depend, in this respect, upon natives, the more agreeably and securely will they travel.

The whole village of Ypanema owes its origin to the vast repositories of magnetic iron-stone in the mountain of Araasojava, the treasures of which have indeed been long known, but were not regularly worked according to the true principles of mining till after the arrival of the king. The enterprising minister, Conde de Linhares, brought hither, in the year 1810, a company of Swedish miners, who began by erecting a wooden workshop on the banks of the Ypanema, in which they had two small furnaces. At present there are still three Swedish master-workmen, who have increased the annual produce of the manufactory built by them to four thousand arrobas. In the smelting and other operations the Swedish method is followed. The want of a high furnace, as well as the difficulty of transporting the metal in large masses, and the demand for ready-made articles, induced the managers to have the greater part of the metal that is obtained immediately manufactured into horse-shoes, nails, locks, &c. The Swedish workmen have endeavoured to instruct negroes and mulattoes so as to qualify them to be useful assistants, and are very well satisfied with their practical ability; but their idleness and irregularity are a continual cause of dissatisfaction to those good people who, even in the abundance and freedom from care which

they enjoy in this southern climate, cannot forget their own country, and are filled with the most painful longing after their native land, at the thought that, like their already deceased companions, they will one day lie in unconsecrated ground. Under the government of the Conde da Palma, an enlightened promoter of the manufactories, a plan was made for a new and more durable iron-foundry, and the execution of it was confided to our countryman, Lieutenant-colonel Varnhagen. This handsome and extensive edifice, the expenses of which amounted to 300,000 crusados, was just completed when we arrived at Ypanema, but they had not yet begun the operation of smelting in it, because they waited for the founders necessary for the management of a high furnace, who were expected from Germany. The buildings of the new manufactory are constructed, with taste and solidity, of yellow sandstone, which is found in the neighbourhood. There are two high, and several other furnaces; the bellows are worked by water. Very well contrived and spacious magazines for keeping the coals and the ready-manufactured articles are erected near to the main building, which receives the necessary water from the Rio Ypanema by means of a bricked canal provided with sluices. There is also an hospital for the sick workmen belonging to the establishment, which is attended by two surgeons. At the time of our visit doubts were still entertained

whether the sandstone here was proof against fire, because they had not yet attempted to smelt. A difficulty which will oppose the extending of the manufactory is the want of proper wood for fuel; for though the low valleys, the banks of the streams, and the iron mountain of Araasojava itself, are covered with wood, it is probable that this will soon be exhausted if the manufactory continues to work to a great extent. The directors have, it is true, made the regulation, that every inhabitant of these parts must furnish a quantity of charcoal in proportion to the extent of the land cultivated by him; but this means, without the due planting of new woods, and a judicious management of those which already exist, cannot prevent a future scarcity of fuel. By plantations of the paraüna (perhaps an acacia?), a kind of wood which produces a very good charcoal, they would prevent the necessity of employing many different kinds of charcoal; which, by an unequal communication of carbon to the iron in the process of smelting, probably make it of unequal density, and consequently brittle in some places. The ore appears to be good, and contains partly ninety per cent.; yet we frequently heard complaints in Brazil that the iron extracted from it was too brittle, and that many instruments made of it were not durable. When the best method of treating the ore, especially in the operation of refining, is discovered, and the exportation facilitated by making a good road or canal to the coast, Ypa-

nema, with its incredible abundance in iron ore, will be able to supply, not only Brazil, but all the rest of the American continent, with that metal.

The mountain which produces this extraordinary quantity of ore, rises behind the place, a quarter of a mile to the west, and extends, as a rather insulated mountain ridge, a league in length, from south to north. The elevation above the Ypanema is about 1000 feet. It is almost every where covered with thick woods, from which, in the morning and evening, the noisy howls of the brown monkey (*Mycetes fuscus**) are heard. We ascended it, taking the narrow road through the bushes, by which the mules bring the ore to the manufactory. After we had gone winding up the mountain for a short way through thick wood, we found ourselves all at once before some gigantic rocks of magnetic iron-stone, which rise almost perpendicularly to the height of forty feet and more. Around them, partly upon, and partly under, the surface of the ground, which is a very rich mould, lie innumerable loose pieces, from the size of a fist to considerable blocks. The surface of the masses of rock is almost everywhere flat and even, with slight depressions and cavities, and has a crust of imperfectly oxydated iron-stone, which is some lines thick. We did not observe that the great masses caused any motion in a suspended needle, but small pieces,

* Spix: Simiarum et Vespertilionum brasiliensium species novæ, &c. Monachii, 1823. fol. tab. xxx.

especially when just struck off, had a considerable effect on it. The mass of this magnetic iron-stone is either quite compact or traversed by veins of red ochre. This iron-stone appears to be in immediate contact with a yellow quartzy sandstone, with an argillaceous cement; at least, the latter is seen in several places at the foot of the mountain, as well as in Ypanema itself. A dirty lavender-blue primitive clay-slate, tinged brown in the rifts, which runs from east to west, lies on the top of the mountain, here and there, over the iron. Upon the Morro de Araasojava, and probably in veins of the magnetic iron-stone, there is a porous quartz-stone, of a light brown colour, the cavities in which are covered with a bluish white calcedony, with a crystallised surface.

The forests, which stand more luxuriant and thicker in the hollow than in the higher parts, are uncommonly rich in the most various kinds of wood. In the company of a farmer of the neighbourhood, we collected, in one day, a hundred and twenty different kinds, among which, there was in proportion a great number of very hard and durable species, fit for the construction of buildings and ships.* We were very much struck with the facility with which our guide, after viewing the

* The most valuable woods of that country are, *Sebastião d'Arruda*, *Coracão do Negro*, both chiefly used for fine furniture on account of their red grain; *Jacarandà-tun*, an excellent kind of mahogany; *Masaranduva*, *Cabiuna*, *Perova*, *Paraüna*, *Jequetivà*, *Cedro*, &c.

stem and the bark of each species, told us not only the name current in the country, but also stated the use, the time of flowering and the kind of fruit. An uninterrupted intercourse with nature, sharpens the senses of these uneducated people to such a correct notion of natural distinctions, that they mostly excel, in this respect, the learned European, who has fewer opportunities of contemplating nature. The sertanejo (a countryman) of S. Paulo distinguishes several kindred forms of laurel trees, which he intends to fell for domestic purposes, on a comparison of their leaves, with a certainty that would do honour to a botanist. He is equally distinguished by an accurate acquaintance with the medical plants of his country. The female inhabitants of this province in particular, have the reputation of great skill in the practice of the medical profession. Almost in all the houses, one or other of the women takes upon her the office of curadeira, which is not disputed with her by any real physicians or surgeons, for at the time that we travelled through the capitania of S. Paulo, there was no regular physician either in the city or in the country. It is an error, to suppose that this practical knowledge of the medical virtues of natural substances, has chiefly descended to the present inhabitants, by tradition, from the American aborigines. A long intercourse with the Indians has convinced us, that the indolence

of these unhappy people, hinders them from investigating the healing virtues of plants. Superstition and indifference to life, and insensibility to the sufferings of their fellow-creatures, prevent the Indians from making use of the beneficent gifts of nature which everywhere surround them, and which their senses, quick in simple observation, would readily discover if they took any lively interest in them. The greatest merit in discovering and making use of healing plants, as well as the finding of the gold mines, is therefore due to the Paulistas. Their active minds and their curiosity, excited by the bounty of nature, pursued, with the acuteness peculiar to Europeans, the discoveries which occurred to them by chance, or very seldom by information obtained from the aboriginal inhabitants.

In this branch of research, the human mind everywhere takes advantage of the indications of nature, and from the physical character of objects from the smell, colour, from the similarity of certain forms with parts of the human body, draws analogical conclusions respecting their internal virtues and their effects as medicines. Thus the Paulista, endowed with a lively sensibility to nature, saw in every deep red colour a reference to the blood, in the yellow to the gall and liver: to the Urupé (*Boletus sanguineus*), which is of the colour of red lead, suddenly appears on decayed trees, and frequently continues only a month, he ascribed peculiar properties for checking hemor-

rhage; in the yellow wood of the bùtua (*Abuta rufescens*) he saw a hint of its efficacy against diseases of the liver; in the testicle-shaped root of the *contrayerva* (*Dorstenia brasiliensis*) and the heart-shaped leaves of the *Coracâo de Jesus* (*Mikania officinalis*, nob.) an indication of strengthening and cordial qualities; and considered the large bright flowers of the *Gomphrena officinalis*, nob. as an expression of many excellent qualities of the root, which he therefore distinguished by the significant name of Paratudo (good for every thing). We might mention several other similar natural productions, which the Paulista, having judged to be efficacious from their external appearance, tried, in a very rude empirical manner it is true, and applied them more and more frequently against diseases. Among this little people of colonists, who were left only to their own simplicity and the natural riches which surround them, medicine began with mere practical experience and popular traditions, and assumed the same character which it bore in Europe in the middle ages; and as testimonies of which, we still find in several Pharmacopœias of old date, elks' claws, the scincus officinalis, &c. The scientific physician must here make use of the simple accounts and experience of the country people, to extend the knowledge of medicine, as Hippocrates formerly used the votive tables in the temples. Wounds in particular, and external

disorders of the most various kinds, are here treated with a degree of success which is often astonishing. Both the rapidity with which in hot countries all organic processes go on, and the frequently almost too bold interference of the half-taught physician, by desperate remedies and by excessive doses, may likewise be among the causes of the success of many modes of treatment which in Europe would be condemned as hazardous. The circumstance too, that most of these domestic remedies are taken immediately from their living state for medical purposes, is of great importance, and, perhaps, too little attended to in Europe, where the state of civil society keeps us at a greater distance from nature. The European medicines from the vegetable kingdom have lost most of their virtues before they have reached this country, and the Brazilian physicians therefore substitute, without hesitation, the native productions for many that come from abroad. Only for a few remedies, for example, Iceland moss, the squilla, aconite, digitalis, opium, which latter, however, seems frequently not to act favourably, sufficient substitutes are not yet known here.*

We had been only a few days at Ypanema, when the report of the arrival of two foreign physicians had spread far and wide through these lonely regions, and patients came from all quarters, who

* See Note 1. page 90.

asked our advice and medicines. Our host, too, a man full of patriotic sentiments, thought it his duty to turn the presence of his guests to the advantage of his friends and neighbours, and introduced to us a great number of patients. In the space of a fortnight, which we spent here, we distributed above five hundred prescriptions to the crowd of applicants, which half emptied our little medicine chest. By far the greater part of the diseases which we here observed, were of syphilitic origin, or united with syphilitic dyscrasy. The forms under which this polymorphous disease appears, are of the greatest diversity, particularly as regards the cutaneous system, and several of them have perhaps not yet been observed in Europe. In general the character of disease here is inflammatory, and modified by the choleric, melancholy temperament of the Paulista. Under this head must be classed the extremely numerous cases of inflammation of the eyes; of erysipelas, combined with liver complaints; of acute dropsies, particularly anasarca; of hydrothorax, the consequences of pneumonic complaints, which appear sometimes simple and sometimes complicated with gastric affections difficult to be recognised; of apoplexies preceded by cataract, &c. In no part of Brazil are there so many melancholy and hysterical patients as here. Hydrophobia has been already observed though rarely. In mentioning the circumstances tending to produce diseases in this part of Brazil, we must

particularly notice the diet which differs essentially from that in the northern provinces. Instead of mandiocca, they use almost exclusively a coarsely ground maize flour: it is brought to table in little baskets, as bread is in Europe, and it is only when the guests require it that farinha de pâo (mandiocca) is brought in its stead. They very rarely bake it into bread or cakes. Besides this, *Canjica* which is also made of maize, and which is never wanting at the dessert, is likewise a national dish of the Paulista. The grains of maize, cleared of the husks by a hammer, driven by means of water, in the hollowed trunk of a tree, are boiled with water or milk, and then sweetened with sugar or treacle. This dish, of the invention of which the Paulistas are not a little proud, is well-tasted, but, on account of the heat of the climate, difficult of digestion. We often hear in this province the expression: "if we had not been the first who discovered the gold mines, we should have done sufficient service to the country by the canjica, and the hammocks, which last we first copied from the Indians."

The simple inhabitants of this country, had not yet heard anything of animal magnetism, and listened with some incredulity to our accounts of this mode of cure, which in their opinion, was of a magical nature. If we had proposed the cure by magnetism, for hysterical women, their husbands would certainly not have been indifferent to

the execution of this project; but another opportunity presented itself for making such an experiment. A young negro slave, who had lost the use of his right arm, by suddenly taking cold, was brought to us by his master, to examine the nature of his disease. After we had sufficiently enquired into all the circumstances, we decided that the application of magnetism to the right arm, would be the most suitable method. One of us, therefore, made him stretch out his arm upon a table, and had begun to magnetise only a few minutes, when the attention of the spectators was attracted by a considerable motion of all the muscles of the patient's arm. The operator hereby encouraged, redoubled his exertions; and when a short time afterwards, he called to the negro, in a voice of command, "Rise! lift up your arm!" the patient, still half in doubt, raised his arm, and as he was able to perform all the motions without difficulty, a scene took place which was worthy of the pencil of a master; the astonishment of the persons present, and their terror at this act of conjuration, the respectful triumph of our host, the joy of the slave, and the gratitude of his master, formed altogether a very animated picture. We did not remain long enough at Ypanema, to learn whether our black patient continued to feel the benefit of the operation; but at all events, we could not but be surprised at the rapidity with which a single manipulation had acted upon him.

This experiment appeared to us to confirm the notion, to which the physiologist is led by many other circumstances, that the European excels the black and other coloured races in intensity of nervous vitality, and is specifically superior to the other races both in body and mind (dass der Europäer an Intensität des Nervenlebens die gefärbten Menschen übertreffe, und auf eine ganz specifische Weise, sowohl somatisch als pyschisch die übrigen Racen beherrsche). It has been already observed by several ingenious writers, that the individual races, though similarly organised, are, however, more or less qualified in various respects, and that a superior conformation of the intellectual organs and powers indemnifies the European, for instance, for the absence of inferior and lower faculties. If, for example, the man of the Caucasian race is inferior to the negro in mobility and productiveness, to the American in firmness and robustness of make, in muscular strength, in ability to endure fatigue, and in longevity, and both to him and to the Mongol in acuteness of the senses, he however excels them all in personal beauty, in symmetry, proportion, and carriage, and in regard to the moral, free, independent, universal development of the intellectual faculties. It is that beautiful harmony of all the individual powers, which is only produced and maintained by the preponderance of what is noblest in man, which more accurately establishes his dignity, than the pre-eminent, and

perhaps excessive perfection of single inferior organs. It is the result of this beautifully constituted and more perfect unity of the human powers, that must be considered as true humanity, which is inseparable from the idea of freedom. Freedom, founded on a lively moral consciousness, and developed by the glories of religion and genuine science, has impressed upon the European the stamp of elevation and dignity, which have hitherto almost unconsciously conducted him victorious through all parts of the globe; which have protected him among the rude children of nature, even where unlicensed presumption has succeeded to the first simplicity, and everywhere defend him with the shield of veneration and awe. We ourselves had opportunities, during a longer residence among the Indians, of proving the superiority which the nature of the whites exercises over them. This race, as well as the Ethiopic, and their mixed descendants, manifest a secret awe of a white man, so that a look from him, nay his bare appearance, terrifies them; and one white, in silence, commands hundreds of them. This is still more the case with the blacks, who, though prompt to act, have no real solid courage, and are therefore, as it were, mentally subdued and constrained by the innate superiority, and the firm resolution, of the white man.

After we had explored the immediate environs of Ypanema, we extended our excursions to more distant parts. It appeared to us to be