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INCLINE PLANES AND PEOPLE — SOME PAST AND PRESENT ONES

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COAL and coal inclines started Pennsylvania on its way to commercial greatness. Passenger inclines accelerated the economic growth of the Commonwealth, but most of them have disappeared.

One of the ingenious methods used in Pennsylvania more than a century ago for transporting coal from very lofty heights was by inclined plane. That mode of transportation was used at Mauch Chunk as early as May, 1827. The inclined plane there may have been the first one in our country. An interesting account of it, written in 1832, began as follows:

Mauch Chunk. Under this title it is proposed to give an account of the famous coal mountain, and the magnificent improvements of which it has been the cause. The name of this mountain is of Indian origin, and in the language of the Lenni Lenappi (Delawares) is said to signify *Bear Mountain*.

The writer then described the marvellous achievement in detail.¹

The system was still in operation in 1872, for a writer stated then that the length of the Mount Pisgah plane "is 2250 feet," the elevation 850 feet from its base to its summit; and the incline plane at Mount Jefferson "is 2070 feet long, rising 462 feet."²

Mrs. Bothwell, a native of Pittsburgh, does exhaustive research in the history of her city as an avocation.—Ed.

¹ See Appendix I.

² *First Century of National Existence; The United States as They Were and Are* (Hartford, Conn., 1872), 136. The book publishers informed subscribers, in a notation on the title page, that the book was "Carefully Prepared By An Eminent Corps of Scientific and Literary Men." Facing page 130 is an interesting view of "Mount Pisgah Plane, Mauch Chunk, Pa.," and on p. 139 is a view of "Mount Pisgah Planes and The Gravity Railroad, Mauch Chunk."

Four years later, another writer reported that the system, and he emphasized that it had been designed especially for coal cars originally, "has been arranged for the comfort of travellers."³ The project was "abandoned in the 1930's"⁴ after more than a century of existence.

In 1833, just six years after the Mauch Chunk line was put into operation, the famous Allegheny Portage Railroad was completed. Ten inclined planes were part of the system.⁵

In the early 1850's, eight Allegheny County men decided that an incline plane was sorely needed in the area which they wanted to develop. Those men were Richard Cowan, A. Kirk Lewis, Wm. Dilworth, Clarence Shaler, Robert Finney, Sturley Cuthbert, W. O. Leslie and E. H. Hastings.⁶ They swung into action and secured enactment, in 1852, of "An Act To Incorporate the South Pittsburg and Saw Mill Run Turnpike Road Company."⁷ They were given authority to meet their objectives, and it was stipulated in said act that they could "at their discretion construct one or more inclined planes to run cars from any point or points on the river bank between the Monongahela Bridge and the mouth of Saw Mill Run to the brow of Coal Hill."⁸ The rates to be charged for both passengers and freight were set forth in the act.⁹

Incidentally, coal from Coal Hill had been a boon to the garrisons at "The Point" in Pittsburgh, and it later was the fuel that enabled the early industries of Pittsburgh to exist and prosper. It was Edward Ward, the man who made the first settlement in Pittsburgh, who dis-

3 William Mason Cornell, D.D., LL.D., *The History of Pennsylvania* (Philadelphia, 1876), 396.

4 *Pennsylvania — A Guide to the Keystone State*, American Guide Series, Illustrated — Co-sponsored by The Pennsylvania Historical Commission and the University of Pennsylvania (New York), 594, Sixth Printing, 1957.

5 Sherman Day, *Historical Collections of the State of Pennsylvania* (1843), 183 — "The Allegheny Portage railroad is 39 69-100 feet in length from Hollidaysburg to Johnstown, overcoming in ascent and descent an aggregate of 2,570 feet, 1,398 of which are on the eastern and 1,172 on the western side of the mountain. It crosses the mountain at Blair's gap summit, and descends along the mountain branch of the Conemaugh. The top of the mountain, which is some 200 feet higher than the culminating point of the railroad, is 2,700 feet above the Delaware river at Philadelphia. The ascent and descent have been overcome by ten inclined planes, lifting from 130 to 307 feet, and varying in inclination between 4 1-8 and 5 5-6 degrees. The shortest plane is 1,585 feet and 130 feet high; the longest is 3,100 feet and 307 feet high . . ."

6 See Appendix II.

7 Act No. 47, by which this company was incorporated, was approved on Feb. 13, 1852.

8 See Appendix III for fuller details.

9 *Ibid.*

covered coal in Coal Hill, and it was he who gave the name Coal Hill to acreage there for which he had obtained a warrant in 1784.¹⁰

It was at the base of Coal Hill that Major Isaac Craig and James O'Hara started their glass works, which went into operation soon after Major Craig "took Mr. E [Eichbaum] up the coal hill and shewed him Ward's pits, and the lots on which" they were located.¹¹

Returning now to the subject of coal inclines, old-timers always referred to a coal incline on Coal Hill as Kirk Lewis's incline. The incline to which they alluded may have been the one that was authorized by the Pennsylvania Legislature in 1852, but, if so, only the name "Kirk Lewis" was firmly lodged in the minds of the people of his time who told their children and their grandchildren about his incline plane.¹² Some aged residents insist that one landing of the "Kirk Lewis incline" was located just about where the Duquesne incline's upper station is located.

A unique coal incline, an aged resident of the area stated, was one that was built in the Bailey Avenue area of Mount Washington by J. D. Miller.¹³ The resident who told the story departed this life some years ago, but he said that on the day the incline became a reality, a red bandanna "decked the first car"; that, later on, dogs and goats were harnessed to the little coal pit wagons to help draw the coal wagons or cars to the platform, and, still later, mules performed the same service, and, eventually, a steam engine took over the job.

Some old-timers also stated that "Jim Bailey had a coal incline on Mount Washington."¹⁴

10 The warrant was dated Dec. 18, 1784, and was for 280 acres and allowances. The land was surveyed March 26, 1785; Book 1, 24, Surveys, Washington County, Pa. Allegheny County was not then in existence.

11 Letter, dated 12th June, 1797, addressed by Isaac Craig to Col. James O'Hara, Detroit. The letter was reprinted in the *Pittsburgh Daily Gazette & Advertiser* of January 9, 1845.

12 The story persists that Lewis tunneled through the earth a distance of a mile from the head of the plane to Saw Mill Run Valley; that he laid a tramway and hauled coal out in cars drawn by ponies to the check house, where the cars were run down the plane to the river and the coal was dumped in boats. Mr. Lewis died on Nov. 10, 1860.

13 Two coal inclined planes were shown on an 1852 map and both were located, according to the map, as being on the south side area of the section that later became part of Pittsburgh. *The Atlas of Pittsburgh, Allegheny and Adjoining Boroughs* (G. M. Hopkins & Co., 1872) shows that there was an inclined plane on the property of Mrs. E. F. Denny in what was then Union Borough (page 112). The same atlas, 108, shows an inclined plane as being located on Mount Washington. One of the inclines mentioned above as being shown on an 1852 map of Pittsburgh travelled over land of John D. Miller.

14 Thomas Neely, a teamster who has long since departed this earth, recalled,

Proof that a coal incline was operating on Coal Hill in January, 1854, is contained in a newspaper account as follows:

ACCIDENT. A coal car was precipitated from the mouth of the pit on Coal Hill, above Sligo, yesterday afternoon. In its descent, it ran over two German boys, injuring one so badly that his life is despaired of.¹⁵

Another accident occurred in February of that same year and was reported as follows:

SERIOUS ACCIDENT. Quite a serious accident happened on Saturday last, upon the inclined plane of the coal works of Mr. Knox of Lower St. Clair township. A woman, named Elizabeth Kreus, was standing upon the track of the plane gathering coal, when a loaded car descended and ran over her. The elbow joint was dislocated, the fingers of the right hand and the hand itself were lacerated and torn, some of the bones being broken. The right leg was nearly torn off, the skin, muscles and bones being crushed. There being no hopes of saving the leg, it was amputated at once, by Dr. A. G. Walter, assisted by Dr. Kerr. Her other injuries were attended to by Dr. Walter, who hopes to save the hand. The condition of the poor woman is a very critical one. Weak, and in feeble health, she has been hardly able to support five helpless children, having been deserted by her husband some three years ago. It is thought she cannot survive.¹⁶

Now back to the subject of passenger inclines! In February, 1854, Pennsylvania approved "An Act To Incorporate The Mount Washington Inclined Plane Company" ¹⁷ and the incorporators were granted the "power to construct one or more inclined planes, to run cars from any point or points on the river bank between the Monongahela Bridge and Jones' Ferry . . . to the brow of Coal Hill, in the neighborhood of High Street . . ." ¹⁸ The rate to be charged for carriage of passengers and of freight was set forth in the act.¹⁹

The incorporators got busy with the result that the townspeople read the following item in a newspaper of May 22, 1854:

INCLINED PLANE RAILROAD. Workmen have commenced the preparatory work on the inclined plane railroad, running from the end of the Bridge to Mt. Washington, on the summit of Coal Hill . . . ²⁰

according to a news item in the early 1900's, that John D. Miller leased some coal mines from Jim Bailey's mother and built a coal incline; that the mines passed from Miller's hands to James McCain and Jacob Geib; afterwards to McKinney Ross, John Geib, and Jim Bailey, and finally to the Castle Shannon R.R. Co. and the Pittsburgh Coal Co. His recollections of the early 1900's were reprinted in a column, "Departed Years," in *The Mount Washington News* of April 11, 1952. The "Jim Bailey" to whom he alluded was James Madison Bailey who married Martha Dalzell. Bailey Avenue on Mount Washington was named for him.

15 *The Daily Pittsburgh Gazette* of Jan. 11, 1854.

16 *Ibid.*, Feb. 14, 1854.

17 Act No. 689, approved Feb. 22, 1854. *Laws of Penna.*, 1854, 734.

18 Appendix III gives fuller details.

19 *Ibid.*

20 *The Daily Pittsburgh Gazette* of May 22, 1854.

The plans of the planners were disrupted and work was interrupted on the inclined plane when Lyon, Shorb & Company obtained an injunction²¹ against the promoters.

However, hopes were revived late in July of that year that the incline would soon be serving the public, for a newspaper reported:

MOUNT WASHINGTON INCLINED PLANE. We understand that this work is so near completed that no doubt exists but it will be in operation sometime early in August. The contract for the building of the engines and cars has been given to a couple of firms in our own city, whose well known reputations will insure that they will be constructed in the best manner.²²

The Pennsylvania Legislature, in 1856, approved an act to permit the company to borrow funds, etc.²³ It seems that the incline was not completed.

About eleven years went by and then the Pennsylvania Legislature, on April 12, 1867, approved an act²⁴ permitting William M. Lyon, James Millingar, Alexander Chambers, John Murray, D. W. C. Bidwell, Joseph Dilworth, James M. Bailey and their associates to become a "body corporate, by the name . . . of the Monongahela Inclined Plane Company." The company was, by that act, granted the "power to construct one or more inclined planes, to run cars from any point or points, in the Boroughs of Birmingham, South Pittsburg, Monongahela, or West Pittsburg, between the line of East Birmingham and Saw Mill Run . . . to the brow of Coal Hill." The rates to be charged for carriage of passengers and freight were set forth in the act.²⁵ The moves that had to be made to bring the inclined plane into actual operation were made slowly and cautiously.

The first shares of stock were sold in November, 1868, and in the next few months, as well as in 1870, additional shares of stock were sold and the list of subscribers was, in actuality, a "Who's Who" of Coal Hill people.²⁶

21 *Ibid.*, July 24, 1854, reported: "Lyon, Shorb & Co. vs. The Mount Washington Inclined Plane Co. . . . In this case, complainants over whose land the road of respondents is to pass, applied for a special injunction to restrain them from proceeding, or to secure them," the complainants, "from loss." The "Court ordered and directed that a special injunction issue . . ."

22 *The Daily Morning Post*, Pittsburgh, July 27, 1854.

23 Act No. 404, approved April 17, 1856. *Laws of Penna.*, 1856, 387.

24 Act No. 1104, approved April 12, 1867. *Laws of Penna.*, 1867, 1170-71.

25 Appendix III gives fuller details.

26 The first shares of stock were sold in late Nov., 1868, to James M. Bailey, Frederick Kauf, J. L. Bigham, A. S. Bell (in trust for Mrs. Ebbs), A. S. Bell individually, J. S. McMillin, Samuel Harper, C. S. Ream and Isaac Whitter. Lyon, Shorb & Co. were among the purchasers of stock in December of that same year. In January of the next year some of the purchasers were Wm. Dilworth and Joseph Dilworth. In June of that

By mid-September of 1869, the company's president "reported that most of the contracts were awarded."²⁷ About two months later, it was agreed "that the hours of the engineer and conductor at lower station be from 6 A.M. to 11 P.M.," and that "the Watchman and Fireman stand 15-hour watches subject to modification by the Executive." What a startling contrast to working conditions of today! Management also worked long hours and risked its capital in the venture.

Meanwhile another Mount Washington — one in New Hampshire — completed an incline in 1869.²⁸

By the end of November, 1869, the engineer in charge of the Monongahela incline project, Mr. J. J. Endres, reported that the Engine House was nearly finished; that "the bricklayers would commence the Boiler House" the next day, and "that if the weather permitted the road would be ready in two or three weeks with the exception of the Iron Bridge."²⁹

Fares were decided upon on February 10, 1870.³⁰ It was agreed a little later that gas was to be used for lighting the road and buildings, and the signal system was decided upon.³¹ The salary of the conductors

year, A. G. Walter, Wm. Bown, *et al.*, purchased stock. The year wore on, and among the other purchasers of stock were Wilkins Linhart, Edw. Bratt, Rich. Cowan, Geo. Good, Wm. M. Lyon, Jones & Laughlin, Richard Hamilton, John L. Awl, and John Scott.

27 Minutes of a Board meeting held at Sligo Iron Works — Sept. 13/69. Incidentally, the deed records of Allegheny County contain a record of only four instruments executed in 1869 involving the company. The first is an indenture dated Oct. 16, 1869, between Wm. M. Lyon and said company, and after a recitation as to the land to which it related, it was stated that the parties agreed that it would be used only "during the use and occupation of an inclined plane." The second was a deed, executed two days later, by Margaretta K. Brown to said company. There are no earlier deeds of record to the company than the ones executed in 1869.

28 *Universal Cyclopaedia & Atlas*, revised edition (D. Appleton & Co., N.Y., 1909), Vol. 6, 188. "The railway up Mount Washington [N.H.], completed in 1869, has an incline of about 3½ miles in length, the maximum 40%; the gauge of the track was 4 ft. 7½ in., and the locomotives were so built that the boilers were horizontal when on the average grade." Various inclines in the U.S.A. and abroad were discussed in that work.

The Americana (1920), Vol. 28, 796, in an item relating to Mount Washington, N.H., reported, among other things, that "since 1869 a rack-and-pinion railroad has enabled tourists to ascend to the summit with ease. A United States meteorological station with a large hotel are on the summit."

29 Minutes of a Board meeting held at Sligo Iron Works Nov. 29/69.

30 The fare "of the transient passengers" was fixed at 6c each; "tickets in packages of 10 & 20" were to be sold at 5c each; a family ticket for 125 trips was to be issued for \$5.00; a "school ticket for 33 trips" was to be issued for \$1.00 for the use of "all children under ten years of age going to and from school"; children "under five years of age accompanied by a passenger" were to "pass free," and "all over five years" were to "pay full fare."

31 Minutes of May 18, 1870; — "1 bell — alarm; 2 bells — ready; 3 bells — starting."

was set at \$2.50 per day and the men were required to give bond.³²

It was resolved, on May 5, 1870, by the directors that on the "first day the road is ready for travel that the cars be run free."

Management was able to announce "that the inclined plane" would "be opened for business on Saturday, May 28, at three o'clock P.M." ³³

The great day arrived, and to the delight of the company and the public, the incline functioned perfectly. The cars were put in motion "at 3 P.M. and ran untill 8 P.M." ³⁴

The Monongahela Incline, which was probably the first passenger incline in Pennsylvania,³⁵ made the grade to success that others had tried in vain to reach.

One man who would certainly have rejoiced if the incline had been put into operation years earlier was the Reverend Bryan B. Killikelly, who, when he was sixty-two years old, became pastor of Grace Church on Mount Washington in 1866, and resigned after serving only a year because he had "no way of getting to Mount Washington except by a fatiguing walk up a long and steep hill." ³⁶

Local newspapers gave little publicity to the incline, but after it had been in operation a little more than a year, the *People's Monthly* published an excellent description of it.³⁷

A. W. Smith, who had greenhouses on Mount Washington which were initially devoted to the growing of lettuce, found it much easier to get the lettuce to market once the incline began to operate, and the following year, 1871, he founded the wholesale flower business of A. W. Smith Company, which flourished for many years. His business was helped to an even greater extent when the Monongahela freight

32 Minutes of May 18, 1870. The bond was to be in the amount of \$1,000.

33 *Pittsburgh Gazette* of Saturday, May 28, 1870.

34 Minutes of a Board meeting held June 2, 1870.

35 One would have to use more time than the quest would be worth to ascertain which was the very first inclined plane in the United States of America, or in the whole universe. There are those in Pittsburgh who insist that the Monongahela Incline was the very first passenger plane to operate in the United States, and it may have been, but incontrovertible proof is needed to substantiate the claim. It may be, too, that an incline in Cincinnati, Ohio, was in operation before the Monongahela Incline began to operate, for a biographical sketch of Samuel Diescher stated that he came to the United States in 1866, and located in Cincinnati, where, after working as a designer at the Niles Tool Works for a year, he then assumed charge of the construction of an incline plane in that city." If the Cincinnati incline was a passenger plane and began operations promptly upon completion, it antedates the Monongahela Incline.

36 *History of Grace Church, Mount Washington*. The Reverend Mr. Killikelly was the father of Sarah H. Killikelly, whose *History of Pittsburgh* (Pgh., 1906) is a much-consulted work.

37 See Appendix IV.

incline began to operate in 1884. His son, A. W. Smith, Jr.,³⁸ now deceased, told an amusing story about one of his father's horses and the incline. One horse, he said, especially appreciated the freight incline, and if an effort was made on a return trip from Downtown Pittsburgh to turn her to the left to go up the steep hill that she formerly travelled, she would balk and turn sharply to the right and head for the incline. That same horse is said also to have shown a distinct liking for the Smithfield Street Bridge. She would travel the return trip from Downtown as lazily as possible until she reached the bridge, and then she would trot briskly across it.

In the latter half of 1872, a convention of soldiers and sailors was to be held in Pittsburgh, and it was decided by the Monongahela Inclined Plane Company "that as a large number of strangers would be in the city that the road be decorated with 2,000 Chinese lanterns and that they be suspended along the railing . . ." ³⁹

A ludicrous thing happened in that year, and a newspaper reported the happening as follows:

SOUTH SIDE BURGLARY
A THIEF CAUGHT IN THE ACT — SLIDING
DOWN THE INCLINE PLANE — HIS FINAL CAPTURE
Mount Washington still sustains its reputation
for first class sensations.

The article went on to state that a woman, whose name was mentioned, had discovered a burglar ransacking her home. He discovered her presence just about the time that she discovered his, and, as he fled, her shouts attracted the attention of neighbors, and the burglar was apprehended "sliding down the cross ties between the tracks on the incline." ⁴⁰ He was probably the first and only burglar to try to escape from the scene of the crime in that strange manner.

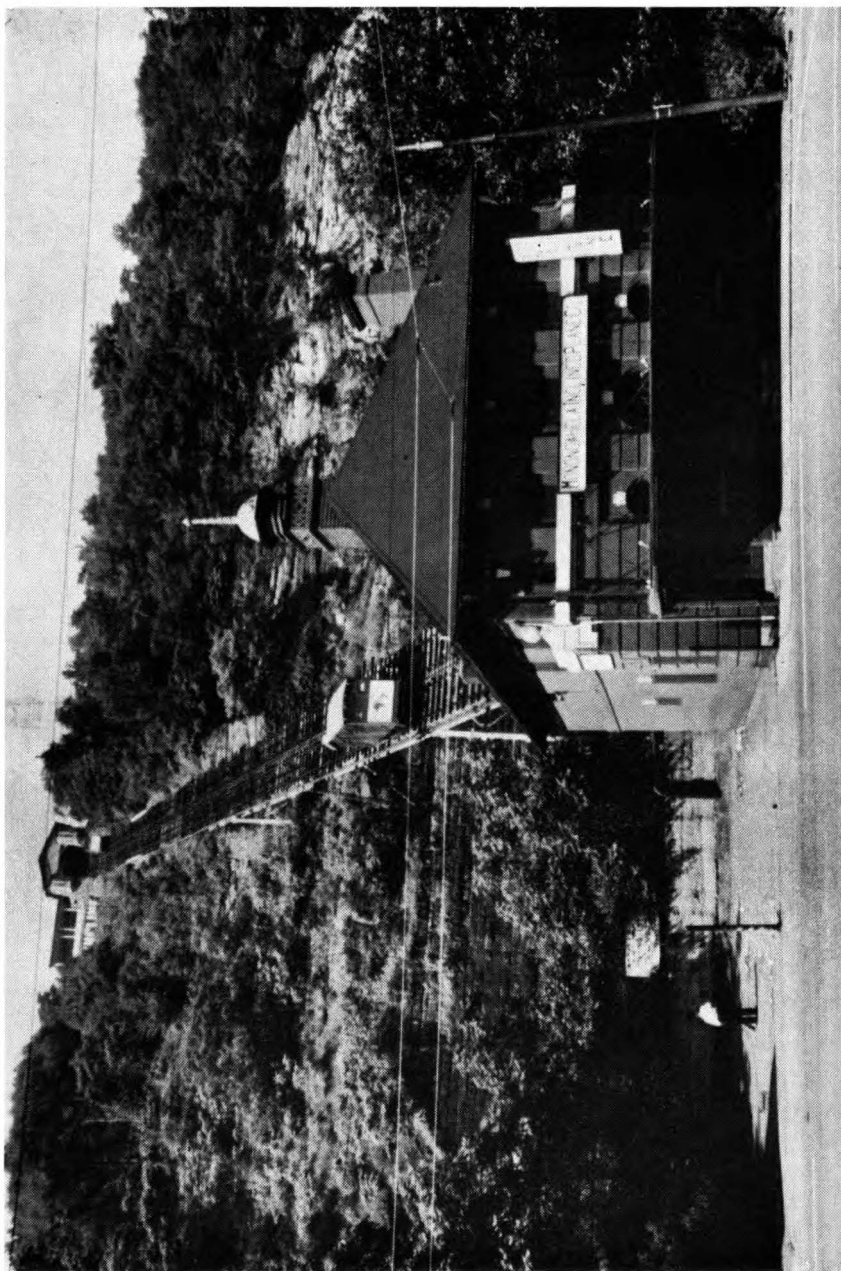
About a year after the Monongahela Incline began to serve the public, the Mount Oliver Incline was put into service. Its base was at Twelfth and Frederick streets and its summit was Mount Oliver.⁴¹ It "was originally constructed by Endres [John Endres] with a

³⁸ He married Janey Coard in 1902, and she, at fourteen years of age, was the first society editor of *The Pittsburgh Press*. Their son, A. W. Smith III, practices law in Washington, D.C., and their daughter, Jane Roberta, resides in Pittsburgh with her husband, Dr. M. Graham Netting, Director of Carnegie Museum. The A. W. Smith Co., which quit business about fifteen years ago, had for many years aided the commercial and cultural growth of Mount Washington and Allegheny County generally.

³⁹ Minutes of a meeting of the Board of the company on Sept. 5, 1872.

⁴⁰ *Pittsburgh Gazette* of Sept. 9, 1872.

⁴¹ See Appendix III for fuller details.



THE MONONGAHELA INCLINE

This photograph was made in July of this year, 1963. It is reproduced through the courtesy of the Directors of the Monongahela Inclined Plane Company.

wooden structure, but it was rebuilt in iron in 1875.”⁴²

Within five years after the first Mount Oliver Incline went into service the National Garden and Public Resort went into business near the upper station of the incline, and it advertised that “Regular hotel accommodations” were to “be had at most reasonable rates.”⁴³

It is impossible to state, with absolute accuracy, without spending too much of life’s short time in an effort to learn the facts, which was the next Allegheny County incline.⁴⁴ It may have been the Duquesne Incline, which is generally known as the “Duquesne Heights Incline,” but whether it was the third or the fourth in Allegheny County, it has, from an historic standpoint, the choicest location of all the inclines that were constructed in the county, for it commands the best view of Pittsburgh’s most historic spot, the Point, as well as a superb and sweeping view of the city.

The grandeur of the view from any place on the river-side rim of Duquesne Heights and Mount Washington speaks eloquently of God’s work and of the work that He has permitted man to do. One sees, from the summit of both hills, Pittsburgh’s three fine, useful rivers, the level land that encompasses them at shore-line, as well as the distant towering hills that encircle much of Pittsburgh. The work of millions of minds and hands is visible in the bridges, the tunnels, the skyscrapers and all the other structures that meet one’s vision. At night the myriad city lights make the scene a mystically lovely one that engraves itself on the minds of the beholders.

The Duquesne Incline was first discussed in August, 1875, when young Kirk Q. Bigham⁴⁵ met with John C. Shaler, Alfred Marland and some other men⁴⁶ to consider “the construction of an

42 *The Street Railway Journal Souvenir* (The Street Railway Publishing Co., New York), Oct., 1891, 38.

43 *Industries of Pittsburgh* (Pgh., 1879), 259.

44 A reliable publication — the one mentioned in fn. 42 — stated, on page 38, “The Mount Oliver Incline was followed by the Duquesne Incline, also a passenger plane.” Another very dependable publication, the *Scientific American* (New York), Sept. 18, 1880, reported that “The Duquesne is the latest and most complete of four similar enterprises climbing the same mountain.”

45 Kirk Q. Bigham’s father was Thomas J. Bigham, a lawyer who was known as the “Sage of Mount Washington,” and his mother was Thomas’s wife, Maria Louisa Lewis, a granddaughter of the renowned Major Abraham Kirkpatrick.

46 Alfred Marland was known as “an old time politician.” His son, Ernest W. Marland, became Governor of Oklahoma. John C. Shaler was a member of the Shaler family of Shalersville. Shaler Street on Duquesne Heights perpetuates the name of that family. Some of the other men at that meeting were Wm. L. Bond who was a partner with Kirk Lewis in the operation of the Piermont Nurseries on the Lewis Estate; Wm. B. Lupton and Edward Abel.

inclined plane railway on Coal Hill opposite the new Point Bridge.”⁴⁷ Their deliberations and efforts resulted in the formation of the Duquesne Inclined Plane Company to which a charter was granted in January, 1876.⁴⁸ A great number of devotees of progress subscribed to the stock.⁴⁹ The incline was opened for service in May, 1877. “The first structure was part wood and part iron, but it was rebuilt entirely of iron in 1888.”⁵⁰

The friendly rival inclines, the Monongahela and the Duquesne, can be given credit for the area being favored with paved streets much earlier than they would otherwise have been paved. The paving in the Grandview Avenue area of Mount Washington was not done until about January, 1890. At one time, in the area’s history, slag was hauled from the Sligo mill and was spread along Grandview Avenue, so an old-timer stated, but the slag, he said, soon disappeared into the mud over which it had been strewn. The same person stated that a stone wall had been built to hold up the boardwalk, and that the boardwalk had a railing on the town side as a safeguard against pedestrians rolling down the hill to Carson Street.

An aged resident of Duquesne Heights stated that during the trial runs of the Duquesne Incline, people were allowed to ride free of charge.

Some years ago, another aged resident stated — and he is now deceased — that quite awhile after the incline was put in operation, some kind of a device was attached to it by which barrels of foodstuffs could be brought up the hill, and that his father’s horses and carts

47 It was very difficult to raise money then, and the men who were interested in the project decided, at a meeting late in August 1875, to serve without pay until the incline was put into operation.

48 A charter was granted on Jan. 20, 1875. See Appendix III for fuller details. One of its first seven directors was Dr. A. G. Walter, Pittsburgh’s famed physician and surgeon; another was Samuel Severance whose father, Levi Severance, was in business at the Point as early as 1828. The other five directors were Wm. B. Lupton, Charles A. Colton, Wm. N. Riddle, Edward Abel and John T. Woods.

49 A few of the many stockholders who were listed in the application for a charter were Elizabeth F. Denny; T. J., J. L. and Kirk Q. Bigham; John C. and Clarence Shaler; T. J. Sampson, Wm. Gould, Geo. D. Holliday and G. L. B. Fetterman. Mrs. E. F. Denny, just mentioned, was the only woman who acquired stock in the incline company then, and she was certainly none other than Elizabeth Febiger O’Hara (1796-1878), daughter of Pittsburgh’s famous James O’Hara and his wife who had been Mary Carson of Philadelphia. (Carson Street in Pittsburgh’s South Side was named for her family.) Elizabeth F. O’Hara had married Harmar Denny (1794-1852), an illustrious forebear of Pittsburgh’s present day Harmar Denny, president of The Historical Society of Western Pennsylvania.

50 *The Street Railway Journal Souvenir*, Oct. 1891, 38.

used to get the barrels and haul them down the deeply rutted mud roads to Henry Digby's store on Oneida Street.⁵¹

The Duquesne Incline is having a struggle for survival. Late last fall it was decreed by the Pennsylvania Public Utility Commission that the incline had to be shut down because it needed repairs. Its owners were unwilling or unable to make the required repairs. Community spirit and enterprise have been characteristic of Duquesne Heights ever since people inhabited it. The spirit is contagious and it gets results! The Civic Association of Duquesne Heights⁵² decided that the incline had to be put back into operation, and through negotiations of various kinds, as well as fund raising, the incline, after imperative repairs had been made, was put back into operation on June 30, 1963, and was opened to the public the next day, July first.⁵³

In the 1880's and 1890's, and even later, many persons of wealth and influence who owned real estate on various hills in Allegheny County determined that the community in which they were chiefly interested should have an inclined plane. The promoters either put an incline into operation or formed a company with that purpose in view. Some of the incorporators had such well-known surnames as Scaife, Brashear, Jarvis, Linhart, McCalmont and Latshaw.⁵⁴

Such places as Allegheny City, Bayardstown Hill,⁵⁵ Bellevue Borough, Knoxville, Nunnery Hill, Troy Hill, as well as some other

51 It was Robert C. Bond, son of Wm. L. Bond (both deceased), who told about the device attached to the incline.

52 Under the sponsorship of said Civic Association, a committee was formed and was given the name "Save the Incline Committee." Its members have worked indefatigably in many ways. One of their objectives has been to raise \$20,000. Contributions have come from many sources, but their goal has not yet been reached, i.e., as of this date, Aug. 1, 1963. Mr. Karl Voigt, President of the Duquesne Heights Civic Association, has high praise for Mr. David Miller who has worked efficiently and laboriously to aid the cause of the incline. As a result of Mr. Miller's efforts and the esteem in which he is held he has been elected an Assistant Vice-President of the Incline Company. His wife has been a true helpmate in the cause. Mr. Voigt also stated that Attorney Lloyd Engle deserves credit for the legal assistance that he has rendered to the committee.

53 *The Pittsburgh Press* of June 30, 1963.

54 For the given names of the men whose surnames were mentioned, see Appendix III, and then — as to the Scaifes — see notes regarding Nunnery Hill Inclined Plane Co.; as to Dr. Brashear, see notes regarding Ridgewood Incline Railway Company; as to Mr. McCalmont, see notes regarding The Mount Washington Inclined Plane Co., formed in 1910, and, as to Mr. Latshaw, see notes relating to the Penn Incline Plane Co. Samuel Jarvis and Wilkins P. Linhart were among the many stockholders of Duquesne Inclined Plane Company when a charter was granted to it.

55 That hill was served by the Penn Incline Plane Co. The incline was known as the "Penn Incline" and as "the Seventeenth Street Incline."

places in Allegheny County, wanted incline service and eventually had it.

The promoters of those later inclines were hopeful that the hills in which they had a monetary interest would thrive as Mount Washington had done after it was served by the Monongahela Incline. Building and loan associations, as well as other business houses, took root on the Mount due to the incline. Houses, churches, stores, apartment buildings and various other structures were erected on land that had stood idle for years before the incline brought people to it.

The Monongahela Incline was responsible, in large measure, for Mount Washington, in the early 1880's, having a library,⁵⁶ not that it financed it, but its services to the area had created a need for it.

The Monongahela freight incline, as stated earlier, went into service in 1884. It remained in service for slightly more than fifty years and immeasurably aided the community's growth.

Beginning with the year 1852 down to and including the year 1910, there were at least thirty-one companies authorized by Pennsylvania to own and operate an incline plane or planes in Allegheny County, but some of them did not put an incline into operation. In some instances a company would encounter insurmountable financial difficulties and a sheriff's sale was the result. The stock, equipment, etc., of one such company, the Mount Oliver Incline Plane Company, which had been incorporated in March, 1870, was sold at sheriff's sale several years later, and the purchasers organized The Mount Oliver Inclined Railway Company.

Appendix III hereof may interest some readers of this article. It contains data obtained by the writer from the charter records of Allegheny County, the laws of Pennsylvania, and certain other sources as to incline companies of Allegheny County and their promoters, the area served by the inclines and some other data of a general nature.

The Street Railway Journal Souvenir of October, 1891, reported that there were then "eleven" inclined planes "in the two cities [Pittsburgh and Allegheny], seven on the south side of the Monongahela river in Pittsburgh, two rising to the top of the central table in Pittsburgh proper, and two in Allegheny." The article devoted con-

⁵⁶ The chief contributors to a building fund for the library were Andrew Carnegie, Capt. Sam Browne and Wm. M. Lyon of Lyon, Shorb & Co. The library was at first located on Shiloh Street, but when its own building was erected on a hill which rose high above the pavement of Grandview Avenue it held forth there. The building is still there, but is devoted to other uses. A branch of Carnegie Library now serves the Mount Washington area and has so served it for many years.

siderable space to all of them, and they were identified as the Monongahela (two inclines — a freight and a passenger incline), Mount Oliver, Duquesne, Fort Pitt, Penn, Troy Hill, Nunnery Hill, St. Clair, Knoxville and Castle Shannon. As to the last one mentioned, Castle Shannon inclines No. 1 and No. 2 were discussed, but it was explained that the No. 2 incline was "more of the nature of a cable road than an inclined plane."

By the year 1930, only seven of the inclines that had been in operation in Allegheny County were still in operation.⁵⁷

Today there are only three inclines in operation in this county, and they are the Castle Shannon No. 1, the Duquesne and the Monongahela in Pittsburgh. Considerable space has been devoted herein to the latter two, and now something more should be said about Castle Shannon No. 1, which was built in 1890 by Samuel Diescher,⁵⁸ and extended "from Carson Street to Bailey Avenue on the hill top,"⁵⁹ as it does today.

That incline faces extinction even though it serves a very useful purpose. Its lower station is on Carson Street near Arlington Avenue, and its upper station is on Mount Washington's Bailey Avenue within easy walking distance of the Mount's delightful Grandview Park which commands a magnificent view of Pittsburgh. There is a tug-of-war now, and has been for about a decade, between the users of the Castle Shannon incline and its owner, the Pittsburgh Railways Company.⁶⁰ The incline users want it to continue in operation, but the Railways

⁵⁷ See Appendix V for the names of those inclines and data as to their height and length.

⁵⁸ Samuel Diescher was born in 1839 and came to the U.S. in 1866. He came to Pittsburgh "Following his marriage, and was first associated with John Endress, an engineer of prominence at that time" whose daughter Carrie was his wife. "The majority of the inclined planes in use in the U.S." were designed and built by him. "Among these were the Penn Incline, Monongahela, Duquesne, Fort Pitt, Nunnery Hill [the first plane of any size to operate with curved track]; the two Castle Shannon Planes, The Mount Oliver Passenger Plane, Troy Hill, Johnstown, Two at Duluth, Minn., Wheeling, W. Va., and Cincinnati in addition to two in South America." He "took upon himself the education of his sons, and under his tutor-ship they received the training that qualified them for the engineering profession." The sons were Samuel E., August P., and Alfred J. Diescher. The foregoing facts are from *History of Pittsburg And Environs* (New York and Chicago, 1922), Vol. V, 93.

⁵⁹ *The Street Railway Journal Souvenir*, Oct., 1891, 37.

⁶⁰ Hon. Harry A. Estep, one of Pittsburgh's very capable attorneys, has waged various successful legal battles in behalf of the incline users to keep it in operation, and despite impairment of his health, he is still active in the battle to keep the incline in operation. As this is being written (Aug. 1, 1963) a decision is being awaited from the Public Utility Commission as to the incline's fate.

Company wants it discontinued for the reason, it is said, that it has become a liability. It transports people and vehicles, and it has been a boon to many motorists on days when steep Arlington Avenue, which begins at its lower terminus, has made driving very dangerous because of snow or ice or both. Motorists, at such times, have driven their vehicles onto the incline on Carson Street to be taken quickly and safely to the hilltop.

Incidentally, in the almost record-breaking snowstorm of early December, 1944,⁶¹ when commuters from areas other than Mount Washington and Duquesne Heights were stranded overnight in Downtown Pittsburgh because of lack of transportation facilities, the Mount and the Heights commuters were brought to the summit of those hills by the inclines. Automobiles were useless vehicles in the area at that time.

The success of the Monongahela Incline now is due largely to tourist trade in the opinion of Dr. Carter H. Lewis,⁶² President of the Monongahela Incline Plane Company, and P. G. Eizenhafer,⁶³ its superintendent.

There is only about a mile between the Monongahela Incline and the Duquesne Incline, and some tourists patronize both inclines because the view is somewhat different from each one, and the cars of each incline are of a different type. The cars of the Monongahela Incline are three-compartment ones whereas the cars of the Duquesne Incline are "one room" cars. The Castle Shannon Incline also attracts some tourists because it is the only remaining incline that carries passengers and vehicles.

The inclines symbolized progress when they were put into operation, and now, in the name of progress, there are those who

61 *Pittsburgh Sun Telegraph* of Dec. 12, 1944, reported that "Weatherman W. S. Brotzman" said that "only twice before in the city's history has more snow fallen in a twenty-four hour period." The item stated, among other things, "Many spent the night in the lobbies" of hotels and that "Hundreds of automobiles were abandoned."

62 Dr. Lewis was born and raised on "the Mount," and has practised dentistry there for about forty-eight years. When his grandsons, Carter H. Lewis III, aged nine, and Keith Allen Lewis, aged seven years, sons of Dr. Carter H. Lewis, Jr. (who is also a dentist), visit Pittsburgh, one of their chief delights is being taken for rides on the Monongahela Incline by their grandfather and their Aunt Nancy — their father's sister.

63 P. G. Eizenhafer, usually called "Phil," strives enthusiastically and successfully to have the Monongahela Incline give the best service possible so that it will please the users and yield a nice profit to the stockholders. He confidently predicts that its business this year will be better than last year, and that year, he said, was a very good one.

regard them as relics of the past and would discard them even though they still serve a useful purpose.

It was written, centuries ago, by a man who enriched the minds of his generation and succeeding ones, that "A mountain and a river are good neighbors."⁶⁴ Pittsburgh's hills, its rivers and its inclines "are good neighbors" and friends of man.

APPENDIX I

The quoted paragraph regarding Mauch Chunk appeared in Thomas F. Gordon's *Gazetteer Of The State of Pennsylvania* (Phila., 1832), and the rest of the lengthy account, 274-287, related to the mines, the railroad and the incline plane, but only the portion that is pertinent to the subject of the present article will be quoted below.

Pp. 280-81. "The rail road commences at the Lehigh r., and ascends at the rate of 1 foot in $3\frac{1}{2}$ of the slant; the whole ascent to the top of the promontory is 215 feet, and the slant 700. The loaded wagons descend this incline plane to the river. At the top of the hill is a building containing the machinery, by which their descent is governed; the most important part of which is a large cylinder, revolving horizontally, and serving to wind the rope attached to the cars. The latter are rolled by hand on a circular platform, which, revolving horizontally upon a perpendicular axis, brings the wagon upon a line with the inclined plane upon which they are launched. The rapidity of their progress is in a measure checked, by the weight of an ascending empty wagon, which being fastened at the other end of the rope, and moving on a parallel rail way on the same plane, necessarily mounts as rapidly as the empty one descends; and when it arrives at the top, it is transferred to the upper rail way by means of the circular platform. But the partial counterpoise is insufficient to moderate properly the speed of the descending car. This object is effectually gained by an iron band which clasps the drum, and which compressed by a lever controls its motion. Accidents have been rare in this descent, but the cars have sometimes deviated, or broken loose, and one man has been killed. They are now guarded against by a very simple, yet ingenious contrivance. The rail way is double, until the most rapid part of the descent is passed; when both ways curve and unite in one. Should a wagon break loose, its momentum will be so great as to prevent its following the curve, and as soon as it reaches this spot, it is thrown

⁶⁴ George Herbert: *Jacula Prudentum*, 1651.

out, overturned and lodged on a clay bank, formed for this purpose below. Farther down a bulwark is constructed, overarching the rail way, to intercept the loose coal as it flies from the wagon. When the car arrives at the foot of the inclined plane, it pitches into a downward curve in the rail way, and a projecting bar which secures the lower end of the car, which for this purpose is hung on a horizontal axis, knocks it open, and the coal slides down a steep wooden funnel, into the boat or ark, which receding from the shore by the impulse thus given to it, occasions the coal to spread evenly over its bottom”

APPENDIX II

These notes relate to the men who organized the first company that was incorporated under Pennsylvania law to operate an inclined plane in Allegheny County to transport passengers and freight. The company was the South Pittsburg and Saw Mill Run Turnpike Road Company, and the Act by which it was incorporated was No. 47, which was approved on February 13, 1852. Appendix III contains data relating to the company.

Richard Cowan was a son of Allegheny County's Christopher Cowan, who was born in Erin, and of Eliza Maria (Kirkpatrick) Cowan, a daughter of Major Abraham Kirkpatrick of Revolutionary War and Whiskey Rebellion fame. Christopher Cowan, who died at fifty-five years of age on March 12, 1835, was described, years after his death, by "R.I.P." in the *Pittsburgh Gazette* of March 1, 1871, as "that enterprising, good-hearted Irishman who built the first rolling mill in the place."

A. Kirk Lewis, whose full name was Abraham Kirkpatrick Lewis, was also a descendant of Major Kirkpatrick. His father was Dr. Joel Lewis and his mother was Mary Ann (Kirkpatrick) Lewis. A. Kirk Lewis was usually called "Kirk Lewis."

William Dilworth was born in Dilworthtown, Pennsylvania, in 1781, and came to Allegheny County in the early years of his life. He served in the War of 1812. His wife's maiden name was Elizabeth Scott. The first school on Coal Hill was erected at his expense so that his children and his neighbors' children could receive a good education. He paid the teacher's salary and all other expenses of operating the school, which, incidentally, was in existence for many years before Coal Hill's first public school (a two-room school) was built in the Mount Washington section of that hill in 1848.

Robert Finney. It is difficult to state facts with certainty regarding him for the reason that there were several persons named Robert Finney in Allegheny County.

Clarence Shaler was also a descendant of Major Abraham Kirkpatrick. Mr. Shaler's parents were Judge Charles Shaler and Amelia Louisa (Kirkpatrick) Shaler. Shaler Street on Duquesne Heights perpetuates the family name.

Sturley Cuthbert was twenty-two years old when he walked over the mountains from Philadelphia in 1818 to live in Pittsburgh. Cuthbert Street on Mount Washington perpetuates his name. His business interests were varied. At one time he owned a foundry in the part of Pittsburgh then known as Bayardstown, and he had another one in Wheeling, West Virginia. In the latter one, he built the machinery for the Wheeling waterworks of his day.

W. O. Leslie was a very capable lawyer who was, for a while, associated with Thomas J. Bigham in the practice of law. Mrs. Bigham was a granddaughter of Major Abraham Kirkpatrick.

E. H. Heastings was for some years a county surveyor with an office in the court house.

APPENDIX III

The following list is believed to contain the name of every company that was authorized by the Commonwealth of Pennsylvania to operate an inclined plane or planes in Allegheny County. Some of the companies failed to put an incline into operation. Only three remain in operation.

Coal Hill, which is mentioned frequently in the list, was ultimately divided into two sections, *i.e.*, Mount Washington and Duquesne Heights.

Mount Washington has two inclines, the Monongahela and the Castle Shannon.

Duquesne Heights has one — the Duquesne Incline.

Coal Hill's High Street mentioned at various times in this appendix, was re-named Grandview Avenue.

Allegheny Inclined Plane Company;
Allegheny County Charter Book 6, 579

The company was formed "for the purpose of constructing and operating one or more inclined plane railways for the transportation of

passengers, vehicles and freight or either of them, from a point at or near Jackson Street to the top of Observatory Hill in the City of Allegheny." The Commonwealth of Pennsylvania, on Aug. 24, 1881, directed that Letters Patent issue to it. The stockholders at that time were L. H. Willard, R. J. Hemmick, Robert S. Smith, W. H. Pfohl, James S. Young and Lewis McMullen.

Aliquippa Incline Plane Company;

Penna. Laws, 1891, Charter section, a-47

The company was formed for the purpose of "erecting . . . and operating an incline plane in the township of Mifflin . . . from a point at or near the Mifflin township end of the McKeesport and Duquesne Bridge to a point at or near property owned by the Crawford heirs, for carrying . . . and transporting passengers and freight." The company was incorporated March 31, 1890.

Arlington Avenue Incline Plane;

Penna. Laws, 1891, Charter section, a-43

The company was formed for the purpose of "erecting . . . and operating an Inclined Plane in the city of Pittsburgh . . . from a point at or near the head of South Thirteenth Street, Twenty-eighth Ward, to a point on Arlington Avenue at or near the Brownsville Road in the Twenty-seventh ward of said city, for carrying . . . and transporting passengers and freight." The company was incorporated on Feb. 9, 1890.

Bailey Avenue Inclined Plane Company;

Allegheny County Charter Book 7, 11

The company was formed for the "purpose of constructing . . . and operating an inclined Plane Railway from a point at or near the intersection of Carson Street and Brownsville Avenue to Bailey Avenue in . . . Pittsburgh . . . for the carriage of passengers and freight." The Commonwealth of Pennsylvania directed, on Nov. 17, 1881, that Letters Patent issue to it. The company's stockholders at that time were James M. Bailey, John H. Bailey, John H. Dalzell, I. Willis Dalzell and Jacob Geib.

Bellevue Incline Plane Company

The Commonwealth of Pennsylvania directed, on Sept. 4, 1882, that Letters Patent issue to it; *Allegheny County Charter Book 7, 291*. The company's stockholders at that time were Joseph S. Brown, J. W.

Kirker, F. A. Mahon, John W. Morrison, John I. Shaw and A. S. Miller. The company was formed "for the purpose of locating . . . and operating one or more Incline Plane or Planes in the Borough of Bellevue from a point or terminus or points and termini upon or near the right bank of the Ohio River between the lower gate recess of the Lock in the Davis Island dam and a point on the said bank nine hundred feet upstream from Neville Station on the Pittsburgh Fort Wayne Chicago Railway to a point or points on the top of the hill in said Borough of Bellevue at or near the northwestwardly line of . . . the James Sterrett Plan of Lots at or near a prolongation of the same with the privilege of extending the same to the new Brighton turnpike road and for the purpose of carrying . . . passengers and freight along and over said Incline Plane or Planes and the extension thereof as aforesaid and for the collection of tolls rates and charges for carrying conveying and transporting . . ." The incline was known as the Bellevue and Davis Island Incline. Allegheny County deed records — D.B. 630, 526, disclose that an inclined plane owned by that company was sold at sheriff's sale in April, 1889.

Castle Shannon Inclines

The Street Railway Journal Souvenir, Oct., 1891, 40, stated: "The inclines of the Pittsburgh & Castle Shannon Railroad are among the most interesting of the inclined roads . . . The first incline . . . extends from Carson Street to Bailey Avenue on the hill top, a total length of 1,375 feet. The grade is thirty-seven and seven-tenths per cent. and the total rise is 451 ft. . . The cars are for freight and passengers, a cabin being built for passengers . . ." A description was then given of Castle Shannon No. 2 Incline, which is no longer in existence. See notes in re Pittsburg and Castle Shannon Railroad Co.

Central Inclined Plane Company; Laws of Penna., 1870, 879

Act No. 810, by which it was incorporated, was approved on April 5, 1870. Some of the incorporators were Charles H. Armstrong, William Stevenson and Andrew Patterson. The company was authorized to "construct and operate one or more inclined plane passenger railways from any point or points on or near Cliff street, to any point on or near Liberty street, in the City of Pittsburgh . . ."

Citizens Inclined Plane Company of Pittsburg, Pennsylvania

It was formed "for the purpose of erecting . . . and operating an

incline plane in the City of Pittsburg . . . from a point on the south side of West Carson Street, to a point on Grandview Avenue for . . . transporting passengers and freight." The date "August 14, 1893" appears beneath that description and indicates that the company was incorporated on that date. See p. a-17, List of Charters, *Laws of Penna.*, 1895.

City Incline Plane Company

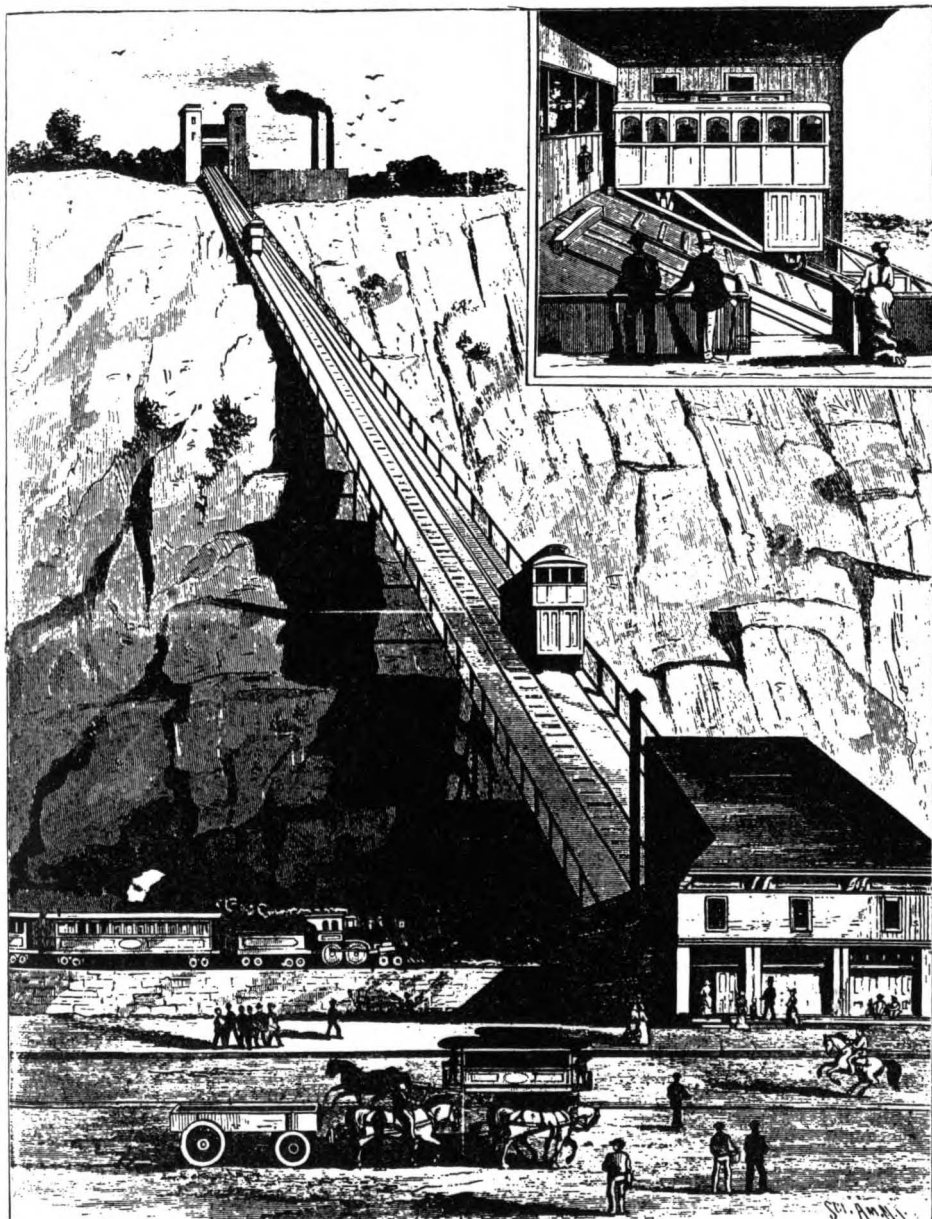
Its application for a charter was approved on Dec. 9, 1895; Allegheny County Charter Book 21, 453-4-5. Subscribers to its stock at that time were James F. Grimes, John P. Moore, Webster W. Murray, James W. Patterson and Edwin K. Morse. The company was "formed for the purpose of constructing . . . and operating an incline plane in the City of Pittsburgh . . . from a point on Fourth Avenue, in said City of Pittsburgh, to a point at or near the brow of the hill in the 32nd ward in said city, for the transportation . . . of passengers and freight thereon."

Clifton Avenue Incline Plane Company

Its application for a charter was approved on June 25, 1888; Allegheny County Charter Book 12, 219. The subscribers to its stock then were William and John McCreery, Wm. A. Stone, Charles A. Cooper, R. F. Ramsay and T. L. Rodgers. The corporation was formed for "the purpose of erecting . . . and operating an incline plane in the City of Allegheny . . . from a point on Sarah Street near Breed's Hill on land of Wm. McCreery for carrying . . . passengers and freight." The company put an incline into operation according to Erasmus Wilson's *History of Pittsburg*, 954.

Duquesne Inclined Plane Company

The company's application for a charter was approved on Jan. 20, 1876, and the names of sixty-one subscribers to its capital stock were listed in said application. The company was formed for the purpose "of constructing one or more inclined plane or planes and the carriage of passengers, freight, &c., from a point or points near or below the southern terminus of the Point Bridge to the top of Coal Hill in the City of Pittsburg . . ."; Allegheny County Charter Book 5, 229, *et seq.* The names of some of the subscribers to the company's stock are listed in footnote 49. An application for amendment of the charter was approved on June 27, 1876; Allegheny County Charter Book 5, 313, *et seq.* Another application for an amendment to the charter was ap-



THE INCLINED PASSENGER RAILWAY, PITTSBURG, PA.

DUQUESNE INCLINE AS IT WAS IN 1880

This picture appeared in the *Scientific American* (New York), September 18, 1880, together with an article that described the incline in detail.

proved on April 30, 1937, whereby, among other things, "the name of the said consolidated and merged corporation" became "The Duquesne Inclined Plane Company"; Allegheny County Charter Book 67, 125. The Duquesne Incline was opened to the public in May 1877. It is still operating. Footnotes 45 to 53, both inclusive, contain additional data regarding that incline.

Fort Pitt Incline Plane Company

Its application for a charter was approved on June 6, 1881; Allegheny County Charter Book 6, 553. Subscribers to its stock at that time were Wm. J. Flinn, Harry Moore, S. H. French, John Martin Shaffer and James Booth. The company was chartered for "the purpose of constructing one or more incline planes, and the carriage of passengers, vehicles and freight, or either of them, at or near the Birmingham Bridge, Second Avenue." The company put an inclined plane into operation for "both freight and passengers," according to Erasmus Wilson's *History of Pittsburg*, 954.

Grandview Incline Plane Company

The Commonwealth of Pennsylvania directed, on Jan. 14, 1895, that Letters Patent issue to it; Allegheny County Charter Book 20, 554. Its stockholders at that time were W. C. Jutte, A. Jutte, Harry Bohm, C. Cramer and Lewis E. Burton. The company was formed for the purpose "of erecting . . . and operating an incline plane in the City of Pittsburgh . . . from a point on Grandview Avenue between Shiloh and Wyoming Streets immediately west of the Monongahela Passenger Incline Plane Company to a point on Carson Street near the mouth of Smithfield Street, for carrying . . . and transporting passengers and freight."

Knoxville Incline

See notes relating to Pittsburgh Incline Plane Company.

Local Incline Plane Company

Its application for a charter was approved on July 23, 1883; Charter Book 8, 102, Allegheny County. The company was formed "for the purpose of the erection and maintenance of an incline plane railway operated by stationary engines and the carriage of passengers and freight thereon," and was "to be located on the south side in the City of Pittsburgh, and the foot of the incline is to be built and located between Ninth Street and Fourteenth Street south of Carson street,

and the plane is to extend from thence to a point on the hill in the 27th or 31st ward of said city." The stockholders when the company was chartered were F. Bausman, Morton Hunter, T. A. Noble, W. W. Knox, H. Stamm and H. Heinrich.

Monongahela Inclined Plane Company

The act incorporating it was No. 1104, which was approved on April 12, 1867; *Laws of Penna.*, 1867, 1170-71. See footnote 26 for the names of some of the first subscribers to the company's stock. *The Street Railway Journal Souvenir*, Oct. 1891, in its article relating to "The Inclined Planes — A Feature of Rapid Transit That Is Peculiar to the Cities of Pittsburgh and Allegheny," stated, on p. 37, "The oldest of the inclines, and the one that is likely to attract first attention on the South Side, is the Monongahela passenger incline, which rises from Carson Street, just below the southern end of the Smithfield Street bridge. This plane was designed and built by John Endres in 1870, the original structure being of wood. In 1882, it was rebuilt, and the present iron structure, designed by Samuel Diescher, was then erected. The plane is 640 ft. long, and is built on a grade of seventy-one and one-half per cent, with a total rise of 375 ft. About 250 ft. of the lower portion of the structure is built over the tracks of the 'Pan Handle' railroad . . . Close beside the Monongahela passenger incline is the freight plane, owned by the same company . . ." The *Pittsburgh Sun Telegraph* of Oct. 24, 1934, reported that the Monongahela freight incline was "to quit about January 1," and it actually went out of service at about that time. The passenger incline is still operating and prospering, as stated in the instant article. Its tracks were electrified early in 1935.

Mount Oliver Inclined Plane Company

It was incorporated by Act No. 1340, which was approved on March 23, 1870; *Penna. Laws*, 1870, 1462-63. By the terms of Sec. 1 of that Act, Joseph Walton, Benjamin F. Jones, Charles J. Schultz, Peter Haberman, Augustus G. Hatrey, Miles S. Humphreys, and the others named therein, and their associates, were created a body corporate by the name indicated. Sec. 3 of the Act gave to the president and directors of the company the "power to construct one or more inclined planes to run cars from any point or points, in the Boroughs of Birmingham, East Birmingham and Borough of Ormsby, in Allegheny County, to the brow of the hill of said boroughs; and for all freight, packages and passengers carried on said planes" they were

permitted "to charge the rates allowed by law to the Pittsburg and Birmingham Passenger Railway Company . . ." *The Street Railway Journal Souvenir*, Oct. 1891, 38, reported: "The construction of the first Monongahela incline was immediately followed, in 1871, by the erection of the Mount Oliver plane . . ." The Mount Oliver Inclined Plane Company, according to a decision rendered in litigation instituted by Hampe, *et al.*, against the Mount Oliver Inclined Railway Co., *et al.* (*Pittsburgh Legal Journal*, No. 36, April 4, 1894, 330), was re-organized after it had suffered financial difficulties, and a new corporation, *The Mount Oliver Inclined Railway Company*, "located, constructed and operated, three lines of passenger railway to reach real estate purchased in accordance with the provisions of the Act of March 23, 1870, from the foot of one plane, one line, by way of Twelfth Street to Carson Street, from the head of the plane, two lines, one to the Borough of Beltzhoover, the other to Mount Oliver. These three lines of railway joined by said inclined plane make up the system of the inclined railway company . . ." Records of the Pittsburgh Railways Company state that the incline "was located at 12th Street, South Side, while the upper terminus was on Warrington Avenue, Mt. Oliver"; that it "was built in 1872 for passenger service only and was electrified in 1920 by the Otis Elevator Company" and "served practically the same districts as the Pittsburgh Incline. It was abandoned July 6, 1951, the last trip being made at 7:00 P.M., and dismantled in February, 1952."

Mount Oliver Inclined Railway Company

In re the organization of that company and its operation, see notes relating to Mount Oliver Inclined Plane Company.

Mount Washington Incline Plane Company

That company applied for a charter fifty-six years after the Mount Washington Inclined Plane Company, mentioned in the next paragraph, had obtained its charter. The application for a charter, of the company named in the title to this paragraph, was approved on June 7, 1910; Charter Book 45, 322, Allegheny County. The subscribers to the company's stock when it was incorporated were A. B. McGrew, Michael O'Herron, F. B. Maloy, Wm. J. Musser, and John E. McCalmont, a Pittsburgh lawyer whose family settled in Pennsylvania at a very early date. The company had, as its purpose, "the formation and operation of an incline plane for the transportation of passengers and

freight in the 18th ward of . . . Pittsburgh from a point on the northerly line of Bailey Avenue, distant 725 feet eastwardly from William Street to a point on the southerly side of Carson Street where it intersects with the southerly line of Brownsville Avenue."

Mount Washington Inclined Plane Company

By the terms of Sec. 1 of Act No. 689, which was approved on Feb. 22, 1854, Richard Cowan, John S. M'Millan, John D. Miller, W. O. Leslie, James Millingar and their associates were "created a body corporate by the name" indicated. The president and managers of the company were empowered "to construct one or more inclined planes, to run cars from any point or points on the river bank between the Monongahela Bridge and Jones' Ferry, in Allegheny County, to the brow of Coal Hill, in the neighborhood of High Street, and for all freight and packages carried on said inclined plane, to charge for each one hundred pounds, not exceeding three cents, and for each passenger, not exceeding five cents per trip"

Norwood Incline

The recollections of individuals have been relied upon regarding this incline. Some persons state that it was in McKees Rocks and others that it was in Stowe township. Robert J. Brose, who was born in 1890, states that he believes he was eight or nine years old when he "first became acquainted with that incline" and that "children were permitted to ride it free." Squire Pasquale Musmanno of McKees Rocks, who is an authority on all matters relating to "the Rocks," stated, in July of this year, when asked for information regarding the incline, that "Sam Robertson, who owned quite a bit of land in McKees Rocks, had a financial interest in that incline." The Squire also said that "one mile of concrete steps, with a hand-railing, replaced that incline and the steps occupy exactly the same route as the Norwood incline, which long years ago was abandoned." Some present day maps of Allegheny County show "Norwood Steps." The route of the incline was said to be from Island Avenue to Norwood Hall. It was learned, in August of this year, through the kindness of Sinbad Condeluci, Editor of the *McKees Rocks Gazette*, that this incline was "The Penny Incline."

Nunnery Hill Inclined Plane Company

Its application for a charter was approved on Sept. 24, 1886; Allegheny County Charter Book No. 11, 132. The subscribers to the

company's stock at that time were: Oliver P. Scaife, Chas. C. Scaife, Jas. B. Scott, Geo. P. Hamilton, Jr., Arthur Kennedy and S. Diescher. The corporation was formed "for the purpose of operating an inclined plane in the City of Allegheny . . . from a point on Fairmount Street to a point on Clide or Willis street near the Twelfth Ward School House." *The Street Railway Journal Souvenir*, Oct. 1891, stated that the Nunnery Hill Incline was "The second of the Allegheny inclines," and that it ascended "Nunnery Hill from Federal Street on the line of the Pleasant Valley railway." It also stated that it was built in 1887 and was for passengers only. Detailed information was given as to construction, fares, etc.

Park Incline Plane Company

The Commonwealth of Pennsylvania directed, on June 10, 1892, that Letters Patent issue to that company, whose stockholders were Gilmore Goldinger, Bernard J. Johnston, Albert E. McKee, James McLaren and Thomas E. Jones. The company was "formed for the purpose of erecting, maintaining and operating an inclined plane in the City of Pittsburgh . . . from a point on Barkheimer Street or Arlington Avenue to a point at base of hill between 13th Street and 25th Street for carrying, conveying and transporting passengers and freight." Allegheny County Charter Book 17, 522.

Penn Incline Plane Company

Its application for a charter was approved on Feb. 26, 1881; Allegheny County Charter Book 6, 524. The stockholders, when the company was formed, were Wm. H. Latshaw, John J. O'Reilly, W. M. Lewis, J. D. O'Brien, W. A. Lewis and Wm. B. Hays, Jr., Trustee. The company was formed for the "purpose of erecting . . . and operating one or more incline planes in the City of Pittsburgh . . . from a point and terminus or points and termini on or about Liberty Avenue at or about 17th or 18th streets to the top of the Heights community known as Bayardstown Hill and for the purpose of . . . transporting passengers and freight along upon and over said incline plane or planes." The rates to be charged were set forth. *The Street Railway Journal Souvenir*, Oct. 1891, 38, stated that the Penn Incline was "The largest of all the Pittsburgh inclines, and probably the most heavily built plane in existence." A picture of it was in that edition, and it was stated that the incline "was opened for business in 1883." However, Vol. 9 (1885), 173, *Engineers Society of Western Pennsylvania*, stated that it "was opened to traffic on March 1, 1884."

Edward M. Hamilton, Librarian of Allegheny County Law Library, heard a lot about that incline, for his father, Harry C. Hamilton, was an engineer of the incline for about fifty years. According to records of the Pittsburgh Railways Company, that incline "was abandoned Nov. 30, 1953, the last trip being made at 6:00 P.M." and the "Dismantling work was finished Oct. 1, 1956." The same records show that the lower terminus of the incline was "located on Spring Way at 17th Street, between Liberty Avenue and Penn Avenue" and that the "upper terminus" was "on Ridge Street in the Hill District." This incline was often referred to as the Seventeenth Street Incline. There was a popular resort, the Penn Incline Resort, at the incline's upper landing for many years. See *Pittsburgh and Allegheny Illustrated Review* (Pgh., 1889), 20, for a picture of the incline and of the resort.

Penny Incline (The)

See notes relating to Norwood Incline.

Peoples Incline Plane Company

In the "charter" section of *Laws of Penna.*, 1895, a-16, the following data appear regarding that company: "Said corporation is formed for the purpose of erecting, . . . and operating an inclined plane in the City of Pittsburgh . . . from a point at or near the southwest corner of Carson Street and the old Washington Road, running to a point at or about the northeast corner of Sycamore and Shiloh Streets, for the carriage . . . of passengers and freight." Beneath the name of the incline was the date, "August 11, 1893," which, presumably, was the date on which the company was incorporated.

Peoples Incline Plane Company

Letters Patent were to issue to it pursuant to an order of the Governor of Pennsylvania, dated Dec. 31, 1902; Allegheny County Charter Book 31, 274. The company was formed "for the . . . erection . . . and operation of one or more incline plane or planes for the carriage of passengers and freight from a point on the north side of Grandview Avenue 224 feet west of the center line of Wyoming Street to a point on Carson Street 420 feet west of the center line of Sycamore Street." The subscribers to the stock, initially, were Geo. W. Herriott, Robt. S. Chess, R. G. West, Geo. L. McCleary and A. H. Mercer.

Perrysville Incline

Mr. Newton E. Tucker, analyst for the Pittsburgh Railways

Company, who very kindly lent me photostats of *The Street Railway Journal Souvenir*, Oct. 1891 (mentioned frequently herein), stated that an old map shows that an incline operated from Charles Street toward Perrysville Avenue, and that the owner of the line was the Pleasant Valley Railroad Company.

Pittsburg and Castle Shannon Railroad Company

Act No. 573, which was approved on April 5, 1873; *Laws of Penna.*, 1873, 547, conferred "additional powers on the Pittsburg and Castle Shannon Railroad Company, extending the time for completion of their road . . ." Sec. 3 of said Act empowered the company "to construct, erect and maintain and regulate an incline plane or planes, at any point or points on the line of, or connecting with their said road . . ." See notes relating to Castle Shannon Inclines.

Pittsburgh & Mount Oliver Inclined Plane Railway

Its application for a charter was approved on June 7, 1888; Allegheny County Charter Book 13, 374. The stockholders then were C. J. Schultz, Joseph Keeling, Peter Haberman, John P. Beech, A. L. Schultz, Joseph Keeling, Jr., O. G. Schultz, C. J. Schultz, Jr., and Frederick Hampe. The company was organized for "the purpose of erecting . . . an inclined plane between Tenth and Thirteenth Streets . . . in Pittsburgh in the 28th and 29th wards of said city to Washington Avenue in the 27th ward of said city . . . for the carriage of passengers and freight . . ." Albert Louis Schultz was "the designer and builder of the Mount Washington freight incline and the Mount Oliver Incline Railway," according to *The Story of Pittsburgh and Vicinity* (edited and published by the *Pittsburgh Gazette Times*, 1908), 100.

Pittsburgh Incline Plane Company

Its application for a charter was approved on April 29, 1889; Allegheny County Charter Book 12, 478. Subscribers to its stock at that time were James G. Barbour, A. L. Koenig, James McLaren, B. L. Elliott and S. A. Myers. *The Street Railway Journal Souvenir*, Oct. 1891, reported: "The longest of all the inclines is the Knoxville, which is located near the St. Clair Incline, starting from Bradford Street, at the foot of the hill, and rising to Brownsville and Washington Avenues, at the top of the hill. This plane has a total length of 2,640 feet and a rise of 375 ft. It was built by J. H. McRoberts in 1890 At a point about 1000 ft. from the bottom the tracks make a curve of eighteen degrees to the right, this curve continuing 350

ft. . . ." *History and Commerce of Pittsburgh and Environs* (N.Y.C., 1893-4), 100, reported that Mr. McRoberts, the builder of that incline, also built the incline plane at Manyunk, Pa., and the St. Clair inclined plane in Pittsburgh. Pittsburgh Railways Company files disclose, regarding "Pittsburgh Incline," that "The lower terminus" was "located on Bradish Street, between 11th and 12th Streets, South Side," and that "The upper terminus" was "located at the intersection of Warrington and Arlington Avenues"; and that the incline "was built in 1890 for freight and passenger service." The *Pittsburgh Post Gazette* of Dec. 5, 1960, reported that one hundred persons took their last ride on Dec. 5, 1960, on the Pittsburgh Incline which was being shut down. The name of Bradford Street was changed to Bradish Street. This incline was also known as the "Knoxville Incline."

Ridgewood Incline Railway Company, Ltd.

A partnership was entered into in July, 1886, "for the purpose of building and operating an elevator incline railway in the Second Ward of the City of Allegheny, Allegheny County . . ." (Partnership Book 4, 412, Allegheny County). The purchaser of the largest block of stock at that time was H. Samson who, years earlier, had established an undertaking business in Pittsburgh. World-renowned Dr. John A. Brashear was also a stockholder. Some of the others were Alexander Leggate, M. J. Walsh, Geo. Lacock and R. P. Wallace. Allegheny County deed records (D.B. 613, 5) show that "Otis Bros &c" obtained a judgment against the Ridgewood Incline Railway Company, and that the sheriff of Allegheny County conveyed, by deed dated Sept. 24, 1887, to W. D. Baldwin, "All the right, title . . . of" said company "in and to lot 20 feet, more or less, on the eastern side of Taggart street, Allegheny City, 331 feet 10" from Gallagher Street and extending back 300 feet . . . on which is erected a station house, engine boiler, passenger car and tressle for an inclined railway"

St. Clair Inclined Plane Company

Its application for a charter was approved on Sept. 9, 1885; Allegheny County Charter Book 9, 502. The stockholders at that time were Henry L. McLain, Wm. G. Hughes, James M. Eccles, Wm. G. Jones and Geo. B. Blood. The company was chartered for the "purpose of erecting . . . and operating one or more inclined planes in Pittsburgh . . . from a point or terminus or points or termini on or near Josephine Street, between S. 22nd and S. 27th streets to the top of the hill in the 27th ward of said city . . . for the purpose of carrying

. . . passengers and freight." It was still in operation in 1916, but went out of existence later. It was often referred to as the "South Twenty-Second Street Incline."

Seventeenth Street Incline

See notes relating to Penn Incline Plane Company.

South Pittsburg and Saw Mill Run Turnpike Road Company

This company was incorporated by Act No. 47, which was approved on Feb. 13, 1852. By the terms of that act, "Richard Cowan, A. Kirk Lewis, Wm. Dilworth, Charles Shaler, Robert Finney, S. Cuthbert, W. O. Leslie and E. H. Heastings . . . were appointed Commissioners" to organize and operate that company. The company was given "authority to make a turnpike or plank road, commencing at any point deemed practicable between the borough of Birmingham and Jones' Ferry, on the Monongahela River, and to connect with any public road at or near Saw Mill run, or the old Washington Road . . . and at the discretion of the managers to extend a branch nearly in the direction of High Street, along the brow of Coal Hill, opposite the city of Pittsburg, to connect with any public road therein located . . ." The managers were also authorized to "construct one or more inclined planes to run cars from any point or points on the river bank between the Monongahela bridge and the mouth of Saw Mill run to the brow of Coal Hill, in the neighborhood of High Street, and for all freight or packages carried on said inclined plane to charge, for each passenger, not exceeding four cents per trip, and each one hundred pounds of freight not exceeding two cents . . ."

South Twenty-Second Street Incline

See notes relating to St. Clair Inclined Plane Company.

Spring Hill Incline Plane Company;

Penna. Laws, 1893; Charter sec. a-18

The company was incorporated on Aug. 21, 1891. It was "formed for the purpose of locating . . . and operating an incline plane from Madison Avenue, Twelfth Ward, Allegheny City, to Haslage Avenue on Spring Hill; also in the same ward, and to be located as follows, viz., beginning at a point on the east side of Madison avenue immediately opposite Mill st., and at the base of Spring Hill a distance of about eight hundred feet to Haslage avenue on the crown of Spring Hill at or near a point where said Haslage Avenue intersects with

Kloper street, in the Twelfth Ward, City of Allegheny . . . and for the purpose of carrying . . . and transporting passengers and freight or either upon or over said incline plane from Madison avenue to Haslage avenue on Spring Hill, Twelfth Ward, Allegheny City”

Tenth Street Inclined Plane;

Penna. Laws, 1893; Charter sec. a-37

The name shown above is exactly the same as it was in said laws. The corporation was “formed for the purpose of erecting . . . and operating an inclined plane in the city of Pittsburgh . . . from a point at or near the southeast corner of South 10th street and Bradford street to a point on Brownsville Avenue, at or near property late of Louis Fritz, for carrying . . . and transporting passengers and freight.”

Troy Hill Incline Plane Railway Company

It was directed by the Commonwealth of Pennsylvania, on Aug. 27, 1886, that Letters Patent issue to that company; Allegheny County Charter Book 10, 369. The stockholders at that time were John H. McCreery, R. F. Ramsey, C. A. Cooper, Wm. M. Short and Wm. A. Stone. The company was formed for the “purpose of constructing and operating one or more Incline Plane Railways for carrying of freight and passengers from a point or points on Spring Garden Street up and over Troy Hill to a point or points on the West Penn Railroad, between Ravine Street and Pine Street in the City of Allegheny”

Troy Hill Inclined Plane Company

Its application for a charter was approved on May 21, 1884; Allegheny County Charter Book 9, 50. Its stockholders at that time were John D. Scully, Josiah W. Davidson, Joseph F. Speer, George B. Hill and James W. Grove. The company was formed “for the purpose of erecting, maintaining and operating one or more inclined planes in the City of Allegheny . . . from a point or points terminous or termini on the northern side of Ohio street, about 300 feet west from the intersection of McFadden street in the 8th ward of said city up the slope or heights of Troy Hill to a point or points at or near the junction of the Troy Hill Road and Gardener street, a distance of 300 feet, more or less, and for the purpose of carrying . . . passengers and freight along over and upon said Inclined Plane or Planes and for the collection of tolls rates and charges therefor . . .” *The Street Railway Journal Souvenir*, Oct. 1891, 39, stated: “The first inclined plane

in Allegheny was the Mount Troy Incline, which starts at the Allegheny end of the Thirtieth Street Bridge and climbs Troy Hill”

Washington Incline Plane Company

The Commonwealth of Pennsylvania directed, on Dec. 10, 1894, that Letters Patent issue to the company; Allegheny County Charter Book 20, 552. The stockholders at that time were C. Cramer, L. E. Burton, Harry Bohm, John S. Chambers, Jr., and John Naegeley. The company was formed for the “purpose of forming and operating an inclined plane for the transportation of passengers and freight from a point on Grand View Avenue between Shiloh and Wyoming Streets to a point on First Avenue between Smithfield and Wood Streets in the City of Pittsburgh”

West Pittsburg Incline Plane Company

It was incorporated under Act No. 851, which was approved on May 19, 1871; *Penna. Laws*, 1871, 966-67. By the terms of Sec. 1 of that Act “A. E. W. Painter, James Noble, David Robinson, W. K. Nimick, J. W. Ballantine, S. P. Ross, W. E. Brandon, Geo. K. Gamble, P. C. Sawyer, R. S. Hemip and their associates” were “created a body corporate” by the name hereinabove indicated. The company was empowered “to construct and operate an inclined plane from Carson Street, in the Borough of West Pittsburg, at western line of Painter’s property, to a point at or near the mouth of Shalem [Shaler] Street, in Union Borough, on the brow of Coal Hill, in the County of Allegheny; and the said company” was to “have power to run cars, carry passengers and freight on said plane,” and was also to “have the right to take and charge, for each passenger carried, six cents, and for all freight not exceeding twenty pounds, and not over one hundred pounds, five cents,”

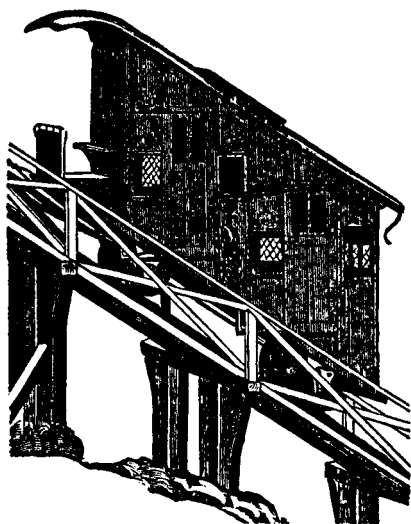
APPENDIX IV

“MOUNT WASHINGTON INCLINED PLANE”

The title of this appendix and the following notes are from *People’s Monthly*, Vol. 1, No. 1, June, 1871, 12. The description is actually of the Monongahela Incline which was often called the Mount Washington Incline.

“ We must needs be brief in our description of this railway, constructed on a plan furnished by John G. Endres, Esq., a Prussian engineer, commenced in August, 1869, and finished May, 1870. The

railway is placed at an angle of thirty-five feet long, with a vertical height of three hundred and seventy feet, and laid most of the way on solid trestle work. There are two tracks, five foot gauge T rail, forty pounds to the yard.



The car, however, is the peculiar feature of the whole affair, and hence we have the accompanying engraving made of it, giving a side view and showing how it is made to conform to the incline, so that each of its two apartments — double seated and accommodating eight passengers — has its floors on a perfect level. The ends of these cars are vertical. The floor of the second or upper compartment strikes the upper hillside of the lower compartment, three feet higher. As the car stands at the lower station house, passengers enter either compartment at the side from stair platforms and in addition to the seats described, there is a seat with hinges at the front platform, constructed with a view to carrying packages of all descriptions, from a market basket to a barrel of flour.

HOW THE CARS ARE WORKED

The cars are raised and lowered with a wire cable an inch and a half in diameter, composed of seven strands, with nineteen wires to the strand, the strands making one turn to ten and a half inches. The cable will sustain thirty-five tons vertical lift; but as the weight of the loaded cars, with the greatest weight of cable attached at an angle

of thirty-five degrees, will never exceed three tons, it will be seen that the cable may be rated at twelve times the security required for service. But to 'render assurance doubly sure,' an additional cable one and a quarter inches in diameter, capable of sustaining twenty-seven tons vertical lift, is held in reserve, and playing idly, accommodates itself to the movement of the cars. In case the working cable should part, the reserve cable would assume the functions of the working cable. Both cables are supported by small wooden rollers, placed at stated intervals along the track . . . The iron employed in the structure is the best Sligo boiler plate iron, and the construction was entrusted to skillful hands, with an experience extending over a quarter of a century. The magic power of the plane is to be found in wire. Wire cables lift and lower the cars in safety. Wire is employed for signalling. The system of signals adopted is similar to that employed in fire alarms. The signal bells are eight inches in diameter.

The cars ascend to the station house on the top of the hill quietly, smoothly, rapidly and without vibration, occupying about a minute.

The engines are two, in line with the track, and so constructed that a reverse movement can be obtained in the twinkling of an eye, and the huge and massive drums, (with brake attached) around which the cables are rolled, obedient to the touch of the engineer's hand, turn either backward or forward, precisely as the wheels of a locomotive are operated by the reversing lever. Away up there in his glass-framed cab, overlooking the whole length of the plane, sits the watchful engineer. The whistle throttle and signal wire are at his right. His hand grasps the lever attached to the rod connected with, and operating the 'links.' His foot is on the brake-step; a pressure of his finger sets the engine in motion, and the car descends; a pressure from his foot and it pauses in its descent, and thus, at will, he regulates its movements until it touches the buffer at the lower station.

There are various adjuncts for securing safety, lessening friction, preventing jar, controlling motion, &c, which we have not space to explain. Suffice it to say, the road is perfectly safe, the fare moderate, . . . and the entire road admirably managed. The whole enterprise reflects the very highest credit on projectors, directors, constructors and managers. It is the pioneer of numerous similar enterprises, which will enable the denizens of our overcrowded and pentup city to spread themselves over and beyond our beautiful hills and charming valleys, giving 'room and verge' enough for several cities like Pittsburgh. We look soon to see a continuous street along the crest of Coal Hill from

the Birmingham Monastery down to Saw Mill Run."

NOTE: A description of the Monongahela Incline today would vary from that given ninety-two years ago, for progress and new inventions dictated that improvements should be made and they were made.

APPENDIX V

INCLINES IN OPERATION IN ALLEGHENY COUNTY, PENNSYLVANIA, IN 1930

The following data were obtained from p. 7 of a book commemorating *The Fiftieth Anniversary of the Engineers Society of Western Pennsylvania* (Pgh., 1930) —

"INCLINES	LENGTH	HEIGHT
	Feet	Feet
On South Side (from the Point upstream)		
Duquesne	800	400
Monongahela	640	370
Castle Shannon	1,368	461
Pittsburgh (Knoxville)	2,640	370
Mount Oliver	1,600	380
St. Clair	1,962	370

In Pittsburgh

Seventeenth Street	837	329
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The third, fourth, fifth and seventh are operated by the Pittsburgh Railways Company and carry 6,000 passengers a day. Their motive power is electric hoists, that for the Knoxville Incline has two 250 horsepower motors driving through double reduction gear and two 12-foot drums on which is the 1½" wire cable. The entire equipment is of interest."

APPENDIX VI

A copy of the schedule printed below is in the files of the Monongahela Inclined Plane Company, and on the back of it is the following penned notation: "Attested copy — G. A. Gilfillan — 12-26-1914."

SCHEDULE OF RATES AND FARES

Monongahela Inclined Plane Company

Single Fare.....	5 cents.
Transfer Tickets (Issued at Upper Station only—Good over the Bridge or up Carson Street)	5 cents.
These tickets are good on all cars except INTERURBAN or EXPRESS.	
60 Trip Ticket.....	\$1.25

VEHICLES

	Single Trip.	Round Trip.
Horse and Rider.....	\$0.10	\$0.15
1 Horse Buggy.....	.15	.25
2 " Carriage.....	.20	.30
1 " Wagon.....	.20	.30
2 " Wagon.....	.30	.40
3 " Wagon.....	.40	.50
4 " Wagon.....	.50	.60
Horse Moving Van.....	.60	.80
Motor Cycle or Push Cart.....	.10	.15
2 or 3 Passenger Automobile.....	.15	.25
4 or 5 " " or Taxicab.....	.25	.35
6 or 7 " "40	.50
Small Delivery Motor Truck.....	.20	.30
2 or 3 Ton " "30	.40
4 or 5 " " "50	.60
6 " " "70	.80
Funeral Car.....	2.00	2.50

Each additional passenger over seating capacity, one fare.

Each additional horse, five (5) cents.

Each additional ton over regular capacity on Motor Trucks, ten (10) cents.

A discount of 10% will be allowed on \$20.00 worth or more of single or Round Trip Vehicle Tickets if purchased at one time.