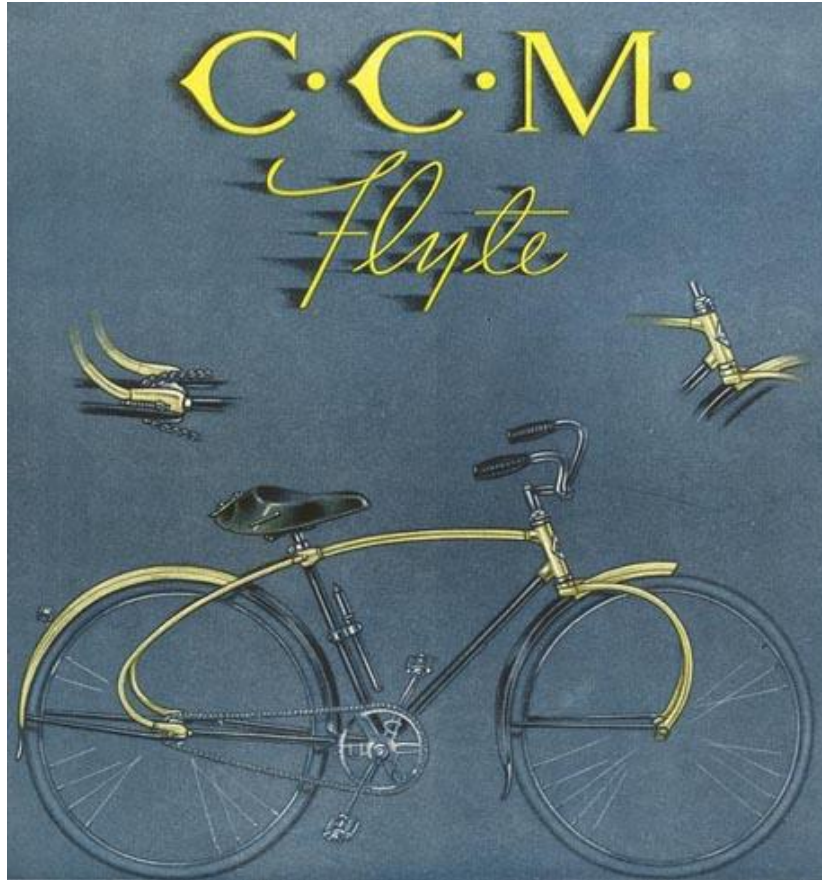


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The 1936 CCM *Flyte* – Canada's contribution to the Streamlined Decade

Christopher Morris, Vancouver, BC & **John McKenty**, Perth, Ont, Canada



The 1936 CCM Streamlined *Flyte* – sales brochure

The Streamlined Decade:

As well-described in Donald Bush's classic book of the same name¹, the Streamlined Decade was an exuberant time in the 1930's when top industrial designers, mostly in the USA, styled just about everything from locomotives to toasters as if they wanted to fly.

These designers included Henry Dreyfuss (the New York Central's amazing Hudson steam locomotive), Raymond Loewy (the Pennsylvania Railway's pioneering GG1 electric locomotive and a toaster for Sunbeam), Walter Teague (Kodak Bantam camera) and Juan Ricardo Morgan (the Sears Roebuck Waterwitch outboard motor and Sears/Elgin's streamlined bicycles).



1938 New York Central streamlined Hudson locomotive



1936 Kodak Bantam Special



1939 Sunbeam S9 toaster



1935 Elgin Robin, built by Westfield/Columbia

Which brings us nicely to the streamlined bicycles - that sprang to life in the mid-thirties, from just about every North American manufacturer. Here are some examples from Elgin, Monark and Schwinn. Note that Elgin commissioned their streamlined bicycles, styled by Juan Morgan and sold through Sears, from either Westfield/Columbia in Massachusetts or Murray-Ohio in Cleveland.



1936 Elgin SkyLark



1938 Elgin Twin Tube 20



1933 Schwinn CyclePlane

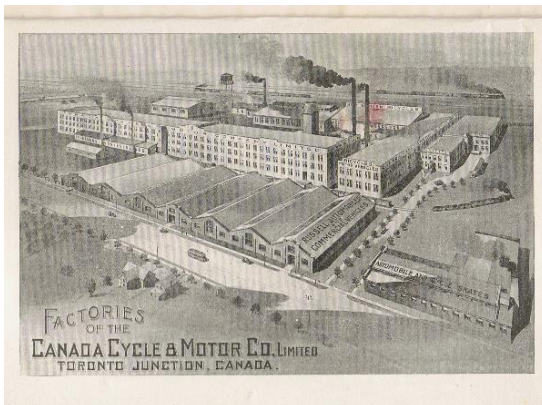


1936 Monark Silver King FloCycle - with leaf spring!

Canada Cycle & Motor:

Canada Cycle and Motor or CCM (founded in 1899 from five Canadian competitors in The Junction, Toronto during the safety bicycle consolidation era)² was a fairly conservative company by the 1930's. Their bicycles were well-engineered, solid and dependable, if somewhat uninspiring. They made skates in winter, bicycles in summer.

But in Chicago, things were stirring in bicycle innovation and styling, in a bold attempt to shake off the last vestiges of the Great Depression. Home city to Sears Roebuck, Elgin, Monark and Schwinn, also not far from the other mid-west bicycle manufacturing hub of Cleveland; Chicago was, and remains, Toronto's American rival city in many ways. There was nothing but a Great Lake or two to separate them.



1910 CCM Factory – The Junction, Toronto



1930's CCM Factory – Weston, Toronto

Things finally warmed up at CCM in 1935 when Harvey Webb Peace³, the Chief Engineer (later Factory Manager) at CCM for several decades, decided to break away from the mould. CCM were by now located in a large, vertically integrated factory in Weston, Ontario (NW Toronto), having long outgrown the pre-WWI location at The Junction nearer town.

The CCM *Flyte*:

The CCM *Flyte*, his lasting masterpiece, was a very unusual bicycle. Produced for just 5 years, from 1936-1940, before war clouds shut down most bicycle production in Canada, the *Flyte* remains a much sought-after collector machine to this day. It was also the only bicycle design that CCM ever patented⁴.

There were two evident objectives: a sleek, streamlined style (after all this was the middle of the Streamlined Decade) and a comfortable sprung ride without mechanical suspension. Roads were still pot-holed and uneven in the Dirty Thirties. The *Monark Silver King Flo-Cycle* bears a superficial resemblance to the *Flyte* with its rear elliptical frame, but the Monark was constructed of stiff thick-walled aluminum tubing and had to use a leaf spring between the bottom bracket and rear frame to provide resilience.



The leaf spring on the 1936 Monark FloCycle

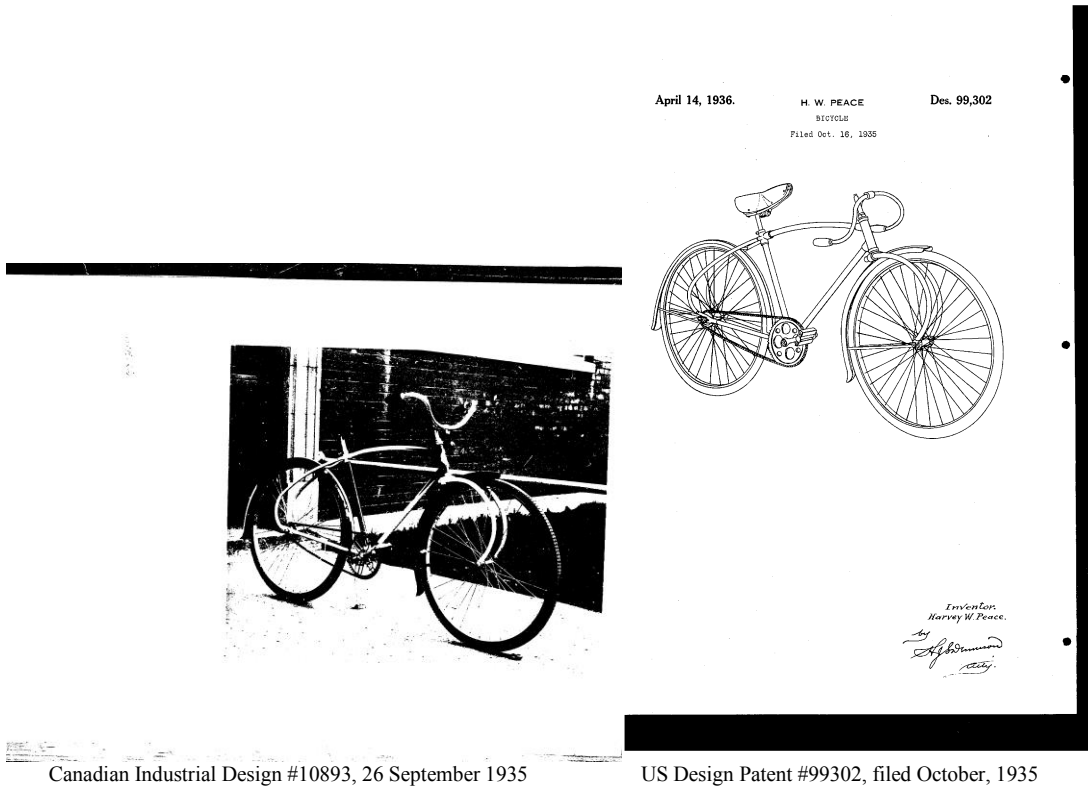


Over 2" wide balloon tire debuting on 1933 Schwinn

The *Schwinn CyclePlane* of 1933 achieved resilience by using wide and low pressure balloon tires on giant rims, the invention of which was forced on the US rubber industry by an exasperated Frank Schwinn. In the decades before, American bicycles had mostly used the unreliable one-piece tire with no inner tube.

To achieve resilience with the *Flyte*, Harvey Peace came up with an innovative solution, a combination of an unusual reversed fork geometry and a rear loop frame, all made from seamless aviation-grade thin steel tubing. Both the front fork and the frame provided a reasonable feather-bed ride over harsh surfaces, without the drag of balloon tires or the movement of springs.

Designed in the spring and summer of 1935, by early Fall prototypes had been built and tested. Here is a September 1935 photograph of a working prototype at the factory, and an isometric drawing made at the same time of the design concept, but with racing bars.



Canadian Industrial Design #10893, 26 September 1935

US Design Patent #99302, filed October, 1935

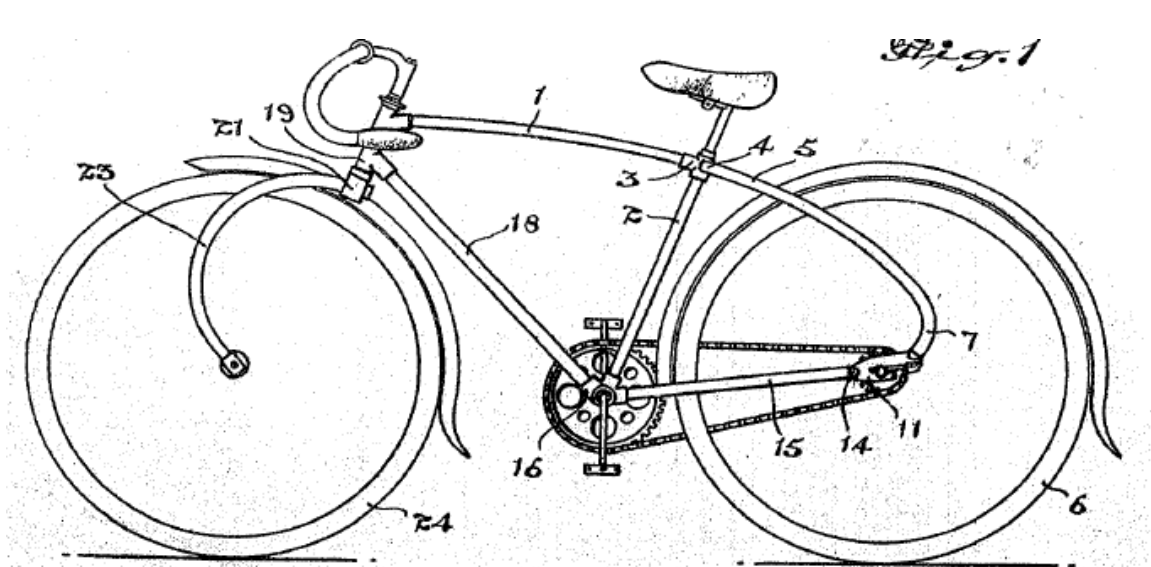
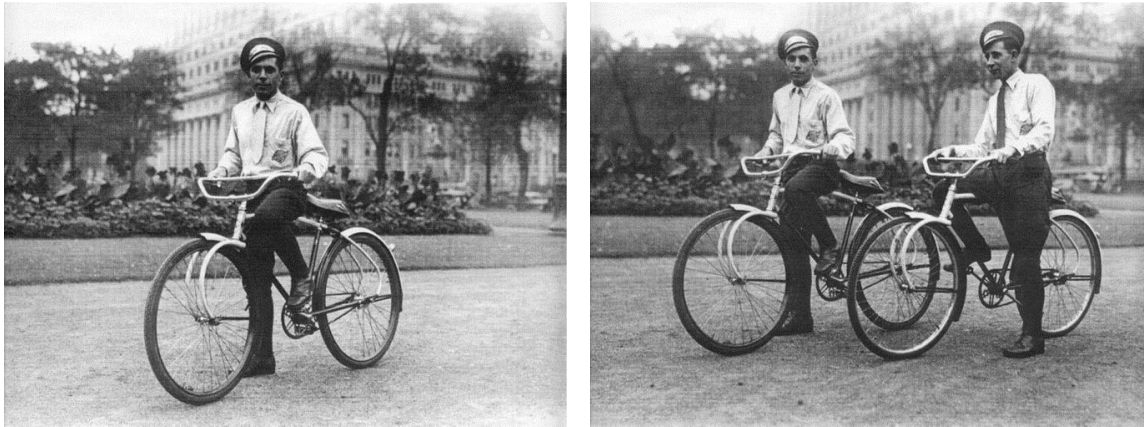


Figure 1 from the CCM *Flyte* patent CA358849, of June 1936, showing the unique frame and front fork

Impact at the time

At the time, the *CCM Flyte* was considered the height of Canadian style. In the first year it was in mass production; Canadian National Railways, famous then for such innovations as the first diesel-electric train to cross the North American Continent, in 67 hours⁵ (in 1925 long before diesel locos were in use) and the first wireless service on TransContinental passenger trains (1923), saw the appeal of the *Flyte* design and adopted it for their telegram messengers. Here is a great 1937 picture from CCM's dealer magazine of a pair of CNR messengers posing proudly with their *Flytes*, in Dominion Square, Montreal - not far from the CNR pre-war System Headquarters on McGill College Avenue.



CNR Telegram messengers in Montreal's Dominion Square, 1937, with modified CCM Flytes

The heavy-duty braced handlebars for the CNR messenger version were borrowed from CCM's *Motorbike* range, *pace* Schwinn. CCM was easily the biggest bicycle manufacturer in Canada at the time, and had an excellent reputation for quality. What made the *Flyte* special, especially at a time when American (as opposed to Canadian) bicycle styling and design was in overdrive, after decades of slumber? It was firstly an engineering job rather than just styling. There is a humorous story in *Peddling Bicycles to America*⁶ of Westfield rushing their prototype *Elgin Bluebird* streamlined bicycle to Sears HQ in 1935, for viewing by the President. Behind the drapes, Juan Morgan's stylists did some final finessing. When unveiled, the *Bluebird's* headlight ended up a sticky mass of modeling clay in the over-curious President's hands.

The Flyte close-up:

The *Flyte* was a streamliner in a leaner more engineered tradition. It included an advanced cotterless crank (developed inhouse by CCM and used on other top models) the *Triplex Hanger*. This had a triangular projection on the bottom bracket axle to grip the crank.



CCM's advanced Triplex Hanger crank

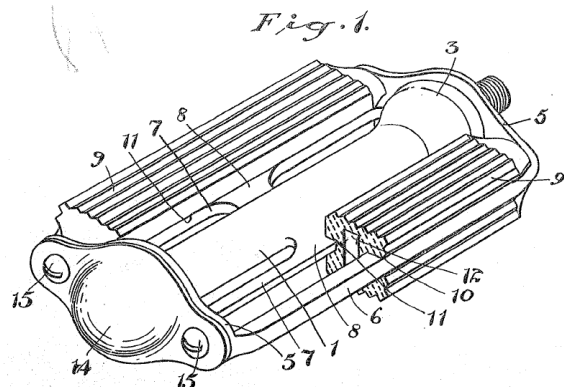


Triplex Hanger axle and cranks

The pedals, also designed and patented by Harvey Peace in the 1920's, were of an innovative aluminum monocoque design, named - after the General Manager of CCM - as *Gibson* pedals⁷. This prevented the twist experienced with built-up pedals of that era.



Monocoque aluminum armature – the Gibson pedal



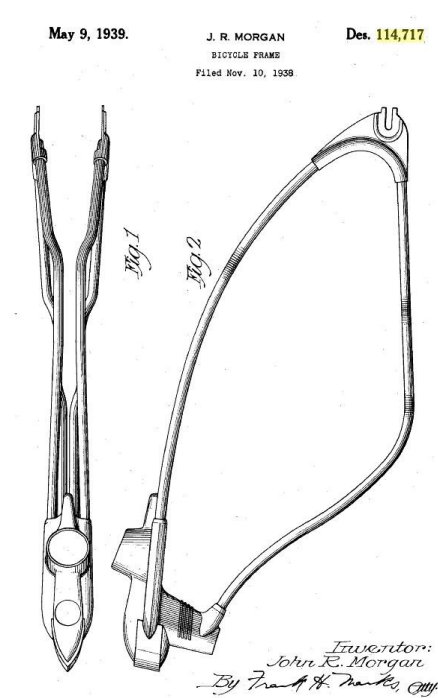
From the Gibson patent, showing interlocked rubber blocks

Balloon tires and fat rims were eschewed in favour of quality Dunlop Fort tires of modest size (28" x 1³/₈") for the time and roads. Alas, the elegant drop handlebars and graceful fluted fenders shown in the 1936 patent did not make it to production.

The most prominent difference (from all bicycles before or since) was the reversed and sharply contoured front fork, intended to give a better cushioned ride on the rough and tumble urban pavements of the streetcar-dominated 1930's. The rake angle was actually conventional, despite the startling appearance. In a radical design move, the fork came horizontally out of the headset (instead of the normal vertical) and acted as a C-shaped trailing link spring. Chrome-moly hi-tensile aircraft steel tubing was used, again ahead of current practice in the industry at the time.

Then there was the frame itself, with an elegant rear loop design that included a built-in rear axle adjuster. The rear stays followed the curve started by the crossbar, then curved around to the rear axle forming an elliptical rear spring suspension. Two years later, Elgin in Chicago were to go even further with this concept, with their innovative twin loop frame with no seat tube, allowing the whole frame to work like an elliptical spring. Juan Morgan took out a design patent for that⁸. Was he inspired by Harvey Peace's *Flyte*

design? Cushioning from road shocks was the objective in both cases, without adding mechanisms or links. Transverse rigidity was thus maintained for good handling. Increased tire life was even claimed from the sprung frame benefit, in the *Flyte* patent⁴. Present day riders of restored *Flytes* confirm the smooth ride sensation¹⁸.



The Elgin twin loop sprung frame, 1938



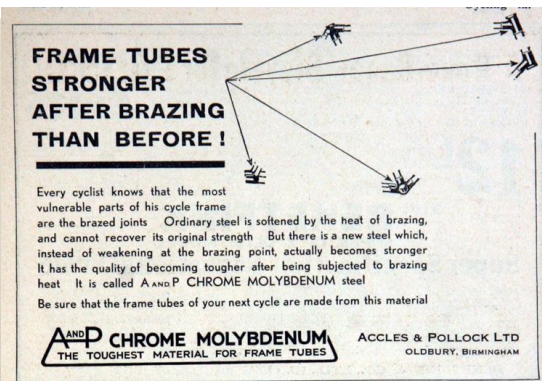
The Elgin twin loop with 2 speed Musselman hub

Tube Tales:

Two main companies made the critical seamless steel tubing for the burgeoning bicycle industry out of Great Britain, both started at the end of the 19th century and both based in Birmingham. The one still famous today is Reynolds, the one forgotten today is Accles & Pollock. A&P were the innovators in the 1930's, adapting their aircraft ChroMoly alloy tubing for lighter yet stronger bicycle frames. Unlike the Reynolds Manganese alloy, A&P's 'Kromo' increased in strength at brazed joints, rather than weakening.



1927 ad from *Flight* magazine, A&P tubing

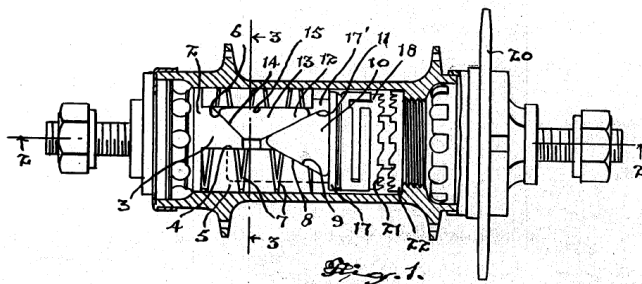


1931 ad for the new A&P ChroMoly bicycle tubing

When *Kromo* was introduced in 1931, CCM were one of the first North American manufacturers to use it, on their *Flyer* racing machine¹⁷. So it was no surprise that they again adopted this alloy for the streamlined *Flyte* in 1936, saving pounds on the frame and forks, yet giving superior strength and fatigue characteristics. It would be another 60 years before Reynolds would develop a ChroMoly alloy for bicycles¹⁶ (the same 525 alloy used on one of the authors' Moulton TSR2 bicycle), displacing their older 531 alloy Manganese tubing. Sadly, A&P have now disappeared as a tubing manufacturer.

Coaster Brakes:

Braking on the *Flyte* was by CCM's sturdy *Hercules* design of coaster brake on the rear wheel. No front brakes were fitted, a common practice in North America, particularly during the Streamlined Decade. As a vertically integrated factory, CCM were quite proud of their own design of coaster brake - at a time when most other manufacturers in North America were using the classic New Departure Model D coaster brake (70% of the market) with its internal disc pack.



Hercules cross-section from 1937 patent



CCM Hercules coaster brake hub

The *Hercules* hub had originally been invented during WWI, but had recently been improved under Harvey Peace's direction. There were several 1930's CCM patents for the *Hercules* coaster brake⁹, which claimed simplicity and dependable braking: at a time when English bicycles were using the not-so-dependable side caliper or rod rim brake on chromium plated steel rims (uncertain braking in the wet). North America had better all-weather bicycle brakes¹⁰ than Europe in the 1930's.

Extras:

From the start the *Flyte* was priced well above the conventional CCM bicycle product range. In 1937 they were even fitted with chromium-plated forks. The *Flyte* remained a single speed coaster bicycle (with a high 78" gear) throughout its 5 year production run. American bicycle manufacturers were largely pre-occupied with the new two speed domestic hubs at the time, for example on the 1938 Elgin Twin Loop with its Musselman geared hub and hand shift lever).¹²

Sturmey Archer, to whom CCM as part of the British Empire tariff zone would later turn to for 3 speed hub gears, had unfortunately dropped coaster 3 speed hubs with the 1936

introduction of the AW hub. Not until 1952 would they bring back the coaster geared version as the TriCoaster TCW.



1936 CCM Catalogue for the new *Flyte* model



Attractive drop handlebars added to *Flyte* by owner

Innovative running gear was everywhere on the *Flyte*, from 'aerodynamic' Troxel leather saddles with integral streamlined tool compartment to aluminum/bonded rubber lightweight Gibson pedals to the "Triplex Hanger" cotterless cranks. *Flyte* as in *Flight* indeed. Much of this was in-house CCM designed. Wheels were the larger 28" variety, a common choice at the time. The *Flyte* weighed just over 30 lbs, half the weight of the typical Streamliner of the time¹⁸.

CCM's racing origins:

As early as 1917, CCM had introduced the CCM *Flyer*, a racing bike for the track or road, with drop handlebars, triple hanger cranks and laminated wooden rims. The frame was light yet sturdy enough to be used on a Roadster version.

By the 1930's, CCM had a major commitment to racing with champion riders like Willie Spencer and Torchy Peden¹³, winning races on both sides of the border. They sponsored a CycleDrome on Dundas Street, Toronto, modeled on the Newark, New Jersey track with 6 laps to the mile¹⁴. Later Six Day indoor races became very popular with the public. The Afro-American 'Major' Taylor was another famous rider associated with CCM, contributing a special *Major Taylor* version of the drop handlebar stem on the *Flyer*.

C.C.M. Flyer Model

Since this Model was first introduced the aim has always been to build the world's best racing bicycle.

We mention a few C. C. M. features:—
C. C. M. Special Triplex Hanger.
C. C. M. Racing Hubs.

Double Butted Aeroplane Seamless Steel Tubing. Used exclusively in American and Canadian racing circles by such well-known champions as Willie Simpson, Art Simpson, Bill Cades. Was standard equipment of the Canadian Team at 1928 Olympic Games held at Amsterdam where it was the centre of interest of competing riders from many countries.

Supplied with extra front and rear sprockets giving variation of gears.

Frame—21", 23". Butted tubes, forged saddle bracket, malleable crank bracket.

Nameplates—Cleveland, Red Bird, Massey, Columbia, Perfect, C. C. M.

Finish—No. 28 Sapphire blue with gold stripes.

Rims—Flat Racing Type, Laminated 28" x 1 1/2".

Rear Hub—Racer or C. C. M. Improved Hercules Counter Brake.

Tires—Pirelli Track or Road.

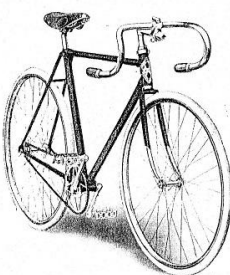
Chain—Hans Konold, Black 1" x 3/16".

Pedals—Brampton Racing, Star Racing (optional).

Handlebars—C. C. M. racing design, reversible for roadster use. 15 1/2" top. Major Taylor sliding extension stems. No. 321 sown leather grips.

Saddle—Mansfield racing style. No. 1311 option. Brooks No. 1373 at extra charge.

All Prices in this Catalogue include Sales Tax. INTEGRITY



The CCM *Flyer* track and road racer, 1917 on

C.C.M. "Flyte"

(With Regular Fork and Chromium Plated Truss)

SIZE: 22" 20" 24" 26"

PATENT AND DESIGN
REGISTERED



FINISH: Sapphire blue with ivory sandblast head; suitably striped; bright parts, C.C.M. Chromium plated; enamelled parts, C.C.M. baked-on, durable, weather-proof, lustrous enamel.

FRAME: Chromol tubing; designed for flexibility; shock absorbing.

NAME PLATE: C.C.M.

FORK: Standard; chromium plated truss.

HUBS: Front, C.C.M.; Rear, C.C.M. "22" Counter Brake, 14-speak sprocket.

GUARDS: Flared, baked-on enamel, suitably shaped.

HANGER: C.C.M. Triplex.

HANDLEBAR: No. 550; Top, No. 559, See Index; Stem, No. 561; Grip, No. 521.

PEDALS: Gibson, No. 1508.

SADDLE: No. 1315; Mensinger.

WHEELS: 28 x 1 1/2", Canadian size; Rim, chromium plated; red enamel spoke; Dunlop "Fast" Tires.

OTHER EQUIPMENT: Bellows, No. 1141; Pump, No. 1131; Tool Bag, No. 559; Wrench, No. 1125.

OPTION:



Dunlop Olympic Saddle, No. 1025

Post 1938 *Flyte* with conventional Truss fork

The *Flyte* designer, Harvey Peace, was also a champion cycle racer in his youth, his son Douglas was on the Canadian Track Cycling Team at the 1936 Olympic Games in Berlin.

This racing background did two things. It enabled CCM to leverage the racing success in their ads for regular bicycles. In addition, it informed the choice of Streamliner when the *Flyte* was designed, without the excess weight found in much of the 'Streamlined' competition. The Triplex Hanger saved weight in the crank, at a time when virtually every other manufacturer was using the Ashtabula one-piece design – sturdy but heavy. The *Flyte's* narrow (by 1930's standards) 28" x 1 3/8" tires on Endrick rims also helped. Ironically, postwar, CCM dropped the Triplex Hanger and patented¹⁵ their own version of the ubiquitous Ashtabula crank for their regular production bicycles.

Epilogue:

In retrospect, it seems CCM did not know quite what to do with their new prodigy. Little marketing was done after Harvey Pearce's untimely death (he only lived to see the first year of *Flyte* production); and the pricing and perhaps those radical front forks may have put some buyers off. The country was still recovering from the Great Depression which had hit the Prairies hard with droughts for a decade, along with a collapsed stock market.

There appear to have been failures of the streamlined fork design after a few years of use. Clayton Foxall of *BackPeddling*¹⁸ recalls entering a shuttered old CCM shop from the 70's and seeing as many as half a dozen broken or bent *Flyte* forks hanging in the rafters. The failures often occurred at the location of maximum bending stress, where the curved fork horizontally attached to the top lug casting. Harvey Peace would no doubt have been able to redesign the fork for greater fatigue strength here, but he was long gone.

Instead, in 1938, CCM introduced a modified version, with a conventional truss fork of the time, later called the *Flyte Eight*. They continued to sell the streamlined fork original version as well, with only a 5% price difference between the two premium models. Clearly this was not an attempt to lower the price to significantly increase sales.

It is in the ensuing decades since Harvey Peace's premature death on 12 December, 1936 in High Park, Toronto, that the brilliance of the *Flyte* design has come to be appreciated - by both bicyclists and collectors alike, surviving the hubris of the Streamlined Decade.



Requiescat in Pace.

Harvey Webb Peace, 1880-1936

References:

It is recommended to use the European patent search engine to download the patents easily: http://worldwide.espacenet.com/advancedSearch?locale=en_EP

1. *The Streamlined Decade*, Donald Bush, 1975, George Braziller Inc., New York
2. *The CCM Story*, John McKenty, 2011, Essence Publishing, p.45
3. *The CCM Story*, John McKenty, 2011, Essence Publishing, pp.232-233
4. CA358849 patent, 30 June 1936, *Bicycle*, Harvey Webb Peace, CCM
5. *Across the Continent in 67 hours*, CNR Magazine, Dec.1925, p7
<http://www.trainweb.org/oldtimetrains/Various/CNR15820.htm>
6. *Peddling Bicycles to America*, Bruce Epperson, 2010, McFarland & Company, p.222
7. CA232593 patent, 10 July 1923, *Bicycle pedal*, Harvey Webb Peace, CCM
8. USD114717 design patent, 9 May, 1939, *Bicycle frame*, J.R.Morgan, Sears Roebuck
9. CA367918 patent, 10 Aug.1937, *Bicycle coaster brake*, John.Hampton, CCM
10. *Where the Rubber meets the Road*, Nov.2013, 2nd ICSC, Holland, Christopher Morris
http://www.icsc2013.com/papers/cmorris2013_when%20rubber%20meets%20the%20road.pdf
11. *The Sturmey Archer Story*, 1987, Tony Hadland, Pinkerton Press (UK), pp.76,100,127
12. *A New Departure or Two*, May 2013, XXIV ICHC, Lisbon, Christopher Morris
http://ichc2013.cies.iscte-iul.pt/images/ICHC2013_BookAbstracts2.pdf P27
13. <https://www.historicacanada.ca/content/heritage-minutes/torchy-peden>
14. *The CCM Story*, John McKenty, 2011, Essence Publishing, p.157
15. US2670219 patent, 23 Feb.1954, *Crankcase of bicycle frame*, L.Shakesby, CCM
16. http://www.gracesguide.co.uk/Accles_and_Pollock
17. <http://www.bikeforums.net/classic-vintage/879376-when-chrome-moly-first-used-frames.html>
18. www.backpeddling.com , Clayton Foxall, Guelph, Ontario