

Chronology of Selected Ski Lifts
Notes for 2001 Exhibit, New England Ski Museum
Jeff Leich

The following notes on ski lifts are intended to aid in the development of a Ski Museum exhibit. In many cases it is unclear from the sources referenced below exactly when a particular lift was installed or first operated. It is also probable that sources with data on certain early ski lifts was not located. It is therefore not possible to compare opening dates to determine which lift was "the first" of its kind to operate; rather, this chronology is intended to indicate the general sequence of the development of early ski lifts of the stated types.

1870 Eureka Mine ore tramway used to transport miners for skiing (Allen, 109, 203 note 22--Vallejo CA Sunday Times Herald, 12-13-1870).

"For example, the ore bucket of the **Plumas Eureka Mine** at Johnsville (CA) was converted on Sundays into the world's first ski tow. It was operated by steam". (Gould, p 136 (ref to Vallejo CA Sunday Times Herald, 12-13-1870).

1896 Riblet Tramways Company of Spokane, WA begins designing mining tramways (Gilbert, p. 2).

1907 Sightseeing four-passenger gondola built in **Silver Plume, CO**; torn down for scrap metal about 1914 (Gilbert, p. 2).

1907 "Sled lifts had been employed on the slopes of Bodele in the Voralberg region of Austria as early as 1907" (Gilbert, p. 4).

1908 Haulback tows used in Europe as early as 1908 (Allen, 109, note 20 on pg 203, from patent application, March 16, 1908).

1910 "A tow to haul toboggans was ready for the **Truckee** CA carnival in 1910 and then was used later by skiers following the formation of the Truckee Ski Club in 1913". (Allen, 109).

1913-14 season "**Truckee** Winter Sports built a steam engine-powered lift that consisted of two toboggans, one attached to each side of a continuous cable loop. Originally this lift was built to haul tobogganists, but it was soon adopted by skiers: (Cohen, 108).

1928 First aerial tramway built for skiers, **Engelberg Tramway**, Lucerne, Switzerland (Valar, 2) (Gilbert p. 2)

late 1920s "In the late 20s, Moise Paquette installed a "rope tow" on the Baumgarten slope in Sainte-Agathe. Moise, who collected old cars, installed one on blocks, coiled a rope around one of its two rear wheel rims and slipped the other end around a pulley set up on top of the mountain...Moise was so proud of his invention that he spent a great deal of money on having it patented (November 28, 1939, US) (Arbique, pp. 38-39).

1931 **Parsennbahn** cable railway built in Davos Switzerland, giving skiers 3000 vertical feet of terrain (Valar, 2).

1932 "The **first patent on record (ropetow)** was issued in 1932 to a young Swiss engineer (and skier)

named Gerhard Mueller...He came up with Switzerland's first usable rope tow, a contraption consisting mainly of a one-inch-diameter hemp rope and some old motorcycle parts...Mueller went on to bigger and better lifts, and his firm of the same name has now built over 500 lifts of various kinds at winter and summer resorts the world over" (Jay, 63).

"In 1932, use of a circulating rope powered by an internal combustion engine was first employed in Europe to tow skiers in Zurich, Switzerland (Gilbert, p. 3).

1933 (January 2) Shawbridge rope tow opens on the "big hill" at Shawbridge, Quebec in the Laurentians, by Alec Foster. "Not a funicular, but better, a 2,400-foot endless rope, passing through blocks at top and bottom of its span of two-thirds of the hill, and around a special hub on the rear axle of the Dodge...Five cents a trip or fifty cents a day and business was booming "(Canadian Ski Annual, 1933, p. 50).

1933 (December) Ski Club Hochgebirge passed resolution urging the construction of tramways to carry skiers. Three surveys of tramway locations had been undertaken by American Steel & Wire (Leich, p2).

1933 "At the foot of a snow slope stood a man on skis. His body was wrapped in a complicated harness, and to the harness a spring scale was tied. From the scale a long rope ran up the hill, through a pulley fastened to a tree and down to a horse...another man led the horse along a path in the snow. Slowly the skier was pulled up the hill. From the well-beaten track it was obvious they had repeated the maneuver many times...the next day he continued his experiments, using a J-shaped stick instead of the strap harness. That same year he designed and patented the first J-Bar lift, which later became the T-Bar...The time was 1933, the place, Davos, Switzerland, the man Ernie Constam, a true skiing personality (Dunaway, p. 18).

1934 (January 28) Woodstock VT rope tow: "Urged on by the discussion and advances of a New Yorker, Mr. Thomas Gammack, the Royces of the White Cupboard Inn, Woodstock, Vt., have installed on a fine slope in Woodstock the first motor ski tow to operate in the United States. This ski tow on its first day of operation last Sunday, Jan 28, continuously carried happy skiers uphill all day. The arrangement is novel and simple. A coil of 7/8 inch manilla rope knitted together with a long splice, passing over pulleys and around a tractor wheel on the rear end of a Ford automobile, provides 300 yards of uphill transportation." (Ski Bulletin, 2-2-1934, p. 8).

The Royces (Bob and Betty) were requested to look into the Foster tow at Shawbridge by guests--Thomas Gammack, a broker, Douglas Burden, Barklie Henry, and the Cheney brothers. The Royces visited Shawbridge, and obtained a rough diagram. They leased Gilbert's Hill from Clinton Gilbert of \$10. Robert Slayton Bourdon was the first to ride the Ski-Way.

Wallace (Bunny) Bertram, a ski instructor at the White Cupboard, took over the lift in the fall of 1934 (Adler, p. 50-51)

"Three men who I'd been teaching, came down here from Canada, and they'd seen this automobile pulling people up this hill on an endless rope, they told me about it while we were climbing this hill over at Gilbert's. They said: 'Why don't you put in a rope here'...They described it to me..." (Bertram, p. 7).

"In 1934 the first American version appeared in Woodstock, VT, spawned by a former Dartmouth Ski Team Captain, Bunny Bertram, in conjunction with the mid-wifery of Doug Burden and Robert Royce and the surgical skill of David Dodd, a sawmill mechanic....The terrain was a natural, with largely round-topped hills, free of forests (sic). Close-cropped by sheep, they made up in steepness what they lacked in

drop" (Jay, 63).

"Bertram rented his motor equipment (\$20)"...total cost for the first season, \$978.90 (DOC, p. 6)

1934 "One of the first sled lifts in the United States was in 1934 when Badger Pass Ski Area in Yosemite National Park installed a popular sled lift called the **Up-ski**...There were several different versions of this lift and each version helped make the Up-ski a success for many years before and after World War II" (Gilbert, p. 4)

1934 (August 17) Swiss patent granted to Ernest Gustav Constam for J-Bar or T-Bar lift (Gilbert, p. 5).

1934 (Fall) E. Constamm, experienced builder of aerial tramways, designed a **J-Bar lift in Davos**, Switzerland for entrepreneur Lieni Fopp. Jack Ettinger, Davos ski school director, suggests adding a bar to turn it into a T-Bar (Valar 3).

1934 (December 31) "Skiers frequenting the **Uncanoonuc** Mountains were given the opportunity of using an electric cable tramway in conjunction with skiing, not equalled in America. Early last spring members of the Uncanoonuc Ski Club determined to construct ski trails Adjacent to the railway, and thereby give Eastern skiers a chance to ski in an Alpine fashion. The trails were completed and traffic commenced on the weekend of Dec 31st and continued for ten consecutive weeks" (Ski Bulletin, 3-29-1935).

"To the Uncanoonuc Ski Club's tailor-made ski-park on South and North Uncanoonuc Mountains, its ready-to-wear funicular, in last Sunday's zero weather, lent a positively European atmosphere--all in miniature. Parking space well-ploughed; base station crowded with skiers, lunch tables, coffee counters, ticket windows; funicular cars shuttling busily up and down the rails. Five rides for a dollar, and seven hundred feet of good downhill skiing for every ride....Between Boston and all this is only fifty miles of railway to Manchester, NH, nine miles of trolley to Shirley Station (fare 20 cents) and two miles of highway to the base station (no busses, but what is two miles to a skier?)" (Ski Bulletin, 2-1-1935).

1935 (January 20) Rope tow **on Travena Hill in Lisbon, NH** begins operation. The tow was operated by the Lisbon Outing Club. John Bailey was the first to ride the tow (Courier article sent by Bill Currier).

"Now that 18000 feet of rope, long awaited, has lately arrived at Lisbon, NH, it will, powered by a rebuilt tractor, be the tow-er of skiers up Travena Hill for the winter" (Ski Bulletin, 1-11-1935, p. 8).

"The Lisbon Outing Club has been successfully operating a ski tow since January 1st, 1935. The tow extends over a 1000-foot slope. The rope is 2000 feet long. The slope has a maximum grade of 25 degrees. From the top of the slope begin three trails...open slope skiing is also available. The place is popularly known as the Travena Slope, and located one mile north of Lisbon village off Highway no 10" (Ski Bulletin, 2-7-1936, p. 10).

1935 (January 27) Mt. Gunstock Ski Hoist, Gilford, NH. "At Laconia NH, T.C. Cooke's Mt. Gunstock ski tow was in operation last Sunday, and was busy all day hoisting skiers a thousand feet to a point a little below the summit" (Ski Bulletin, 2-1-1935, p. 8).

Built on the land of Frank Bacon and Fred Weeks by Ted Cooke of Swampscott, MA. (L80.3.14).

"The reason I got interested in it was because I rode on Buddy (sic) Bertram's tow over in Woodstock,

Vermont. And that was, I guess, in 1932. And it was so much better than taking the time and effort to climb up the hill. I could see that was the wave of the future coming on" (Cooke, p. 1).

1934-35 "Cisco Pullback, Cisco, Calif. The Auburn S.C. installed on its hill a "pull-back", 1000 feet long, giving a vertical lift of approximately 300 feet. Two double-ended toboggans were rigged so that as one ascended the other descended. California Ski News reports that early season difficulties were overcome, and on later weekends the operation of the pull-back has been highly successful" (Ski Bulletin, 3-29-1935, p. 6).

"As early as 1933, the Auburn Ski Club was discussing the possibility of building a lift on California's Tunnel Mountain at what is now Cisco Ski Hill near Lake Tahoe; possibly the lift was built the same year" (Cohen, p. 114).

1935 (summer to December) "...letter of Dan's [Hatch] to the German Bleichert firm, a reply from them, a letter or two in German language, written by Dan and addressed to Constam, and C's replies to these. This early correspondence was dated in the summer and up to December, 1935...Dan wrote in one of his early letters reporting how he was planning to build his tow...The other reference that seems significant is Constam's reply, informing Dan at the outset that his ski lift is covered by patent" (Paschen, Letter, p. 2).

1935 (October 1) Memo on proposed ski tow for Dartmouth Outing Club estimates costs at \$4675. "As a result of a visit to the American Steel and Wire Company of Worchester, we have the following quotations from Mr. Jack Herr, one of their tramway engineers and from Mr. Beatty, their Chief Draughtsman...The tow would be 1200 feet long with a rise of 280 feet. It would be supported by six intermediate towers and would be built of 5/8" cable with 38 hangers for passengers. It would travel at a speed of 6 or 7 miles per hour and would have a capacity of 585 persons per hour--as opposed to the Woodstock capacity of about 180 people per hour" (Hatch).

1936 (January 30) (first notice of tramway operation--Ski Bulletin 1-31-1936, p. 2) Dartmouth Outing Club installs **Dartmouth Ski Tramway** on Oak Hill in Hanover, NH, claiming it is the only ski cable lift in the US and one of two in the world.

(DOC had a rope tow the previous year (1934-35), "a very small and modest installation. The equipment was all borrowed or rented and the whole thing was undertaken in (an) experimental mood. The tow was used on the golf links...most of the mechanical details were simple and patterned after Bunny Bertram's layout at Woodstock...we did learn that makeshift equipment will not handle the strain of a ski tow. Bearings, pulleys, and drive should all be heavy duty equipment and be well mounted. Dan P. Hatch. (Ski Bulletin 3-29-1935).

"The Dartmouth Ski Tramway, operated by the Dartmouth Outing Club at Hanover NH is unique. The Tow is 1,225 feet long, vertical ascent is 350 feet. 5/8 inch steel cable is used in the circuit. The comfortable handle, padded seats against which the skier leans, are the outstanding virtue of the installation. Capacity, 25. Ford V-8 motor with the standard transmission. 46 to 1 worm gear--cable speed five or six miles per hour. The five sheave is six feet in diameter. Dual controls located at the top and the bottom of the hill' can be stopped instantly by either operator." (Ski Bulletin, 2-7-1936).

Dartmouth ski tramway was designed by SSB Machine Division, Split Ballbearing Corporation, Lebanon, NH.600 skiers per hour (Ski Bulletin, 2-7-1936).

"The Dartmouth Outing Club, perpetrators of the first ski tramway, which went into operation at Oak

Hill, NH last winter, close their eyes to the obvious immorality of the machine...The 50 handles or seats suspended from the cable approximately every 50 move with the cable...and further, either the American Steel and Wire Company of Worcester, Mass, the Split Ball Bearing Corporation of Lebanon, NH, or the Dartmouth Outing Club of Hanover, NH have offered to assist..." (American Ski Annual 1936, p. 158).

"Then Dan Hatch, the President of the Dartmouth Outing Club, who'd been to Europe, saw the invention of the T-bar lift by E.G. Constam, who was an engineer designing aerial tramways in Switzerland. This guy, Dan Hatch, built one of these things at Oak Hill at Dartmouth. Several years later Constam sued them for infringement of a patent and collected" (Newell, p. 11).

1936 (January 12) "The ski tow at **Bousquet's**, Pittsfield, Mass. pulled well over 50 skiers at one time last Sunday (Jan 12). A sprocket chain broke several times and from then on the tow had to be run slowly. After a stronger sprocket chain will be put in, the tow should then run without any trouble" (Ski Bulletin, 1-17-1936, p. 12).

"The only ski tow operating in Western Massachusetts is the Bousquet Tow at Pittsfield. Length of tow, 1400 feet; vertical ascent, 275 feet; grade, 14-18 degrees; power, 53-hp stationary gas engine.... In operation it will carry from 30 to 40 skiers at one time, and has been successfully operated with 74 skiers on the rope....A second tow, 1000 feet long...will not be completed before next winter (Ski Bulletin, 2-7-1936, p. 10).

Bousquet's farm visited by a ski train in 1935. "That summer he (Clarence "Clare" Bousquet) hustled to Woodstock, Vermont to study the pioneer ropetows in that community" (Jay, p. 67).

Clare Bousquet invented the safety gate (Cal Conniff, 4-18-2001).

1936 "...the first rope tows were installed in California and Washington (at Soda Springs, CA and Mt. Spokane, WA)" (Gilbert, p. 3).

1936 "Jean Pomagalski, originally of Poland, founded Pomagalski, S.A. in Fontane, France in 1936. Pomagalski installed his first surface lift that same year in Alpe d'Huez, France. Reportedly, Pomagalski had started working with surface lifts in Europe as early as 1934" (Gilbert, p. 7).

1935-36 ski season "George Morton invented and installed a lift on the lower slopes of Black Mountain, behind the **Moody Farm** (in Jackson). This lift was a cable with ropes hanging from it, for transportation of skiers. The promoter of this lift--the first cable lift in the country--was Phil Robertson, then executor of the Electric Light Co....When Bill and Betty Whitney bought the Moody Farm in September, 1936, the ski lift was not included in the deal, and it was a blow to the two young entrepreneurs to have to pay George Morton \$250 for the lift. After a year's use, Bill Whitney, a mechanical engineering graduate of Tufts College, redesigned the lift as the ropes, when released by a skier, could flip over the cable taking it off the bull wheel. The solid handle Bill used was the shovel handle, used for 10 years until replaced by a J-bar. So George Morton would be given more credit in the ski world than for just the Skimobile--for the first cable ski lift" (Whitney).

"One of the first lifts installed in the region was an overhead cable at Moody's Farm in Jackson in 1935-36, devised by Bartlett inventor George Morton, later designer of the Skimobile. Bill and Betty Whitney purchased Moody's in the fall of 1936, renamed it Whitney's, and improved the lift a year later by attaching 72 shovel handles to the cable..." (Eastman, p. 7).

"Bill and Betty Whitney purchased Moody's in September 1936 and improved the lift by attaching 72 shovel handles to the overhead cable in the winter of 1937-38" (Eastman, p. 36).

1936 (November 22) First two single chairlifts at Sun Valley, ID, completed on Dollar and Proctor Mountains. (Gmuender, p. 81).

"At Ketchum, Idaho, a new tow erected by the Union Pacific R.R., is based on the principle of the Dartmouth tramway, which was studied by the Union Pacific engineers" (Ski Bulletin, 12-11-1936, p. 4).

"The concept of using a chair on a lift came from Jim Curran. Curran had seen monocable conveyors loading bananas aboard ships in the Tropics...Curran and his boss, Glen Trout, consulted with Gordon H. Bannerman of American Steel and Wire Company. Bannerman referred them to the American Steel & Wire's Oak Hill installation. The Union Pacific engineers studied the Oak Hill J-bar when completing the design of the first chairlifts. Thus, the first chairlifts were closely related to the Oak Hill J-bar" (Gilbert, p. 7).

1938 (late January) Belknap chairlift begins operation, first chairlift in the east. (Allen, p. 113).

A joint project of the WPA and Belknap County (label on chairlift, NESM).

Length: 3200 feet; vertical, 714 ft; capacity, 200 pph; 50 chairs; eight rides for \$2 (Rowan, p. 77).

1938 (March 9) "Distinction of being the first ski-runner on the Cannon Mtn. tram, now under construction, goes to Otto Kley, landscape architect of the NH Forestry and Recreation Department, who, on March 9, went up the freight tramway "on business", arms full of blue-prints, incidentally taking his skis along. Skied down Taft Trail, passing pedestrian Alex Bright toiling up same. Both ascent and descent were reported rough (Ski Bulletin, 3-18-1938).

1938 (June 28) Aerial Tramway at Cannon Mountain, NH opens.

"After careful consideration, the contract was awarded to the American Steel and Wire Company...The tramway is known as the American-Bleichert-Zuegg, double, reversible system; of two passenger cars, with capacity for twenty-seven each, plus the conductor, one car descends, while the other ascends. The American Steel and Wire Company are the American representatives for the European Bleichert-Zuegg Company, which has constructed thirty-three of the last fifty tramways installed in Europe. This tramway is operated by 100 hp electrically driven motors..."(Peabody, p. 126).

1938 (December 27) Skimobile opens in North Conway, NH. "All overhead lifts at the time were patented by a Swiss inventor named Victor (sic) Constam, and , so the story goes, Gibson didn't want to pay any lift royalties to anyone. Following the advice of his friend and fellow ski resort developer Averill Harriman of Sun Valley, Gibson consequently hired (George) Morton to come up with another design"(Eastman, p. 36).

1939 (January 15) Collins Chairlift at Alta, UT operated for the first time. Built of parts from the Michigan-Utah mine tramway, the lift was 2,650 linear feet, 830 vertical feet (Engen, p. 98, Rowan, p. 77).

1939 (August 1) Upper trestle of the Skimobile completed (Eastman, p. 38).

1939 "When Sun Valley installed three single chairs on Mt. Baldy in 1939, it was a true breakthrough in

perceiving uphill transportation for skiers as a **mountain lift system**. Friedl Pfeifer's biographer, Morten Lund, suggests that Pfeifer should be credited with the mountain design approach to developing a mountain for skiers, in which chairlifts are used to match terrain with the needs of skiers of varying skill. "The single most remarkable idea [Friedl] had in his lifetime" is how Lund sees it"" (Rowan, p. 77).

1940 (fall) "While visiting Davos in Switzerland, the Meads stumbled across a tow novel even in Europe, called the Constam T-bar...Brad set up the lift on Little Pico in the fall of 1940. Powered by a 130 hp six cylinder Hercules industrial engine, the T-bar could take more than 600 persons an hour a distance of 2,330 feet, rising vertically 644 feet. The cable speed of the list was between 450 and 480 feet per minute..."(Goodspeed, p. 54).

"It was designed by E.G. Constam in Switzerland and constructed by the American bridge builders, J.A. Roebling and Sons" (Adler, p. 62).

1941 (January) E.G. Constam meets with officials of the Dartmouth Outing Club seeking a settlement for infringement on his patent by the DOC Oak Hill J-Bar. "He said that the J stick constituted the infringement. Asked if he furnished pictures, drawings, or instructions for this , he said, that he had not, but that Dan saw a picture or pictures of one of his tows. I asked him if that was the entire infringement, and he said that it was, but that the J stick was his idea and fully covered by the patent. He denied my suggestions that we developed something similar independently and entirely on our own, always harping on the picture and the J stick" (Paschen, Letter, p. 2).

after 1942 "He (Fred Speyer) also pioneered the idea of having diesel back-up for the lifts" ("Alta's Beginnings as a Ski Area", Winter 1998-99, Alta Ski Lifts, p. 2)

1946 (summer) "Riblet Tramways installed the very first double chairlift on Mt. Spokane in summer 1946. This lift was a converted and relocated bi-cable ore tramway. This lift had 34 double chair carriers and a reported capacity of 550 persons per hour" (Gilbert, p. 12).

1947-48 season "The **first Heron double chairlift** was also a bi-cable lift design. A local mining engineer, Sam Huntington, came out with his first preliminary design for a new double chairlift at Berthoud Pass, CO in June 1946. However due to problems with implementing the design and a damaging fire at the construction site, the lift was not completed for the 1946-47 season" (Gilbert, p. 12).

1949 "Heron developed one of the first **monocable double chairlifts** at Squaw Valley and Soda Springs in CA (Gilbert, p. 13).

1950 (January 20) "In the summer of 1949, the Sierras de Santa Fe Co. bought the mining lift of the defunct Eureka mine near Silverton, CO with the intention of using it to transport people rather than ore. This bi-cable lift with detaching buckets was equipped with Webber grips. These grips functioned quite reliably by means of a lever, activated by a bent piece of rail, which, when lifted, opened the jaws between which ran the haul cable and when depressed, closed them. The cable and grips dated back to the 1880s!...Under the guidance of Marion Page, an old-time mining lift expert, the lift was erected in Santa Fe Ski Basin...The maiden voyage for skiers on the lift occurred January 20, 1950 (Blake).

1951 (January 4) Mount Hood aerial tram made its initial run. "Built at a cost of \$750000...the aerial tram runs from Government Camp to Timberline Lodge, a 3-mile distance with an elevation rise of 2,200 feet. ..The car carries approximately 40 persons and their ski equipment" (National Newspaper of Skiing,

January 15, 1951).

1952 (November 1) "Foundations have already been poured at the popular California ski resort near the Donner Summit for a cross-country aerial shuttle to transport skiers from Highway 40 near Kiski Lodge into the Sugar Bowl ski area..." (National Newspaper of Skiing, November 1, 1952).

1953 (March 15) British Ropeway Division of Vulcan Iron and Engineering advertises a Breco-Pomalgalski lift in operation at Ste. Agathe, Que. (National Newspaper of Skiing, March 15, 1953).

1953 (summer) "Magic Carpet" gondola installed at Sugar Bowl, CA. Designed by Heron Engineering, built of recycled wire rope, sheaves, motor room components from mining trams due to materials shortages caused by the Korean War. Capacity of 289 people in twelve 6-passenger cars. The lift brought skiers from the parking lot to the base area (about a mile and a quarter distance from the lodge to the Norden snowsheds on the railroad), but did not transport them up the ski slopes (Frohlich, p. 59-60).

? First Poma lift in US said to be installed at Suicide Six, Woodstock, Vt. Hannes Schneider attended opening (Letter from Kin Miner to Arthur March, Dec 3, 1982).

1954 (January) Arapahoe Basin announces its new Poma lift. "Snow Ridge, well-known ski area at Turin, NY, has a Poma lift" (American Ski Annual and Skiing Journal, January 1954, pp. 54-55).

1958 (Feb) Wildcat gondola opens. Built by Carlevara-Savio of Turin, Italy, it was 6800 linear feet, 2010 vertical feet, 600 pph (Ski, December 1956 p. 77, Macomber p. 113).

1958 " (Victor) Hall is also proud of his contributions to skilift safety. In 1958 he started work with Phil Robertson, Blair Birdsall and Harold Thorne on writing a standard for lifts in New Hampshire. ASA (later ANSI) and USSA and ASME were brought in, and with the Eastern Ski Area Operators as sponsors, the original set of standards were developed" (Rowan 2) p. 52.

1962 Ramshead chair installed at Killington is the first Killington chairlift to have an **auxiliary motor** (Bousquet).

1963 SAM article on erecting chairlift towers by helicopter (SAM, Winter 1963, pp. 11-14).

1963 "The **triple**, a Riblet, debuted at Boyne Highlands, MI and came to dominate chairlift construction in the 1970s" (Rowan, p. 76). (SAM, Fall 1963)

1964-65 "The **first quad**, a Heron, was at Boyne Mountain, MI for the 1964-65 season, but this configuration didn't come into its own until the 1980s" (Rowan, p. 76).

1964 (fall) Plans published for mine tunnel railroad--elevator combination ski lift for Park City resort (Woody).

1966-67 Attitash, Bartlett NH announces plans to build an electric-powered **cog monorail** ski lift with 7400 linear feet of track built 6 to 14 feet off the ground, with a 1650 vertical foot rise. A section of track and several cars were installed at the base of the mountain (North Conway Reporter, January 26, 1967)

1981 (November 26) "The first truly operational **detachable chair** had arrived:Doppelmayr's quad at Breckenridge, CO. (There had been earlier detachable chairs, both in Europe and the US, but none lasted

long enough to rate as ongoing technology)" (Rowan, p. 77).

1985 Oak Hill ski tow, used by the Ford Sayre ski program since Dartmouth stopped operating Oak Hill as a ski area in 1977, will not operate in the 1985-86 season (Kenyon).

1992 (July) Doppelmayr advertises first 6-seater express chairlift (SAM, July 1992, p. 13).

References

Adler, Allen, *New England and Thereabouts--A Ski Tracing*, Barton, VT: Netco Press, 1985.

Allen, E. John B., *From Skisport to Skiing: One Hundred Years of an American Sport, 1840-1940*, Amherst: University of Massachusetts Press, 1993.

Arbique, Louise, *Mont Tremblant: Following the Dream*, Saint-Laurent, Quebec, Les Editions Carte Blanche, 1998.

Bertram, Wallace (Bunny), interview by Michael McQueeney, December 16, 1980. Tape recording and transcript, New England Ski Museum, Franconia, NH.

Blake, Ernie, "America's First Detachable Chair" *Ski Area Management*, May 1987.

Bousquet, Paul, telephone interview, May 10, 2001.

Cohen, Stan, *Pictorial History of Downhill Skiing*, Missoula MT, Pictorial Histories Publishing Company, 1985.

Cooke, Ted, interview by Janet Young, circa 1980. Tape recording and transcript, New England Ski Museum, Franconia, NH.

Dartmouth Outing Club, "A Plan for Developing Ski Terrain with Ski-Tows at Hanover", Typescript ca 1934, Dartmouth Special Collections, DO1, II-25-9.

Dunaway, Bil, "Skiing Personality: The Lift Maker", *National Skiing*, November 1, 1954, pp. 18-19).

Eastman, Tom, *Flight Without Wings: A Celebration of Hannes Schneider and Fifty Years of Skiing at Mt. Cranmore*, North Conway, Mt Cranmore, Inc, 1989.

Engen, Alan K, *For the Love of Skiing*, Salt Lake City, Gibbs-Smith, 1998.

Frohlich, Robert, *Skiing With Style; Sugar Bowl, 60 Years*, Truckee, CA, Coldstream Press, 1999.

Gilbert, Kirby W., "From Rope Tows to Chairlifts in North American Skiing", February 2001.

Goodspeed, Linda, *Pico: The First 50 Years*, Pico Ski Resort, 1987.

Gould, Helen Weaver, ed., *LaPorte Scrapbook*, La Porte CA, Helen Weaver Gould, 1972.

Gmuender, Mary Purdy, "Sun Valley Singles: History Made", *Ski Area Management*, May 1999, pp. 78-81.

Jay, John, *Ski Down the Years*, New York: Award House, 1966.

Hatch, Dan, "Memo on Ski Tow", October 1, 1935, Dartmouth Special Collections, DO-1, 3:27.

Leich, Jeffrey, "The Mount Moosilauke Aerial Tramway Proposal", *New England Ski Museum Newsletter*, Issue 44, Winter 1998.

Kenyon, Jim, "Ford Sayre Plans to Cease Operations at Oak Hill", *Valley News*, June 8, 1985.

Macomber, George, *Plunging In*, Beverly MA, Memoirs Unlimited, 1997.

Newell, Ed, interview by Susan Noble, November 29, 1980. Tape recording and transcript, New England Ski Museum, Franconia NH.

Paschen, Hans, "To the Trustees of the D.O.C"., January 27, 1941, Dartmouth Special Collections, DO 1, Box 62.

Paschen, Hans, Letter to John R. McLane, January 20, 1941, Dartmouth Special Collections, DO 1, Box 62.

Peabody, Roland, "The American-Bleichert-Zuegg on Cannon Mountain, NH", *Appalachia*, June, 1938, pp. 125-126.

Rowan, David, "A Salute to the Chairlift", *Ski Area Management*, May 1999, pp. 76-7.

Rowan, David (2), "Hall Ski-Lift Co.--A Home Grown Success Story", *Ski Area Management*, January 1982, pp. 51-53.

U.S. Eastern Amateur Ski Association, ed, *American Ski Annual*, Brattleboro VT, Stephen Daye Press, 1936.

Valar, Paul, "The Wonders of the First T-Bar", *Skiing Heritage*, Volume 5, Number 2 (September 1993): 1-3.

Whitney, Betty, "George Morton Created First Cable Ski Lift", *Conway Daily Sun*, December 11, 1997, p. 4.

Woody, Robert, "Not up the Mountain--Through the Mountain", *Ski Area Management*, Fall 1964, pp. 26-28.