

**POMPEII.**

With the long-drawn-out tragedy of the West Indian eruptions being now enacted before our very eyes, the parallel disaster that happened to the Roman seaside resort of Pompeii takes on an added interest, in spite of the interval of nigh upon two thousand years that has lapsed since the city was buried. The destruction of Pompeii differed from that of St. Pierre in that while the modern town was practically razed to the ground, the buildings of Pompeii were left standing, although they were buried entirely out of sight by the falling volcanic ashes.

There is no city in the antique world of which we know so much as Pompeii—a place whose sudden extinction was, perhaps, the most important event for Roman archæology which could have occurred. The literature on the subject is most extensive, and we have in one bibliography of the subject no less than five hundred titles.

Pompeii in the old days lay nearer the sea and the River Sarno than at present. It stood on an elevation a third of a mile from the sea, offering a charming spot for a sojourn or a permanent residence, so that it is little wonder that Pompeii was so popular with the Romans. We know very little of the city prior to its destruction except that the inhabitants engaged in commerce and agriculture, and did quite a business in millstones. At the time of the great eruption of 79 A. D., the population was a very mixed one.

In A. D. 63 the city was visited by a violent earthquake which threw down most of the buildings in the city, and there was just about time to rebuild the public buildings when the great catastrophe occurred. This was perhaps fortunate, because now we have the remains of the city built nearly all in one period. The damage was done by the volcanic ash and pumice made into a kind of muddy rain, combined with earthquake shocks. The woodwork of the buildings was not set on fire, but was so desiccated and charred that it has not been in most cases preserved. There is every indication that a copious rain fell with the ashes. It is estimated that 2,000 persons perished in the catastrophe. The city formed an irregular oval four-fifths of a mile long and two-fifths of a mile wide. It was surrounded by a wall and there were eight gates. The city took its shape from the end of the old lava stream in which it lay, which ran southeast from Vesuvius. Our engraving is from a model of Pompeii which gives a much better idea of the city than can be obtained in any other way. The visitor

the Large Theater and the Small Theater. Back of the Large Theater is an open-air gymnasium and the Temple of Isis. The street which is so prominent an object is the Stabian Street. The streets were laid out with great regularity and the public buildings form two groups, one lying about the Forum and the other is the group which we have just described. The Forum measures 497 by 156 feet, including the colonnade. No vehicles of any kind were permitted in it, as is shown by the upright stones at the streets, which

**CYNIPS POLYCERA.**

bar all passage to chariots or carts. Gates were provided, so that even pedestrians could be kept out if it was thought desirable. The Forum was given up to temples, markets and buildings connected with the administration of the city. The principal buildings were the Basilica, the Temple of Apollo, the Market Buildings, City Treasury, the Temple of Jupiter, the Sanctuary of the City Gods, the Temple of Vespasian and the Voting Place. The Baths of Pompeii were naturally on a small scale, but owing to their excellent preservation and the certainty with which the use of the various rooms can be assigned, we derive from them most of our information regarding the arrangements of ancient baths. The Amphitheater lies at a distance from the other excavations. Its length is 444 feet, breadth 342, and is small compared with other amphitheaters, but was naturally large for the town, so that only a part of it was provided with seats.

**CYNIPS POLYCERA.**

BY M. C. FREDERICK.

No photograph nor description can portray the delicate beauty of the home of the young *Cynips polycera*. It was at the foot of the Santa Ynez mountains, across the range from Santa Barbara, that I saw them for the first time, depending from the under side of white oak leaves like fairy bells or tiny fantastic Japanese lanterns. In the midst of a natural park, consisting mostly of magnificent live oaks which have been jealously guarded from the woodman's ax that has almost denuded the region of timber, are a few stately white oak trees. They bear a bountiful crop annually of rosy-cheeked "oak apples;" but it was only on a white oak scrub that the remarkable *Cynips polycera* was found, the insect mother who provides so curiously for her prospective offspring, evidently selecting the tender, juicy, leaves of the young tree in preference to the less vigorous growth of the mature ones.

With a leaf for a canopy these brilliantly-colored and highly-ornamental homes are easily overlooked, but an observant eye once catching the gleam of the white-and-rose, so delightfully blended, follows up the discovery until a veritable wonderland is revealed.

As not even the tiniest opening is visible through which the occupant might have entered in its earliest infancy—not to mention the access of air and food—it is hard to believe these starlike fairy bells the habitations of living organisms.

How the little grub gets inside has long been an open secret of the student of natural history, who knows that the multitudinous variety of galls found on rose bushes and other vegetation, but chiefly upon the oaks, are caused by the sting of a little fly who lays her eggs in the soft tissues of leaf or stem.

The male of some kinds of gall flies has never been discovered, hence parthenogenesis is believed to meet this deficiency in nature. The female is provided with a hair-like ovipositor snugly coiled within the body except when in use, and then it is thrust into the soft under side of the leaf and forms a conduit through which the egg is embedded beneath the surface. It is believed that an irritating fluid is also injected into the puncture which causes the strange growth known as a gall and within which the egg is hatched and the larva lives until ready to emerge into the world, when it bores its way out. How the beautiful colors originate when they are no part of the life of the tree, and what part they play in the economy of gall-fly life, no one has yet told us.

**VIEW SHOWING THE PRESENT CONDITION OF THE EXCAVATED CITY OF POMPEII.**

is supposed to be looking from the Stabian gate. The theater or colonnade, used as a barracks for gladiators, is on the left and is shown with the columns of the colonnade. Directly beyond, will be seen the termination of the triangular Forum, while in the center are two theaters known respectively as

The houses of Pompeii are worthy of special study. They face the streets, which are usually the average width, being 10 to 20 feet. There were sidewalks with curbing and broad ruts were made by passing wheels. Only the principal streets were wide enough for two vehicles to pass.

The cradle of the *Cynips polycera* has but small attachment to the leaf but spreads into a bell-shaped form, the broad end usually flat, and the rim serrated by the horn-like projections from which it takes its name. In substance it is soft and juicy like apple, quickly shriveling if the branch is detached from the

tree. Unlike many parasitic growths the cynips do not seem to interfere with the health of the leaves or plants, those so studded being quite as thrifty in appearance as the others.

#### RAILROADS IN CUBA.

BY WALDON FAWCETT.

The railway systems, existent and prospective, in the Island of Cuba constitute one of the most important factors in the promised development of the new republic. To a neglect in the past to comprehend the full value of transportation facilities must be attributed, in a measure, the retardation of the commercial and industrial advance of the country; but nevertheless the dawn of the new era in Cuba has found ready to hand a very fair foundation equipment of rail lines, steam or electrically operated. Moreover, the inauguration of American military control was coincident with the promulgation of an enterprise for the construction of a great trunk line through the center of the island—a long-awaited and sorely needed undertaking of pre-eminent importance; and finally, other projects of only slightly lesser importance but awaited the establishment of a stable government to take definite shape.

The railroads of Cuba are divided into two general

have submitted statements the profits of all the lines, if pooled, would have amounted to about \$2,120,000. The existing railways in Cuba are owned largely by British capitalists and the headquarters for a majority of the various operating companies are in London.

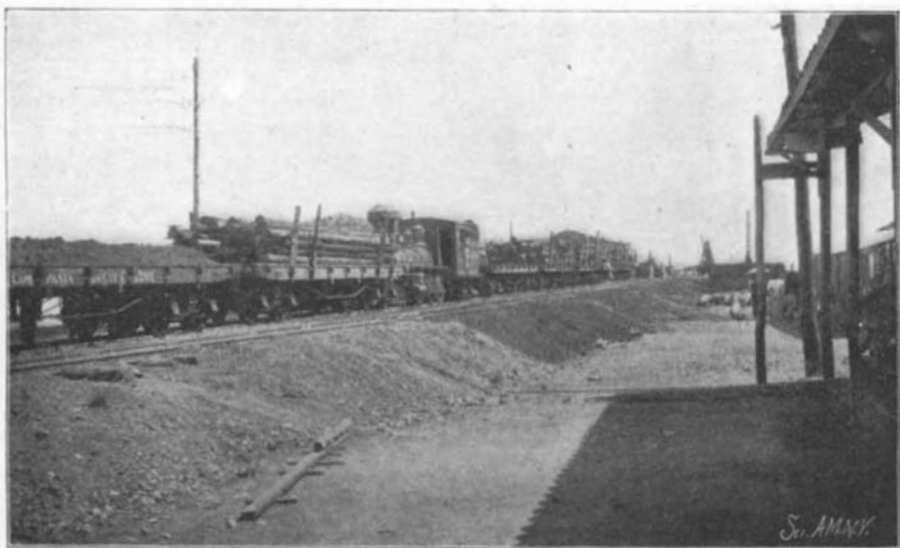
In order to convey an idea of the conditions obtaining in the case of a thoroughly representative Cuban railroad, it may be well to direct momentary attention to the Puerto Principe and Nuevitas Railroad, one of the oldest and best-paying lines on the island. The line extends from the seaport of Nuevitas for a distance of 45 miles to the important inland city of Puerto Principe, through a level region principally adapted to cattle raising, but in which a number of large sugar plantations are situated. One of the reasons why this system constitutes so valuable a property is that it has no bonded indebtedness and pays handsome dividends to its few shareholders—it being a close corporation, composed of less than a dozen stockholders.

The operating company is virtually a private corporation, with a capital stock of \$1,000,000 and eight stockholders, each of whom holds one share of stock. The government and administration of the affairs of the company are in charge of a committee composed of three stockholders, elected annually by the others;

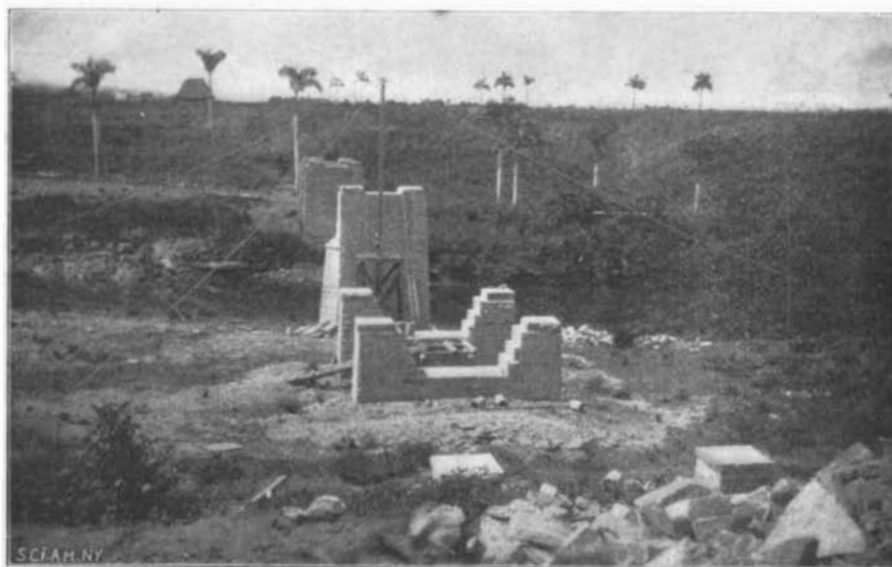
leased to private corporations, following the example of the Mexican government, which, after expending millions of dollars on the Tehuantepec Railroad, finally leased it to an English firm.

As indicative of the equipment available for the development of the mineral resources of Cuba it may be noted that several of the corporations operating iron mines on the island control their own rail lines. This is the case with the Spanish-American Iron Company, the Juragua Iron Company, the Cuban Steel Ore Company and the Sigua Iron Company. The Spanish-American Iron Company owns five freight locomotives and sixty ore cars and has transported as high as 30,000 tons of iron ore a month.

The deepest interest in the Cuban railway field naturally centers in the new operations having for their object the extension of the transportation facilities of the island. Prominent among these is the project of the Havana Electric Railway Company, which has undertaken to reconstruct and extend the street railway system of Havana, giving the Cuban metropolis a thoroughly modern urban system. The new 7-inch girder rail weighs ninety pounds per yard; the steel ties are spaced every ten feet, and the roadbed is of concrete 7½ inches thick, with vitrified brick and asphalt block paving. When completed



Raising the Tracks at Jucaro.



Masonry Piers for Bridge Across Guananicum River.



Pile Trestle Bridge on the Eastern Division.



Railway Headquarters at Ciego.

#### RAILROAD CONSTRUCTION IN CUBA.

classes: the public railways and the private or plantation railways, the latter being designed, of course for marketing the products and aiding in the distribution of supplies on the large estates on the island. The public railways comprise seventeen separate systems, although nearly all are owned and operated by five companies, and their aggregate length is in the neighborhood of 1,225 miles. There are 107 plantation or private systems totaling 872 miles in length, and thus the total railway mileage amounts to 2,097 miles.

In view of the fact that these lines have been built in a tropical island, where it is necessary to exercise great care in the construction of tracks and bridges that they may withstand the exactions of the rainy seasons when water in torrents descends upon the road-beds, the cost of construction constitutes an interesting phase in their history. The 124 railroads of all kinds represent a cost of \$68,474,407 in gold. Of this sum \$57,164,715 was expended for the public railways and \$11,309,692 for the private lines. Two of the public railroads have been operated at a slight loss for some time past; but all the others have proven profitable in a greater or less degree. During the last calendar year for which the operating companies

by a plurality of votes and who are not eligible to re-election. They perform their duties gratuitously. The line has twenty bridges and seven pontoons with walls and pillars of masonry and trusses of steel and a large number of culverts also of masonry. The stations are of lumber and tile, and the rails are of American steel, weighing fifty-six pounds a yard. The rolling stock consists of five passenger and five freight locomotives, the heaviest weighing sixty tons, eleven passenger coaches and 137 freight cars. The telegraph line in connection with this system was constructed in co-operation with the Spanish government, the cost being shared equally. There are two wires extending the entire length of the road, the upper wire being for government use and the lower for the use of the railroad company.

Several of the smaller and less important railway lines in Cuba belong to the new government as an inheritance from Spanish sovereignty. One of these, the Jucaro-Moron system, cost the Spanish government \$1,152,800 in gold. Private parties are willing to purchase at least one of these railroads, reimbursing the government for the full amount of the first cost, and it is probable that ultimately all the lines under governmental control will be either sold or

there will be thirty-six miles of single track, and the cost of reconstruction will exceed \$3,000,000. There will be 110 motor cars with two 25 horse power motors on each car, and the power house will represent when all machinery is in place an investment of about \$480,000.

However, the enterprise of supreme importance in the transportation field, if not indeed in the entire range of activities on the island, is found in the project being carried out by Sir William Van Horne, the builder of the Canadian Pacific Railroad, and the capitalists associated with him in the construction of a central line of railroad throughout the length of the island. This "backbone railway," as it has been aptly termed, and which will exert a more powerful influence for the general development of the island and all its resources than any other one undertaking, was an objective institution with foreign capitalists for half a century prior to the Spanish-American war; but all their schemes failed of consummation. The main line from Santa Clara to Santiago, to be completed this spring, is about 350 miles in length; but there will be feeders to the north and south coasts which will bring the aggregate length of the system to approximately 1,000 miles. The branches or