

dandy horse

1
1817

“

”

1656-

1655 1685

2 3

19



1

1869
1820-1872)

William John Macquorn Rankine

1899 [1]

G. G. R. Routh (1899)

Francis Whipple

E. Carvallo 1899-1901

300

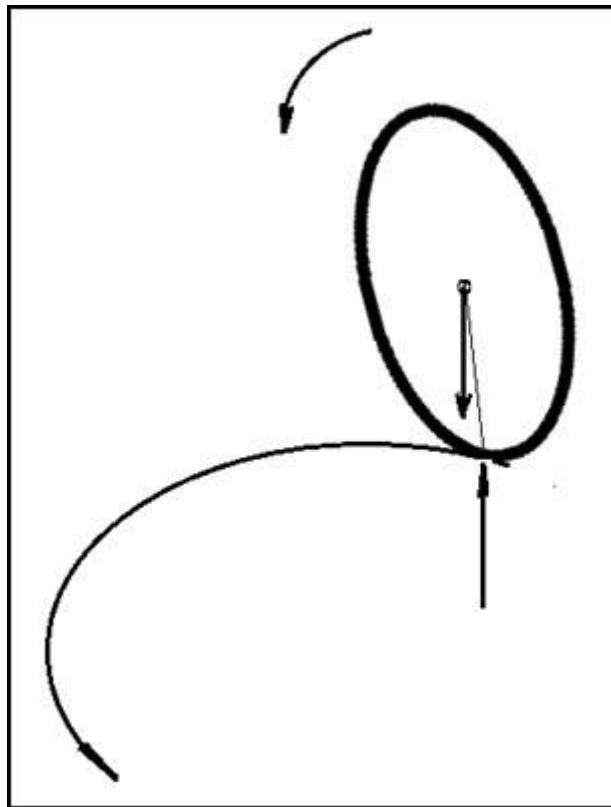
Timoshenko and Young [2]

J. P. Den Hartog

1948

1969 1970

4



4

5

OH

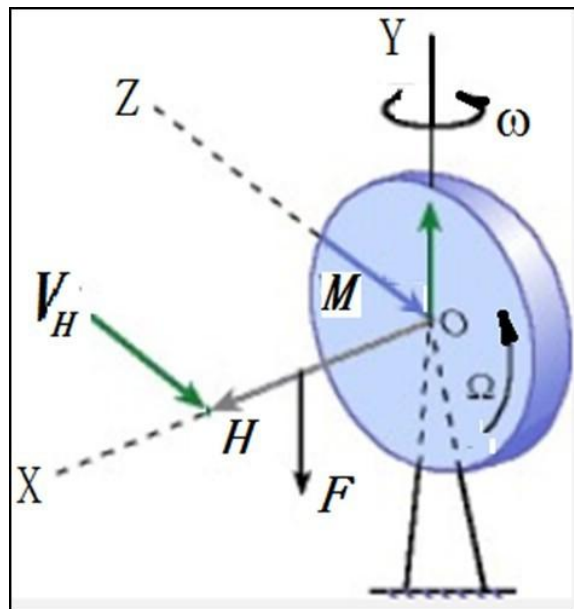
F

M

Y

H

M



5

1948

1970

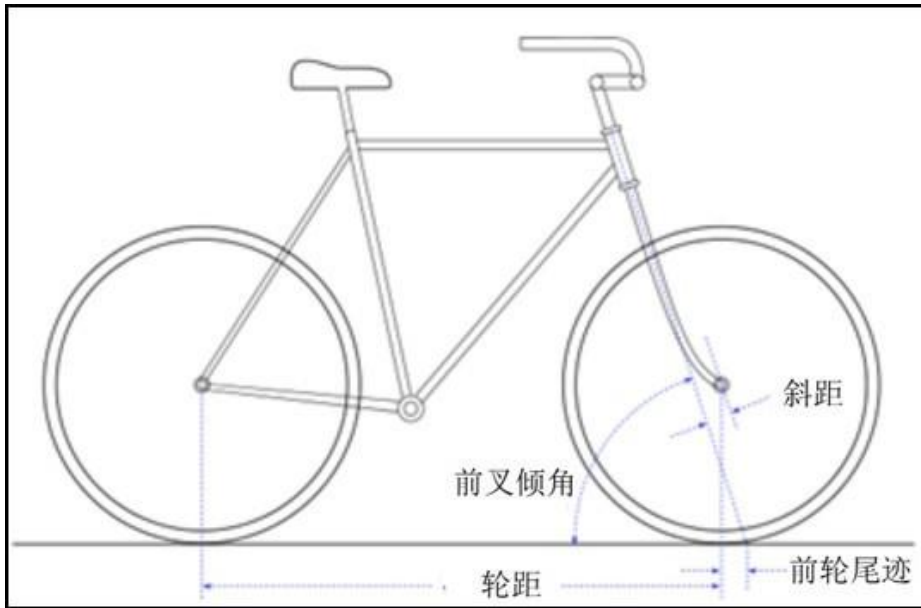
David E.H. Jones

[3]

6

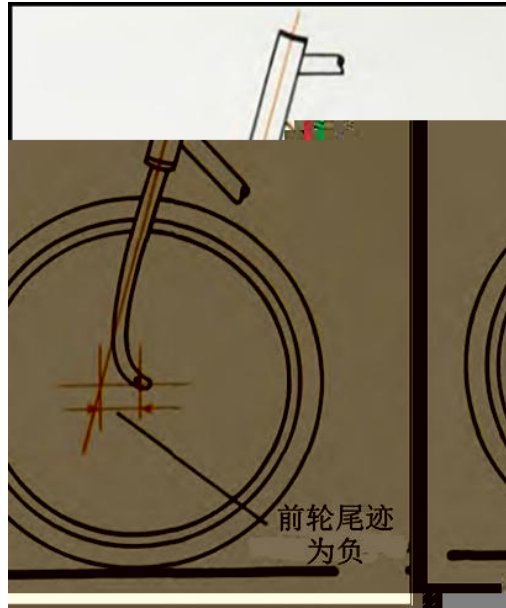


6



7

steering geometry



8

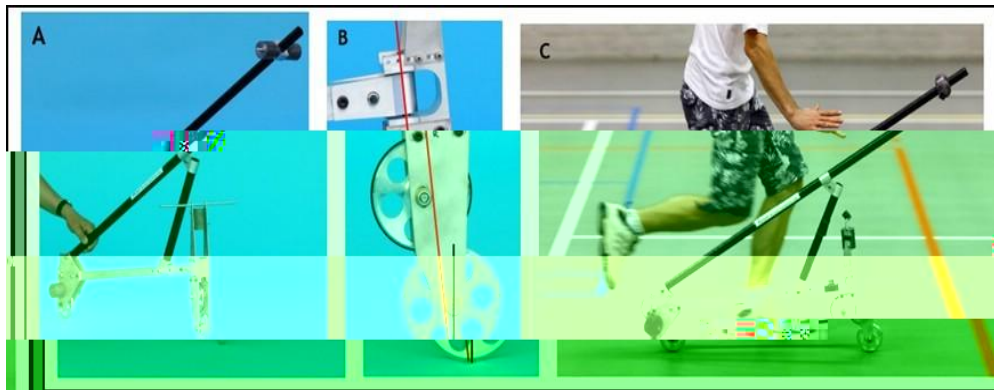
2011

[4]

9A

9B

9C



9



10

[3] Jones, David E. H. "The stability of the bicycle" . *Physics Today***23** (4): 34–40.(1970).

[4] D. G. Kooijman, J. P. Meijaard, J. M. Papadopoulos, A. Ruina, and A. L. Schwab , A bicycle can be self-stable without gyroscopic or caster effects. *Science***332** (6027): 339–342. (April 15,2011).

http://en.wikipedia.org/wiki/Bicycle_and_motorcycle_dynamics