

THE SCIENTIFIC AMERICAN'S ADVICE TO OUR SOLDIERS.—MALARIA AND ITS REMEDIES.

It is difficult for us to realize the fact, but we all know that any soldier is in five times more danger of dying from malarious disease than of being killed in battle.

WHERE MALARIA EXISTS.

What malaria is nobody knows. It may consist of organisms, either animal or vegetable, too minute for even the microscope to detect; or it may be some condition of the atmosphere in relation to electricity, or temperature, or moisture; or it may be a gas evolved in the decay of vegetable matter. The last is the most common hypothesis, but it is by no means proved, and it has some stubborn facts against it. There is no doubt, however, that malaria is some mysterious poison in the atmosphere, and that it is confined strictly to certain localities. It seems to favor valleys rather than mountains; though the hills of Staten Island and the high lands about Greenwood Cemetery are as full of it as the Valley of the Mississippi. It is not a disease peculiarly of new countries. The region directly south of Rome, called the Campagna, is one of the most malarious localities in the world, and it was settled at least 700 years before the Christian era. On the other hand, the State of Rhode Island and the other parts of New England that are now free from malaria, were always free from it. The inhabitants of paved cities are almost entirely exempt from attacks of malaria.—New York city is situated in a malarious district, and beyond the pavements fever and ague is common. In the fall before work was commenced on the Central Park the writer of this had occasion to enter all of the houses on that 700-acre tract of land, and in almost every one of them one or more of the inmates were suffering from fever and ague. In the paved portions of the city, however, the disease is seldom met with.

THE DIFFERENT FORMS OF MALARIOUS DISEASE.

The mildest type of malarious disease is *intermittent fever*, called, at the West, dumb ague, or more commonly, "dumb ager." It is the same as fever and ague, only that the fever is not preceded by a chill or followed by perspiration. Every one, two, or three days, usually at the same hour of the day, the patient experiences a moderate attack of fever, lasting an hour or two, and the rest of the time he feels about as well as usual.

The next type in severity is the most common form of the disease, the ordinary *fever and ague*. For an hour or more the patient is shivering and shaking with cold, frequently so violently as to make his teeth chatter; and this is as likely to occur in the hottest part of the day as at any other time. Presently the chill subsides and is succeeded by a violent, burning fever, which lasts usually three or four hours, and is followed in the graver forms of the disease by a copious perspiration.

When the paroxysms of fever become so prolonged as to extend from one to the other, and occupy all of the time, the disease is called *bilious fever*. It still preserves its periodical character; at certain hours of the day the fever is less violent than at others; and some physicians describe it as remittent fever.

Occasionally in all malarious districts, and frequently in those which are most infected, bilious fever manifests congestion as one of its symptoms. This is an accumulation and stagnation of the blood in one of the organs, usually in the brain, though occasionally in the lungs. This is the terrible *congestive fever* of malarious districts—one of the most dangerous diseases known. Nearly all of the passengers who died on their way to California, died of this disease, contracted during their detention on the Isthmus.

Sometimes, though rarely, malaria attacks the eyes, producing little hard granules on the inner side of the lid, which cause great irritation and inflammation, occasionally resulting in blindness more or less prolonged. In the summer of 1855 *malarious ophthalmia* made its appearance in San Francisco, though any form of malarious disease is exceedingly rare in that city. There were 200 or 300 cases, and a few of the prominent business men were blind for two or three months with it.

But the most dreadful of all forms of malarious disease is *chronic diarrhoea*. This was the pestilence

that decimated our army in Mexico, and filled our hospitals with the returned soldiers after the war. General Taylor died of it, and it is said that General Scott and Jefferson Davis are both still suffering from its effects. It is a slow, wasting, debilitating disease, and almost entirely incurable. Fortunately, no part of this country is very much subject to this form of malarious disease.

REMEDIES FOR MALARIOUS DISEASES.

The investigations of Louis and his followers have demonstrated that almost all of the diseases to which mankind is subject are nearly or quite uninfluenced by medicine; at all events, by any substances at present known. But there are a few exceptions. There is a small number of diseases that may be cured, and a small number that, like the small pox, may be prevented. The milder types of malarious diseases belong to both of these categories. They may be either cured or prevented. Two substances have been discovered to act as specifics on all intermittent diseases. One of these is a harmless vegetable substance, and the other is one of the most terrible and deadly of the metallic poisons. One is Peruvian bark, the other is arsenic.

QUININE.

In the year 1521, a gallant young Spanish soldier, Don Inigo Lopez de Recalde de Loyola, afterwards called Saint Ignatius de Loyola, received a wound while defending the city of Pampeluna against the French. During his convalescence he spent his time in reading the lives of the saints, and his devotional feelings were so excited that he determined to consecrate his life to the cause of religion. In 1534 he founded a small society which took the holy name of Jesus, and which has since grown upon into the great order of Jesuits. In its early days the society was composed of men who were animated by the most earnest zeal for the Christian faith, and who were ready to make the greatest efforts for its propagation. As missionaries they penetrated into every corner of the globe, from Japan to California, and from Siberia to Terra del Fuego. Among the countries which they visited was Peru—that singular rainless region that lies upon the western slope of the Andes in South America. Here the natives told them of a certain lake, the waters of which preserved all who used them from all kinds of sickness. The missionaries soon discovered that the medicinal properties of the water were derived from the bark of a particular kind of tree which grew in great abundance on the borders of the lake. With their extraordinary powers of credulity, they eagerly swallowed the tales of the natives, and concluded that among the marvels of that wonderful land they had discovered the elixir of life that was to banish all disease from the world. Quantities of the new medicine were sent to Europe, with glowing accounts of its power, and it rapidly acquired a wide fame under the name of "Jesuits' bark." Enlarged experience, however, soon showed that its power had been overrated, and that its scope was limited to the treatment of intermittent, and especially of malarious diseases. When used for these diseases, the practice of 300 years, and especially the inexorable statistics of modern investigators, have shown that its effects are more marked and more constant, than those of any other remedy for any disease, in the whole materia medica. It has become proverbial. We have heard a physician, in recommending a new medicine, remark, "Its effects are almost as certain as those of Peruvian bark in fever and ague."

Modern chemistry has succeeded in extracting the medicinal principle from Peruvian bark, so that now the former may be taken without the great mass of crude impurities in the latter. This extract is called quinine.

A prejudice has been created against quinine, we believe mainly by the inventors of patent nostrums for the sake of selling their own wares. Twenty years ago there was a famous pill sold in the Western States as a cure for fever and ague. It was called Sappington's pill, and was a powerful remedy. Dr. Beaumont, of St. Louis, analyzed it, and found that all its medicinal virtues were due to the *arsenic* which it contained. Now, quinine is a vegetable substance, and is decomposed in the system into gases which pass away. But arsenic, like all of the metallic poisons, remains in the system, and if successive doses of it are taken, however small, they accumulate until the quantity becomes sufficient to destroy life. And

killing the patient is not the worst of its effects; it produces a frightful train of diseases, more terrible than death. There is no greater folly than the buying of patent medicines to cure fever and ague. If they will cure the disease they must contain either Peruvian bark or arsenic. If they contain the latter they are of course to be avoided; and if the former, it is better to purchase the pure quinine at the druggists than to pay a swindling price to have it mixed with the useless and frequently deleterious compounds that are employed to disguise it.

This substance will almost invariably cure the milder forms of malarious disease, and a few years ago it was discovered, at about the same time both in Italy and this country, that even congestive fever could frequently be cured by enormous doses of quinine. Since that discovery, a considerable number of persons have been snatched from the very jaws of death by spoonfuls of this powerful extract. It is important that the remedy should be properly administered, and when a soldier is attacked he will of course consult the surgeon of the regiment; our advice refers only to the prevention of the disease.

TO PREVENT THE ATTACKS OF MALARIOUS DISEASE.

All experience has confirmed the observation of the natives of Peru, that Peruvian bark has a powerful influence in counteracting the poison of malaria. Though, after malarious poison is absorbed into the system, it sometimes remains many months before manifesting its presence: outside of the tropics it is propagated only in the months of August, September and October; and if during these three months a small quantity of Peruvian bark or quinine is taken daily, it will generally prevent the occurrence of the disease. As much as can be taken up on the point of a penknife—say to the length of half an inch—will, as a rule, be sufficient; though if the dose is doubled it is immaterial. It can be taken by placing it directly on the tongue, as, though bitter, it is a clean bitter, not unpleasant to most people. If the taste is not agreeable, however, it may be put into the coffee at breakfast, when it will not be perceived. We advise all of our soldiers to consult the surgeons of their several regiments in regard to the wisdom of this course, and if it is sanctioned by them, as it will be, to follow it resolutely. The quinine would doubtless be furnished from the army chest, as the government could not expend money more judiciously for securing the efficiency of the troops, and consequently for the vigorous prosecution of the war.

THATCHER'S COMET.

The brilliant comet which made its appearance on the evening of Sunday, June 30th, and which has doubtless attracted attention all over the world, proves to be the same comet which was discovered by Mr. Thatcher, a New York astronomer, on the 4th of April last, while it was on its way toward the sun. It passed its perihelion on the 11th of June, and is now on its return into space. The plane of its orbit is inclined 87° to that of the earth, so that it has shown itself to the inhabitants of both hemispheres. As it was visible in the southern hemisphere when it was nearest the sun, it probably presented a far more magnificent appearance to the people of that half of the globe than it did to us. The accounts of it from South America and the Cape of Good Hope will, consequently, be looked for with a good deal of interest.

FLOYD ON REBELLION.—If there are any of our readers who are opposed to the execution of the laws, and the suppression of rebellion against the authority of the Federal Government, we commend to their careful perusal the singularly appropriate quotation from the report of John B. Floyd, late Secretary of War, which is introduced into the recent report of Secretary Cameron, briefly referred to on another page.

The Mormons defied the Government, their bluster and bravado sank into terror and submission in the presence of ex-Secretary Floyd's powerful force. Floyd whipped the Mormons, and now he turns upon and fights the Government that supported him.

THE petroleum oils do not appear to contain benzole. No doubt many of these oils are isometric, and may agree in density, and in chemical formula with other hydro carbon fluids—such as various essential oils of plants.