GENERAL

Megayear and Gigayear: Two Units of Geological Time

FOR measuring geological time and for indicating the age of minerals and rocks before the Quaternary, geologists are at present using two time units, namely, one million years (10^6 years) and one "billion" years (10^9 years). The abbreviations of these units are indeed variable. A check of a number of recently published books, monographs, and symposium volumes¹ produced the following expressions and abbreviations: million years, millions of years, years $\times 10^6$, m.y., m.yr., m.yrs., Myr, 10^6 a, 10^6 y, 10^6 yr, 10^6 years; and billion years, b.y., 10^9 a, 10^9 y, 10^9 yr, 10^9 yrs, and 10^9 years. Such abbreviations are also current in meteorite chronology. In German publications², *Mio Jahre*, and in French works³, MA, M.A., and mA for a million years are customarily used.

Instead of a "billion" years, the name, aeon (or eon), is sometimes used, particularly in meteorite chronology⁴. In normal parlance, however, an aeon refers to an immeasurably long or an indefinite period of time. In addition, it has been proposed that Eon be used as a unit of time stratigraphy⁵. Thus, the Cenozoic Era, the Mesozoic Era, and the Palaeozoic Era are combined into a geological time unit called the Phanerozoic Eon.

The purpose of this note is to call the attention of geologists to two eminently suitable units of geological time, based on the recommendations of the Commission for Symbols, Units and Nomenclature (SUN Commission) of the International Union of Pure and Applied Physics (IUPAP)⁶. These units are the megayear (Myr = 10^6 years) and the gigayear (Gyr = 10^9 years). Their names and abbreviations follow the style of such well established units as the nanosecond, the nanogram, the megaelectronvolt, and the gigawatt, which are commonly used in physics and in chemistry. The introduction of such unit names has probably passed unnoticed by most geologists. The names megayear and gigayear are convenient in use, and their abbreviations are easy to write and to set in type. They are strongly recommended for use in chronostratigraphy and in geochronometry. Perhaps, in radiocarbon dating, it would not be impossible to speak of kiloyears (kyr = 10^3 years) instead of thousands of years, when Quaternary geologists get used to modern physical nomenclature.

To conclude: "Nothing is so plentiful as Time"⁷. The age of the Earth is about 4.8 Gyr and the length of Pre-Cambrian time is about 3,400 Myr.

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⁶ *Physics Today*, 15, 20 (1962).

⁷ Holmes, Arthur, *The Precambrian*, 1, xxi (New York, London, Sydney, 1963).

Figs. 2-4. (2) No silica film present. (3) Silica present to a depth of $0.19 \lambda/\mu$. (4) Silica present to a depth of $0.25 \lambda/\mu$.

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