BOOK REVIEWS

The Real Maya Mystery

Breaking the Maya Code. MICHAEL D. COE. Thames and Hudson, New York, 1992 (distributor, Norton, New York). 304 pp., illus. $24.95.

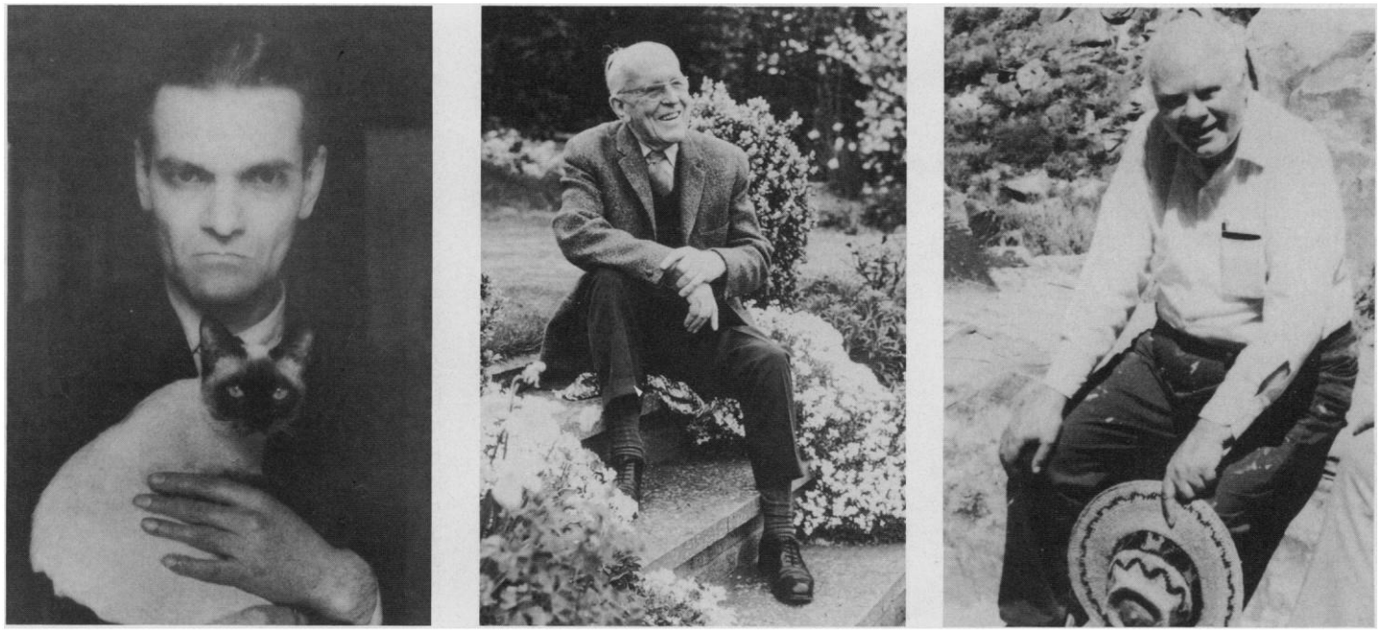
"The Maya Mystery has become Maya history," quipped Gillett Griffin a few years back. He was right in every way. Thanks to the decipherment of the New World's only Pre-Columbian literature, the Classic Maya texts, scholars are zeroing in on the native chronicles of a great archeological mystery: the collapse and abandonment of the southern lowland cities in the ninth century A.D. Augmenting field archeology, a tale of royal hubris, war, famine, and desperate—even brilliant—reform is opening up to us. The collapse is a real puzzle, but it now yields its secrets.

Breaking the Maya Code is about a different mystery: why it took more than a century of intense scrutiny for Mayanists to settle on a productive method for deciphering the glyphic texts left in four time-worn books and scattered on the ruined monuments of the Yucatan peninsula. And it's about a different collapse: the collapse of resistance to the fact that an aboriginal American people achieved and maintained literacy.

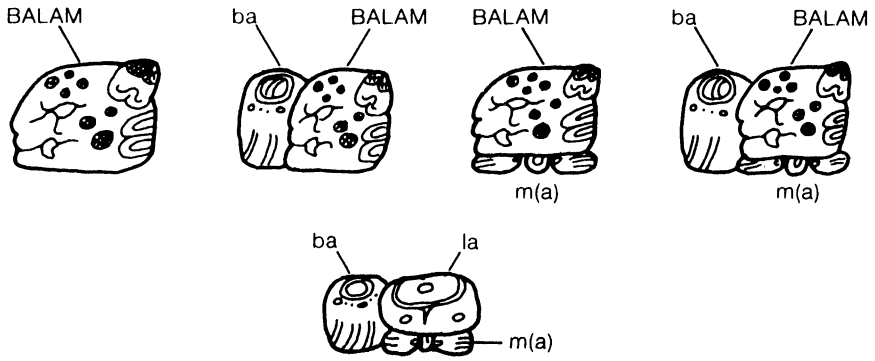
It's a great story told clearly and passionately by a great Mayanist. It's an inspiring example of the ultimate triumph of a truth in the knock-down, drag-out world of academic politics. With the simple prose he is famous for among his colleagues, Michael Coe unravels the mystery of Maya decipherment. His introductory chapters include everything one needs to follow the argument to its persuasive conclusion—basic primers in linguistics, writing systems, Maya archeology, and the early history of the field. Compounding the expectable clash of egos and personalities found in any scientific debate, there is an underlying fundamental difference of opinion. In a rare deployment of ten-penny words, Coe relates the theory of linguist Geoffrey Sampson. Sampson divides all possible scripts into semasiographic and glottographic. The latter category includes those writing systems which encode spoken language, the former those which convey ideas independently of spoken language. To be fair, Sampson regards the semasiographic mode as only a hypothetical possibility. The amazing thing is not that a linguist should conceive of a literature that could convey ideas directly in any spoken language. It is that generations of leading scholars would believe Maya glyphs worked that way when positive evidence pointed to the alternative—that the ancient Maya wrote in Mayan.

To be sure, the truth always had its champions. John L. Stephens, who made the Maya famous in the English-speaking world 150 years ago, speculated that the ancient Maya were ancestral to the modern Maya and that the glyphic texts contained their histories. The main protagonist in Coe's story is Yuri V. Knorosov, the Russian linguist who most clearly and consistently argued for the anchoring of Maya glyphs in Mayan language. The vindication of Knorosov's general phonetic and logographic approach, and the honor he now receives in the scholarly world, are transparently sources of satisfaction for Coe. And so they should be. Throughout the 1950s and '60s, when Knorosov was generally consigned to outer darkness by J. Eric S. Thompson and a field of Mayanists that revered this British giant, Coe and his wife, Sophie, steadily worked to translate and promote Knorosov's views.

In the 1960s, other major proponents of the historical content of Maya texts and of decipherment rose, especially Tatiana Proskouriakoff and David H. Kelley. The battle for Maya decipherment continued through the 1970s and '80s. In it were pitted an emerging group of people pursuing ancient written Mayan, led by such energetic young epigraphers as Linda Schele and Peter Mathews and the prominent linguist



Three Mayanists. *From left*, Yuri Valentinovich Knorosov in Leningrad, about 1960; J. E. S. Thompson in his English garden, 1974; David H. Kelley, 1991. [From *Breaking the Maya Code*; center photograph by Otis Imboden, courtesy of George Stuart and National Geographic Society]



"Alternative spellings for *balam*, 'jaguar.' According to his whim, the scribe could write this purely logographically; logographically with phonetic complements; or purely syllabically." [From *Breaking the Maya Code*]

Floyd Lounsbury, against an increasingly unhappy cadre of archeologists brought up to believe Thompson's despairing conclusion that the non-calendric texts were linguistically impenetrable. The band of working glyphers enjoyed support and meeting opportunities provided by people like Elizabeth Benson and Merle Greene Robertson. Still, throughout the last 20 years some prominent archeologists continued to devise interpretations of the Pre-Columbian Maya world that studiously minimized the value of the texts—all in the name of science and sober method.

Coe treats honestly but gently the painful encounters he and others of his ilk have endured with such opponents. His own entanglements in this period revolved around the public display and intellectual promotion of inscriptions of unknown provenience painted on vases of the Classic period. The texts running as bands around the rims of these pots we now know are dedication statements, declaring the kind of vessel, the artist, the patron of the ritual, and the contents. The texts embedded in the scenes include vital information on the ceremonial activities of the Maya nobility and basic insights into Maya religion and philosophy. Coe's courageous insistence that the painted vessels were a legitimate and central source of evidence invited a campaign of professional reprisals from righteous colleagues who argue that all looted art objects from the Maya world should be ignored. No professional, least of all Coe, who is a famous field archeologist, condones the looting that has destroyed countless Maya buildings. It was the kind of smear that wounds deeply and heals slowly. Fortunately, the salve of vindication and validation heals well. The Classic Maya vessels and their texts are now fully incorporated into the inquiry by the leading scholars of our field.

As Coe's story closes in on the present, the cast of characters broadens out to include most of the principal people who actively worked to realize this last major decipherment of an ancient literature. Such impressive contributors as David Stuart, Nikolai Grube, and Barbara MacLeod receive deserved praise. Coe is especially proud of Stephen Houston and Karl Taube, Yalé students of his during the 1980s who became his teachers in this era of spectacular progress.

This is one central participant's eyewitness account; but as an archeologist working with epigraphers in the most recent years of the drama, I can attest to its general accuracy. Yet being also a participant—not one who figures in Coe's story—I naturally have some differences with him over details. He is rather categorical in his view that archeologists, with only a few important exceptions that he notes, were in opposition during the 1980s and remain there today. Actually, there have been quite a few Maya archeologists working with glyphers and glyphs over the last decade. These archeologists, publishing in major journals and books, have also paved the way for a general acceptance of the decipherment. But that story can wait. This book's story is an exciting and worthwhile one.

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Molecular Connections

Hydrogen Bonding in Biological Structures. G. A. JEFFREY and W. SAENGER. Springer-Verlag, New York, 1991. viii, 569 pp., illus. $79.

Hydrogen bonds—the interaction of a hydrogen atom bonded to an electronegative atom such as oxygen or nitrogen with an electron pair of another electronegative atom—are weak attractions, with a binding strength less than one-tenth that of a normal covalent bond. However, hydrogen bonds are of extraordinary importance; without them all wooden structures would collapse, cement would crumble, oceans would vaporize, and all living things would disintegrate into random dispersions of inert matter. The component molecules of living systems such as proteins, carbohydrates, and nucleic acids owe their unique properties in large part to inter- and intramolecular hydrogen bonding. In addition, living tissue is an aqueous environment in which hydration by and hydrogen bonding with solvent water mediate the functioning of biomolecules.

Hydrogen Bonding in Biological Systems provides an illuminating account of the role of such bonds. In their account of known crystal structures, the authors extract, condense, and clearly present a wealth of material for the benefit of the non-crystallographer. An extraordinary amount of information and interpretation is packed into the pages of this book, yet it is neither cluttered nor dense. Section by section, the clearly written text builds into a smoothly flowing whole. The numerous illustrations are chosen with care and crisply reproduced, and references are comprehensive up to 1990.

The book opens with a succinct review of the history, theory, structural parameters, metrical properties, experimental methods of study, and theoretical methods of treatment of the hydrogen bond that is valuable on its own. Discussion then proceeds to hydrogen bonding in small biological molecules such as amino acids, mono- and disaccharides, purines, pyrimidines, nucleotides, and cyclodextrins and continues with macromolecules such as polysaccharides, proteins, and nucleic acids. For each molecular type, there are discussions of intrinsic hydrogen bonding of the species (intra- and intermolecular) and hydration.

The authors place considerable emphasis on cooperativity. In extended hydrogen-bonding structures, bonds interact so that the total bonding energy of the structure is greater than the sum of an equal number of similar but isolated bonds. Cooperativity is a function of the entire hydrogen-bonding network throughout the bulk crystal.

The depiction of such patterns with conventional molecular illustrations would be difficult if not impossible. To overcome this, the authors have developed a schematic method of mapping networks that shows only donor and acceptor atoms; in effect, this lifts the hydrogen-bonding network intact out of the crystal structure. In this approach, applied most frequently to carbohydrates and nucleotides, each atom is labeled with a designating number from crystallographic studies, and codes from the Cambridge Crystallographic Data Base are