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The Nephite Monetary System

Author(s): Richard Pearson Smith
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Abstract: This article provides a scholarly analysis of the monetary system of the Nephites used around 82 b.c. and described in Alma 11. The Nephite system was a slight modification of a binary system, where each unit would have twice the value of the next smaller one. The author also shows parallels with similar systems in Egypt and Macedonia.

The Nephite Monetary System

by Richard Pearson Smith

DEPARTMENT OF CHEMISTRY, UNIVERSITY OF UTAH

Table 1
Comparison of Some Systems

Amount of Purchase	Number of Coins Required "1-2-4-8" system	"1-2-4-7" system	"1-2-5-10" system
1	1	1	1
2	1	1	1
3	2	2	2
4	1	1	2
5	2	2	1
6	2	2	2
7	3	1	2
8	1	2	3
9	2	2	3
10	2	3	1
11	3	2	2
12	2	3	2
13	3	3	3
14	3	2	3
15	4	3	2

AN INTERESTING indication that the Book of Mormon was not written with mere human knowledge during the nineteenth century is to be found in an examination of the monetary system devised by the Nephites. This study is particularly interesting in that no acquaintance with scholarly works is necessary, nor do obscure references need to be quoted. Our considerations rest upon information to be found in the Book of Mormon, with only supplementary material which is well-known and undisputed.

The monetary system used by the Nephites in about 82 B. C. is described in Alma 11. Alma mentions that the system in use at that time was the result of a long series of changes, "according to the minds and the circumstances of the people," and then outlines the system, summarized here in Figure 1. The numbers on the coins represent their values in terms of the *senine* of gold or its equivalent, the *senum* of silver, which, we are told in verse 3, was the daily pay for a judge. It is interesting to compare and contrast this system with the current United States system. (Figure 2.)

The Nephite system was a peculiarly efficient one. The selection of 1, 2, 4, and 7 for the values of the larger coins seems particularly wise and is what intelligent people who were willing to have " . . . altered their reckoning and their measure . . . in every generation . . . " (Alma 11:4) might be expected to have worked out. This point is illustrated in Table 1, where the Nephite system is compared with two other possible systems. If the major coins had denominations 1, 2, 4, and 8, then three coins (1, 2, and 4) would be required for a purchase costing 7 of the basic units, while only one (the 7) would be required in the "1-2-4-7" system; hence the "1-2-4-7" system is more efficient here by two coins, as the long arrow in the table indicates. Shorter arrows indicate differences of one coin in efficiencies. Here the "1-2-4-7" system is further compared with the "1-2-5-10" system, and any other system could be compared in a similar manner. In every case it turns out that the "1-2-4-7" system has an edge over the other systems from the standpoint of number of coins required for a purchase. Comparing the "1-2-4-8" and "1-2-4-7" systems, for example, we see that for some purchases the one system would be better, for others the other, but that over all, when we consider that smaller purchases will occur more frequently than larger ones, the "1-2-4-7" system has great over-all efficiency.

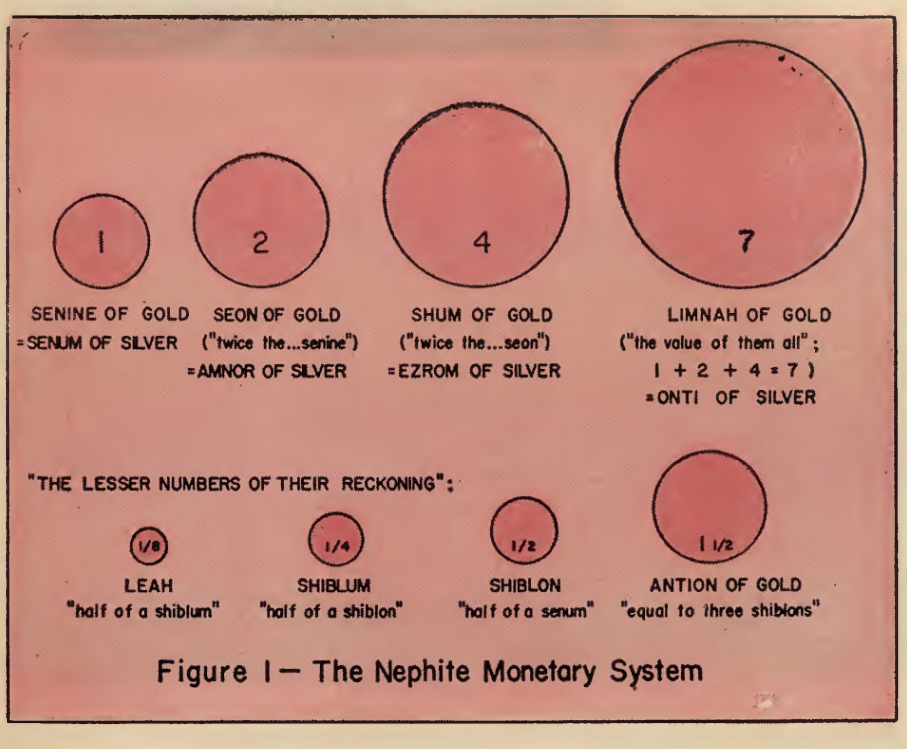

Figure 1— The Nephite Monetary System

The more systematic 1, 2, 4, 8 series is almost as good as the 1, 2, 4, 7 series. A further reason for using 7 rather than 8, however, may have been that less gold or silver would be tied up in the smaller 7 coin, and this coin represented a fairly large sum of money—several days' pay for a judge.

The three subdivisions of the unit—½, ¼, and ⅛—make it possible to build up any number of eighths of the unit with not more than three coins, and these subdivisions make a natural extension of the 1-2-4-7

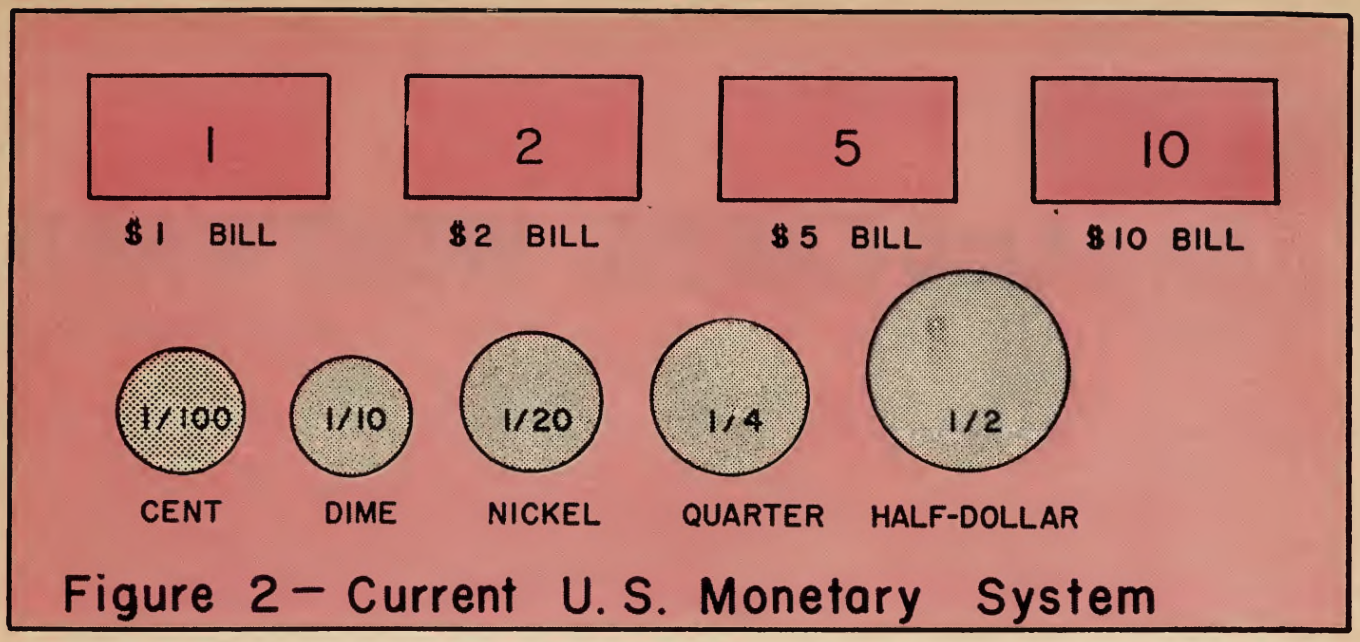

Figure 2 — Current U. S. Monetary System

system. The 1½ coin, also, is useful for purchases between 1 and 2, which would be common; corresponding coins are found in many monetary systems.

The "1-2-4-7" system appears on a common type of punched card. (Figure 3.) This is an index card, for card files, holes being punched around the edge for classification. The cards are classified by punching out appropriate holes and are sorted on the basis of what holes are punched out. The holes are marked off in groups of four, and within each group are numbered 1, 2, 4, 7. "By punching various combinations of the four holes marked, respectively, 7, 4, 2, and 1, one may code any number from zero (no punching) up to and including fourteen (all holes punched) . . . . This code is a modification of the 1, 2, 4, 8, 16 . . . series; 7 is used instead of 8, so that with four positions any digit may be indicated by punching out not more than two holes."[1] Thus the numbers 1, 2, 4, and 7 are used here for the same basic reason of efficiency that would be expected to apply to a well-designed monetary system.

The Nephite system, being a slight modification of a binary system, where each coin would have twice the value of the next smaller one, is further interesting on historical grounds. Egyptian mathematics, which may have carried over into the Nephite culture in view of the background of Lehi and his people, was based largely on the binary system.[2] This system makes its appearance to some extent in many ancient systems —for example, Alexander the Great established, in Macedon, a series of gold coins having values of 2, 1½, ¼ and ⅛ starters.[3] Other systems, mostly later, are based on the decimal system—1, 10, 100, etc. Remnants of both decimal and binary systems are found in our system (Figure 2), as well as in many others, ancient and modern, though the "1-2-4-7" modification does not seem to have been recorded elsewhere in history.

In conclusion, the Nephite system described in the book of Alma is an ingenious system which an intelligent group of people, with a willingness to change their system as improvements suggested themselves, could be expected to develop.

[1]R. S. Casey and J. W. Perry, *Punched Cards* (New York: Reinhold, 1951), pp. 17-18.

[2]O. Neugebauer, *The Exact Sciences in Antiquity* (Princeton, N. J.: Princeton University Press, 1952), pp. 72 ff.

[3]A. R. Burns, *Money and Monetary Policy in Early Times* (London: Kegan Paul, 1927), p. 264.

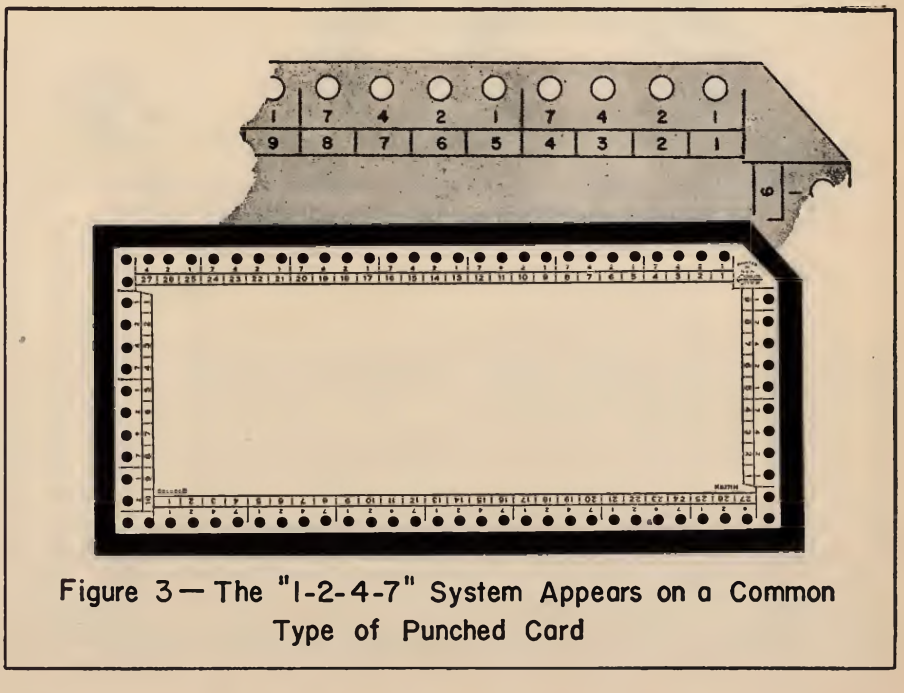

Figure 3 — The "1-2-4-7" System Appears on a Common Type of Punched Card