faces of negative curvature,* although even of this, were any one to dispute it, there is probably no extant evidence which would be available in a court of law.

MORRISTOWN, *February* 18, 1893.

NOTES.

A REGULAR meeting of the NEW YORK MATHEMATICAL SOCIETY was held Saturday afternoon, February 4, at half-past three o'clock, the president, Dr. McClintock, in the chair. The following persons, having been duly nominated and being recommended by the council, were elected to membership: Professor Heinrich Maschke, University of Chicago; Lieutenant C. De Witt Willcox, U. S. A., U. S. Military Academy, West Point; Mr. J. N. James, U. S. Naval Observatory, Washington; Mr. Abraham Cohen, Johns Hopkins University. The council announced the adoption of the following resolution: "That any member of the society in good standing who is connected with an educational institution may order one extra copy of the BULLETIN for the use of such institution at the price of $2.50 a year."

Professor Thomas Craig read a paper entitled "Some of the developments in the theory of ordinary differential equations between 1878 and 1893." This paper appears in the present number of the BULLETIN, p. 119.

Dr. McClintock mentioned his having recently devised the following continued products, wherein $y = x - x^2$:

$$\frac{\sin(x\pi)}{\pi} = y(1+y)\left(1+\frac{y^2}{2^2[1+y]}\right)\left(1+\frac{y^2}{3^2[2+y]}\right)\cdot\cdot\left(1+\frac{y^2}{r^2[r-1+y]}\right)\cdots$$

$$= y\frac{2+y}{2-y}\left(1-\frac{y^2}{2^2[3-y]}\right)\left(1-\frac{y^2}{3^2[4-y]}\right)\cdots\left(1-\frac{y^2}{r^2[r+1-y]}\right)\cdots$$

$$= x\frac{1-x^2}{1+x^2}\left(1+\frac{x^2-x^4}{1.2[2+x^2]}\right)\left(1+\frac{x^2-x^4}{2\ 3[3+x^2]}\right)\cdots\left(1+\frac{x^2-x^4}{r[r-1][r+x^2]}\right)\cdots$$

If $x = \frac{1}{2}$, these become

$$\frac{1}{\pi} = \frac{5}{16}\left(1+\frac{1}{4^2.5}\right)\left(1+\frac{1}{6^2.9}\right)\cdots = \frac{5}{16}\left(1+\frac{1}{80}\right)\left(1+\frac{1}{324}\right)\cdots$$

$$= \frac{1}{4}\cdot\frac{1^2.5}{2^2.1}\cdot\frac{3^2.9}{4^2.5}\cdot\frac{5^2.13}{6^2.9}\cdots = \frac{9}{28}\left(1-\frac{1}{4^2.11}\right)\left(1-\frac{1}{6^2.15}\right)\cdots$$

$$= \frac{9}{28}\left(1-\frac{1}{176}\right)\left(1-\frac{1}{540}\right)\cdots = \frac{1^2}{3}\cdot\frac{3^2.3}{2^2.7}\cdot\frac{5^2.7}{4^2.11}\cdots$$

$$= \frac{3}{10}\left(1+\frac{1}{24}\right)\left(1+\frac{1}{104}\right)\left(1+\frac{1}{272}\right)\left(1+\frac{1}{560}\right)\left(1+\frac{1}{1000}\right)\cdots$$

* Riemann hat freilich schon 1854 die Beziehung sehr wohl gekannt." —Klein, Vorlesung, i. 191.