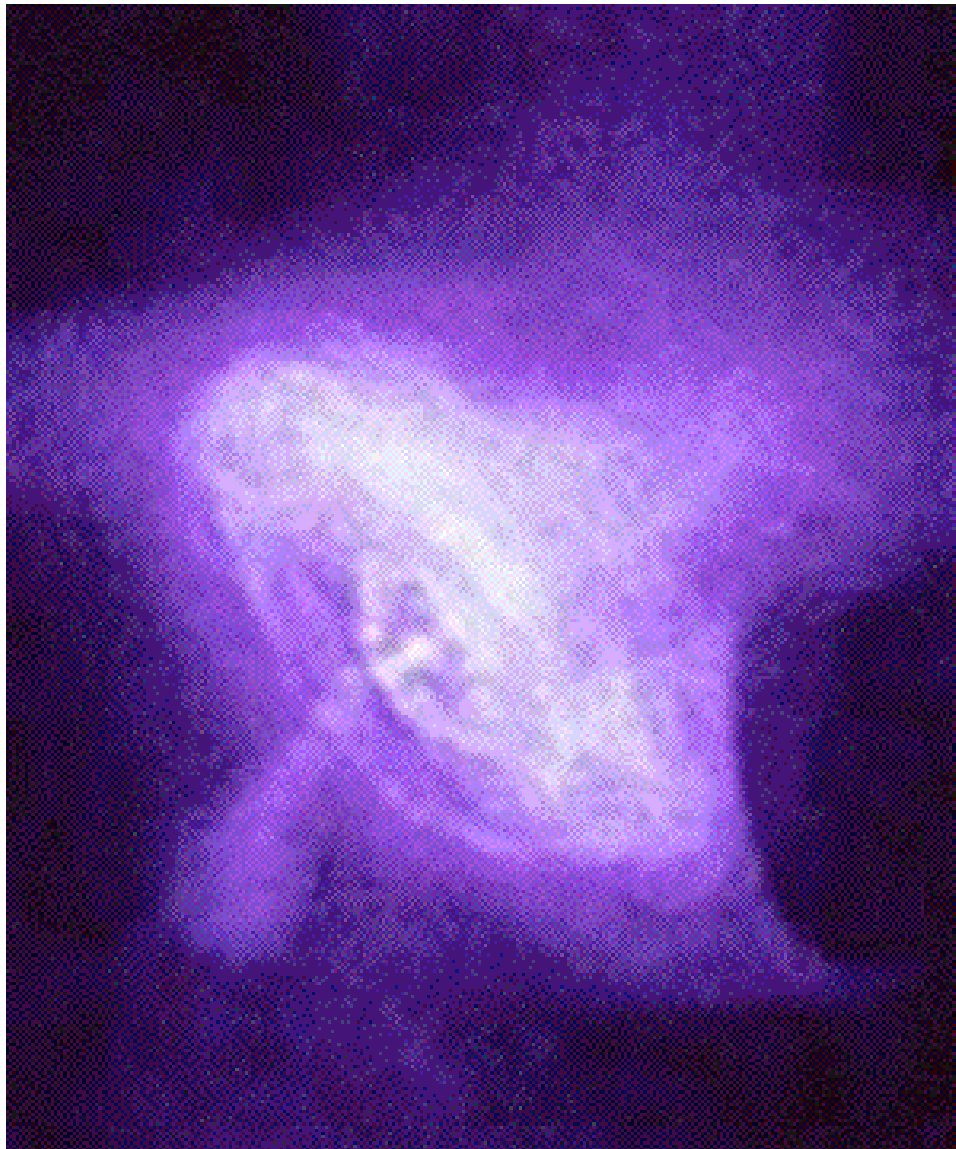


A Journey to the Core of the Sun

Chapter 2: Acceptance of Reality

*The journey of life cannot be successfully traveled alone. The purpose of this book is to share **information hidden from the public in 1945**. This link shows photographs of a few who helped the journey succeed: <http://www.omatumr.com/PhotoGallery.html>



*The Sun's pulsar core [1-3] birthed the solar system five billion years (5 Ga) ago [4], as the above pulsar birthed the Crab Nebula in 1054 AD. In 1945 **FEAR convinced humans to hide NEUTRON REPULSION** [5] - the source of energy that causes cores of heavy atoms, some planets, stars and galaxies to violently fission and/or steadily emit neutrons that spontaneously decay to hydrogen (H) atoms. Rather than accept reality of the power that made our elements and then sustained the origin and evolution of life, **the scientific revolution that Copernicus started in 1543 ended quietly in 1945.***

*Nothing in life is to be feared,
It is only to be understood.
Now is the time to understand more,
So that we may fear less.
~ Maria Skłodowska-Curie*

Chapter 2: Acceptance of Reality - The Solution

Cold weather, declining health, and a general concern for the survival and well-being of society catalyzed my decision to present ***clear and unequivocal evidence NEUTRON REPULSION is the source of energy that causes cores of heavy atoms, some planets, ordinary stars and galaxies to fission and/or to emit neutrons that spontaneously decay to hydrogen (H) atoms, the POWER*** Aston described in his Nobel Lecture as ***beyond the dreams of scientific fiction*** [1.14*].

All society deserves unambiguous evidence, especially the ninth grade teacher of Latin and algebra at Allison Junior High in Wichita, Kansas - **Eleanor O'Connell** - who tried to dissuade me from dropping out of school at the end of the 1951-52 school year; the science teacher who welcomed me back to North High in Wichita - **Cecil Gray** - in 1954-55 and made me his teaching assistant; the gifted physical chemist at Pittsburg State College, Dr. **Jim Pauley**, who guided my undergraduate studies and directed me to the University of Arkansas in 1959; Professor **Paul K. Kuroda** - assigned the graduate research project at the University of Arkansas that forced me to decipher hints in his [1.1] and Fred Hoyle's [6] autobiographies; and Professor **John H. Reynolds** - the UC-Berkeley physicist who developed the high-sensitivity mass spectrometer in 1956 that would be used in my career and then also allowed me to learn its operation in his laboratory in 1962 and 1964.

Kuroda perhaps realized that my obstinate perfectionism - ability to see flaws in others but not in myself - might equip me to confirm and communicate the fearful reality exposed by atomic bombs in 1945, and help society regain benefits reaped from the scientific revolution after accepting another fearful, ego-deflating part of scientific reality: Copernicus' 1543 discovery that ***Earth orbits the Sun !***

I first noticed flaws [7] in a graduate nuclear physics class in the spring semester of 1961: In the ***nuclear binding energy (B.E.)*** concept, and in ***omission of data*** points for the decays of the neutron and the tritium atom from Figure 2.1 in the

textbook, *The Atomic Nucleus* [8], by a MIT professor of physics, Dr. Robley D. Evans. Kuroda's comment [1.1, page 7] - about a physicist not grasping Aston's "**packing fraction**" - would later point to the hidden information [5].

To maintain focus on the central theme of this chapter, these flaws will be not be discussed here, except to point out that reliable information on nuclear energy and nuclear stability are correctly represented by Aston's "packing fraction," based on precise measurements of the mass of each atom [9], but **not by values calculated for von Weizsäcker's "nuclear binding energy per nucleon (B.E./A)."** Replacing Aston's "**packing fraction**" with "**nuclear binding energy per nucleon (B.E./A)**" in textbooks [e.g., 10-11] after 1945 obscured neutron repulsion [5].

Values of "nuclear binding energy" are systematically high in neutron-rich atoms. For example the most stable known atom is correctly identified as ^{56}Fe by Aston's "packing fraction," but the nuclear binding energy per nucleon (B.E./A) is greater for the more neutron-rich isotope, ^{62}Ni , than for ^{56}Fe . The nuclear binding energy (B.E.) of radioactive tritium (^3H) exceeds that of its stable decay-product (^3He); the nuclear binding energy of radioactive ^{14}C is greater than that of its stable decay-product (^{14}N), etc., across the entire spectrum of 3,000 different types of atoms.

Approaching the end of life, aware that society is deeply troubled, perhaps on the verge of collapse worldwide, this chapter's goal is to identify the "**elephant in the living room**" - the key to Aston's promise of "**power beyond the dreams of scientific fiction**" [1.14*]. To decide the validity of my conclusions, each reader must actively compare the conclusion on page 16 with consensus opinions published in textbooks of science after the end of World War II. **The easier, softer way is the path that led us to our current state of servitude, desperation and misery.**

The incredible power Aston acknowledged in his 1922 Nobel lecture on "packing fractions" [1.14] - the source of energy [4] that powers atomic bombs, the Sun and sustains our lives - is powerful but subtle: *Neutron repulsion (N.R.)* was concealed by Weizsäcker's deceptively convincing model of "nuclear binding energy (B.E.)."

The remainder of this brief chapter will present **clear and unequivocal evidence** :

1. Neutron repulsion is the source of energy in cores of heavy atoms and stars
2. The Sun made our elements, birthed the solar system and sustains our lives
3. Iron-56 is the most abundant and most stable atom in the Earth and the Sun

This conclusion to my career is published as written, not for royalties, but to help you access reality. To benefit from the reality illustrated on page 16, tell me** if you find flaws in evidence of a pulsar-centered Sun but ask other scientists if they have a better explanation for the experimental data shown in Figures 1-3.

1. Experimental

1.1 Proof of Neutron Repulsion

Figure 1 (below) shows convincing evidence of neutron repulsion [12-14] in cores of neutron-rich atoms (left), proton repulsion in cores of proton-rich atoms (right), and neutron-proton attraction in the middle. The vertical scale on this figure is the mass (energy) per nucleon, $M/A = f + 1$, where f is Aston's "packing fraction."

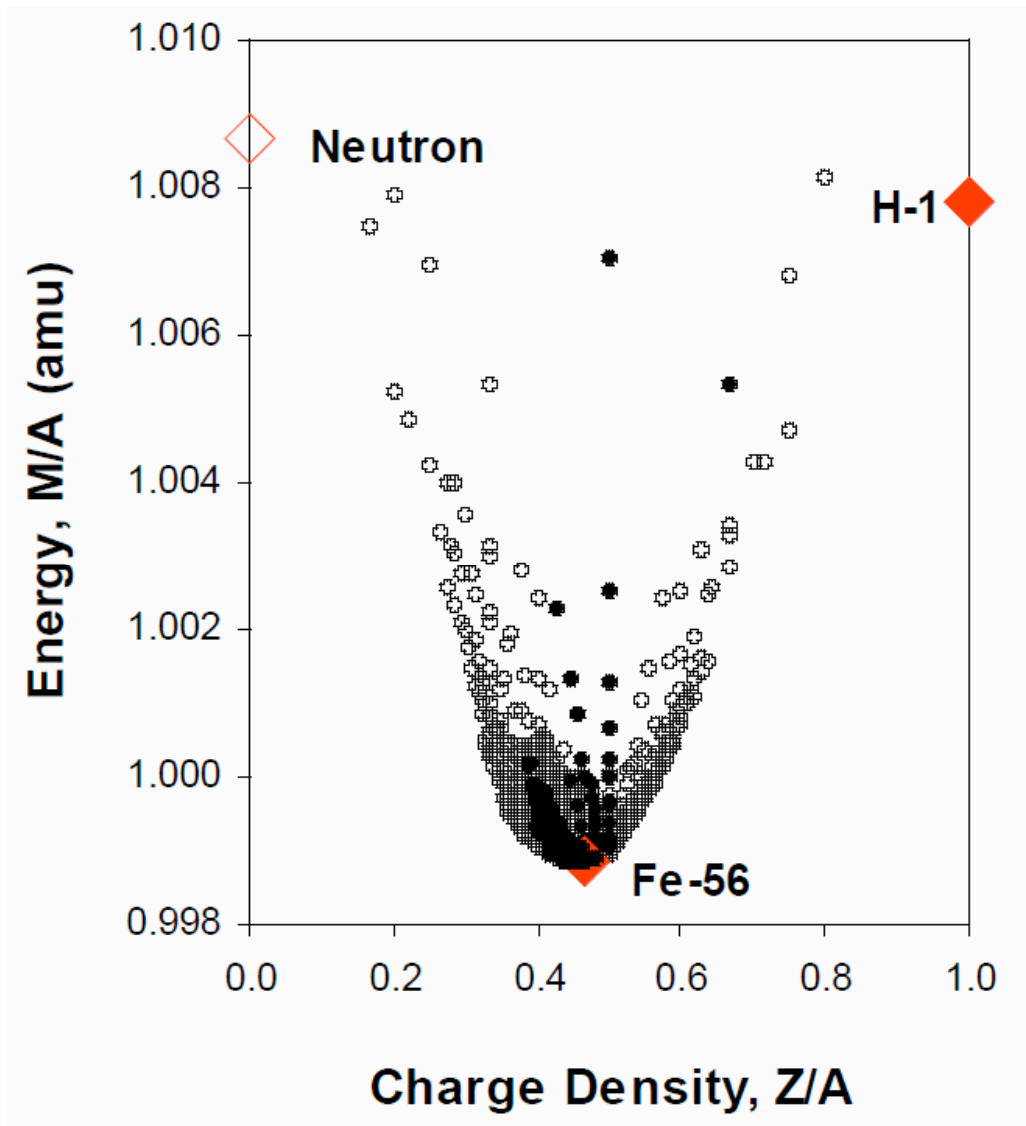


Figure 1a: Two forms of one fundamental particle shown by the **red** symbols on the left (**neutrons**) and right (hydrogen atoms, **H-1**) comprise every atom. The most stable atom, **Fe-56**, is also the most abundant atom in the Earth, in the Sun and in ordinary meteorites. On Earth H-1 is more stable than the neutron. At high pressure, H-1 atoms collapse into neutrons [15] and can be energized by N.R. to energy levels above the top of the page [5].

The Cradle of the Nuclides

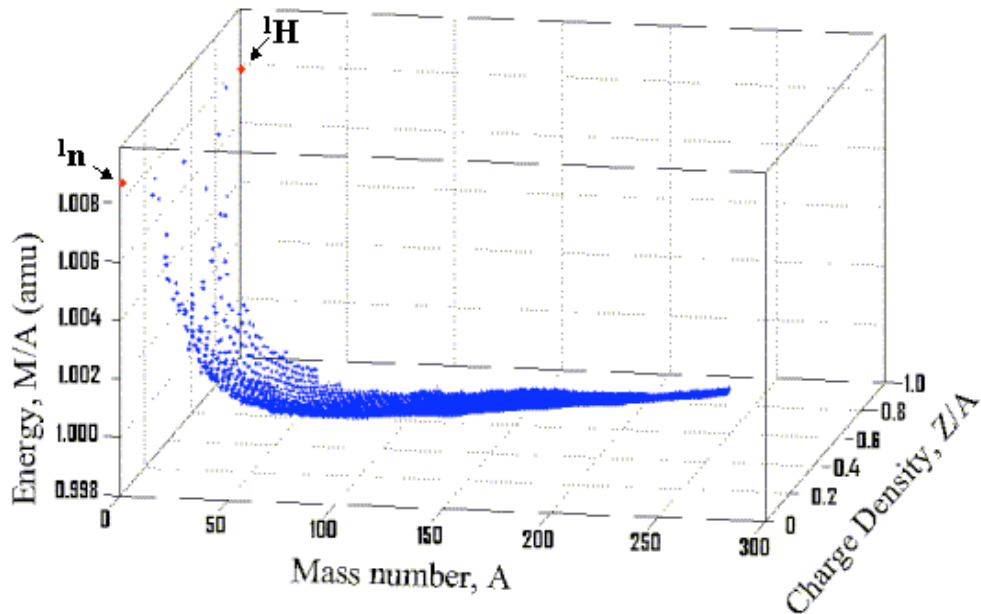


Figure 1b. Combinations of the two forms of one particle that comprise all of the atoms, neutrons (${}^1_0\text{n}$) in the front and hydrogen atoms (${}^1_1\text{H}$) in the back, are sorted above by mass number (A) on the horizontal axis and by charge density (Z/A) in the third dimension.

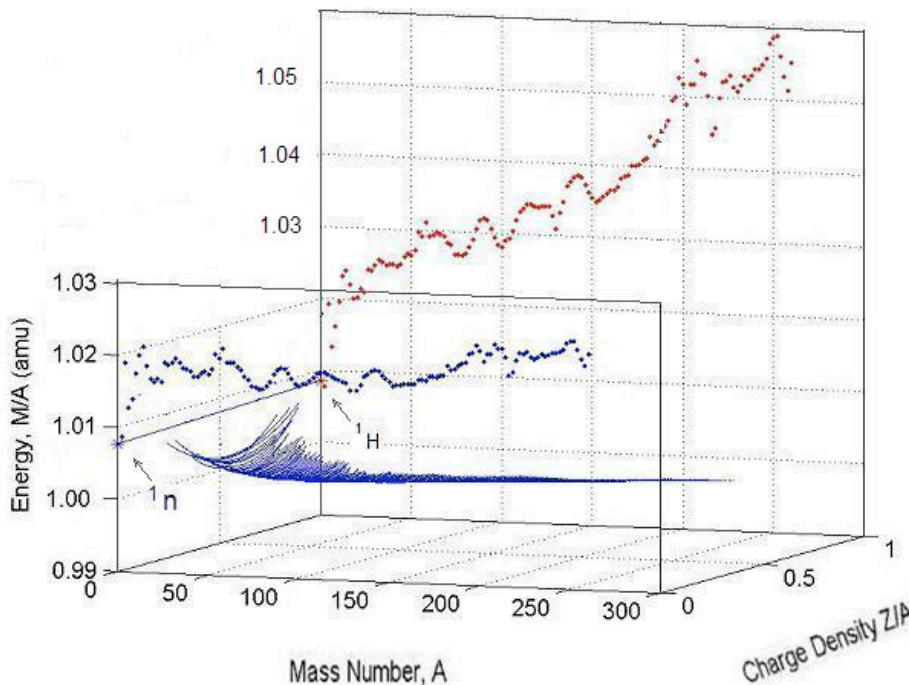


Figure 1c. Parabolas defined by mass data points reveal neutron repulsion at $Z/A = 0$ (○) on the front panel (nuclei made of neutrons only), proton repulsion at $Z/A = 1.0$ (○) on a back panel (nuclei made of protons only), and differences from Coulomb repulsion [12].

1.2 Proof of Local Element Synthesis

Figure 2 (below) shows evidence the solar system's elements were produced here and then formed solids before isotopes and elements from different regions of the supernova completely mixed. Figures 2a,b,c,d,e,f are all from papers published in 1972 [16], 1975/77/79/80 [17/18/19/20], 1993 [21], 1994 [4] and 1997 [22].

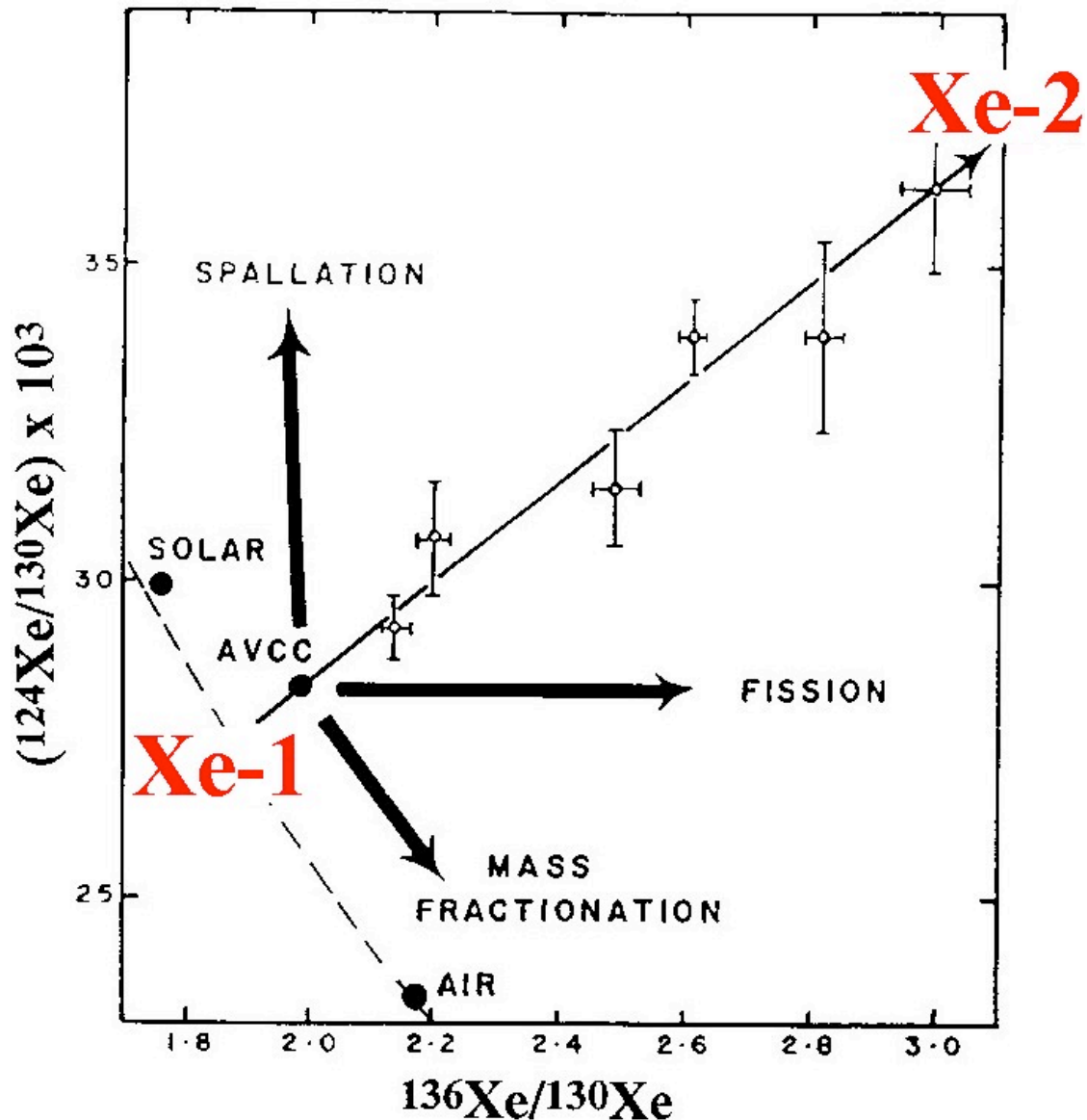


Figure 2a: "Normal" xenon, **Xe-1**, is dominant in the iron-rich, inner region of the solar system but mass fractionated (dashed line) in the Sun. "Strange" xenon, **Xe-2**, dominates the outer region of the solar system [23]. **Xe-1** is dominant in the Earth (**AIR**), the Sun (**SOLAR**), and in ordinary meteorites. At about 1000° C [16], carbon-rich inclusions of average carbonaceous chondrites (**AVCC**) selectively released **Xe-2** that is enriched in ^{124}Xe from the p-process and in ^{136}Xe from the r-process of nucleosynthesis [24].

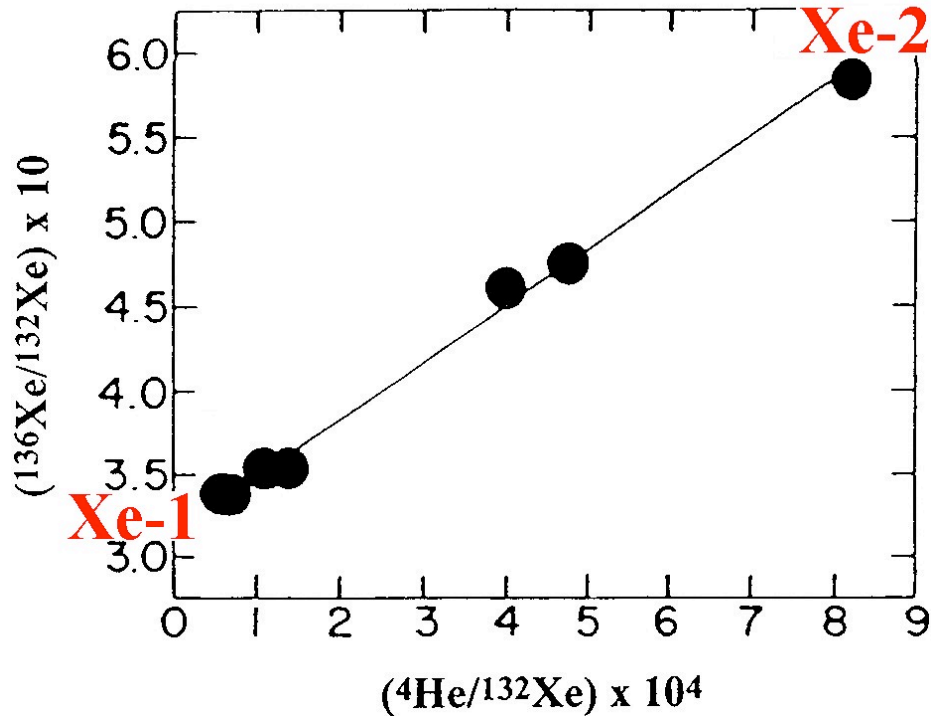


Figure 2b: Primordial helium (^4He) accompanies only "strange" xenon, **Xe-2**, in carbon-rich (diamond/graphite) mineral separates of the Allende [25] and other meteorites [20]. The Galileo probe later found "strange" xenon in Jupiter's He-rich atmosphere [23].

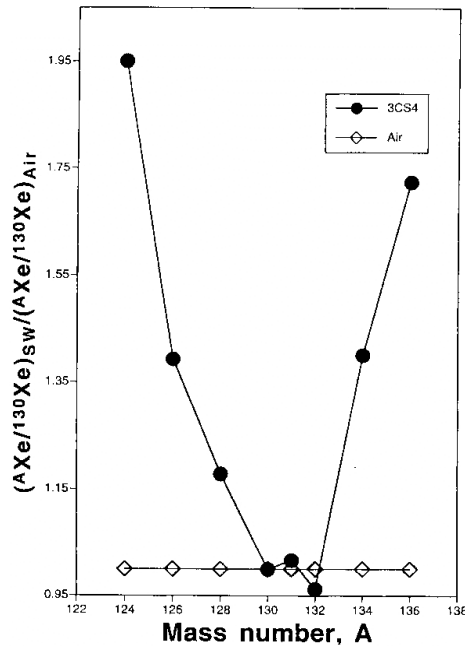


Figure 2c: "Strange" xenon, **Xe-2**, in Allende has excess light and heavy isotopes [25] from p- and r-processes of supernova nucleosynthesis [24]. "Strange" tellurium and its "complementary" component were also reported in Allende in 1979 [19].

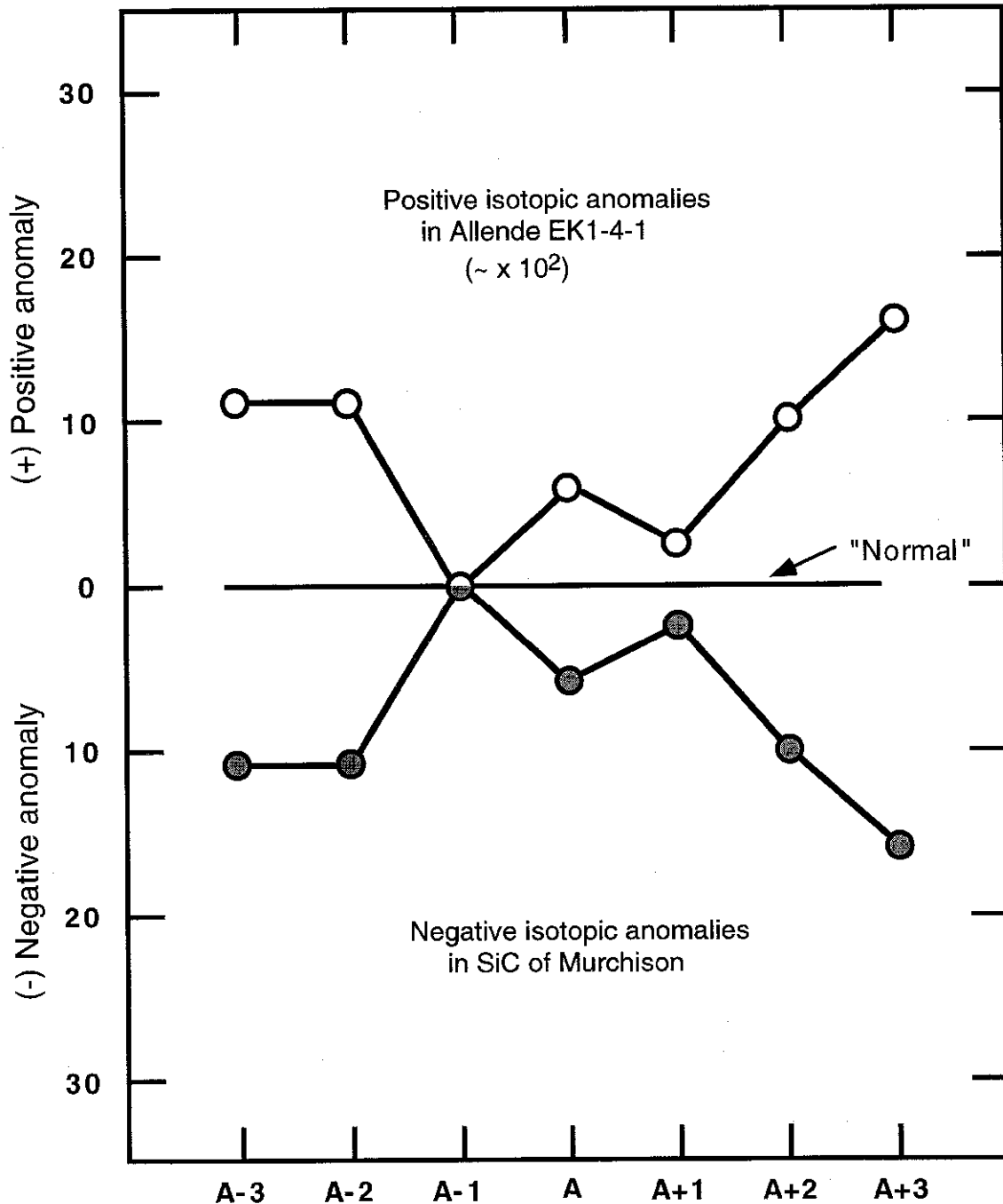


Figure 2d: In 1978 Srinivasan and Anders [26] found a "complementary" component to "strange" xenon, enriched in middle isotopes by the s-process of nucleosynthesis [24], in the Murchison meteorites. By 1993, "strange" and "complementary" isotopic anomalies had been found in the isotopes of xenon (element #54) [16, 26], tellurium (element #52) [19], barium (element #56), neodymium (element #60) and samarium (element #62) [21]. These two anomaly patterns are usually observed in refractory grains of diamond (C) and silicon carbide (SiC) that condensed early in the heterogeneous solar nebula [5].

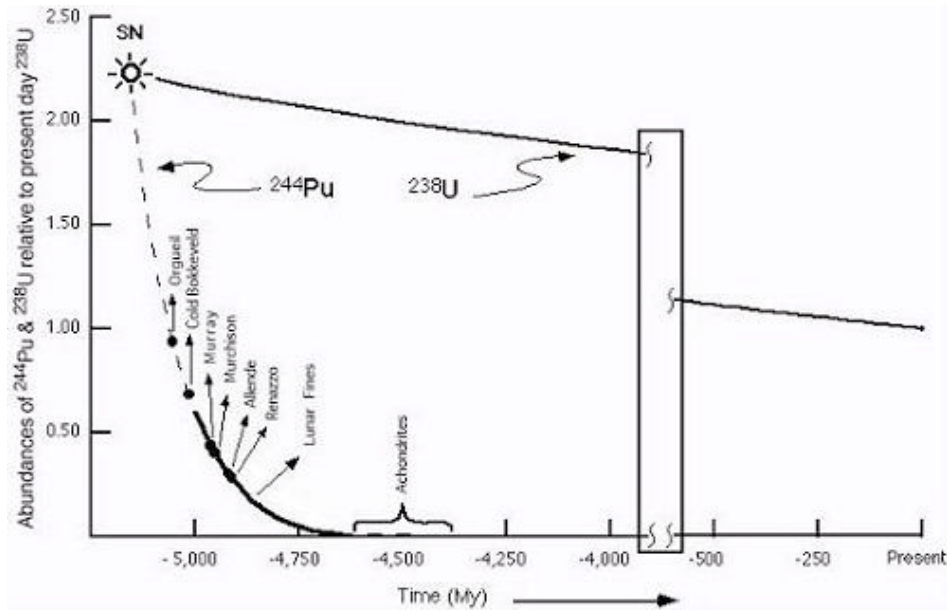


Figure 2e: Combined U/Pb and Pu/Xe age dating of primitive meteorites by Kuroda and Myers [4] show that the supernova exploded shortly before the oldest meteorites formed about five billion years (5 Ga or 5,000 My) ago.

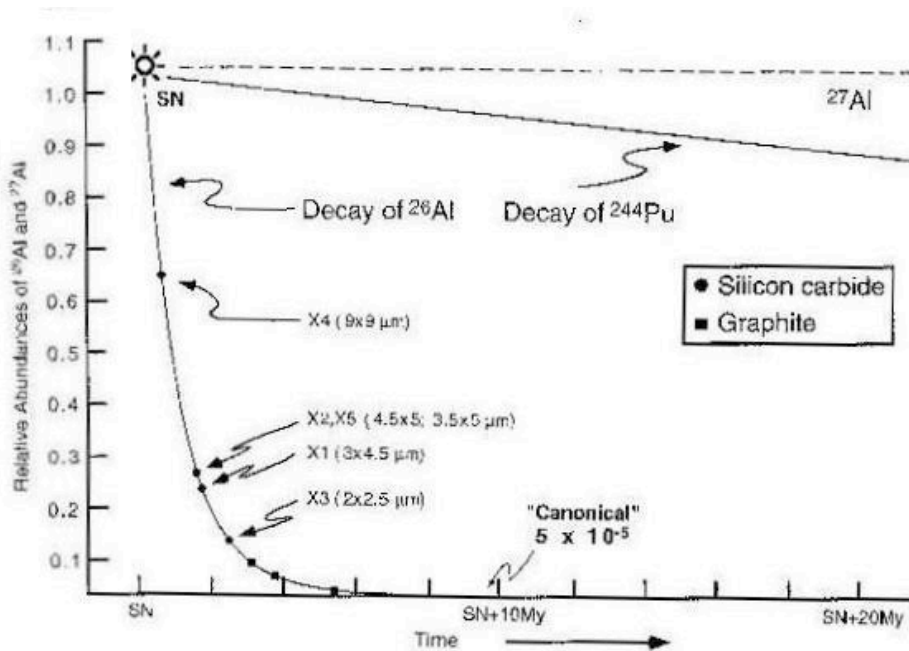


Figure 2f: $^{26}\text{Al}/^{26}\text{Mg}$ age dating of refractory meteorite inclusions of silicon carbide and graphite show that they formed within 1-10 My of the supernova with physical properties like those of "fall-out" particles from nuclear explosions [22]. The grains that formed first grew larger and trapped higher levels of radioactive ^{26}Al ($t_{1/2} = 740,000$ yr or 0.74 My).

1.3 Proof of the Iron-Rich Sun

Figure 3 (below) shows the results of *a few* of the thousands of measurements that revealed *unequivocal evidence* of solar mass-fractionation and the Sun's iron-rich interior. This ubiquitous evidence is even in publications of leading astronomers and astrophysicists. E.g., Sir Fred Hoyle exposed in his 1994 autobiography [6] an abrupt, inexplicable change in popular opinions on the internal composition and source of energy in the stars in 1946; Nobel Laureate William Fowler admitted in 1998 [27] that *"we certainly do not understand the nuclear astrophysics which produced the oxygen and carbon in our bodies."* Data from a well-known paper co-authored by these scientists, B2FH [24], are shown on the right in **Figure 3a**:

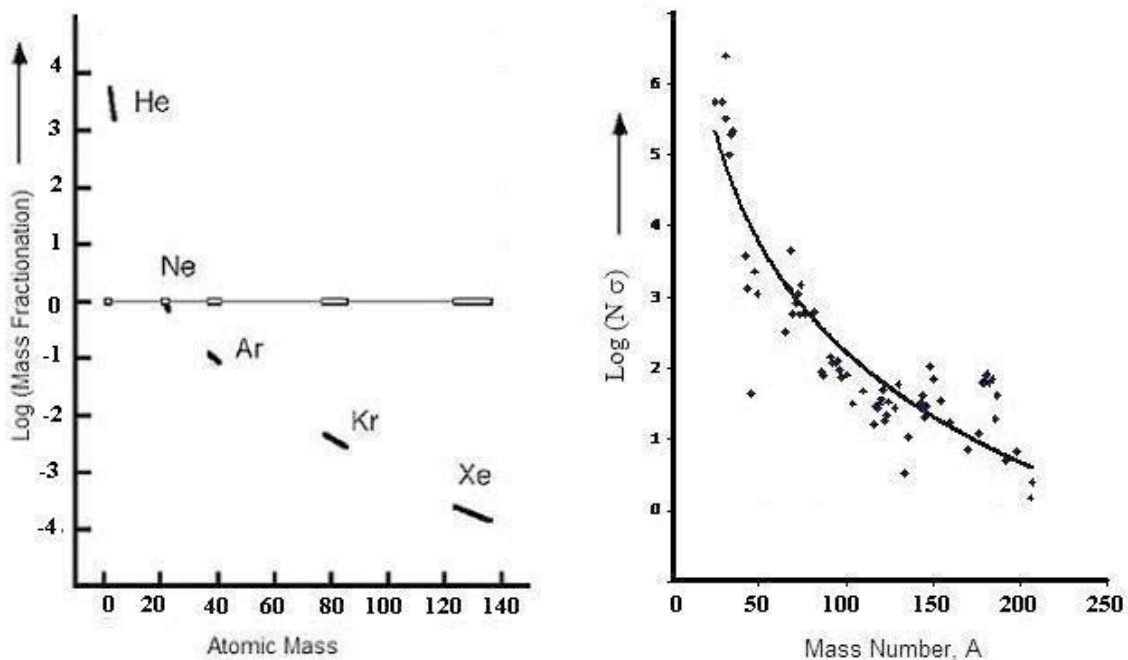


Figure 3a: Severe mass-fractionation in the Sun is obvious in the abundances of seventy-two (72) *s*-products in the photosphere (graph on the **right**) relative to the constant value of $N\sigma$ that B2FH predicted for *s*-products [24]. These *s*-products span a mass range of 25-207 amu. This is based on values reported by B2FH [24] for neutron-capture cross-sections (σ). The graph (**right**) is from a paper in the 2005 Lunar and Planetary Science Conference [28]. Severe mass-fractionation of noble gas isotopes in the solar wind (**left**) was noted in 1983 [29]. Precise measurements of noble gas isotopes implanted in lunar soils and breccias from the solar wind [30] (filled bars) are mass fractionated relative to those in planetary noble gases [31-33] (open bars). Solar mass fractionation of isotopes is shown in the graph on the **left** across 22 isotopes, spanning a mass range of 3-136 amu, and solar mass fractionation of *s*-products is shown in the graph on the **right** across 72 *s*-products spanning a mass range of 25-207 amu.

A common mass-fractionation of xenon and neon isotopes had been identified in 1970 [34] in the Sun and meteorites. The dashed line in **Figure 2a** identifies the mass fractionated xenon isotopes observed in primitive meteorites in 1972 [16]. It only became possible to identify a common mass fractionation across all the Sun's noble gas isotopes (See the graph of the **left side of Figure 3a**) after the discovery [25] in 1975 of "strange" isotope abundances in all three heavy noble gases, argon, krypton and xenon, was followed by the 1976 [35] finding that noble gases in the Sun are a mixture of "strange" ones, from the outer region of solar system, with "normal" ones from the inner regions of the solar system [36].

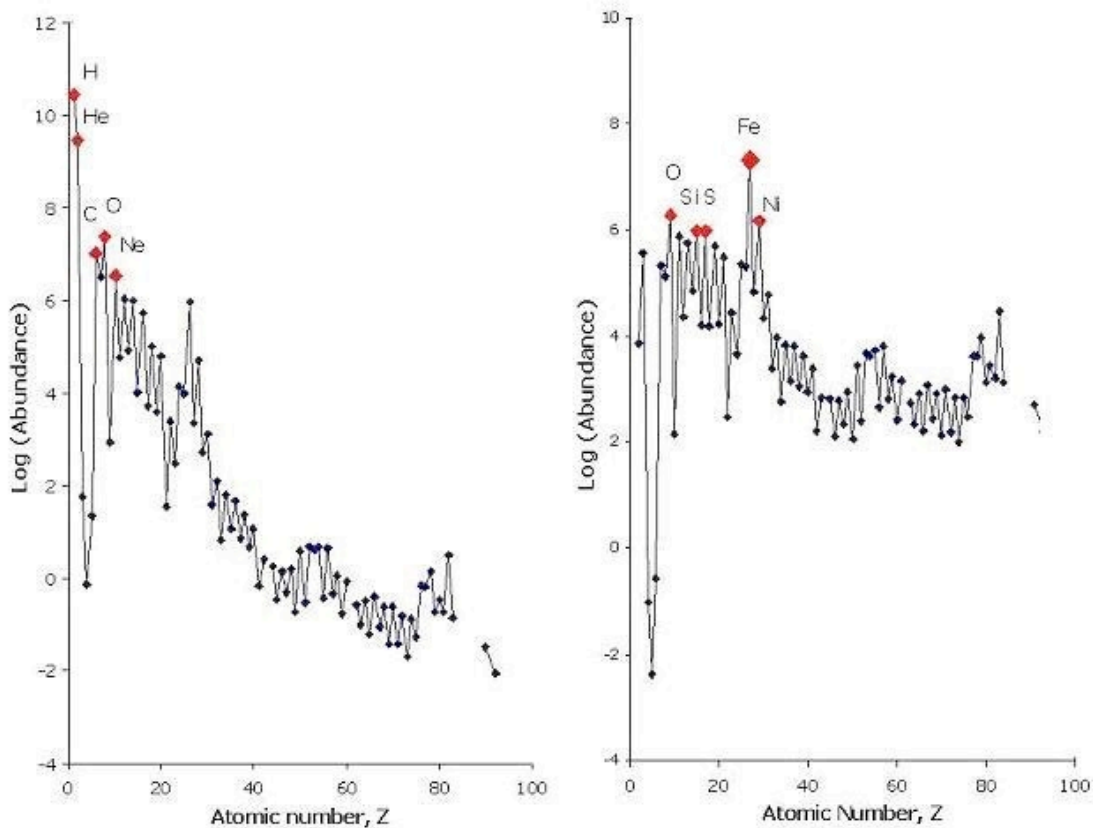


Figure 3b: The severely mass fractionated abundance pattern of elements at the top of the Sun [37] (**left**) becomes remarkably like the abundance pattern of elements on Earth and in ordinary meteorites [38] (**right**) - consisting mostly of Fe, O, Ni, Si and S - after correcting for the severe solar mass fractionation revealed by precise measurements [30] at the Universität Bern, Physikalisches Institut of isotopes implanted in lunar soil #bb18. Correcting for mass fractionation (**Figure 3a, right**) across the 72 s-products that B2FH [24] reported in the solar photosphere in 1957, yields the same five elements - Fe, O, Ni, Si and S - dominant in the interior of the Sun as were revealed by wet chemical analysis to be the five most abundant elements in ordinary meteorites in 1917, forty years earlier [38].

There is thus abundant evidence the Sun's internal composition is ***not*** represented by light-weight elements (hydrogen and helium) at the top of its atmosphere, just as Earth's internal composition is ***not*** represented by gaseous nitrogen and oxygen in the air. Evidence of solar mass fractionation was noticed in the first meteorite I analyzed [39], the meteorite that fell near the University of Arkansas in 1934 [40].

<http://www.omatumr.com/Photographs/Pics/Fayetteville.jpg>

This finding was subsequently confirmed by numerous analyses of meteorites and material ejected from the Sun [41], but obscured by claims neon in meteorites is a mix of alphabetically labeled components of primordial neon: Ne-A, -B, -C [42].

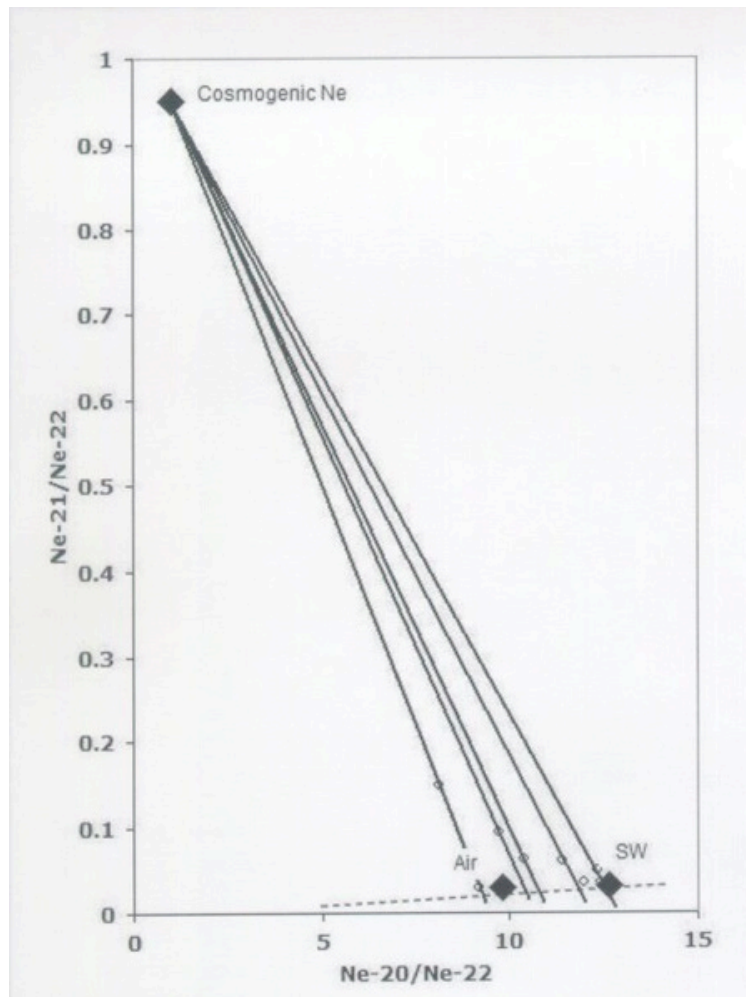


Figure 3c: Analysis of neon isotopes in the dark section of the Fayetteville meteorite in 1964 revealed a.) Neon isotopes in the upper left corner of the graph generated by cosmic ray bombardment (**Cosmogenic Ne**); b.) Neon isotopes implanted from the solar wind (**SW**) in the lower right part of the graph; and c.) Mass-fractionated forms of SW neon along the dashed line that passes close to atmospheric neon (**AIR**) and extends on toward mono-isotopic Ne-22 (^{22}Ne or Ne-E) as the final end product of mass-fractionation [42].

2. Conclusions

The precise data in Figures 1, 2 and 3 provide **clear and unequivocal evidence**:

1. Neutron repulsion is the source of energy in cores of heavy atoms and stars
2. The Sun made our elements, birthed the solar system and sustains our lives
3. Iron-56 is the most abundant and most stable atom in the Earth and the Sun

In other words the conclusion to my journey, illustrated by the image on page 16, is scientifically valid. The solar pulsar is the source of every atom, life and planet in the solar system. The fountain of energy that sustains our lives and controls our destiny is powered by neutron repulsion - a source of energy Aston recognized in "packing fractions" as **"power beyond the dreams of scientific fiction"** [1.14*].

Unlike "packing fractions," values of "nuclear binding energy (B.E)" minimize the effect of neutron repulsion and exaggerate that of proton repulsion. Such bias is in the long-term best interest of no one: It ultimately puts all human life at risk.

Homo Sapiens will hang together, and share information honestly, or risk sudden – but unexpected – death from natural causes. We have fortunately survived the last sixty-eight (2013 – 1945 = 68 yrs) years, despite official disinformation that was probably intended to protect humans from the possibility of nuclear annihilation.

To benefit from the precise experimental data presented here, each reader needs to actively challenge the conclusions of the author and his critics in order to decide: *Which is right? Is the pulsar-centered Sun an acceptable conclusion **for me** ?*

Acceptance of the pulsar Sun is as frightening to society now, as was Copernicus' conclusion in 1543 that Earth orbits about the Sun. But acceptance of this reality may free us from tyranny [ref. 1.8 and E in acknowledgements on the next page].

This chapter is a summary of major conclusions to the research project Professor Paul Kazuo Kuroda assigned to me in May 1960. Future chapters will historically review all research findings along the journey from 1960 to 2013.

3. Acknowledgements

Kuroda never hinted what I would find when he made my research assignment in 1960, but the knowledge he displayed in 1956 of the infinite multiple constant in self-sustaining nuclear fission reactions [1.2, 1.3] persuades me he knew I would eventually discover the Sun's pulsar core, if I remained faithful to basic principles of science.

This Chapter is dedicated to seven brave souls who helped reveal answers to the intriguing solar puzzle. Paul K. Kuroda [A], Fred Hoyle [B], David Snell [C], Robert Jungk [D] and George Orwell [E] left hints in their autobiographies and other documents about strange events in 1945-46. Bill Streifer and Irek Sabitov [F] continue to investigate mysterious events in David Snell's report [C] and the downing of a B-29 bomber "*Hog Wild*" over Konan, Korea on 29 August 1945.

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Chapter 2: Addendum and Final Conclusion

After finishing Chapter 2, a message was sent to the *Congressional Space Science and Technology Committee* on 20 December 2013 asking why:

<https://dl.dropboxusercontent.com/u/10640850/WHY.pdf>

1. The internal composition of the Sun was changed from **mostly iron (Fe) in 1945** to **mostly hydrogen (H) in 1946**, . . . (without discussion or debate)?
2. Textbooks replaced Nobel Laureate Francis W. **Aston's rigorously valid "nuclear packing fraction"** with von **Weizsacker's convincing but deceptive "nuclear binding energy"** after the Second World War?

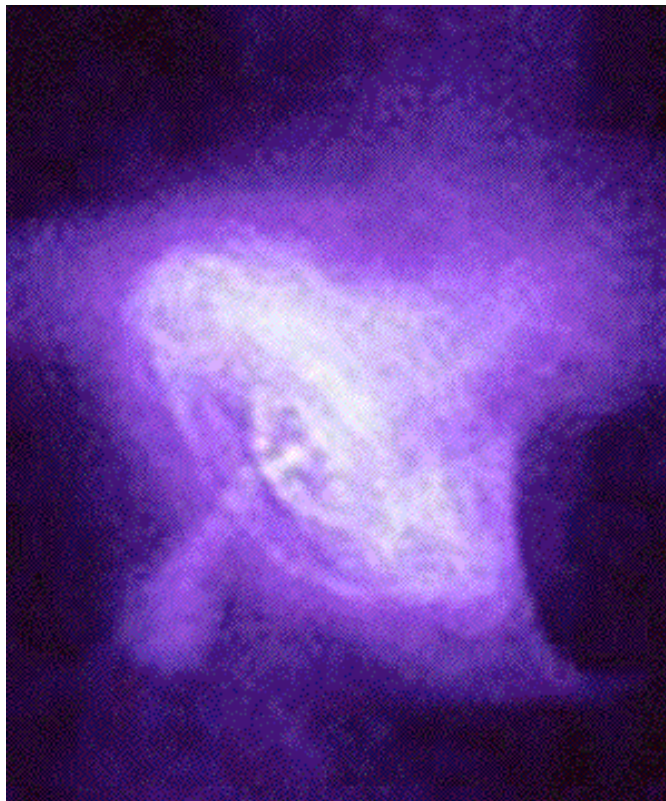
Year-end holidays and/or the blinding snowstorm and bitter cold that now grip the United States may have delayed their response. Now seems an appropriate time to consider the possibility that deception of the public was justified by events in **1945 - 1968** that may have threatened the survival of civilization.

1. In **1905**, Einstein showed that mass is stored energy, **$E = mc^2$** .
2. By **1922** Aston had measured the exact masses of most atoms. He reported on 12 December 1922, **"the human race will have at its command powers beyond the dreams of scientific fiction!"** *How did humans use the energy?*
http://www.nobelprize.org/nobel_prizes/chemistry/laureates/1922/aston-lecture.pdf
 - In **August 1945** allied forces released "powers beyond the dreams of scientific fiction" from the cores of uranium and plutonium atoms to vaporize Hiroshima and Nagasaki and kill hundreds of thousands of innocent civilians.
 - [On **12 Aug 1945** Japan may have exploded an atomic bomb off the coast of Konan, Korea, and later in **August 1945** Japan's atomic bomb production facility may have been captured by USSR troops that had invaded Korea and Manchuria.]
 - On **24 Oct 1945** the United Nations was established, but the Cold War continued to threaten the survival of mankind.
 - On **25 May 1961** President Kennedy announced the Apollo program to send man to the Moon and back **before 1970**.
 - On **30 Oct 1961** the USSR exploded the Tsar bomb, more than 1,000 times more powerful than those that destroyed Hiroshima and Nagasaki.
https://www.youtube.com/watch?v=16cewjeqNdw&desktop_uri=%2Fwatch%3Fv=16cewjeqNdw&app=desktop
 - On **22 Nov 1963**, President John F. Kennedy was assassinated.
 - On **6 June 1968**, Senator Robert F. Kennedy was assassinated.

3. In **July 1971**, Henry Kissinger secretly flew to China to make an agreement to end the Apollo space program, the space race, and the Cold War.
4. On **5 Jan 1972** Richard Nixon announced to the world the end of the space race and Apollo program.

4. Two Final Conclusions

1. **WE WILL WORK TOGETHER or WE WILL DIE SEPARATELY.** The historical events of **1945-1968** suggest that humans had not yet evolved to a stage to benefit from **"powers beyond the dreams of scientific fiction"** in 1922 [1.14*].
2. **OBSERVATIONS and MEDITATIONS REVEAL THE SAME REALITY. HONEST SCIENTIFIC CONCLUSIONS and CONCEPTIONS of GOD DO NOT CONFLICT.** The creator and sustainer of every atom and life in the solar system, as revealed by scientific observations, is indistinguishable from those described as the *Father of Light*, the *Spirit of the Universe*, or *God, the Creator and Sustainer* of lives and matter by various religions throughout the recorded history of mankind.



This is the tool "God" used to create and endow mankind with intelligence, creativity, talents and inalienable rights.