## History

SPACE BETWEEN WORDS: The Origins of Silent Reading. By Paul Saenger. Stanford Univ. Press. 480 pp. \$49.50

At the outbreak of World War II, the historian Lynn White, Jr., alerted his fellow medievalists to a curious fact. For all the otherworldly concerns of the people of the Middle Ages, they were generally better practical innovators than the ancient Greeks and Romans. Even the "Dark Ages" showed a steady advance over the Roman Empire, and 10th-century serfs lived better than the proletariate of Augustan Rome. Documenting the impressive accomplishments of medieval society in agriculture and mining, wind power and waterpower, shipbuilding and road construction, White and his successors have shown that medieval religion, far from inhibiting technological change, encouraged it in ways unthinkable in slaveholding antiquity.

In Space between Words, Saenger makes a richly learned contribution to our reinterpretation of medieval innovation. A curator of rare books and manuscripts as well as a historian, Saenger is equally at home in the arcane lexicon of paleography (the study of historical scripts), the daunting terminology of contemporary neuroscience, and the psychology of reading. His theme seems specialized and technical, but it is nothing less than the reinvention of reading: how the arrangement of letters on a page, and our techniques for interpreting them, began to take their present form well over a thousand years ago. Saenger does for medieval mental software what White and others did for the hardware of daily life, discovering that habits we take for granted were early and profound innovations.

Late Romans and the Church Fathers nearly always read aloud. They had to. They were interpreting highly inflected Latin, written without standardized word order and without breaks between words. Understanding a passage required *praelectio*, a spoken recitation. (Silent reading was apparently unusual enough to be noticed, and Saenger argues that it probably entailed mumbling rather than true silence anyway.) The goal of Roman literacy was not gathering information quickly from a text; it was giving an elegant oral performance, if only a private one.

Writing amid economic depression and

war, White recognized that vital innovations appear in times of crisis. Saenger's work confirms this insight. It was Irish and English monks during the troubled seventh and eighth centuries who first prepared manuscripts with a form of word spacing. Copying rapidly, as a present-day keyboard transcriber would, they established the first fixed sentence orders in Latin. Gradually they introduced new forms of books still used by countless readers: alphabetical glossaries, interlinear translations, pocket Gospels, and vernacular texts. In promoting sacred Latin texts to non-Latin speakers, they stimulated new reading habits, notably the ability to recognize entire words as patterns.

As word separation spread slowly through Europe, it changed culture subtly but powerfully, especially in the 12th and 13th centuries. Once inaudibility prevailed, authors' works grew more personal, private, occasionally erotic. Scholastic Latin, intended for silent analysis in larger units of thought rather than for declamation, valued clarity and precision over sonority. Mathematical notation grew more abstract, preparing the way for Arabic numerals. By the late Middle Ages, books were available on a scale unknown in antiquity, and university students were expected to bring copies of texts to their lectures and follow along silently. When librarians installed costly reference books, they chained them to tables (just as their successors safeguard computer equipment); in such close quarters, silence became the rule.

While admirers of McLuhanesque epigrams should look elsewhere, Saenger writes clearly and directly, and his insights into the cultural practices behind now-obscure scribal conventions enrich the archaeology of the written word. It is fitting that as some monastic orders take to the Internet, their early medieval predecessors emerge as pioneers of a first information age.

—Edward Tenner

THE LAST APOCALYPSE: Europe at the Year 1000 A.D.

By James Reston, Jr. Doubleday. 299 pp. \$24.95

In A.D. 1000, Otto III, the emperor of the Holy Roman Empire of the German Nation, paid a visit to Charlemagne's