

ROM the tropics to your table, is the journey we invite you to take with us to learn the complete story of Minute Tapioca, for the story begins in far-off Java, the "Garden of the East," where rugged volcanoes lift their peaks, capped by day with a gray mist which as darkness falls takes on a rosy hue; where the valleys are luxuriant with the rank growth of banyan and bamboo, the jungle forest gleaming with the brilliant colors of a million exotic flowers: where the air is sweet with the mingled perfumes of spice and flowers-a wonder island in a sea of wonderful, tropic blue. Here, under the influence of equatorial sun and showers, grows the plant from the root of which tapioca is made. This plant is known to botanists as Manihot, but it also bears such names as cassava, cassada. manipot, manioca, mandioca and many others.

PREPARING THE FIELD

CUTTING STALKS AND PLANTING

This useful plant is the source of the various forms of tapioca used extensively all over the world in many lines of industry as well as for food. The tapioca plant is from four to ten feet in height, usually consisting of one or more woody stalks which are from an inch to an inch and a half in diameter at the base and from these stalks branch long, slender stems with skeleton-like leaves. None of this portion above ground enters into tapioca. The only use to which the stalk is put is to cut it up into pieces six to eight inches long for use in planting a new crop. In planting, these cuttings are merely inserted in the ground to a depth of two or three inches and thereafter require little attention until the crop is ready to harvest, twelve to eighteen months after planting. The part of the plant which is utilized DIGGING ROOTS

for the production of tapioca is the part below ground, consisting of one or more tubers closely resembling a sweet potato, although much larger, some tubers weighing as much as twenty to thirty pounds. These tubers are pulled out by hand or dug by the use of a heavy hoe, and immediately after they are dug, they are taken from the field to the factory where the tapioca is extracted.



TAPIOCA ROOT



When these roots reach the factory they are thrown into the carrier A, shown above, which brings them to an inclined elevator B, from which they pass through C into D, a washing This interesting machine which process. thoroughly cleanses them is a large perforated metal cylinder, which revolves slowly in water. Through this the roots tumble until, washed clean, they drop out onto the elevator E. They next pass through the "grater" F, where they are reduced to a fine pulp. A stream of water flows constantly through the grater and the mixture of water and pulp drops onto a vibrating sieve G composed of three sieves of different degrees of fineness. This machine is kept in constant motion and all pulp too large to pass through the coarsest screen is pumped back by the pump I, through the pipe J to the "regrinder" K and it then falls onto the sieve again. This process is kept up until it passes through the finest screen, and this is practically pure tapioca which falls into the resevoir H, from which it is pumped to the large cement settling tanks where it is allowed to remain several hours. As it stands, the insoluble tapioca settles to the bottom and the water comes to the top and is later drawn off. The moist tapioca is then removed from the tanks and placed in the centrifugal where all superfluous moisture is thrown off. After thoroughly drving, the tapioca is bagged and is the completed tapioca flour, ready to begin its long, tedious journey to the United States. The first stage of the journey is in large, clumsy twowheeled carts, drawn by native buffaloes or oxen, from the factory to Batavia, Soerabaya or Samarang, on the coast, where, on backs of natives. it is crarried to the hold of a waiting ship. The steamers on which the tapioca flour is carried usually touch at Singapore, where they may take on a cargo of rubber or rattan; at Penang for a shipment of gambier, pepper or tin; at Cevlon for coconuts or tea; then on to Aden, through the Red Sea and the Suez Canal to Port Said:

SETTLING TANKS



perhaps touching at Marseilles and out by Gibraltar into the Atlantic, sometimes going to Holland, where the cargo is transferred to another vessel, sometimes coming directly across, but in either case finally ending their long voyage of twelve thousand miles at New York. Two other routes may be followed, however, one by way of South Africa, the other across the Pacific to San Francisco and from there through the Panama Canal and up the Atlantic Coast.

Arriving at the Minute Tapioca factory, these bags of tapioca flour are carried into the clean cement storehouse on a gravity carrier and from this they are wheeled on trucks to the great electric piling machine which piles them to a height of sixteen or eighteen feet. Here they remain until the flour is needed, when the bags are emptied into a hopper from which the flour is carried by conveyor to the floor above, where



it passes through the "bolter" containing a revolving silk sieve through which only the finest flour can pass, for it is necessary that our flour shall be just as smooth and fine as the flour used in making your bread and cake to insure the final product, Minute Tapioca, being the quality we want. From the bolter the flour passes through a conveyor to the factory building and is received in a storage bin from which it is drawn by conveyor into overhead scales in which definite quantities are accurately weighed. From the scales the flour drops directly into the "mixer" in which the "dough" is thoroughly stirred. This part of the process is a very important one,

MIXER

for the mixture must be made in exactly the right proportion and under absolutely correct conditions to insure perfect results in the subsequent stages of manufacture. Scrupulous cleanliness prevails in this Cooking Department as it does in every part of the entire factory.

Flooded with sunshine, pure air always kept in circulation by means of a special ventilating system, the workmen dressed in white uniforms and caps, the machines and everything connected with the work spotlessly clean, make this a huge modern kitchen particularly adapted to the preparation of a pure food. From the mixer the dough is carried by conveyors to the "granulator" which prepares it for the cooking process. Coming from the granulator, the material drops into metal trays which hold an exact quantity and which fit into specially constructed trucks by means of which ihey are car-

GRANULATOR

STEAM COOKERS

ried to the large steam "cookers." Here the moist granules of dough are thoroughly cooked by high-pressure steam heat, while being constantly stirred by means of automatic power stirrers. After the exact amount of cooking, the moist, cooked tapioca is automatically conveyed and delivered to the "dryers." These are of



STORAGE BINS

special built-in construction, nearly one hundred feet long, with double, insulated walls. A huge fan forces through these dryers a constant current of heated air which has been filtered previously and then brought to the necessary temperature by passing through enormous coils of steam pipes. In this heated current the tapioca travels back and forth on white cotton belts, ending its jour-



BUCKET ELEVATOR

ney completely dried.

Then by means of a bucket elevator and a most ingenious system of overhead conveyors, it is carried to the storage bins in which it remains for about two weeks, after which time it is taken from these bins by conveyors to the "crusher" where it is reduced to the pearly crystals of Minute Tapioca in which form it comes to you.



CRUSHER

on an endless belt and which are automatically held in place while being filled, then released and delivered to the "top sealer." Before passing under the filler, the cartons, which are brought flat from the box department are placed on the "bottom sealers," where they are After crushing, the 'tapioca goes again to an immense storage bin which feeds directly to the automatic "weigher and filler." This machine is made up of three sets of accurate scales, each of which weighs out an exact weight, and all dumping together, fill at one time three packages which are carried to it



AUTOMATIC WEIGHER AND FILLER

BOTTOM SEALERS

"squared" and the bottoms are glued ready to receive the Minute Tapioca from the filler.

Leaving the filler, the filled packages are fed automatically to the top sealer on which the tops of the cartons are securely sealed. As the packages drop from the top sealer, they fall onto a belt which carries them under pressure to the packing table where the packages are packed thirty-six to the case. The cases used are of fibre and the bottoms of these are fastened with



copper rivets on the "case stapler." After being stapled, the cases are carried on a belt to the packing table, ready for use. When the case is filled it is pushed onto a short elevator and is afterwards carried by gravity to the "case sealer," where the top of the case is firmly sealed. Leaving the sealer, it passes onto the "case elevator" which carries it either to the storehouse or direct to

CASE

the waiting freight car on the side track.

And even now the finished product may yet have many miles to go before its travels are really at an end, for Minute Tapioca goes to every state in the Union and to lands far across the seas.





CASE SEALER AND CASE ELEVATOR

This is the story of Minute Tapioca from the planting of the small tapioca cutting in far-away Java to the pearly crystals of Minute Tapioca as it comes to you in sealed cartons, untouched by hands—a journey from south of the equator, the other side of the world, through Southern seas and the stormy Atlantic; from the tropics to your table.



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