it actually runs with this speed. The curves belong to the following wheels:

1. **Victor Increased Capacity** of 1900, built by the Platt Iron Works Company.
2. **Improved New American** of 1904, test # 1484, built by the Dayton Globe Iron Works Company.
3. **Smith** of 1904, test #1511, built by the S. Morgan Smith Company, designed by J. H. Felthousen.
4. **Allis Chalmers Co. Type F** of 1908, test#17.78, designed by F. Schmidt.
5. **Wellman-Seaver-Morgan Co.** of 1909, test #1796, designed by Chester W. Larner.
6. **Samson** of 1910, test #1900, built by James Leffel & Co.
7. **Smith** of 1911, test #1984, built by the S. Morgan Smith Co., designed by J. H. Felthousen.
8. **I. P. Morris Type E** of 1911, test #2026, designed by L. F. Moody.
9. **Zowski #I** of 1911, test #2060, built by the Allis Chalmers Co., designed by S. J. Zowski.
10. **Wellman-Seaver-Morgan Co.** of 1911, test #2098, improved design of test #1796, by Chester W. Larner.
11. **Zowski #III** of 1911, tset #2121, built by the Allis Chalmers Co., designed by S. J. Zowski.
12. **Zowski #IV** of 1911, test #2122, built by the Allis Chalmers Co., designed by S. J. Zowski.
13. **Zowski #V** of 1913, test #2208, built by the S. Morgan Smith Co., designed by S. J. Zowski.

The following table shows clearly how the **power** was steadily increased by the historically most important runners, when we assume 50 R. P. M. under one foot head as the best speed.

Name of wheel or its designer or builder.	Year of Test.	Power under one foot head for a wheel having 50 R. P. M. as its best speed.
Francis	1849	0.129
Swain	1864	0.595
Leffel	1869	0.436
Eclipse	1871	0.272
Smith	1871	0.367
Risdon	1871	0.218
American	1872	0.305
Risdon	1874	0.55
McCormick	1876	0.825
Victor	1878	1.065
New American	1894	1.221
Samson	1897	1.84
Victor Increased Capacity	1900	1.93
Improved New American	1904	1.98
Smith	1904	2.12
Allis Chalmers Co. Type F	1908	2.0
Larner	1909	2.24
Samson	1910	2.06
Zowski No. 0	1911	2.74
Zowski No. I. Allis Chalmers Co.	1911	3.07
Zowski No. IV, Allis Chalmers Co.	1911	3.24
Zowski No. V, S. Morgan Smith Co.	1913	3.33

ELECTRIFICATION OF RAILWAYS.

In connection with the consideration which the Canadian Pacific Railway Company is giving to the electrification of a portion of its lines, it is interesting to note what American railways are doing in this respect. The day of electrification of steam roads is dawning. It has been stated that it costs about the same, mile for mile, to electrify as to build a new road, and the question is, therefore, almost entirely one of the advisability of heavy investment.

The Pennsylvania Railway is contemplating electrifying its line between Pittsburg and New York, a distance of over 400 miles, which will be at least double-track, and which will cost approximately $40,000 per single track mile.

In the Western States the Great Northern Railway, and the Chicago, Milwaukee & Puget Sound Railway have planned the electrification of 530 and 440 miles, respectively, contracts having already been let for road-bed, power, etc. This revolutionary step is occasioned by the poor coal and water conditions with which steam locomotives have to contend in North Dakota, Montana and Idaho, and with hydro-electric power in abundance.

The Denver, Rio Grande & Western is electrifying one of its mountain divisions, 114 miles in length. Some 73 miles of mountain electrification, for heavy coal haulage, is a very interesting application of electricity in railroading, which the Norfolk & Western Railway is planning in West Virginia. The new suburban electrified section of the Pennsylvania, extending from Philadelphia to Paoli will comprise 70 miles of single track.

Electrifications which have already been made in the United States, by steam railroad, are as follows:

	Miles of Single Track.
Baltimore & Ohio. The original electrification of the steam railroad. The pioneer user of heavy electric locomotives.	7.4
New York, New Haven & Hartford. Including 22 miles on the Hoosac tunnel route of the Boston and Maine, the lines from New York to Stamford, and Providence to Warren (38.5 miles and 109.3 miles); the Harlem River branch, 141.4 miles; the line from Stamford to New Haven, now nearing completion, 210 miles, besides more than 50 miles of short lines, including a very complete system about Hartford.	594.8
New York Central. Two hundred and thirty; four miles out of New York City; 19 miles on the Michigan Central (Detroit River tunnel), and 118 miles on the West Shore Railroad between Utica and Syracuse.	371.6
Pennsylvania. Comprising 186.8 miles on the Long Island Railroad; 98.4 miles on the Pennsylvania's approach into New York, and 150.3 miles between Camden and Philadelphia.	435.5
Butte, Anaconda & Pacific. An ore-carrying mountain line.	90.0
Southern Pacific. Suburban lines at Berkeley, Oakland and Alameda, calif., close to San Francisco Bay.	96.0
Grand Trunk. Four miles of tunnel track (St. Clair tunnel), at Port Huron, Mich.	4.0
Erie. In Central New York to the south of Rochester.	40.0
Great Northern. The electrification of the Great Northern Railway's cascade tunnel, between Leavenworth and Skykomish, about 100 miles east of Seattle.	6.00

(Canadian Engineer.)

ELECTRIFICATION OF THE SWEDISH RAILROADS.

Electrification of the line of the Swedish State railroads from Kiruna to Riksgransen is nearing completion, and the government is now planning the electrification of the large trunk lines from Stockholm to Malmo and from Stockholm to Gothenburg. The former line will receive energy from a plant to be built by the government near the town of Motala, and for the southern part energy will be purchased by the government from a large central station on the River Lagan. The Gothenburg line will be supplied chiefly from the government's plant at Trolhattan. Later the line from Gothenburg to Malmo will also be electrified. The cost of the lines at present under consideration will be nearly $30,000,00. The transmission lines, transformer stations and locomotives will cost approximately $20,000,000 and the new generating station will cost in the neighborhood of $10,000,000.