Estimates of the relative abundances of the elements in the solar system played an important role in establishing the major processes of stellar nucleosynthesis. Subsequently, it became legitimate to use nucleosynthesis methods to interpolate poorly known elemental abundances, but the experimental database has steadily improved and interpolation is less necessary now.

This formed the rationale for my first compilation of elemental abundances, intended to improve upon Suess and Urey. At intervals of every few years, I issued an updated table, but usually these updates were done very informally (for example, one of them was distributed as part of a set of privately produced lecture notes). The paper discussed here, as a Citation Classic, was prepared at the time an International Symposium on Cosmochemistry was held at the Harvard and Smithsonian Observatories, in 1972. This paper was not presented at the symposium, but it seemed appropriate to include it in the issue of Space Science Reviews that contained the papers from the symposium.

With the passage of time, the accuracy of determination of elemental abundances in all relevant sources has improved. It is now possible to base the abundances of most elements not only on measurements in meteorites, but particularly in carbonaceous meteorites (of Type I). These measurements now agree very well with solar abundance determinations. I issued one more update, but not long afterward, Anders and Ebihara doubled the number of carbonaceous measurements and issued a new abundance table based on these measurements and on my interpolation procedures. This is now the standard source for abundances.

These abundance tables have been popular because departures from a standard abundance distribution in natural materials often suggest mechanisms of formation for that material; thus, people like to have such a standard.

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3 Cameron A G W. Stellar evolution, nuclear astrophysics, and nucleogenesis Chalk River, Canada: Atomic Energy of Canada Limited, 1957 Report CRL-41