Notes By the Translator Upon the Memoir: Sketch of the Analytical Engine Invented by Charles Babbage

Ada Augusta, Countess of Lovelace

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1 Note A

These cards contain within themselves (in a manner explained in the Memoir itself [1]) the law of development of the particular function that may be under consideration, and they compel the mechanism to act accordingly in a certain corresponding order.

The particular function whose integral the Difference Engine was constructed to tabulate, is $\Delta^7 u_x = 0$.

2 Note B

In fact the engine may be described as being the material expression of any indefinite function of any degree of generality and complexity, such as for instance,

$$F(x, y, z, \log x, \sin y, x^p) \tag{1}$$

3 Note C

The following is a more complicated example of the manner in which the engine would compute a trig function containing variables. To multiply

$$A + A_1 \cos\theta + A_2 \cos 2\theta + A_3 \cos 3\theta + ... \tag{2}$$

by

$$B + B_1 \cos \theta. \tag{3}$$

4 Note D

We have represented the solution of these two equations below, with every detail, in a diagram similar to those used in Note 2; ...

5 Note E

6 Note F

7 Note G

References

[1] L. F. Menabrea. Sketch of the analytical engine invented by charles babbage. *Taylor's Scientific Memoirs*, 3:666–731, October 1842.