quite futile toys, because the problems, which the poor human beings of the future will have to face, will increase at n^2 times the speed of light.

To get out of this infernal circle and leave the abysses into which we seem to fall, we have to invent a new tool.

Today, through the pressure caused by the uncontrolled increase in the problems appearing at various scales, the planetary human society is shifting towards a chaotic state: "the crisis."

Already physicists[2,3] in their own microcosm, followed by biologists, chemists and engineers,[4] go with quasi-mystical pleasure into the study of chaos. Unfortunately, the more we play with chaos, the more chaotic it becomes; it is again an infernal circle.

The only way to get out of this circle is to fight the devil with the devil: for a chaotic illness a chaotic cure! The solution: Let us create the chaotic "brainy" computer, the unique tool capable of treating chaos with chaos. The continuous chaotic crisis state of human society will be chaotically under control and human beings will for the first time fully enjoy chaotic pleasures of life in a world disorganized, but on a scientific basis. As once appeared on the French tv screen, "Vive le chaos organizé."

References

1. K. Wilson, APS Meeting, March 1983.
2. S. Galam and P. Pfeuty, PHYSICS TODAY, February 1983, page 110.
3. Nature **303**, 15, 1983.
4. Nature **304**, 115, 1983.

S. GALAM
City College of New York
New York, New York
P. PFEUTY
Centre d'Orsay
Orsay, France

8/83

Millikan's predictions

I would like to correct the record on Robert Millikan's quote on atomic energy (L. Carl Savit, July, page 11). Savit refers to "Millikan's 1937 published statement" that "there will never be enough energy available to mankind from the atom to run a peanut whistle" (his quotes). The flavor of the statement is perhaps correct, but it is not a quote, even though it has indeed been "quoted" in that form for years.

On 4 September 1928, Robert A. Millikan addressed the Society of Chemical Industry on the occasion of receiving the Messel Medal in honor of his work on the structure and relation of atoms (*Science*, page 279, 28 September 1928). His talk on "Available Energy" discussed primarily his work on the origins of cosmic rays as the "birth cries of the infant atoms." After reviewing what was then known about cosmic rays and their origins, he dis-

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cussed energy sources in general. Realizing that he spoke before the discovery of artificial radioactivity (1928, not 1937), his statement

> The energy available to him through the *disintegration* of radioactive, or any other, atoms may perhaps be sufficient to keep the corner peanut and popcorn man going, on a few street corners in our larger towns, for a long time yet to come, but that is all. [original emphasis]

is not as subject to criticism as it would be if it had been written in 1937.

There is much that can be criticized in this talk when looked at from the vantage point of 55 years of truly phenomenal developments in physics and astronomy, but I can recommend the eloquence of the presentation as an example also of the disappearance of literacy from scientific writing in those 55 years.

E. RICHARD COHEN
Rockwell International
7/83 *Thousand Oaks, California*

THE AUTHOR COMMENTS: Millikan's statement was cited solely for the purpose of illustrating my contention that even extremely competent and far-seeing scientists tread hazardous ground when they make negative technological predictions. A suitable quotation could have been selected from among the writings of numerous distinguished scientists. Millikan was simply one of the most distinguished.

As to Victor Weisskopf's statement that "Effective anti-submarine detection, if it ever can be done, is several decades off," I prefer to believe those in the anti-submarine warfare community who predict that effective submarine detection systems will be available in the short to mid term. After all, Jules Verne's statement that "what one man can imagine, another man can do" has been repeatedly and amply confirmed.

CARL H. SAVIT
Western Geophysical
8/83 *Houston, Texas*

Corrections

June, page 54—The caption for figure 6 should have included a reference to R. Z. Bachrach, L. E. Swartz, S. B. Hagström, I. Lindau, M. H. Hecht and W. E. Spicer, Nucl. Instr. & Meth. **208**, 105 (1983).

September, pages 68–69—Due to a printer's error, credit for the photos was omitted; all color photos were by Sam Treiman.

September, page 101—The OSA annual meeting for 1983 is in New Orleans, 17–20 October; the 1984 meeting in San Diego was erroneously also listed for the same month. □