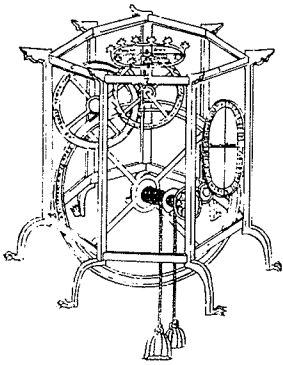


without reward. Though a naturalist, James refused to reduce mental life to a simple mechanistic theory, and that may account for his relative lack of renown: Even in America, Freud's reductivistic psychology eclipsed James's subtler notion that in experience alone were to be found "the constituents of the mind and the explanations of its performance." His horror of oversimplification may also explain why James acquired a small but select following (e.g., mathematician Alfred North Whitehead, physicist Niels Bohr, psychologist Jean Piaget). Barzun's book should, however, help bring James's arguments to a wider audience.

REVOLUTION IN TIME:
Clocks and the Making
of the Modern World
 by David S. Landes
 Harvard, 1983
 482 pp. \$20



Great thinkers from Heraclitus to Einstein have reflected upon the nature of time, but few have given much thought to its keeper, the clock. Landes, a Harvard historian, has done so in this richly detailed exploration. The Chinese, the pioneers of timekeeping, constructed as early as 1086 a water-powered clock that reproduced the movement of the "three luminaries" (the sun, moon, and stars) and showed both the hours and the *k'o* (roughly 14½ minutes). Destroyed by Tartars in 1126, this instrument marked the zenith of China's horological effort. In medieval Europe, the Church's strict observance of holy days and prayer times demanded accurate timepieces. The growth of cities, where time was more a function of commercial rhythms than of natural ones, made timekeepers of the bourgeoisie. The replacement of weights with springs reduced the size of the clock and led in the 16th century to the making of watches. People began living with one eye on the dial, a practice of which Protestant John Calvin heartily approved. As its precision increased, so did the scientific applications of the instrument. The invention of the marine chronometer in 1759 enabled navigators to determine their position by longitude. Modern atomic clocks in today's observatories beat 9,192,631,770 times a second. The nature of time may still elude us, but, as Landes observes, "we sure know how to measure it."