rice, sweet cassava, maize, and sugar cane. Oil palm trees, or *mchikichi* (*Elaeis guineensis*), are to be found at intervals. The coconut palm seems to cease with the first outlying range of mountains, or as soon as the sea breeze is shut off, but beyond that the banana becomes very abundant, and its unripe fruit, boiled and threaded on the twigs of bushes to dry in the sun, forms the staple food of the highlanders. Thus prepared the banana acquires a flavor very like that of the potato.

On the Rufigi, in times of scarcity, the people eat roots, and the heart of a kind of palmetto (locally called *milala*) which tastes much like the heart of the coconut palm. The Mawanda, besides fish, dig up a white tuber, about the size of a potato, in the forest. This they cut into thin slices, and soak in the river for a day, afterward thoroughly drying it in the sun, pounding and boiling, or making it into flour. The beer made from it is said to be very good and strong. The Marongwe people possess coconut palms, sugar cane, and bananas, and distill an ardent spirit in stills of native manufacture.

In the Shishongi country, Southern Mozambique, grows a cherry-like fruit, known to the natives under the name of *simwerbi*, furnishing a delicious and refreshing feast. Its juice is, however, so heavily laden with India rubber that the mustache gets varnished, and the lips almost cemented together, when the fruit is eaten. The berry is, nevertheless, one of the most palatable fruits of the country, with a lusciously sweet taste and milky juice. It has a few light brown enameled seeds, and grows in luxuriant abundance upon a large evergreen tree. Elephants appreciate this fruit quite as highly as men. The natives look upon the trees in the light of a granary during a couple of months or so, when they are golden with their crop. The fruit is at its best in the middle of January, and at that season it is made into a very pleasant wine, decidedly the best drink prepared by the natives, who also produce fermented beverages from the *imbongwa*, the *mayogomela*, the waterboom, the *umtshangowa*, and a species of palm, all wild and uncultivated bush growths.

The *imbongwa* is the rubber plant of the country. It bears an edible fruit, which yields the juice that is fermented into wine. The fruit is about the size of an orange, with a yellow skin or shell, easily broken by the thumb nail. It contains a number of flattish seeds, which are embedded in a small quantity of acid pulp, saturated with sweet juice. The seeds and pulp are squeezed out and watered, and then put in the sun to mature. The plant is a climber, with a light brown, rough, lumpy bark, and a stem occasionally as thick as a man's arm. The rubber furnished by it is of the kind known as "fingers."

The *makwaka*, a very highly prized Tonga food luxury, is prepared from the large calabash-like fruit of a deciduous shrub, greatly appreciated by elephants. The calabash is full of a bright orange colored seed, about as large as a shilling when ripe, and at that time covered with a thick glutinous coat. The seeds are dried upon a wickerwork frame, fixed over a hole, with a fire kindled at the bottom. The seeds acquire a flavor from the smoke, and assume a dark brown color.

The roasted seed coat or testa is then stripped off the seed by the women, pounded in wooden mortars, and pressed into drums made from *umtonto* bark. In that stage it is very like oat cake, and when mixed with honey is palatable, notwithstanding its pervading bitter taste. There is a refined way of preparing it green, when it is called *shugutsu*, and is deservedly in high estimation. In this form of preparation, the seeds are soaked in a succession of quantities of water, to extract their bitter flavor before they are stamped. In this state, however, the product is so rich and rare that it is not to be bought. A dark colored oil drops from the drums of matured *makwaka* in considerable quantity, and has proved to be a good lubricant.

That part of Southern Mozambique occupied by the Hlenga tribe produces a kind of vine called *umtshangowa*, whose flowers are most fragrant, while the edible fruit is made into blood red wine by the natives. In the Sabi River valley occurs a notable palm, the *umfuma* or *umkowan*, which grows to a height of one hundred feet, is thicker in the middle than above or below, and has a fruit somewhat like the coconut in appearance, but consisting of three large seeds in a husk, which are eaten after they have been made to sprout.

The cultivation between Dar-es-Salaam and the Kin-gani River embraces maize, cassava, millet, peas, mangoes, and bananas. Wild "cherry" trees (*kunazi*) occur. At Akeda Ferhan, sugar cane, millet, maize, cassava, peas, melons, pumpkins, saffron, castor oil plant, papaw, tamarinds, and cotton are cultivated, also tomatoes (*nyaya*). In the Shire country, when provisions are scarce, use is made of wild herbs, mushrooms, and *masuku*, the last named being a fruit resembling a pear, with russet rind, and three large grooved stones inside, which falls immediately it is ripe. A noticeable feature in Makualand is the very extensive cultivation of the cashew tree, from whose fruit is distilled a very strong spirit called *arripa*.

On the shores of Lake Nyassa, several wild fruits are eaten. One is a yellowish green ball, about as large as a Tangerine orange, with a raw tasting pulp like a medlar, and called *malembe*. Another is the *mbuza*, a green plum with several stones. It is uncommonly good, and would make a fine fruit if cultivated. It is sometimes dark purple, like damascenes. A tree bearing an edible fruit called *maula*, resembling a small rennet, with a sweetish taste, but a large stone in the middle, grows on the western and northern sides of the lake. Here they make *moa* beer, from a mixture of cassava and small millet. It seems to be inferior to *pombe*.

Cassava meal, eaten after grinding and drying, is known as *ufa*. There is one peculiarity about cassava that commends it to those tribes who are in danger of attack from their neighbors, which is that the crop never matures all at once, so that while some tubers are fit for use many others are not worth seeking, and offer no temptation to plunder. Cereals, on the other hand, ripen at a certain season, and the whole crop may be carried off at once, leaving the growers in a state of starvation.

A traveler in the Mukondokwa valley, near the Zanzibar coast, mentions *Amaranthus melancholicus* as

making a good salad, and "forming trees similar to the copper beech," a statement that needs some elucidation.—*Journal Society of Arts*.

GLOBE FLOWERS.

NATURALIZING garden flowers is a phase of culture happily becoming popular, and among the host of vigorous, yet showy, flowers fitted for the purpose, none are better than the Globe flowers. These have long been cultivated in gardens, and the variety among them now to be had, both in size of flower and shade of color, will satisfy the tastes of all. The flowers of the European species herewith illustrated are clear yellow, while there is every shade between this and the deep orange of *T. japonicus*. All are strong growers, able to hold their own with rampant growing perennials. The ground for Globe flowers simply requires to be broken up, and a little manure added if necessary to give them a start. At a friend's place the other day I was much struck with the quantities of Marsh Marigold which I saw growing by the side of a small lake, the effect of which was charming; it does not necessarily require water to grow in, although it will thrive all the better if the ground in which it is placed is a little damp. *Epilobium angustifolium* and the variety *album*, stately growing plants,

THE GLOBE FLOWER (TROLLIUS EUROPÆUS).

have also a grand appearance growing in a semi-wild state, and if left for a few years undisturbed, they gain in strength in a wonderful way.—*K., The Garden*.

WHAT SORTS OF WHEAT SHALL WE CULTIVATE?

By F. SCHINDLER.

INNUMERABLE experiments have shown that the value of wheat for seed increases with the size of the grain; the larger kernel yields a stronger plant, and this will bear a heavier crop; the smaller grain contains the larger proportion of gluten, yields a better flour, and brings a higher price; but with the smaller yield per acre the profit may be less. The volume weight is dependent more on the well rounded form of the grain than on its size; when about alike in respect to shape, the market value of the grain is closely proportionate to its weight per bushel. Grain of a higher specific gravity is usually richer in gluten. Richness in this constituent is of the greatest importance, as affecting the market value of the grain; it gives better baking qualities to the flour, besides a higher nutritive value, and is accompanied with greater richness in phosphate, also an important constituent of animal food. The proportion of gluten in wheat is determined largely by the climate, and especially by the proximity of the sea. Insular England produces a wheat grain with high absolute weight, but as a rule with less gluten than the wheat of Eastern Europe. English wheat and wheat in general grown in an ocean climate seldom contains over ten per cent. of gluten, while in Eastern Europe and in the Western United States the proportion rises to twenty per cent. and above. Vigorous English seed wheat sown in Eastern Europe yields larger crops than the native seed, and a grain richer in gluten than the parent, though not so rich as wheat from native seed.—*Bied. Centr.; Ag. Science*.

BROWNING OF STEEL AND IRON.

A PROCESS having this end in view has been recently patented in Germany by Mr. A. De Meritens. The goods to be browned form the anode of the bath, which consists of ordinary or distilled water. The cathode is formed by the vessel which contains the water, if it is made of iron; otherwise a plate of iron, copper, or carbon is placed in the bath. The water is kept at from 160° F. to 180° F., and the tension of the current must be

sufficiently great to decompose the water. The oxygen which thus is given off at the anode forms in an hour or two a layer of the black oxide of iron (a combination of ferrous and ferric oxide), which is said to polish up very well. Steel is said to give the best results; in the case of cast and wrought iron, the oxide of iron formed separates as a powder; and it is necessary to use distilled water in order to obtain a layer which will adhere to the goods.

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