Street Car Company Spending Half a Million in Betterments.

THE Utah Light & Railway company of this city has made great strides, accomplished great things during the current year. It has been a marked season for reconstruction as well as the building of new lines, such as those on Ninth avenue and Eighth West street. Every day long gravel trains have been run through the streets from the pits at North Salt Lake to various points where ballasting was being done, and the construction department has seen some very busy times.

During 1909, up to Nov. 1, there have been 26½ miles of track constructed; that is, increase in mileage and new rails. In fact, the old system has been entirely reconstructed, the new line to Murray being included in this. The Ninth avenue line required 3 1-3 miles of track laying, the line extending from Sixth avenue and B street to Ninth avenue and thence east to K street. As property owners along the avenue from K to M street have graded out the old canal and leveled the street into a good roadway to the spur of the side hill, the company can extend its tracks to M street whenever the patronage calls for it. Ninth avenue promises to be one of the most attractive avenues in the city. The railway company has made a fine boulevard of it already. The Eighth West street line, from Second to Tenth South streets, required 4 4-16 miles of trackage. A new and valuable bit of track, two miles, was built along Ninth South street from Ninth East to Eleventh East streets, and thence south to Tenth South street, thus cutting out the short line on Tenth South street between Ninth and Eleventh East streets, and relieving the Ashton avenue line of the Sugar House cars. The Murray line, seven miles in length, has been entirely rebuilt from Seventh South street down, with double track to Twelfth South street, and long sidings between that point and Murray, one of the sidings being practically a double track for 3,000 feet. The poles have been largely removed from the street, the trolley wires being supported by curbstone standards, as is the case also on the new north and west side lines. In fact it is the policy of the company now to avoid completely the use of poles in street centers. The best of heavy gravel ballasting only is used, and plenty of that, which insures a dry roadbed in wet weather. The amount of money expended the current year in tracks and power lines, including the overhead plant, is placed at $225,000.

NEW LIGHTS INSTALLED.

Improvements in the power line and extension of the lighting circuits with installation of new luminous arc lamps for street lights, figure among the valuable steps of progress made by the Utah Light & Railway company, as do also the building of underground conduits, the paving of streets and improvement of rolling stock. The new car barns on Tenth ward square furnish the company with a housing plant unsurpassed for convenience and utility in the country. They are of concrete roofs, flooring and pits, with pressed brick walls, capable of housing 140 of the new cars which measure 35 feet long, over the bumpers. At present, only the yard tracks, barns and heating plant are completed. But during the coming year machine, carpenter, repair and paint shops are to be built, the outlay there for 1910 amounting to $250,000. The value of the entire property, when completed, is estimated at $600,000.

The company has 143 passenger cars, most of them of latest pattern, and 65 of which are in regular constant service: 30 construction cars, including service, dump and flat cars, six sweepers and three engines. Every car in the passenger service has now four motors, thus giving it 160 horsepower propulsion; consequently there is now no trouble about climbing hills, provided the power does not give out.

INCREASE IN TRAFFIC.

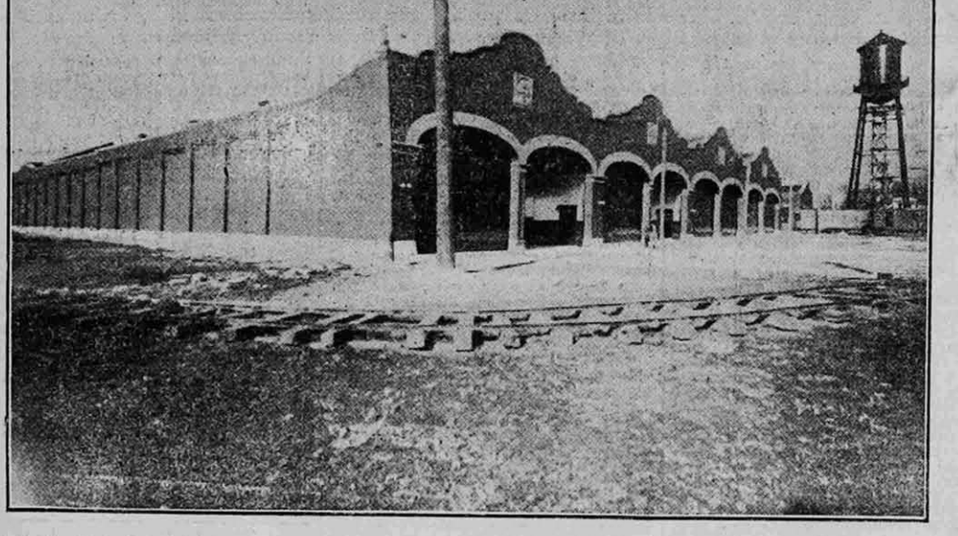
Passenger traffic has increased during 1909 from 10 to 15 per cent over that of 1908, due largely to the holding of conventions here, and the immense tourist travel through to the Seattle fair. The building up of the northern and eastern sections of the city has greatly increased the road's income, and it is the company's policy to extend lines wherever patronage would warrant it. The Fort Douglas line has been entirely relocated and rebuilt, with one of the best constructed tracks and road beds to be found anywhere. The line to the post from Mt. Olivet cemetery has been discontinued and the track will be removed later. Sixty-five pounds steel is now laid in place of the old 35 and 50 pounds rail, much to improvement in comfort of travel. The track extensions for 1910 include the extension of the Murray line to Sandy and Bingham Junction. There will be no line to Holladay, as Judge LeGrand Young's road is to run down there, and the region is not sufficiently populated to warrant the building of two roads. It is doubtful also, if any line will be built along Thirteenth East street for two years yet, as there is nothing along the proposed line to pay for its maintenance.

The Utah Light & Railway company is steadily increasing its power plant. A 4,000 horsepower station is being completed in Weber canyon, just below Devil's Gate, to be ready for operation in the spring. This plant will cost $300,000. This, with the two power plants in Big Cottonwood canyon, and the Ogden canyon plant, and service from the Telluride and Bear River companies, will give the company a total of 21,000 horsepower. In addition to this, there are the auxiliary steam plants, at Jordan river, on Fourth West street, and the West Temple street plant, aggregating 3,500 additional horsepower. The street railway service requires an average of 3,500 horsepower daily, with a maximum of 5,000 horsepower. The company is supplying large amounts of horsepower to various manufacturing concerns in and around the city, as for instance the Portland cement works which use 1,000 horsepower daily.

The company has 680 new luminous arc lamps placed over the city, the west side being equipped this season, so that the installation is general. The business section will be equipped as soon as the necessary cable can be secured from eastern manufacturers and drawn through the conduits. In addition to the arc lights there are 221,000 incandescent lamps scattered through the city. An important addition has been made this fall to the generating plant in the West Temple street station, viz., a second $30,000 motor-generator, which places the company on Easy street as far as getting all the power wanted is concerned. There are now two of these monster machines at this station, each generating 1,250 horsepower.

ARMY OF EMPLOYES.

The Utah Light & Railway company has 1,162 employes—374 carmen, dispatchers and machinists, 57 on the office force, 100 in the line department, 45 in the electrical service department, 73 at the power stations and transmission lines, and 381 on the maintenance of way and track department. The Harriman interests have expended, it is estimated, $5,000,000 on the properties of the Utah Light & Railway company since their acquisition five years ago from the Utah Light & Power company, and the Consolidated Railway & Power company. The officers are: W. H. Bancroft, president; Parley L. Williams, first vice president; W. S. McCornick, second vice president; F. H. Knickerbocker, secretary; G. S. Gannett, treasurer; Will Brown, auditor; Joseph S. Wells, general manager; R. E. Hunt, assistant general manager; O. A. Honnold, electrical engineer; L. L. Dagron, civil engineer. The directory includes, in addition to the first three general officers, L. S. Hills, W. W. Riter, T. G. Webber, Heber M. Wells, D. E. Burley, and Will Brown.



Photos by Utah Materials Co.

TOP—ONE OF THE EIGHT NEW C AR BARNS. BOTTOM—EXTERIO R OF NEW BARNS.

SCIENTIFIC MISCELLANY.

Another step toward the production of electric plants for the farm seems to have been achieved at Buckenhill, Eng. A wind turbine 24 feet in diameter is mounted on a steel tower 75 feet high, about 435 yards from the house and 80 feet above its level, and drives a specially designed generator, with armature running in a vertical position, adapted to a speed variation of 400 to 1,600 revolutions per minute. The current is conducted by overhead wires from the generator at the foot of the tower to a storage battery of 28 cells in an outbuilding of the house. The battery is divided into two equal groups of cells, and is designed to feed about 100 Osram metallic filament lamps in the lighting circuit, besides driving a 50-volt motor for working a chaff-cutter, circular saw, and root-pulping machine. The motor is in the shed 80 yards from the house, connected to the battery by an underground cable. The plant is entirely automatic and a special tail gear changes the position of the wheel when its stopping is desired, and also when the wind reaches a certain predetermined velocity. With ball bearings of worm enclosed in an oil bath, the plant could be neglected for a year without damage from lack of lubrication. The apparatus has been in successful operation a few weeks, and has done wood sawing and other work in addition to lighting the house.

When the making of electrolytic iron is fully developed, it is expected that iron objects can be made direct from the ore in its bed, without any necessity of mining. Iron tubes or plates can be made by placing iron ore or cast iron in an acid bath, and connecting it with the positive pole of a dynamo, the negative electrode being a lead covered wooden core for a tube or a similar flat surface for a plate. When the iron deposit is thick enough, it is taken out, the tube being heated to remove the core. The electrolytic iron is very pure and can be made from poor ore or iron waste.

The monoplane, it is pointed out, is better adapted than the biplane for making in small sections, to pack in the aviator's trunk when he goes to his summer home.

The instructive model of the solar system designed by Agnes Fay, a British teacher, is on scale of one million miles to the foot, and she suggests that the upper classes in any school may make it to advantage, while she used a hollow wooden ball for the sun a calico ball stuffed with hay would serve as well. On this scale, the sun 800,000 miles in diameter, is reduced to 10 2-5 inches. Mercury, 3,000 miles, 1-25 inch; Venus and the earth, each 8,000 miles, to two pinheads of 1-10; Mars, 3,000 miles, to 1-20 inch; Jupiter, 88,000 miles, 1 1-25 inches; Saturn, 74,000 miles, 9-10 inches; Uranus, 33,000 miles, 2-5 inch; Neptune, 37,000 miles 2-5 inch. The planets are mounted on pins at the top of four foot posts, Mercury being 36 feet from the sun; Venus, 67; the earth, 93; Mars, 142; Jupiter, 484; Saturn, 887; while Uranus is 1,783 feet away, and Neptune, 2,800. The moon, 2,000 miles in diameter, is a sphere of 1-40 inch mounted on the post with the earth, at a distance of 3 inches, and the two satellites of Mars, 8 of Jupiter, 9 of Saturn, 4 of Uranus, and 1 of Neptune are mostly mere specks quite near their respective planets, Jupiter having its eighth moon at the extreme distance of 15 feet. On this scale a light year, or the distance traveled by light in one year is 1,100 miles Alpha Centauri would be as far away from London as New York; and 61 Cygni, the nearest star visible in the Northern Hemisphere as far away as Pekin via New York. The Milky Way, if correctly assumed to be 4,000 light-years from us, would be—on the scale of the model—about 20 times as distant as the real moon from the real earth. Giving motions on a like scale, the earth would revolve around the sun 167 times each second; Neptune would make its 3-miles circuit in one second; and the Precession of the Equinoxes would be completed in two minutes.

Fire fighting apparatus on shipboard is very inadequate, and about 40 vessels yearly are burned at sea. The use of incombustible gases from the smoke-stack for smothering flames is the novel idea of George Harker, an Australian. His method has been adopted by an Australian sugar steamer, which has a small motor driving a fan to pump the gases from the funnel, which apparatus serves for cleansing the gases and forcing them through pipes to any part of the ship. The same plan is effective for destroying rats.

The rubberized leather of a new London factory is said to be made by giving the hides a protective chrome tanning, then filling the interstices with rubber. Rabbit, goat and sheep skins become extraordinarily tough as well as waterproof, and are expected to be especially valuable for motor tires, miners' boots, and many other purposes.

In efforts to enforce legislation against smoke from factory chimneys, evidence as to the degree and duration of smokiness has been difficult to get, as the estimates of witnesses vary greatly. The new smoke tintometer of John Lowden, a Scottish engineer, gives accurate measurement by the color of the smoke. The instrument is a tube having an eyepiece at one end, while the opposite end has two apertures, in front of one of which is a revolving diaphragm having five circular holes, four of them containing glass tinted to correspond to the already-adopted standard smoke-scale of Ringlemann. The observer looks toward the windward side at the smoke issuing from the chimney. He sees through the clear hole and one of the tinted ones at the same time, the latter facing the clear sky beyond the smoke, while the clear glass shows a circular patch of the column of smoke. The diaphragm is revolved until the two holes are equally illuminated. The numbered scale on the instrument gives the number corresponding to "light grey," "dark grey," "black," or other shade of the Ringelmann chart, and furnishes the inspector an exact record of the chimney's performance.

Why the dream of utilizing the energy of waves cannot be realized has been explained by Signor Ricardo Salvadori. The mean horsepower of waves he finds to be really quite small, and even if the energy were less variable, the expense of accumulating it—in reservoirs of compressed air, for instance—could not be considered. Waves a yard high furnish one horsepower per yard of coast, waves two yards high yielding seven horsepower. The yard-high wave is usually the greatest that can be depended on for half of the days of the year, and the cost of a plant to utilize its energy would be something like $1,000 per horsepower.