara.

The Imperial Government, in virtue of the contract dated March 1, 1861, took over charge from the Mucury Company, and proceeded to make many improvements. The colony now numbers 487 souls.

2. Military colony of the Urucú. It was created by Imperial Decree of May 24, 1854, with the especial object of protecting the new settlers in the woods of the Mucury River, and it was planted at the confluence of the streams Urucú and Das Lages. The *personnel* numbered hardly a major director, 4 officers, and 26 privates (*praças*), till May 10, 1855, when it was reinforced

* These were "Aforado," i. e., hired from the Camara.

with 28 families from Madeira, each receiving 40,000 square fathoms of land. It actually contains 288 persons, of whom 113 are Portuguese, 94 Belgians and Swiss, and 81 Brazilians. Of 793½ alqueires* of cultivable land in the colony, about 91½ are planted with produce of the country.†

3. Colony of D. Pedro Segundo. It was founded with assistance from Government by the "Company União e Industria" on July 12 1858, when the first German colonists arrived. Early in 1860 it contained 1112 souls, and early in 1861, 1144. In 1861 11 died, 44 were born, and 6 came from Europe; thus early in 1862 the colony contained 1183 persons—654 males 529 females. These figures, however, include 250 who, with or without permission of the directory, are absent from the colony. There are 200 farms (*prados*) of 20,000 square fathoms each, and half of them are planted with cereals and other food for country consumption. At the same time 123 families and 8 unmarried men were occupied in cultivating their grants (*prazos*); 60 persons were simultaneously working at the roads of the colony, 180 were in different works of the company, and 28 persons were in private service. In 1861 the company paid the colonist labourers for various works 142,413\$839 (= £14,200). In the same year the supplies, native and foreign, furnished to the colony amounted to 20,356\$840 (= £200†).

MANUFACTURES AND FABRICS.

These, for want of hands, are at present necessarily in a backward state. The following are the principal branches, viz. :—

1. Preparations of vegetable and animal substances, as coffee, cane (for sugar and spirits), tobacco, indigo (on a very small scale), castor oil, sweets, and quince jams (*marmaladas*), "Indian" (*i.e.*, Chinese) tea, Paraguay tea (*congonghas* or *mate*), manioc-flour, maize-meal (*fuba*), and sediment flour of manioc

* Each alqueire is = 10,000 braças (Brazilian fathoms), usually set down at six acres, English.

† In 1864, according to the Provincial Relatorio, it was directed by the ex-ensign Pedro Viegas de Menezes, who commanded five soldiers. The population was represented by 356 souls, of whom the colonists proper were 165 Portuguese, 97 Dutch, 25 Brazilians, 13 Chinese, 11 Belgians, and 11 Germans, total 322. Of these 178 were males, and the rest females; 11 were widows and widowers, and 191 unmarried, including 172 minors, of whom 5 were orphans. The colony is purely agricultural, and supplies coffee and cotton, tobacco and especially sugar cane, of which rum and rapadura bricks are made. The rest is composed of maize and manioc, rice, beans, and sweet potatoes.

‡ Since the latter part of 1867 this colony has greatly improved, and has received considerable additions. Like the rest, however, it is established upon a wrong system, a kind of sickly exotic nurture being made to take the place of the healthy natural growth. In a future work, I shall revert to the wasteful, useless process of such immigration to the Brazil.

(*polvilho*); besides saw-woods, butter, cheese, bacon, etc. An approximative calculation gives us in the province 300 saweries, 4503 works for sugar-making and distillery, 250 coffee-milling establishments. Besides these there are many mills (*moinhos*), stamps (*monjolos*), and small works (*engenhocas*).

2. Mechanical arts and trades. Besides those which exist in all civilised lands, such as the callings of mason, carpenter, joiner, iron-smith, tailor, bootmaker, etc., the following deserve especial mention :—

(a.) Printing and small bookbinding establishments at Ouro Preto, Marianna, S. João d'El Rei, Diamantina, Tres Pontas, Campanha, and places of minor importance.

(b.) Fabrics of cotton and wool in all parts of the province, especially in the municipalities of Queluz, Bom Fim, Pitangui, Desemboque, Piumhy, Tamanduá, and others in that part. Mostly they are coarse stuffs, but there are finer striped textures like casimir, also horse or saddle-cloths (*mantas*) and coverlets or bedcovers (*colchas*), strongly made and of good design. The annual total of stuffs may, without fear, be estimated at 4,000,000 yards (*varas*), and 10,000 pieces of bedcovers. The most important manufactory is that called "Canna do Reino," in the municipality of Conceição; it is aided by the government, and by the latest information it can turn out an annual total of 50,000 or 60,000 yards (*varas*).

(c.) Hats manufactured at S. Gonçalo da Campanha.

(d.) Ropes and a few stuffs manufactured with the fibres of the pita aloe, the Tuccum palm, the leaves of the Macaúba tree, etc.

(e.) Tanneries in the municipalities of Januaria, Paracatú, Uberaba, and others to the west.

(f.) Currieries and saddleries of the Cachoeira da Campo, Prados, Barbacena, S. João d'El Rei, and other places; fabric of packsaddles (*cangalhas*) and ordinary horse furniture in all parts.

(g.) Goldsmitheries of Diamantina, formerly much famed and still distinguished by their purity of metal.

(h.) Forges and furnaces, lime-kilns and potteries, mentioned under the head of "mineralogy."

(i.) Images made at Santa Luzia, where figures are prettily cut in a very white steatite sent from Bahia; the city annually exports a value of 60,000 \$ 000 (£6,000).

(k.) Pots and vases of steatite.

(l.) Potteries in the municipalities of Conceição, Caethé, and Marianna, all unimportant. The ancient works of "Saramenha,"

* The vara is a yard of 5 palms = 40 inches.

a place near Ouro Preto, which produced an excellent article, have been abandoned for years.

(m.) Soap, indigo, wax tapers, tallow candles, almost exclusively consumed at home.

(n.) Gunpowder made at Ouro Preto and S. Bartholomeu: rockets and fireworks everywhere.

(o.) Drugs for apothecaries' shops, of which there are in the province some two hundred and fifty.

(p.) Wooden boxes and bowls, mats, baskets, panniers (jacás).

DISCUSSION.

Mr. CHARLES HAMILTON had listened to Captain Burton's valuable paper with great interest, and was very pleased to learn from it that the Captain did not hold out any hopes to the English agricultural labourers of obtaining any success in Brazil, as in his (Mr. Hamilton's) opinion it is about the worst country the English agriculturist could settle in.

Dr. CARTER BLAKE, referring to the description of human remains from a bone cave in Brazil (Journal of the Anthropological Society of London, vol. ii, p. cclxxv.), stated, in reply to Mr. Charlesworth, that he did not consider the attrition of the incisor teeth indicated a race character in the Brazilian aborigines.

The President announced that the auditors of the accounts of the Institute for 1872 had been appointed, viz., Mr. Clements R. Markham, C.B., on behalf of the Council, and Mr. Richard B. Martin, on behalf of the Members.

On the invitation of the President, Mr. Charles Hamilton made a brief statement relative to his proposed journey of exploration in Palestine.

The meeting then adjourned.

ANNIVERSARY MEETING.

JANUARY 21ST, 1873.

SIR JOHN LUBBOCK, Bart., F.R.S., *President, in the Chair.*

THE minutes of the last annual meeting were read and confirmed.

THE Treasurer's Financial Statement of Income and Expenditure was read and adopted. (p. 424).