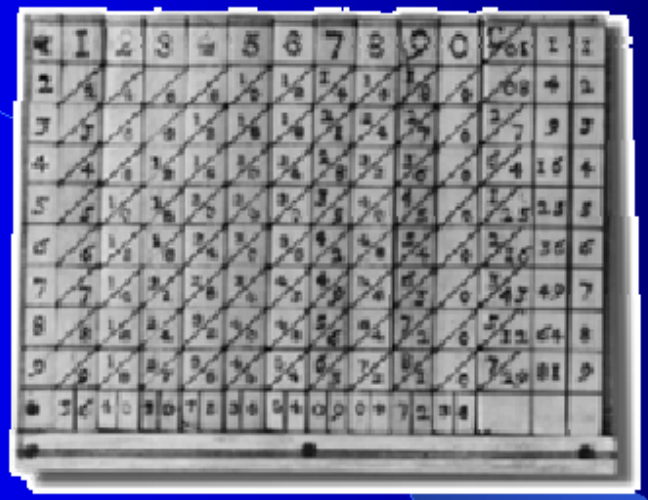
Title: Oct 26 - 10:14 AM (1 of 21)

Napier's Bones



By

Bret J. Gensburg

2004 OCTM Conference

John Napier

The Lattice

X	0	1	2	3	4	5	6	7	8	9
1	0/0	0/1	0/2	0/3	0/4	0/5	0/6	0/7	0/8	0/9
2	0/0	0/2	0/4	0/6	0/8	1/0	1/2	1/4	1/6	1/8
3	0/0	0/3	0/6	0/9	1/2	1/5	1/8	2/1	2/4	2/7
4	0/0	0/4	0/8	1/2	1/6	2/0	2/4	2/8	3/2	3/6
5	0/0	0/5	1/0	1/5	2/0	2/5	3/0	3/5	4/0	4/5
6	0/0	0/6	1/2	1/8	2/4	3/0	3/6	4/2	4/8	5/4
7	0/0	0/7	1/4	2/1	2/8	3/5	4/2	4/9	5/6	6/3
8	0/0	0/8	1/6	2/4	3/2	4/0	4/8	5/6	6/4	7/2
9	0/0	0/9	1/8	2/7	3/6	4/5	5/4	6/3	7/2	8/1

How Does It Work???

X	7	4	3
1	0/7	0/4	0/3
2	1/4	0/8	0/6
3	2/1	1/2	0/9
4	2/8	1/6	1/2
5	3/5	2/0	1/5
6	4/2	2/4	1/8
7	4/9	2/8	2/1
8	5/6	3/2	2/4
9	6/3	3/6	2/7

743 x 1 = 743

743 x 2 = 1486

743 x 3 = 2229

743 x 4 = 2972

743 x 5 = 3715

743 x 6 = 4458

743 x 7 = 5201

743 x 8 = 5944

743 x 9 = 6687

Double Digits…

X	7	4	3
1	0 / 7	0 / 4	0 / 3
2	1 / 4	0 / 8	0 / 6
3	2 / 1	1 / 2	0 / 9
4	2 / 8	1 / 6	1 / 2
5	3 / 5	2 / 0	1 / 5
6	4 / 2	2 / 4	1 / 8
7	4 / 9	2 / 8	2 / 1
8	5 / 6	3 / 2	2 / 4
9	6 / 3	3 / 6	2 / 7

743 x 56

$$\begin{array}{r} 4458 \\ +\ 3715 \\ \hline 41,608 \end{array}$$

Double Digits…

X	7	4	3
1	0/7	0/4	0/3
2	1/4	0/8	0/6
3	2/1	1/2	0/9
4	2/8	1/6	1/2
5	3/5	2/0	1/5
6	4/2	2/4	1/8
7	4/9	2/8	2/1
8	5/6	3/2	2/4
9	6/3	3/6	2/7

743 x 56

4 4 5 8

\+ 3 7 1 5

4 1, 6 0 8

Double Digits…

X	7	4	3
1	0/7	0/4	0/3
2	1/4	0/8	0/6
3	2/1	1/2	0/9
4	2/8	1/6	1/2
5	3/5	2/0	1/5
6	4/2	2/4	1/8
7	4/9	2/8	2/1
8	5/6	3/2	2/4
9	6/3	3/6	2/7

743 x 56

4 4 5 8

\+ 3 7 1 5

4 1, 6 0 8

Double Digits…

X	7	4	3
1	0 / 7	0 / 4	0 / 3
2	1 / 4	0 / 8	0 / 6
3	2 / 1	1 / 2	0 / 9
4	2 / 8	1 / 6	1 / 2
5	3 / 5	2 / 0	1 / 5
6	4 / 2	2 / 4	1 / 8
7	4 / 9	2 / 8	2 / 1
8	5 / 6	3 / 2	2 / 4
9	6 / 3	3 / 6	2 / 7

743 x 56

```
  4 4 5 8
+ 3 7 1 5
---------
41, 6 0 8
```

Double Digits…

X	7	4	3
1	0 / 7	0 / 4	0 / 3
2	1 / 4	0 / 8	0 / 6
3	2 / 1	1 / 2	0 / 9
4	2 / 8	1 / 6	1 / 2
5	3 / 5	2 / 0	1 / 5
6	4 / 2	2 / 4	1 / 8
7	4 / 9	2 / 8	2 / 1
8	5 / 6	3 / 2	2 / 4
9	6 / 3	3 / 6	2 / 7

743 x 56

$$\begin{array}{r} 4458 \\ +\ 3715 \\ \hline 41,608 \end{array}$$

Double Digits…

743 x 56

X	7	4	3
5	3 / 5	2 / 0	1 / 5
6	4 / 2	2 / 4	1 / 8

4 4 5 8

\+ 3 7 1 5

4 1, 6 0 8

Division…

934,893 ÷ 743

X	7	4	3
1	07	04	03
2	14	08	06
3	21	12	09
4	28	16	12
5	35	20	15
6	42	24	18
7	49	28	21
8	56	32	24
9	63	36	27

6 1 4 3
4 3 2 9
1 9 1 8

9 3 4 8 9 3 — 1 2 5 8

7 4 3
1 4 8 6
3 7 1 5
5 9 4 4

199
743

Division…

934,893 ÷ 743

X	7	4	3
1	07	04	03
2	14	08	06
3	21	12	09
4	28	16	12
5	35	20	15
6	42	24	18
7	49	28	21
8	56	32	24
9	63	36	27

6 1 4 3

4 3 2 9

1 9 1 8

9 3 4 8 9 3

7 4 3

1 4 8 6

3 7 1 5

5 9 4 4

1 2 5 8

199

743

Division…

934,893 ÷ 743

X	7	4	3
1	07	04	03
2	14	08	06
3	21	12	09
4	28	16	12
5	35	20	15
6	42	24	18
7	49	28	21
8	56	32	24
9	63	36	27

6 1 4 3

4 3 2 9

1 9 1 8

9 3 4 8 9 3

7 4 3

1 4 8 6

3 7 1 5

5 9 4 4

1 2 5 8

199

743

Division…

934,893 ÷ 743

X	7	4	3
1	07	04	03
2	14	08	06
3	21	12	09
4	28	16	12
5	35	20	15
6	42	24	18
7	49	28	21
8	56	32	24
9	63	36	27

6 1 4 3

4 3 2 9

1 9 1 8

9 3 4 8 9 3

7 4 3

1 4 8 6

3 7 1 5

5 9 4 4

1 2 5 8

199

743

Division…

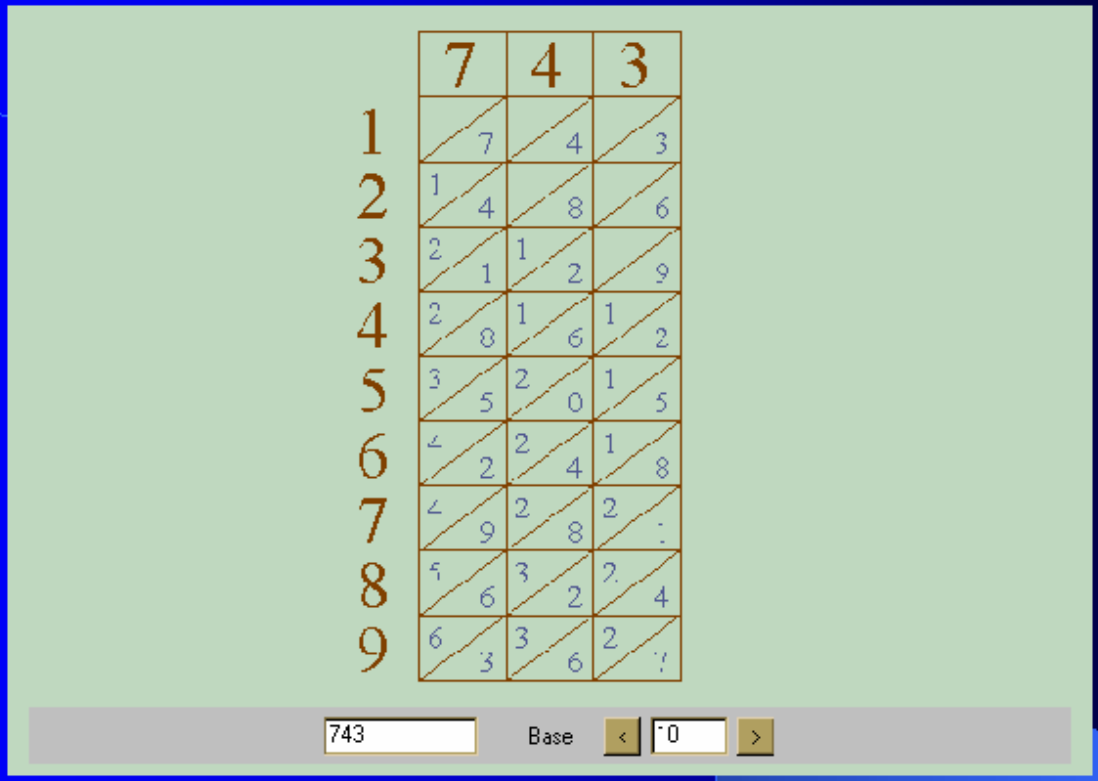
X	7	4	3
1	07	04	03
2	14	08	06
3	21	12	09
4	28	16	12
5	35	20	15
6	42	24	18
7	49	28	21
8	56	32	24
9	63	36	27

934,893 ÷ 743

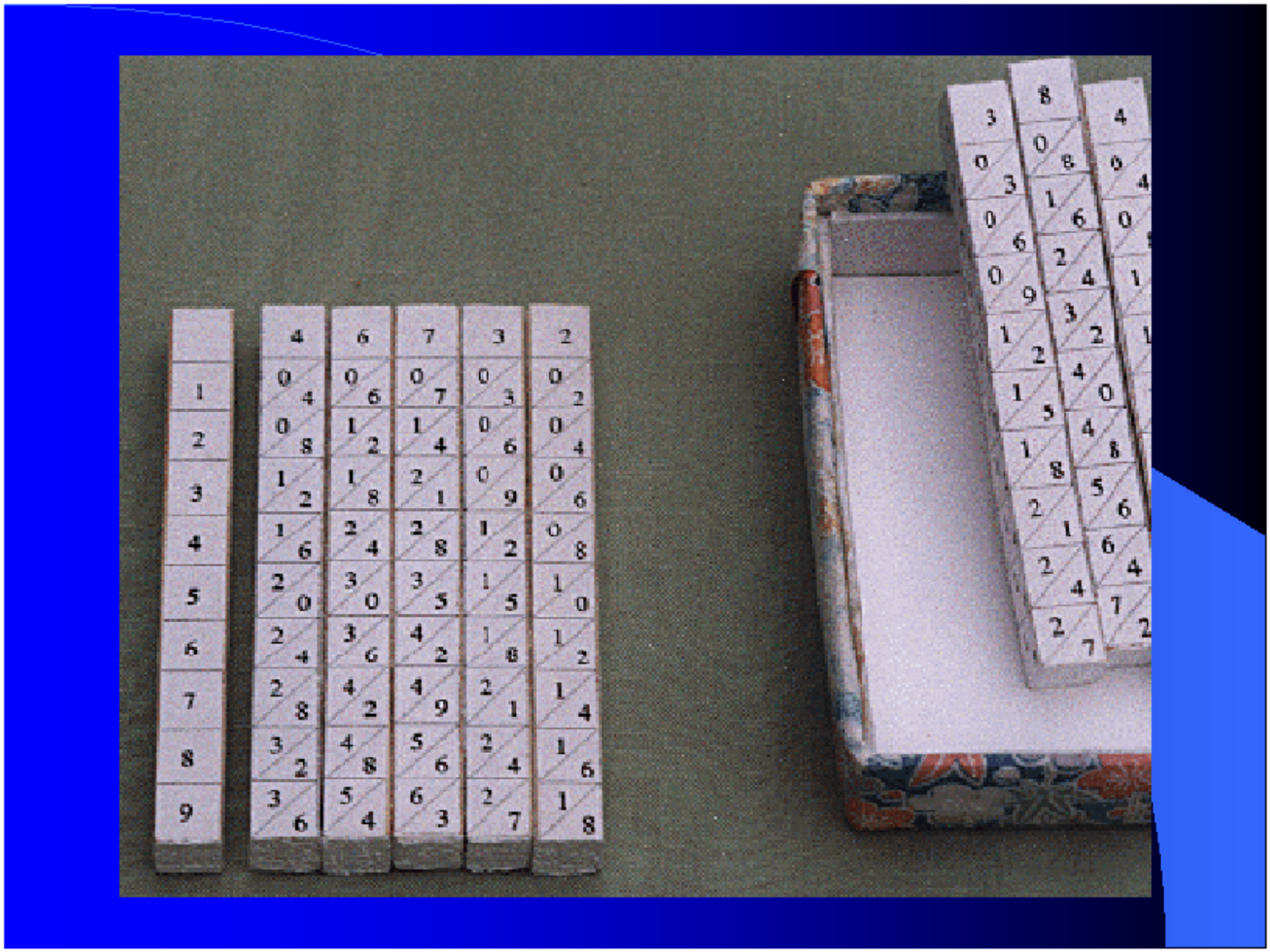
```
      6 1 4 3
    4 3 2 9
1 9 1 8

9 3 4 8 9 3
7 4 3
1 4 8 6
  3 7 1 5
    5 9 4 4
```

```
          199
1 2 5 8   ---
          743
```

Napier's Online Simulator



http://www.cut-the-knot.com/blue/Napier.html



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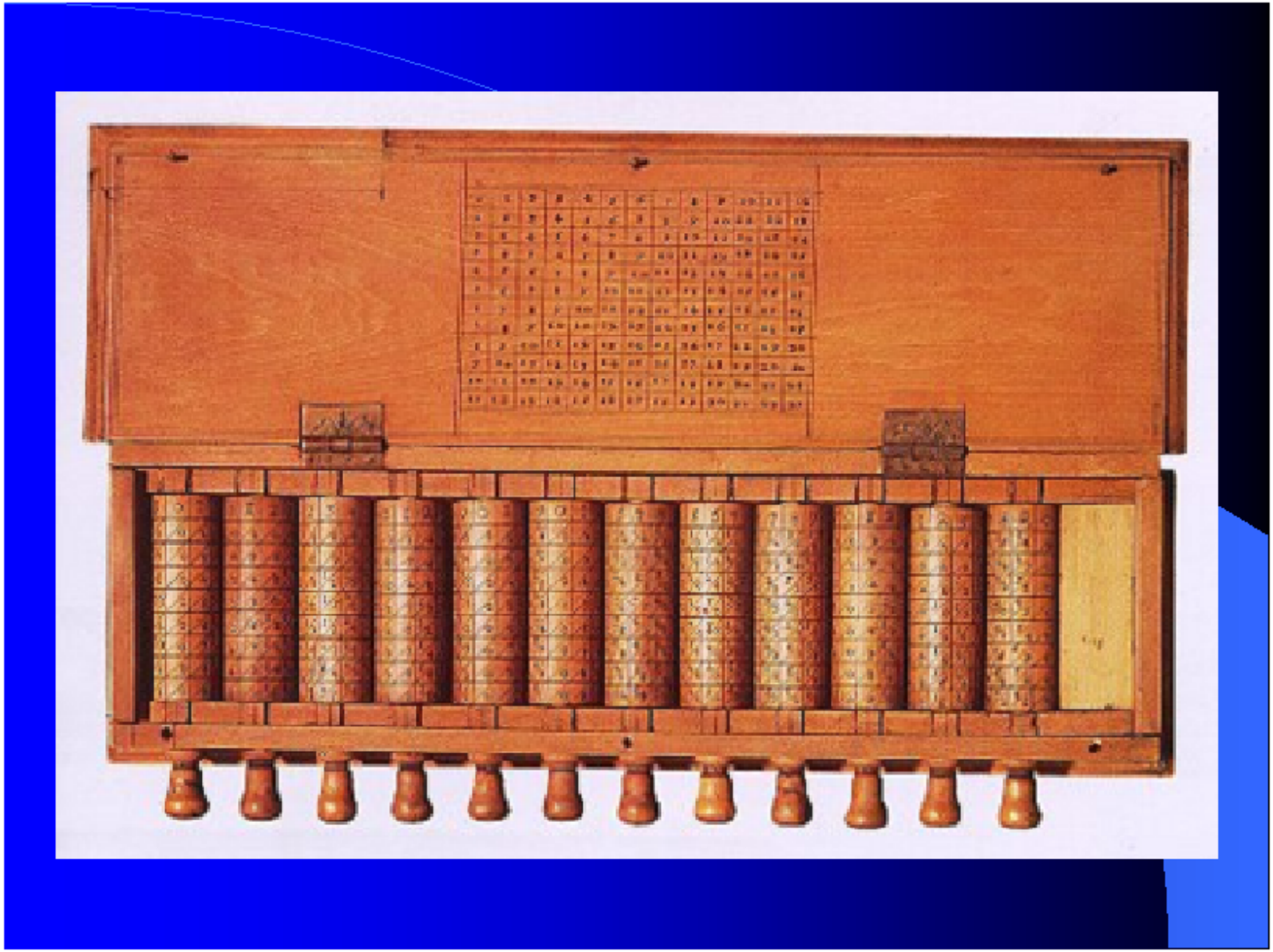

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Questions, Comments,
Short Debates

Title: Oct 26 - 10:15 AM (21 of 21)