



John H. Douglas

Computers like this Burroughs MOD 1, one of the first fully transistorized computers, were key to the success of America's space program. Now in the Smithsonian Institution, shown with Mathematics Curator Uta Merzbach, it guided early rockets.

many complex processes.

Possibly the greatest impact on daily life may come from combining computers with sophisticated means of communication to form data networks. Just as the growth of industry drew great masses of people together into overcrowded, filthy cities, networks and computer-coordinated transportation systems may free them again to seek alternate lifestyles in communities of their choosing. The National Academy of Engineering and the Department of Housing and Urban Development have been sponsoring for several years a project to study these possibilities, under the direction of Peter C. Goldmark, the retired head of CBS Laboratories. Although three-quarters of the American people now live in the environs of major cities, Goldmark's team found that more than half of them would rather live in the country (SN: 10/19/74, p. 246). By creating what Goldmark calls the "wired city," people will soon be able to enjoy the benefits of urban jobs, services and culture, wherever they live.

But dangers lurk. Computer networks are already coming under fire for alleged abuse by Government agencies, violating the privacy of citizens. Automation can threaten jobs. And the very existence of sophisticated computers leads to a power gap between those trained to use and understand them, and those who are not. For individual companies in a fiercely competitive industry, the stakes are especially high: Such giants as RCA and General Electric eventually gave up entirely and turned their computer divisions over to UNIVAC and Honeywell, respectively. Now the French-Dutch-German computer venture, Unidata, is splitting apart, with

American and British firms gathering inquisitively about the ruins. Countries, too, may rise or fall according to how well they use the computer to "leapfrog" in development. The disparity is great: China has about 44 computers; Brazil has more than 490.

Much depends on how carefully the computer's advance is planned ahead of time. SCIENCE NEWS discussed this issue with Ruth Davis, who considers her role at NBS as one of a "Pied Piper," facilitating integration of computer technology into the Government. Innovators and technologists must cooperate more closely, she says, particularly in soliciting the help of workers and consumer representatives in planning for the introduction of automation. She is concerned that the direction of much research is focused on the special needs of a few large industries rather than on a broader spectrum of technical challenges. Most of all, she takes to task the academic community, which has been a "drag on the advance of computer science" through its neglect. In an editorial in SCIENCE (10/10/74), she concludes: "As computers increase their capacities to perform more of the tasks formerly considered only within man's intellectual province, man must equip himself for other functions or his survival will seem less important to himself, leading to a physical and intellectual ennui."

But there can be no turning back. The industrial revolution freed the human race from the land, creating in two centuries a largely artificial environment from which there is now no escape. The computer revolution promises to free the human mind; where that could lead in two centuries staggers the imagination. □

OFF THE BEAT

High Stakes in the Monopole Claim Game; Alvarez: 'Too Bad It Wasn't Right'

Physicist Luis W. Alvarez, in a hallway at the White House prior to the recent National Medal of Science awards ceremonies (he's a former winner), talking to fellow scientific notables about the much-disputed report of discovery of a magnetic monopole: "It would have been a great discovery—too bad it wasn't right. I don't know of anybody who believes it's a monopole except the people whose names are on the paper. It would have been a sensational discovery."

Following the ceremonies, Alvarez reiterated to SCIENCE NEWS his conviction that the particle track P. Buford Price and colleagues recorded is not that of a monopole but of a platinum nucleus fragmenting to osmium and then to tantalum (SN: 9/13/75, p. 13). "It is unthinkable that fragmentation was not discussed by these experienced heavy-ion physicists as a possible explanation for the glitch." Alvarez has graphed the Price data in a slightly different way and says, "If you showed any physicist [my graph], he'd say, 'My, what a beautiful fragmenting nucleus.'" He finds it "extraordinarily interesting" that physicist Peter Fowler, in Munich, had independently come to the same conclusions—"not to similar conclusions but to the *identical sequence*: platinum decaying to osmium and then to tantalum, with the fragmentations at the same places."

Alvarez feels strongly that Price and colleagues violated long-established, severe criteria—"ground rules of physics"—involved in the reporting of a great discovery. It is true, he says, that Price's data are *consistent with* the hypothesis that the cosmic ray track recorded was caused by a magnetic monopole. But that's not enough. To lay claim to "a great discovery," one must first, Alvarez cautions, "reject all other alternatives." To illustrate, he notes that physicist C.D. Anderson did not publish his great discovery of the positron in 1932 until he had ruled out all other possibilities. "Many observers had seen particles that were consistent with the positron hypothesis, but Anderson was the first one to be able to reject all other alternatives. That is why we recognize him as the discoverer of the positron."

With such high stakes of fame and reputation involved in any confirmed discovery of a magnetic monopole, the debate over the reported claim has at times been acrimonious. But in a newly

prepared 17-page paper outlining his case against the monopole claim ("Analysis of a Reported Magnetic Monopole," Lawrence Berkeley Laboratory report 4260, Sept. 16, 1975, unpublished) Alvarez concludes on a tone of commendable civility:

"I wish to thank Buford Price for his complete openness and obvious desire to have all the facts in the case made known. This is my first appearance in the role of 'open critic', and what otherwise might have made for a tense situation—no one really likes to have his firmly held conclusions questioned—was ameliorated by the fact that Buford and I are friends and long-time respected colleagues [ironically, both are at Berkeley]. I hope that if any of you ever finds himself in the situation I'm in today, you also have the good fortune to have as your 'debating partner' someone who was raised in the tradition of the 'Southern gentleman.'"

—Kendrick Frazier

Geography lessons

Question: What is the easternmost state of the United States? Answer: Alaska. The U.S. Geological Survey notes that if the Greenwich Prime Meridian System of Western and Eastern Hemispheres is considered, Alaska is both the westernmost and easternmost state. Semisopchnoi Island in the Aleutians, at longitude 179 degrees 36 minutes east, is in the Eastern Hemisphere and is thus the easternmost point, although it is only about 65 miles from the westernmost point, Amatignak Island, at longitude 179 degrees 6 minutes west. The occasion for pointing out this East-West business is publication by USGS of its new 50-state map, its first to show Alaska and Hawaii in their proper size and position relative to the other 48 states. The map should make Alaskans and Hawaiians happy, but it sure puts the rest of us contiguous-48'ers in our place: squinched into the map's lower-right quadrant.

* * * *

This geographical pseudorevisionism recalls the recent Smithsonian Institution disclosure that Everest is far from the world's highest mountain, if you measure from the center of the earth. That distinction goes to Mount Chimborazo, 20,556 feet above sea level in the Andes. Because it lies on the earth's equatorial bulge, its peak is 20,946,233 feet from the earth's center, exceeding Everest by 7,058 feet.

—K.F.

STRANGE PLANET

A SOURCEBOOK OF UNUSUAL GEOLOGICAL FACTS

Original articles on mammoth graveyards, foundered continents, deluge myths, musical sands, boulder trains, patterned ground, Mima mounds, giant craters, and other geological perplexities, as originally published in *Science*, *Nature*, *Journal of Geology*, and similar publications.

280 pages, hard covers, \$7.95 postpaid

Published by: THE SOURCEBOOK PROJECT

BOX 107B, GLEN ARM, MARYLAND 21057

LETTERS

Science vs astrology

The anti-astrology arguments of the "186 prominent scientists" "Science vs astrology: New battle, old war" (SN: 9/13/75) unaccountably omit the most telling condemnation of astrology: its ignorance of modern astronomy and of the "precession of the equinoxes" which even in the century of the Greek Ptolemy (the 2nd century, B.C.) had been noticed by the greatest astronomer of ancient Greece, Hipparchus. That means the twelve Houses of the Zodiac have "precessed" or slipped backwards by about *one whole House* since antiquity! When the modern astrologer (looking at his out-of-date astronomical charts) tells you that you were born under Capricorn, you were actually born under Sagittarius (by actual observation of the sky). That makes absurd nonsense of the character traits associated with each House, and hence of all astrological pronouncements. This argument ought to carry far more weight with intelligent young people than any "argument from authority," even prominent scientific authority.

John Spillman Jones
Santa Monica, Calif.

The booboisie, as Mencken called them, have long shown an instinctive preference for fraud; for the cosmology of a Velikovsky over that of a Fred Hoyle, for the anthropology of a Robert Ardrey over that of a Louis Leakey, for the medical insights of a Mary Baker Eddy over those of the brothers Mayo or for the gibberish of an L. Ron Hubbard over common sense. Regardless of what the "186 leading scientists" have to say, they will continue to entrust their money, health and minds to the first handy Bernie Cornfeld, Vic Tanney, Timothy Leary or Oral Roberts and, of an evening, having first solved their emotional problems via Ann Landers, will turn the paper to the astrology column for more comprehensive guidance.

The 186 leading scientists might better spend their time tending their cabbages—or their laboratories.

Charles B. Johnston
Evanston, Ill.

As one who has been both disturbed and puzzled by the recent rise in the popularity of astrology, I certainly applaud the efforts of scientists to take an open stand against it. I must, however, take exception to Bart J. Bok's statement that "Ptolemy . . . could not have known . . . that stars were unimaginably far away." Ptolemy's *Almagest*, Book I, chapter 5 states that, "The earth, in relation to the distance of the fixed stars, has no appreciable size and must be treated as a mathematical point," and goes on to give the arguments leading to this statement. Ptolemy was ignorant of many points of modern astronomy, but this, at least, was not one of them.

Robert W. McAdams
Parsippany, N.J.

Although I am not an apologist for astrology, I see a crucial reason for its increasing popularity, a reason that seems to have escaped the scientists, leaving their attack less effective than it could be. The reason for astrology's popularity is that it offers people what science does not; a psychologically meaningful link between the *individual* and the cosmos.

As an architect, I have been following the work of Gerald Hawkins, Fred Hoyle, and others who are involved with the astronomical alignments and computations of Stonehenge, Mayan temples, the Great Pyramid, and American stone circles, etc. These ancient megalithic works served not only as scientific instruments, but as sites for ritualistic festivals and ceremonies as well. Thus ordinary people *participated* in astronomy and cosmology as an organic part of their religious life and the natural cycles of the seasons, harvesting and planting.

To dismiss astrology, for instance, as "superstition" shows a serious lack of understanding of the primordial psychological need for a "meaningful relationship" with the cosmos, a need which has been part of the structure of the human psyche since the first extant traces of human life.

By not acknowledging people's basic archetypal quests for meaning, and therefore not offering alternative responses to them, scientists have not begun to understand the magnitude of the challenge put to them by astrology and other "superstitions." It is a call for cognitive frames which describe not only the order of the universe, but also give the individual a sublime sense of participation in that order.

Mimi Lobell
Professor of Architecture
Pratt Institute
Brooklyn, N.Y.

I have never had a horoscope cast, and I wholly agree that the popular conception of astrology and its relevance to an individual's life is incorrect.

The more discerning individuals give consideration to astrological principals in the same spirit as those who ascribe meaning to theological concepts and principals. These people recognize that the practical application of astrology is questionable, but no more so than is the practical application of theology—that is, religion. And who could successfully defend the position that the concepts of theology are groundless because of the inconsistencies of religion?

Many young people today (as well as others not so young) are searching for assurance that life does have relevance. The traditional providers of this kind of information, the institutionalized religions, are failing to provide reasonable answers for our era—it seems that science is failing also. Thus many turn to esotericism.

James F. Leavy
San Diego, Calif.

In reference to objections to astrology, I suppose you felt it necessary to note the existence of a document so elegantly sponsored, but I really think it could have been ignored.

Attacking superstition is like attacking a taste in women—unwarrantedly personal and so crucially pointless.

Anna Long, Palmist
Shamokin Dam, Pa.