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THE FIRST WORD

THE KING IN A GOLDEN CHARIOT

The American writer Carl Sandburg shone as historian and poet. With that combination of vision and perception, he might have been expected to be an outstanding journalist as well. Legend has it otherwise, though: A Chicago editor sent the young Sandburg downstate to cover a landmark international labor meeting. Off Sandburg went. A day went by. Then two. Then three, without any word from the cub reporter. Finally, his editor cabled him: "What is going on?"

Sandburg's reply, in its entirety, was: "Tremendous excitement here. Great things happening." And those were the only words he filed on the topic.

He was, of course, fired soon after.

A month of travel—new people, new places, new undertakings—leaves one similarly dumbstruck: with a feeling that great things are happening... but not necessarily the things we expected. (Returning to find the stock market a shambles and Billy Martin once again manager of the New York Yankees* merely increases one's sense of unreality.)

In Singapore—at a conference on The Molecular Biology of Human Disease co-sponsored by *Bio/Technology*, the National University and the Science Council there—Sidney Brenner made a few very well founded observations on the past, present, and future of molecular biology.

In the days before Watson and Crick, biochemists examined how matter and energy are transformed in biological systems. The early years AD (after DNA) revealed chemistry as information. Now, however, we are struggling to understand the chemistry of organization, and the machinery of cell-to-cell interaction.

This development has been accompanied by a change in the way we do biology. It used to be outside-to-inside: a disease is found to be associated with a sickle-cell deformity of the erythrocytes; the deformity is linked to a change in the cell's hemoglobin; the hemoglobin variation is narrowed down to a change in a single amino acid; and, finally, the amino-acid alteration is linked to a genetic defect.

The current approach is inside-to-outside—a process often called reverse genetics, but which Brenner labels "reverse biochemistry." We find a gene, then the protein, and then determine the protein's physiological role. A puzzling product of this trend is the temptation to amass encyclopedic information in the belief all will come clear in the end (what Brenner not disapprovingly calls "have-a-look biology"—experiments that rummage around in nature's attic, just to see what's there without testing any particular hypothesis).

But there are still great adventures and tremendous excitement ahead. "We can get hold of the genetic script," says Brenner, "but we can't read it. It's written in a language I call Linear G."

"Linear G," a short-hand for the physiological interpretation of genetic information, is a play on Linear B, the script of the Minoan civilization on Crete about 3,500 years ago. In the sort of coincidence that delights Dr. Brenner and certain editorial writers, an amateur cryptanalyst cracked Linear B at almost the same time as Watson and Crick cracked the structure of DNA.

Linear B yielded to a simple insight—that the Cretan language was related to Greek—that had been pooh-poohed by the professional scholars of the day. Each of the experts had pursued his own convictions about the language's roots, and had produced eloquent translations by reading the existing texts from right to left, left to right, or any which way that promised a plausible result.

Thus, one exalted message, translated by one scholar as "Lo, the king arrives in a golden chariot," proved in the end to be a quartermaster's inventory, "Here are 45 sandals and 2 chariot wheels."

That may be what we are about today. "Lo, the king," may sound very grand, but the details of organization, the stockpiles of sandals and wheels and grain, tell us much more about life and how it's lived.

—Douglas McCormick

*For those not conversant with American baseball, the relationship between the team's owner, George Steinbrenner, and Martin, one of the game's perennial bad boys, is roughly the relationship between a small boy and a yo-yo. Every other year, Steinbrenner fires a perfectly good manager and rehires Martin. The very madness of the ritual gives one a sense of stability in an unreliable world.