

**GUATEMALA'S EARTHQUAKES.**

BY THOMAS R. DAWLEY, JR.

Guatemala has been particularly disturbed by earthquakes during the present year. Just about the time the world was horrified with the news of the eruption of Mont Pelée and the wiping out of the city of St. Pierre with its thirty thousand inhabitants, and also that of Soufrière, which caused great destruction and loss of life on the adjacent island of St. Vincent, news came from the Central American republic that its second largest city, Quezaltenango, had been entirely destroyed by earthquakes; but this third terrible catastrophe was lost sight of in view of the harrowing details of those so much nearer to us in the West Indies, and available to the news gatherers. The available means of transit shut us off from that most interesting country which has been the center of seismic disturbances throughout the present year, and it is only after a lapse of time that we can obtain anything but the most meager reports of what has really happened.

Quezaltenango was a well-constructed city of imposing edifices of limestone, containing a popula-

civilization and language intact to this day, the Nahuilas presenting the most striking example of this. These number about thirty thousand souls living in a gigantic caldron scooped out of the mountains, as it were, in the midst of the Cordillera, between the capital and Quezaltenango. They met Alvarado's army outside of their rocky basin and give it battle for an entire day, after which both they and the Spaniards appear to have been willing to treat for peace, and terms were agreed upon by which the Nahuilas promised to recognize the Spanish sovereign, the Spaniards on their part agreeing to leave the Indians alone in the future. And they have been pretty well left alone. They do not allow any stranger from the outside world to reside in their principal city, Santa Catalina, which is at the bottom of the bowl-like country, and they look with suspicion upon any one passing through their domain. They govern themselves, although the Guatemalan government pretends to exercise jurisdiction over them. They do not intermarry with any of the people surrounding them, and should one of their women fall a victim to the intrigues of an outsider, the offspring is sacrificed and the mother becomes an out-

perhaps, where the people enjoy a climate of eternal spring. He may ascend to six thousand feet above the sea level in a day's journey, and find himself suddenly transported to a clime resembling some part of New England on a cold, raw November day. Thence he may travel across country over hills and dales, and suddenly find himself upon the edge of a mountain looking down upon a broad valley four thousand feet below him, in the center of which nestles a picturesque little city, which knows no change of seasons at all, but is bathed in the sunshine of an eternal summer.

At least one-third of the population of this country is pure Indian, with no voice in its politics or government whatever. And strange as it may seem, the bulk of this population is concentrated for the most part in the most inaccessible, inhospitable, rugged parts, where it would seem that livelihood for mankind is the most difficult of attainment. For this very reason these people are a rugged, frugal, abstemious lot, their tendency being to attend strictly to their own business and the teachings of their forefathers. From time immemorial they have combined with their chief industry of tilling the soil that of trade, Cortez having



St. Nicholas Street, Where Several Women Were Killed.



Ruins of the Arena, Where the Bull-Fights Were Held.



St. Sebastian Street, After the Earthquake.



Remains of a House Belonging to a Wealthy Citizen, in Motazan Street.

**A GUATEMALAN TOWN RUINED BY EARTHQUAKES.**

tion of upward of thirty thousand souls. It is supposed by some to have been built in the crater of an extinct volcano, but this is doubtful, the belief having originated from the fact that it is surrounded by high, jagged mountain peaks at an elevation of 8,000 feet above the sea. The earthquakes which destroyed it occurred last April, and shook the city from its very foundations, toppling the walls of the houses into the streets, killing and maiming many of its inhabitants.

The major portion of the population of the city were Indians, but these are not Indians in our sense of the word, whom we most invariably picture as a wild, roving band of barbaric or semi-civilized people. The Indians of Guatemala maintained at the time of their conquest a civilization much superior to that of the Aztecs of Mexico, but they were lacking in both political and military organization sufficient to hold them together in any decided opposition to the small army of Spaniards under Alvarado, which Cortez sent against them, although they made on many occasions heroic resistance to their conquests. Though nominally conquered, many of them have preserved their ancient

cast. In former days, it is said that she was killed as well as the child. They allow no rum nor intoxicants of any kind sold within their jurisdiction; have no use for a jail, but flog those who are guilty of any crime known among them, such as a man and wife being unable to live together without quarreling, which is one of their most serious offenses. For these privileges of self-government they pay the government of the republic an annual tribute of \$30,000

Guatemala has an estimated population of more than a million and a half people, and a climate so diversified that its people can find a home in any climate they choose, ranging from the tropic to the frigid zone. There are scattered hamlets on the coasts bathed in the burning rays of a tropical sun, where the land is so fertile it scarcely requires any effort on the part of the sparse population to produce their daily requirements. There are stretches of sandy plains, on the other hand, where it is necessary to turn the rivers from their beds to irrigate and produce, while higher up in the interior the traveler may find himself in a fairy-like town, built upon a shelving rock

obtained from their so-called merchants, who appear to have traveled into Mexico to sell their products, his knowledge of the country before sending Alvarado to subjugate it. These same Indian merchants at the present day set out on long journeys from their native towns loaded with the products of their particular locality. These they carry in immense packs upon their backs held by a strap across their foreheads, and undoubtedly they penetrate regions unknown to them to barter and trade for such things that they are unable to produce at home. In the cold regions of Los Altos, there are tribes who dedicate themselves almost wholly to raising sheep and wheat, and they clothe themselves with garments of wool of their own manufacture. Each pueblo or tribe has a distinct garb of its own in color and fashion, while some of them have a distinct dress for their shepherds. When they have harvested a surplus of wool or wheat, they go forth, perhaps twenty or thirty of them in a band, with their great loads upon their backs, a long staff in one hand and a chief leading the way. They trot along in Indian file, descending the rugged heights, crossing

rivers and plains, frequently making twenty and thirty miles a day with a load of one hundred and twenty pounds on their backs, and after many days' journey return with equal loads of the produce of other countries and climes.

Sailing down the Pacific coast of Guatemala, the country presents one of the most beautiful sights imaginable. A line of volcanic peaks runs almost parallel with the coast from the frontier of Mexico to that of Salvador. The tablelands rise above the verdure-covered shore, and above these the mountain peaks, many of them capped with snow, and so perfect in form as to give the appearance of having been molded by some gigantic hand. There are some thirty of these peaks classified as volcanoes, and the terrible geological revolutions which have originated from them in times past can only be guessed by the present appearance of the country about them. In some places we find the conglomerations of enormous rocks as though thrown down by violent eruptions, in other places depressions of land where the mountains form colossal walls shutting in the drainage and forming

average foreigner, who is unaccustomed to the seismic disturbances, feels the slightest tremor, and often he stands in the greatest place of danger, wondering what the excitement is all about. My first earthquake occurring during the night, I slept soundly through it all, while other people were tumbling from their beds, falling over tables in the darkness and bruising their shins, in their efforts to get outdoors. The next morning they told me all about the frightful earthquake.

#### AN EXPERIMENTAL MONO-RAIL LINE.

BY DAY ALLEN WILLEY.

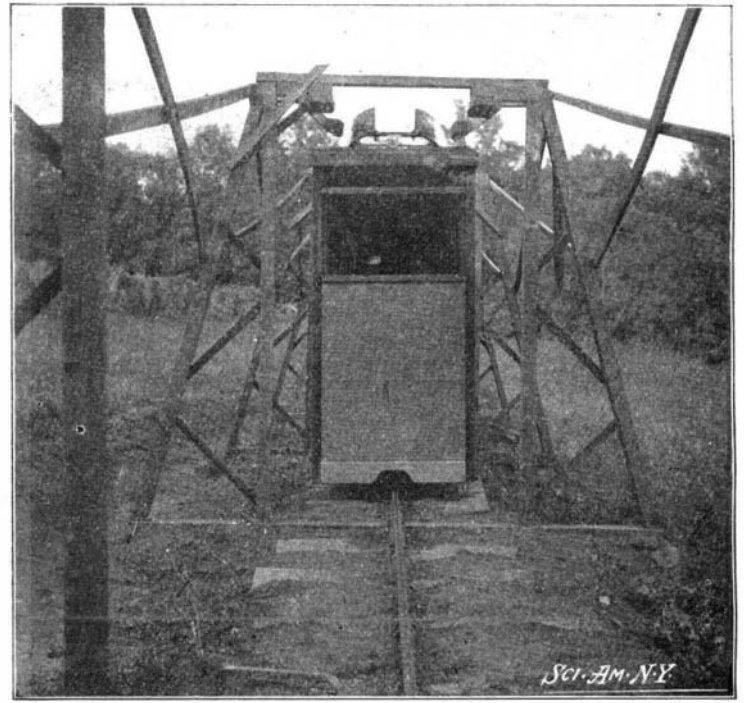
A railway in which the mono-rail system is utilized has been in operation for experimental purposes in the western suburbs of Baltimore for the last few months. It was constructed according to the design of Mr. Howard H. Tunis, who has secured patents on several features of the system which have never before been placed in operation. The track, although but 1,800 feet in length, has the general form of an ellipse, having a grade at several points of two per cent, as

this and the rear wheel only, the rims being grooved to the same depth as the wheels used on ordinary steam standard-gage railway cars. The arrangement of the engine is similar to that of some types employed in automobiles. Although it generates but four horse power, the empty car has been moved around the railroad in  $2\frac{1}{4}$  minutes, or at the rate of 9 miles an hour, while with every seat occupied a rate of 8 miles an hour has been maintained without difficulty. In fact, the engine is so small that it seems almost like a toy. About  $\frac{1}{2}$  horse power is utilized in running the water and air pumps, so that actually only  $3\frac{1}{2}$  horse power is applied to the movement of the load. The car itself with the engine weighs 3 tons, and when filled with adult passengers weighs between 4 and 5 tons.

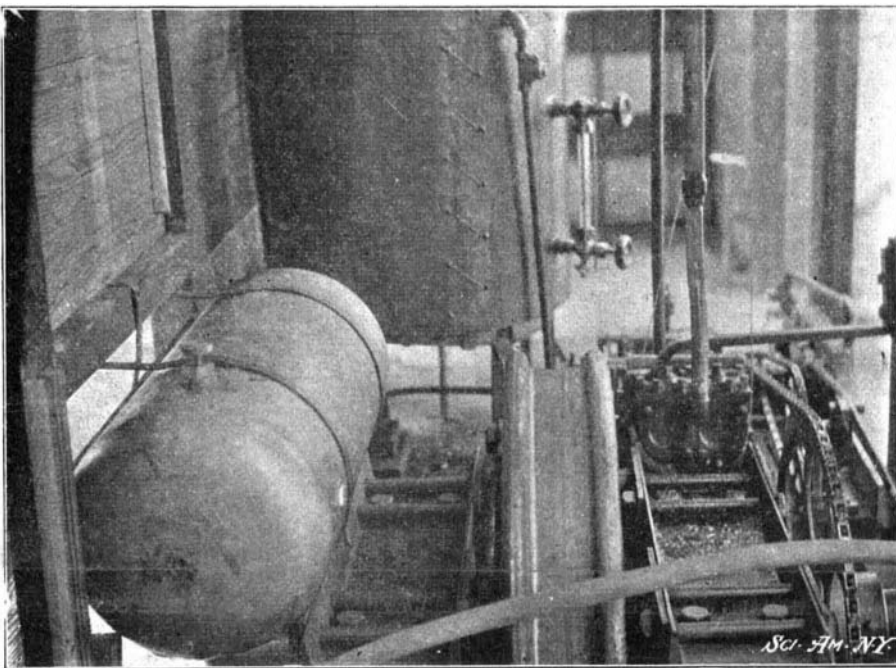
The device which keeps the car from toppling over when in motion is one of the features upon which the inventor has secured a patent. It consists of two strips of wood extending lengthwise along the roof of the car and a series of spring blocks on the archway framework. The strips are slightly



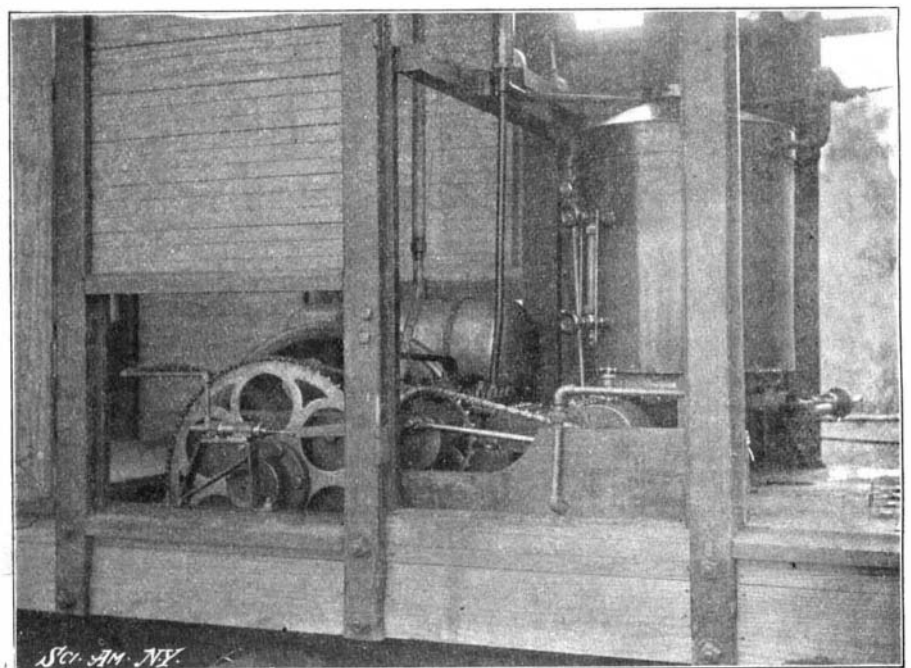
A NEW MONO-RAIL LINE—CAR VIEWED FROM THE FRONT.



REAR VIEW, SHOWING GUIDING STRIP AND SPRING BLOCKS.



VIEW OF ENGINE AND BOILER FROM THE REAR.



SIDE VIEW OF ENGINE, SHOWING CONNECTION WITH TRUCK WHEEL.

great lakes, and in many places great cracks in the earth where it has been rent asunder and never healed.

But the people toil on, building their cities upon the shelving cliffs, planting their wheat and potatoes upon the very slopes of the most threatening volcano, and when the earth rumbles and shakes, the Indian merely looks up from his hoe, shrugs his shoulder, and if nothing more serious happens, he goes on with his work. An earthquake is nothing to him. If it swallows him up, perhaps then, so much the better. He does not seem to have any particular attachment for life. He is a sad, serious personage, who seldom laughs and never sings. He is entirely resigned to his fate, and seems to care little what that fate is to be.

But with that class of people known as the Ladino, the descendants of the old Spanish settlers, it is entirely different. At the very first mutterings of the earth, which seem to precede the usual earthquake, they are seeking places of safety in the open, and they usually begin to pray with all the vehemence there is in their souls. What is more, they fairly anticipate the earthquake, and are fleeing for their lives before the

well as a number of 28-degree curves. The rail, which is laid in the center of the roadbed spiked to ordinary ties, weighs 30 pounds to the yard, and forms practically the only support to the two cars which are operated over the line, as the framework through which they pass is merely intended to maintain their equilibrium. The framework shown in the illustrations as a series of wooden arches is merely temporary, and will be replaced by steel in the permanent structure. Each archway supports a part of what might be called guiding pieces, which prevent the car from falling to one side.

The cars are large enough to hold 24 passengers. They contain their own motors, which utilize kerosene oil as fuel, steam being generated in an upright boiler and conveyed to a cylinder which moves a pair of sprocket wheels. The larger sprocket wheel, which is made especially heavy for the purpose, is joined to the axle of the forward truck wheel upon which the car moves, so that power is communicated to this wheel directly by means of a chain connection, and it may be termed the driving wheel. The car is supported upon

curved at the ends, meeting in the form of a V, and as the car moves, they pass between the spring blocks fixed to the archway. The guiding strips and the spring blocks are greased to reduce friction, and the arrangement is such that at least two pairs of spring blocks are continually pressing against the guiding strips. This device prevents swaying even on the most abrupt curves and when running at maximum speed. Ball bearings are utilized to overcome friction in moving the driving wheel, and this is one of the important advantages claimed for the system. Another claim is that the amount of friction is greatly reduced by the use of the single rail, even though the guiding strips on the top are continually in contact with the overhead structure. The fact that a load aggregating nearly five tons can be hauled at the rate of speed mentioned by an engine of such power is also advanced as a claim for its efficiency. The rates of speed given are maintained even upon the highest grades and sharpest curves. A company has been formed to build a railroad 16 miles long in Virginia embodying Mr. Tunis' ideas.