

There are three kinds of lead: first, the vein, or lode of solid lead, just described, which is, of course, pure, and the most valuable,—this is taken straight to the smelting works; next, there is the second-class lead, or that which has a certain proportion of granite mixed with it, and needs crushing and precipitating in running water before going to the smelter; the third-class lead is that with a greater proportion of granite than lead, and also the flakes of lead that fly about and get mixed with the granite, dust, &c. All the lead yields, when smelted, a certain but very small proportion of silver. Half-a-crown in the pound is the average profit on the silver when it comes to market.

The amount of lead yielded by the mines has of late years been on the increase, owing, of course, to the increased efforts of different companies in working. As an instance, it may be cited that, on one line with which I am conversant, the value of the lead passed on was £15,000 during the year 1870, whereas for the year 1873 the returns showed it to be £60,000.

As to the miner's life and character. There are two sets, the surface-men and the pitmen, or miners proper. The former, who are variously employed, as shall be afterwards pointed out, in wheeling lead, crushing, washing, driving the mules, or managing the steam-engine, or turning the "whims," are not men of so distinct a class as the pitmen. The ranks of both these classes, however, are supplied by men chiefly of the province in which the particular mines are situated; but, attracted by the high rate of wages, men from every province, and in every picturesque variety of costume conceivable, flock to the mines, and swell the ranks of surface and pit men. Nor are men

driven to mine-labour only by the necessity of winning bread. As of old to David at Adullam, so now to the various centres of mining industry flocks "every one that is in distress, and every one that is in debt, and every one that is discontented," forming a rough and motley, but, as a rule, by no means a disorderly or disagreeable set. Indeed, I have personally always found, both taken individually or taken *en masse*, the Spanish miners an open-hearted, honest, hard-working set of fellows. They meddle but little in politics, and prefer their cock-pit, music, and games to the more dangerous walks of life of Spanish artisans. "A short life and a merry one" is the rule with them, poor fellows. I fear, too often, it is short without being merry.

A man of moderate height, say about five feet five inches (for the Andaluzes are short and fleshy men as a rule, and they form the staple of the workmen at the mines from which I write), rather inclined to be stout, with singularly well-developed chest, and sometimes breasts almost like those of a woman, of pale, sallow complexion, with a keen dark eye, and bright fearless smile, hair cropped close to his head, fleshy arm, and small hand and foot, is the Spanish miner.

His dress consists of a short, but very thick and warm, jacket, of some dark coarse material, and lined with woollen, in length and shape like an English schoolboy's jacket before he attains to the dignity of a coat; a coloured handkerchief, tied in knots below the ears, the ends hanging over the back of his neck, a most wise precaution in a country where the swelling of the glands at the back of the ear is very common; a pair of thick woollen trousers; canvas

shoes, or sandals bound with rope, or, if he can afford thirty-four reals for the purchase, a pair of light-coloured leather Blucher boots; generally over the head-gear above described, the thick felt pork-pie hat, or sombrero, is worn; a crimson waistband, containing knife (the famous navaja, or clasp-knife, for eating or stabbing) and purse; coloured checked shirt; with his "alforca," a kind of bag with two pouches, the one for small tools, and the other for provisions, slung over his left shoulder, so that it is evenly balanced, the one pouch being in front, the other hanging down his back; this, with a frying-pan strapped on his back, completes the miner's general appearance. When he goes underground, he puts on nothing but a tight-fitting brown-holland jersey, open at the chest, and lined with flannel, and trousers of the same, baggy, down to the knees. He wears canvas shoes or sandals, or works bare-footed, as he may choose.

In age the miner varies from about seventeen to thirty-four, and then his short life, as a rule, is ended, his children are fatherless, and his wife a widow. The poor Spanish girls say, "It is hard to marry a miner, for he must leave us so soon." In the quick-silver mines of Almaden, the sickness and death-rate, in great measure caused by excessive salivation, is said to be enormous; and at the copper-mines of Rio Tinto, very great. But in the lead-mines the mineral does not so entirely penetrate and break down the constitution as in these last-mentioned mines. The diseases to which the Spanish miner falls a victim, and their causes, are chiefly these:—

(1.) Pulmonary consumption, accompanied, as in England, with spitting of blood. This is the poor

fellow's greatest foe, and hundreds fall a victim to it. It is probably induced by breathing the unwholesome, confined, sulphurous air of the mine; by working with wet feet for the eight hours, until the other shift comes to relieve guard for the night; by the exertion of climbing up the perpendicular ladders quickly and eagerly to get to the surface, which induces profuse perspiration, and also palpitation of the heart. The miner passes at once into the cold air of the surface, perhaps at five in the evening, when the chilly dews begin to fall. The perspiration is suddenly checked, and, with his thin and clammy underground dress on him, he walks across to the undressing shed to wash and smarten up. Then, in the cold evening air, he walks home, perhaps not over-well wrapped up. The exertion of running up the ladders is great. Sometimes, instead of sloping as ladders generally slope, they slope the other way, *i. e.*, outward, and climbing them is like climbing an ordinary wall-ladder on the under side.

(2.) Calentura, or fever. This is of three kinds, or rather has three stages, and probably is induced by the same causes as the above. The first stage is merely calentura. The second, intermitente, that is, it is tertian fever, with bilious symptoms. This stage is best treated with quinine, and many a man is deafened by the strength of the dose given. The third stage is perniciosa, from which recovery is well-nigh hopeless. High fever, sheer exhaustion, constant vomiting, and deafness, as of typhus fever, are characteristics of this last stage of the calentura. The spring and fall of the year are the most favourable seasons for this calentura, which, in many respects, answers to the "low fever with typhoid

symptoms," so common among the peasantry of the English Midland Counties. In some cases, or stages, the tongue is black; in others, thickly coated with white. A medical man assures me that this fever is very closely akin to African fever, and other fevers which arise from living in a district where morass and swamp abound, with tropical temperature. The calentura of the interior often clings about the constitution for months, and its effects on a weakly frame are only with difficulty shaken off entirely. It is constantly brought on by a sudden chill, and, at its first appearance, is marked by alternating fits of heat and cold, shivering, bilious eyes, utter inability to keep food or drink on the stomach, great dryness of the skin, and exceeding mental depression. In its first stage the Spanish doctors treat this disease with bleeding and "febrifuge" pills, inducing profuse perspiration. What this "febrifuge" consists of I know not, but I have seen very great benefit derived from its use; indeed, I have myself derived benefit from it while suffering, at a distance from my English medical adviser, from a like attack.

There is a tree known in Spain among the lower orders as "calentura-tree." It is a tree of moderate dimensions, and is constantly found planted at railway stations, ferry lodges, &c., in districts scourged by this disease. The botanical name of this plant, I am informed by an eminent English doctor in Spain, is *Eucalyptis globulus*. It is, I believe, a native of Peru. Whether the febrifuge of the Spanish medicos is a decoction of the leaves of this plant, I know not, yet it is so asserted by the miners themselves.

(3.) "Dolor de costado," or "pain in the side," a term which is applied by the miner either to inflamma-

tion of the lungs or pleurisy. Both these last diseases are common, and when allowed to become fully developed, are most serious. Probably they are induced by the cause above named, the sudden change from the heated atmosphere of the mine into the chill air of the Spanish winter evening, or the cold damp of midnight. One "shift" of men comes to surface about 5 P.M., the second about 2 A.M. Working in the lowest shafts, ankle or knee deep in water, is also, of course, a fruitful cause of these evils.

(4.) "Leading," a disease which is variously called "being leaded," "lead colic," or "leading." Lead colic, however, is its proper designation. It is common to the surface-men, pitmen, and men engaged in the smelting of the lead. This disease is induced by the absorption into the system of a larger amount of lead than it has the power to throw off. Generally speaking, the bowels are powerless to act, and the vomiting is not sufficiently strong to throw out the offending particles. Sometimes diarrhœa is present. Violent cramp in the side and stomach, almost amounting to paralysis, is constantly present in this disease. In some cases, the sufferer is doubled up with agony, and is carried off in four-and-twenty hours. Two cases of this kind came under my notice, in both of which recourse was had to bleeding and violent purgatives, but without beneficial results, and the two poor fellows died, each within six-and-thirty hours of the seizure. But in these cases the attack was not a first attack, the constitution of each of the poor fellows having been previously enfeebled by the same disease. This colic, however, is not, as a rule, fatal. A person who is "leaded," or who is on the road to it, looks ghastly pale in face, his eyes are dull and the whites

yellow, his appetite decreases, and his thirst increases daily. In certain forms of this colic, when the constipation is long continued and the agony great, croton oil is administered in infinitesimal doses, and generally with a beneficial effect. In others, where the bowel is relaxed, and continues unable to fulfil its duty, strong irritants, such as red cayenne pepper, are administered, and also with good results. The Spanish medical men constantly bleed patients suffering from the constipated phase of this disease, which is generally accompanied with fever.

Prevention is ever better than cure, and I have been told by two managers of large lead-smelting works that they found it possible to keep off the foe, in great measure, by exercise, if possible, great personal cleanliness, frequent doses of simple aperients, as compound rhubarb pills, and, above all, by a regular and judicious use of acids, which do much towards neutralizing the poison. A few drops of some preparation of sulphuric acid in water,—a bottle of this is put at the service of the miners at every mine; they come with a tin mug of water, and take thirty-one drops in it,—or lemonade, tartaric acid, and the like, they assured me they had found of the greatest possible benefit. The way in which the lead is taken into the system is through the lungs chiefly, the atmosphere being impregnated with lead, necessarily, in the smelting works. The very smoke you breathe there is lead, and, in the mine, the tiny particles of lead floating in the air, disturbed by the pick of the miner, are inhaled by him. The Spanish miner increases this risk by his mistake in blasting. An English miner, wishing to blast a lode of lead, would drill the hole for the fuse, and store the gunpowder, in the granite below the lead, and thus the

cloud of smoky dust, which necessarily fills the cavern and hangs heavy in the air for long afterwards, will be, not lead smoke, which is poisonous, but granite smoke, which is comparatively harmless. The Spaniard, however, drills the fuse-hole and stores the powder in the heart of the load of lead, and thus the whole cavern is filled with poisonous lead-smoke, which he and his poor companions are inhaling for hours.

*Apropos* of "leading," I may mention a curious accident which befell the dog of a friend of my own, a large mine-owner in Spain. The dog, a fine specimen of the "bull-dog," or "bull-mastiff," of Spain, was cooped up in the town, and pining for air and exercise. For a week or two his master took him up to the mines, and on each occasion Juan took a plunge into a pool of water strongly impregnated with lead, and lapped a little of the water. He soon showed signs of illness; his eyes grew dull, his hair began to come off. His master, never dreaming of the cause of the poor fellow's suffering state, took him oftener than ever. At last the poor dog was seized with cramp, and howled with pain, paralysis supervened, and in a few hours from his last bath poor Juan's spirit had gone for ever.

This incident illustrates the second way in which the miner takes the lead into his system, namely, through the pores of the skin. In all probability, the quantity of the water alone, without the lead-bath, would not have been sufficiently poisonous to destroy life; and so, with the miner who perspires freely, the poisonous particles settling upon his half-naked body, and becoming absorbed through the open pores of the skin into the system, are highly conducive to lead-



colic. Part of this latter danger might be avoided, were the miners forced to wash in warm soap and water, on leaving the mine, in a warmed shed provided for the purpose. But they are not by any means strict (to use the mildest term) in this respect. They use but little water, and soap is well-nigh unknown among them for this purpose, although, perhaps, from its power of uniting with the greasy substances on the surface of the skin, and forcing them to come off, it is almost as indispensable for health and cleanliness as the water itself.

Under the head of diseases may be classed accidents. The number of accidents, so far as I can ascertain, in a mine, or part of a mine, employing some two hundred men, would be somewhere about two per month, many, if not most, of which are due to sheer carelessness or negligence on the part of the men employed. Let me instance three such cases:—

(1.) A miner, rendered careless by habit, goes down the ladder, barely holding on with one hand. A little tallow has dropped on one of the spokes of the ladder, rendering it slippery; he loses his hold, is over-balanced, and falls some few yards to the next rest, breaking arm, or leg, or ribs.

(2.) Again, a miner knows that he is working in a dangerous working, *i. e.*, in mining phraseology, a place where loose fragments of stone fall from a height, say, of sixty yards. He works, nevertheless, with no protection save his linen skull-cap—this I have myself witnessed—a bit of *débris* falls, strikes his head, and he is carried up insensible.

(3.) Two or three miners are pursuing a lode in a passage, the roof of which is formed of trees and planking, firmly joisted in, capable, if left alone, of

supporting some five hundred tons of granite rock four feet over the head of the workers. Knowing well the dangerous nature of a fall, which would absolutely make "the pit shut her mouth upon them," and, perhaps, leave them with a huge barrier of granite rock between themselves and the exit from the mine; knowing, too, the shock, the vibration that a blast necessarily gives to everything in its immediate vicinity (I have seen the naked rock tremble, the lamps go out, or burn blue, the men's frames near me shake like aspens), the miners, for sheer convenience's sake, determine to blast just underneath the props and planking. If a fall be the result, it may be they are dead men.

As regards deaths from accident, these are not common. In one mine that I visited lately, where two hundred men were employed, the captain told me that, in the past two years, only two or three had occurred.

To the honour and credit of the Spanish Government, it must be here said that their supervision of the mines, especially of those owned by foreigners, and the strict, unflinching scrutiny made, and inquiry held, as to the causes of any accidents that may occur, is almost unequalled. Instant notice of any accident must be given to the civil authorities of the nearest town by the mining-agents. The Spanish civil engineers are on the spot in a trice. Generally they declare the accident was the fault of the works, &c., and inflict a heavy fine upon the owners.

It should here be stated, that the remarks above offered upon the diseases of the lead-miner of Spain, are gathered as well from personal observation as from the information kindly afforded to the writer of

these pages by two Spanish mining surgeons of eminence, of much experience among the Spanish miners,—men who have seen and sympathized with the miner in every stage of accident and disease; seen and tended him in the darkness of the mine, when stricken down by heavy misadventure, or when, wrapped in his manta, in the last stage of calentura, he turns his face to the wall doggedly and quietly, if not with Christian resignation, surrendering himself to his fate.

## CHAPTER IV.

## MINER'S MEDICINES.

HAVING spoken of his diseases, let me speak of some of the miner's own favourite medicines. He is a man who has a great faith in simples. Sage-tea is one of his favourite stomachics and cooling mixtures. In every case of faintness from a severe accident, the moment he comes to himself, he calls out, "A cup of tea, for the Lord's sake!" Tea is a luxury unknown to him save medicinally, and he has a marvellous faith in its curative and restoring powers. Probably it has a greatly beneficial effect in such cases, because it has never been used before, and, therefore, like the effect of a small quantity of stimulant on a person unaccustomed to the use of stimulant, it has a power which on the English tea-drinker would be lost. A decoction made of the leaves of the calentura-tree (*Eucalyptis globulus*), and drunk either hot or cold, is one of his remedies for fever. For biliousness, with feverish symptoms, his wife would give him the juice of two oranges, squeezed into a tumbler, with the value of four cuartos in magnesia. But there is one medicine which, in the heats of summer or the snows of winter, is ever within the miner's reach, and in which, for himself, his wife, and his children, he places the most implicit reliance for cleansing and purifying the blood and strengthening the system, namely, sarsaparilla. This medicine is taken in the

form of a refresco by men, women, and children, at the little stalls of the coffee and aguardiente sellers. Wherever there is a little stall for bunuelos, a kind of snake-shaped cake fried with oil, aguardiente, and vinos, there is found the large bottle of sarsaparilla.

As regards the ordinary fare of the Spanish miner, it is somewhat as follows:—Suppose him to belong to the day shift, he starts from his home, dressed as before described, with his thick knotted stick, or oftener, perhaps, a thin iron bar with a crook, used as a walking-stick, and, if the morning be chilly, his rug over his shoulders; if hot, his jacket is thrown over his left shoulder, and he walks in shirt-sleeves. The women, with their hot coffee, and bunuelos, and aguardiente daintily spread on little boxes, are squatting along the road to the mines at their different points of vantage, and he stops at his customary “House of Call.” He first drinks a wine-glassful of pure aguardiente, to keep the cold out. This costs two cuartos (two farthings) a glass, and has not much raw spirit, but mint, aniseed, and other aromatic ingredients. The aguardiente Valenciano is the favourite. It is pure white, rather like milk-and-water in colour, and is a capital stomachic, and for keeping the cold out invaluable. Then he eats a bunuelo or two, two of which cost a cuarto. This is, as has just been said, a kind of fritter, about the thickness of a man’s thumb, and of a circular or twisted shape. It is made and fried in the streets, and would be nice were it not that the oil in which it is fried (with an egg or two, if the proprietress of the stall be a liberal soul) is so unduly strong. Then the miner has possibly a tiny cup of black coffee, with a dash of aguardiente in it, costing two cuartos more.

Thus fortified, he proceeds to the scene of his work, generally humming the customary wild ditty of the Andaluz, the words of which are simply a narration of any passing object that strikes his vagrant mind. Here are two of these extempore ditties, extemporized on the spur of the moment, and suggested by the passing sights:—

“A big man walking with a sti - i - i - i - i - i - ck,  
A little man riding by his si - i - i - i - i - de!”

And again, as a poaching-dog glided out of sight among some dusky olives, with something unlawful in his mouth:—

“Yellow dog with stolen morsel in his mouth - - - - outh,  
Through the olives he go - o - o - o - o - es!”

The cadence at the end of each line is a series of rising, and then suddenly one or two low notes. It is a most wild, most monotonous ditty, and is peculiar to Andalusia in great measure. It meets one's ear from the fishing-boat, the olive-grove, the donkey-back, the shop, the street, until one's ear fairly tires of it.

Arrived at the mine at about 6.30 A.M., the miner joins his own working-party, one or two of whom have brought a frying-pan. Under the shelter of some tree or wall they sit down and make a fire. Each has brought, be it said, bread and fruit, the *fruta del tiempo*, or fruit of the season, whether it be orange, melon, or grape. Each one, again, has brought some vegetables, or meat, or olive-oil. “Without *aceite*” (oil), say the miners, “no comida.” The frying-pan is filled with the humble stores of these poor, hardy, contented fellows. One slices half-

a-dozen potatoes into it; another shreds a bundle of pimientos (capsicums); a third adds some lumps of goat's flesh, or baccalao (dried cod). The oil is poured over the savoury mess, bay-leaves are added, and then there remains nothing for the miner to do but to fry and eat the savoury mess in which his heart delighteth. All eat, with wooden or metal spoon, out of the frying-pan, which is placed in the midst of the little group. Breakfast ended, each takes out his clasp-knife (the famous navaja) and eats a portion of his bread and fruit, which last two comestibles always form the conclusion of the meals of the Spanish poor. The bread is coarse and cheap, and is sold in round flat cakes of one or two pounds weight.

On a chill, windy morning it is quite a picturesque sight to see a group of these miners, or of ploughmen, their primitive ploughs, each with its team of two mules, yoked abreast, standing on the brown, thistle-clad furrow in the field, huddled together under the lee of some crumbling grey stone wall, taking their breakfast, wrapped in their huge rough, rusty, chocolate-coloured mantas, and each with the inevitable cigarro de papel, or paper cigarillo, between his lips.

Breakfast over, the miners descend at 7:30 A.M., for the eight hours' work underground. They take with them nothing but fruit, bread, water, and tobacco for making the cigarillo. At 11:30 A.M., when four of the eight hours' work are over, they eat bread and fruit. At 4:30 P.M. they come to the surface, and are trudging home; eat bread and fruit again. At about 6 or 6:30 P.M. the miner is at his home with his wife and bairns. The greater number of these men, who earn (for Spain) fair wages, marry young, and husband and wife have the meal of the day, the evening

meal, together, eating out of the same dish, crouched over the tiny "brasero" of charcoal, the niños having been safely stowed away in bed.

To describe the different dishes with which the Spanish girl rejoices her husband's and her own heart at night, would be out of place. But I will give one or two typical dishes, describing only those which I have seen, and of which I have partaken. Let me premise that, both at the tables of rich and poor in the interior, the meat from which the soup has been made is piled upon a dish, covered with vegetables, and called "cocida." It is, of course, goat's meat (*carne de macho*) or mutton; the former being the winter and spring, the latter the summer, meat of the interior, boiled to rags, much of the same kind of material to which the Guardsmen of London were condemned so long.

Beef, in the pastureless and arid lands of Andalucia, is an unheard-of luxury, save for the two days that follow a bull-fight, when, for obvious reasons, such as it is, it may be had.

The "cocida" of *carne de macho* is first placed on table, covered with garbanzos—a sort of nutritious dried pea (*Cicer arietinum*), said to have been introduced into Spain by the Carthaginians, and, perhaps, rice. Then comes the soup, which is highly spiced with *pimientos picantes* (fiery capsicum), and strongly flavoured with bay-leaves. It is thickened with rice, or a rough kind of vermicelli, or sliced bread, and is very nutritious. Then comes the bread and fruit again. Then the friend drops in for a chat and a cigarillo; and with a glass of Val-de-Peñas, and the cigarillo and the guitar and the song, the Andaluz miner passes his evening. Here are one or two