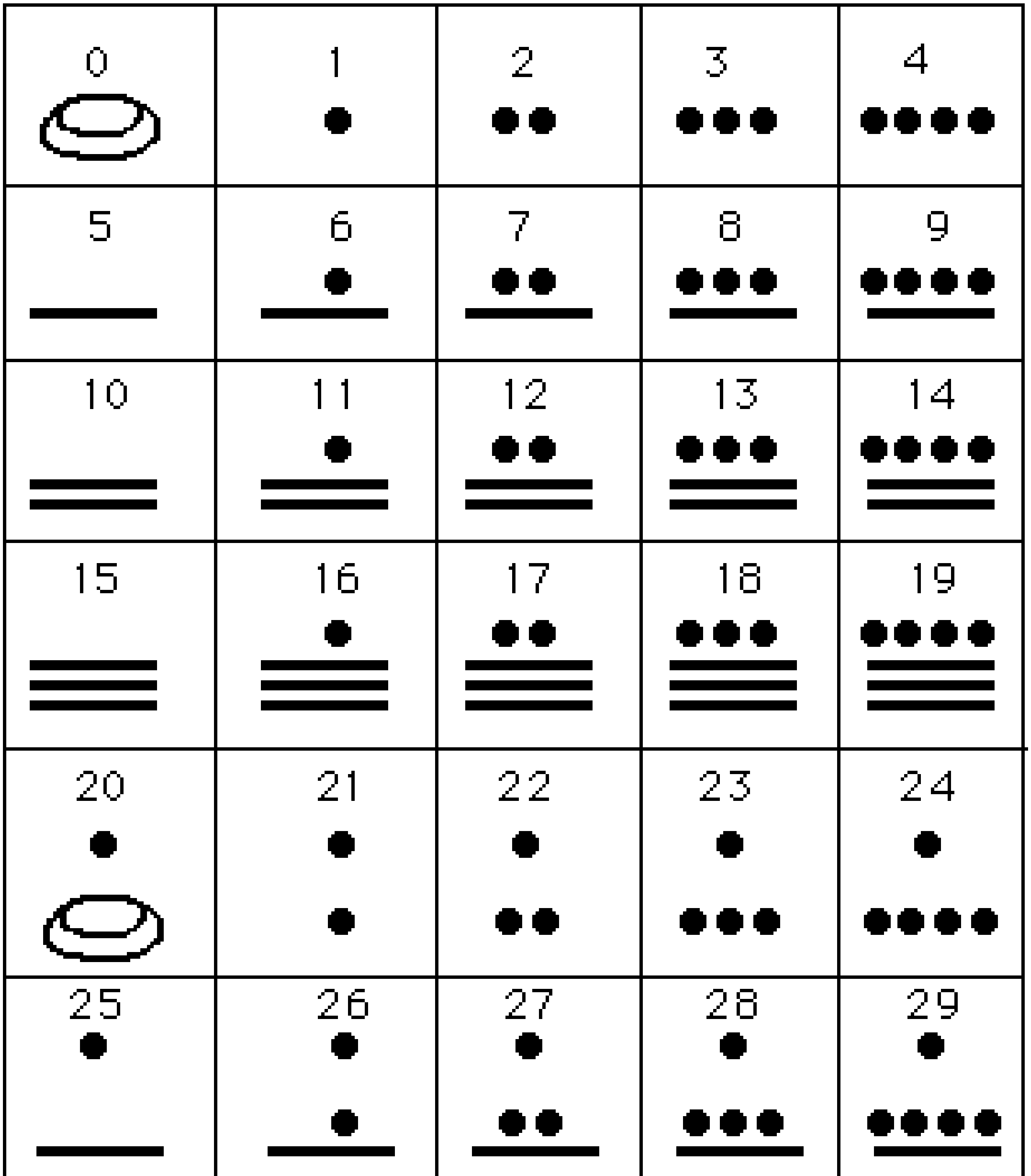

Mayan positional number system

Sherlock Holmes in Babylon

R. CREIGHTON BUCK

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Let me begin by clarifying the title "Sherlock Holmes in Babylon." Lest some members of the Baker Street Irregulars be misled, my topic is the archaeology of mathematics, and my objective is to retrace a small portion of the research of two scholars: Otto Neugebauer, who is a recipient of the Distinguished Service Award, given to him by the Mathematical Association of America in 1979, and his colleague and long-time collaborator, Abraham Sachs. It is also a chance for me to repay both of them a personal debt. I went to Brown University in 1947, and as a new Assistant Professor I was welcomed as a regular visitor to the Seminar in the History of Mathematics and Astronomy. There, with a handful of others, I was privileged to watch experts engaged in the intellectual challenge of reconstructing pieces of a culture from random fragments of the past. (See [4], [5].)

This experience left its mark upon me. While I do not regard myself as a historian in any sense, I have always remained a "friend of the history of mathematics"; and it is in this role that I come to you today. Let me begin with a sample of the raw materials. Figure 1 is a copy of a cuneiform tablet measuring perhaps 3 inches by 5. The markings can be made by pressing the end of a cut reed into wet clay. Dating such a tablet is seldom easy. The appearance of this tablet suggests that it may have been made in Akkad in the city of Nippur in the year −1700, about 3700 years ago.

Confronted with an artifact from an ancient culture, one asks several questions:

(i) What is this and what are its properties?

(ii) What was its original purpose?

(iii) What does this tell me about the culture that produced it?

In the History of Science, one expects neither theorems nor rigorous proofs. The subject is replete with conjectures and even speculations; and in place of proof, one often finds mere confirmation: "I believe P implies Q; and because I also believe Q, I therefore also believe P."

In Figure 1, we draw a vertical line to separate the first two columns. In the first column, we recognize what seem to be counting symbols for the numbers from 1 through 9. Paired with these in the second

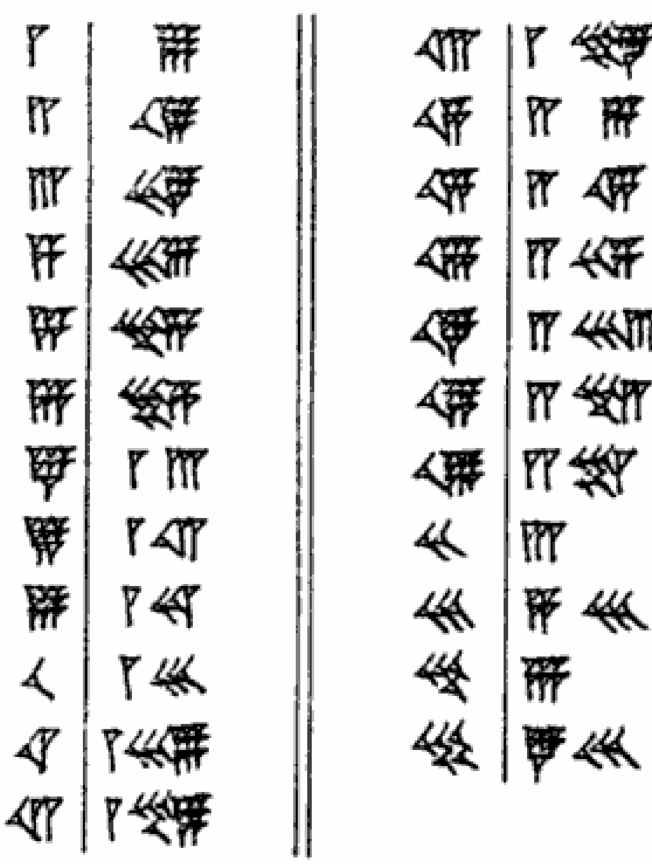

Figure 1.