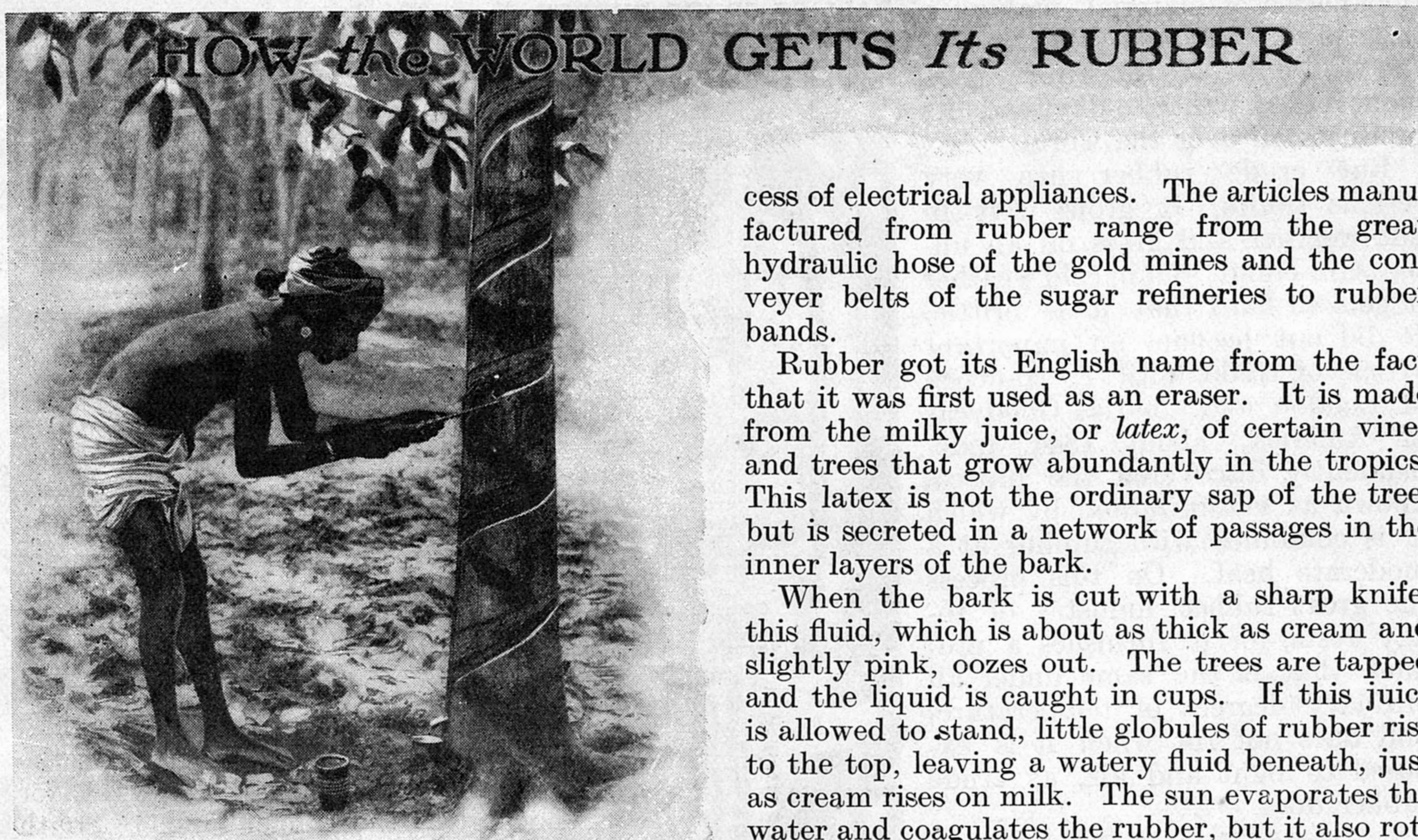




There are several ways of tapping rubber trees, of which one, the spiral method, is here shown. Notice how the thick creamy sap follows the knife.

RUBBER. This wonderful substance, that oozes from certain kinds of trees, is far more elastic than any other known natural product. It may be made soft as a sponge or hard as ivory. It is a non-conductor of electricity, and at the same time is less affected by temperature, moisture, and chemical action than almost any other plastic substance.

Many Uses of Rubber

Rubber is used for an almost endless variety of purposes. The belting and packing of machinery is often of rubber. In modern surgery rubber gloves are usually worn by the surgeons, and in the form of hot-water bottles it is found in every sick-room. Many tons of crude rubber are used annually to make rings for the sealing of fruit jars and to make erasers for lead pencils. Hundreds of miles of rubber garden hose are manufactured every year. We walk on rubber soles and heels, and when it rains we put on our waterproof coats and goloshes. In the field of sport rubber enters largely into the manufacture of tennis-balls and many other articles. Perhaps motor tyres present the greatest single use of rubber.

From hard rubber, which contains a greater proportion of sulphur than the softer rubber products, many thousand articles are made. Among them are battery jars, steering-wheel rims, fountain-pen barrels, pipe-stems, combs, and hundreds of articles necessary to the suc-

cess of electrical appliances. The articles manufactured from rubber range from the great hydraulic hose of the gold mines and the conveyor belts of the sugar refineries to rubber bands.

Rubber got its English name from the fact that it was first used as an eraser. It is made from the milky juice, or *latex*, of certain vines and trees that grow abundantly in the tropics. This latex is not the ordinary sap of the tree, but is secreted in a network of passages in the inner layers of the bark.

When the bark is cut with a sharp knife, this fluid, which is about as thick as cream and slightly pink, oozes out. The trees are tapped and the liquid is caught in cups. If this juice is allowed to stand, little globules of rubber rise to the top, leaving a watery fluid beneath, just as cream rises on milk. The sun evaporates the water and coagulates the rubber, but it also rots the rubber, so that various methods are used to hasten coagulation.

Where Crude Rubber Comes From

Until the early part of the 20th century nearly all the rubber of commerce came from the wild rubber trees of the Amazon district in South America and the rubber vines of the African Congo. But more than half of the crude rubber to-day comes from the great rubber plantations in the Far East—the Malay Peninsula, the Straits Settlements, Ceylon, and other islands, and from plantations in Mexico and Central America. The world's annual production is nearly 300,000 tons.

The romantic story of rubber begins shortly after the discovery of America, when some Indian tribes in South America were observed playing ball with an odd elastic substance. The soldiers of Cortez, the conqueror of Mexico, found that the natives fashioned crude shoes from cloth which had been dipped in rubber latex, and they learned to spread it over their cloaks to keep out the rain. From the native word for this liquid comes the name "caoutchouc," which is a common word for rubber. While this strange substance occasioned much interest in Europe, it was not until the middle of the 18th century that some French scientists discovered its true origin.

The First Rubber Garments

In 1823 Charles McIntosh, of Glasgow, discovered that rubber could be dissolved in naphtha. He spread this solution over a slab of marble to dry, and obtained a very thin sheet of rubber; this he stitched between two