Graphics

A Tough Table Becomes Easy with PiCTeX

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A comment was made in *TUGboat* [2, p. 437] to the effect that TeX does not allow one to typeset a table or anything else by specifying page positions. This made me think of my own experience typesetting the table below. This table with its "gnomons" (L-shaped corridors) had defeated my best efforts to typeset it in plain TeX. Fortunately, I remembered that I was already familiar with a way to place text and draw lines by coordinates: PiCTeX.

Infinite Rectangular Array

1	3	5	7	9	11	13	15	17	19
1	4	7	10	13	16	19	22	25	28
1	5	9	13	17	21	25	29	33	37
1	6	11	16	21	26	31	36	41	46
1	7	13	19	25	31	37	43	49	55
1	8	15	22	29	36	43	50	57	64
1	9	17	25	33	41	49	57	65	73
1	10	19	28	37	46	55	64	73	82
1	11	21	31	41	51	61	71	81	91
1	12	23	34	45	56	67	78	89	100

The PiCTeX commands for this table are as follows:

```
$$\beginpicture
\setcoordinatesystem units <20pt,20pt>
\setplotarea x from  1 to 10,
             y from  1 to -10
\put {  1} [r] at  1  -1
\put {  3} [r] at  2  -1
\put {  5} [r] at  3  -1
...
\putrule from   0.3  -1.5 to   1.3  -1.5
\putrule from   1.3  -1.5 to   1.3  -0.5
...
\endpicture$$
```

This table appears in a famous Russian puzzle book [1]. Among its properties is the fact that the sum of the numbers in each gnomon is a perfect cube.

This small example reminds us once more that proper macros can accomplish the seeming impossible. It further shows us how to do coordinate-based layouts in TeX.

References

[1] Kordemsky, Boris A. *The Moscow Puzzles.* New York, Scribner's, 1972.

[2] Taylor, Philip. "The Future of TeX", *TUGboat* 13, no. 4, (December 1992), pp. 433–442.

[3] Wichura, Michael. *The PiCTeX Manual.* (TeX-niques Series, No. 6.) Providence, R.I., TeX Users Group, 1987.

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