

achievement that it's three westward-aspiring electric rivals failed to do throughout their existence; to link the university city with Kansas City.

The building of an electric line posed several problems for it's builders that a steam road such as the Union Pacific Railroad did not have to contend with. The Kaw Valley line was made no land grants by the United States government and had to acquire all of it's right of way for a price that it had to pay. This was an obvious financial strain that put the electric line and lines at a severe disadvantage. However, the Kaw Valley was able to finance such expansion easier than most and continued to lay rail westward. The average rail that was laid was of the weight of seventy pounds every three feet, although other weights were used. Regular railroad ties were used, later being replaced by ties that had been dipped in creosote which lengthened the service life of the tie and lowered <sup>MAINTENANCE</sup> maintaince costs of the railroad. Three sub-stations were set up along the line at Muncie, Mahon, and Kent. Electric power was purchased from the Kansas City Power & Light Company and from the Board of Public Utilities of Kansas City, Kansas. At the three sub-stations, which were elaborately built of native stone with large paneled glass windows, were ticket offices, waiting rooms, and Westinghouse rotary converter outfits made up of high voltage transformers, switchboards, and converters. Here the 33,000 volt alternating current was transformed and stepped down to the 600 direct current as it was fed into the trolley cables.

While the Kaw Valley line maintained it's route on the north bank of the Kaw and <sup>u</sup>succeeded in bridging the many <sup>e</sup>creaks and small streams by means of steel bridges, it faced a more complicated problem in getting across the double-track Union Pacific line shared by Rock Island trains in the area immediately northeast of Lawrence. Engineers, faced with bridging Mud Creek in the same area, decided to erect a viaduct three miles northeast of Lawrence, crossing Mud Creek and the railroad tracks at the same point. An even greater problem faced the Kaw Valley on entering Lawrence from the northeast. The principle part of the