letters

tal science will more than compensate for losses to computational science.

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Inflationary universe

The inflationary universe is in the news (May, page 17). Its tenets: In the beginning time ran fast and much was accomplished. This idea has been around a long time (see Genesis I). Also, "Others suggest that in those crowded, jostling yesterdays, the rhythm of events was faster than the rhythm of the spacious universe today; evolution then proceeded apace, and into the faint surviving traces, we now misread the evidence of a great antiquity. Our knowledge is too meager to estimate the value of such speculations, but they sound like special pleading, like forced solutions of the difficulty."[1]

I am sure many readers believe this unknown pleader has things backwards. Getting from 10 to 15 years old seemed interminable. From 65 to 70 years is frighteningly short. Hubble should be required reading for all young (and old) astronomers. It is good literature with fine style.

Reference

1. E. Hubble, *Observational Approach to Cosmology*, Oxford U. P. (1937) page 44.

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Chaotic computer?

More and more, the computer today is invading every part of the bureaucratic machinery. Paradoxically, all progress concerning computers—and this progress is immense—has the consequence of showing that this progress is never enough; one always needs something more powerful, faster, with more memory, smaller, cheaper, less energy-consuming, and so on.

The physicist Kenneth Wilson, who is very much in favor of the use of computers in theoretical physics, pointed out recently[1] that these machines are small toys "almost just capable to amuse children." The search for computational "power" is limitless and, as with pornography, it becomes more difficult to get pleasure. The big companies use all their imagination to gain a few kilobytes, complexify the systems and have faster machines. Tomorrow they should find a way to go faster than light! But these computers working at n times the "light speed" will still be

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.

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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-