reference for estimating the distance to those farther away. This leads to an estimate for the Hubble constant—the ratio of the recession speed of the galaxies to their distance from Earth—which, finally, constrains the age and fate of the universe.

"Because we still have a 10% uncertainty, we're not making a dent in the Hubble constant today," says Shrinivas Kulkarni, who supervised Lane's research. "The excitement is that the technique does work. As other optical interferometers come online, they will produce a dozen similar measurements with accuracy to a few percent. This is like an initial public offering." One new interferometer that will probably improve upon the accuracy of the PTI measurements is the Center for High Angular Resolution Astronomy, a 400-meter-wide array of six telescopes on California's Mount Wilson, which will be dedicated on 4 October and is expected to start operations by the end of the year.

–DANA MACKENZIE

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PRESIDENTIAL APPOINTMENTS

Panel Cites Barriers to Government Service

Why don't more scientists want to work as top officials in Washington?

The answer, according to a panel of veteran government policy-makers, is a lack of attention to science by incoming Administrations, a slow appointment process, and outdated rules to prevent conflicts of interest. The problem is particularly acute among high-tech industry executives, according to a new report from the National Academies of Sciences and Engineering and the Institute of Medicine, which urges the next president to give industry a bigger place at the policy table. "We don't want to lower the standards," says Mary Good, dean of engineering at the University of Arkansas and chair of the panel. "But we think that it's fair to ask if the world has changed so much that the rules need to change, too."

Industry officials don't disagree that recruitment is a serious issue. But many say that considerations such as salary levels and career prospects are bigger disincentives to government service, and that it's also possible to serve the government without working in Washington full-time. "It's not a career path for most people in Silicon Valley," says Tim Newell, an aide to science adviser Jack Gibbons during Clinton's first term and currently managing director at E*Offering, an Internet investment banking firm in San Francisco. "The last few years have seen huge growth and unprecedented economic opportunities," he adds. "Those tremendous opportunities, plus the barriers mentioned in the report, make it harder to attract quality people to Washington."

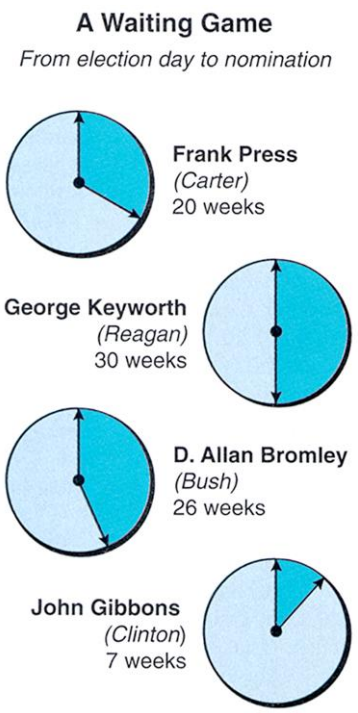
The eight-page report (www.nationalacademies.org) is a follow-up to a 1992 study by the academies and similar exercises by others carried out during an election year. It urges the incoming Administration to include scientists on its transition team and to appoint a presidential science adviser early enough to play a role in screening for other top positions. For example, President Reagan's decision to wait until May 1981 to appoint his first science adviser, George Keyworth, "was a big problem at the start," notes panelist John McTague, a retired Ford Motor Co. executive and acting presidential science adviser during Reagan's second term. "His first two science budgets were woefully inadequate, not out of malice but out of ignorance."

The science adviser is one of 50 science and technology slots, from the director of the National Institutes of Health to the undersecretary for technology in the Commerce Department, that the panel labeled as "most urgent" of rapid appointment. The panel was also concerned that the Clinton Administration included fewer people from industry in its first batch of nominees for top science jobs than did the Reagan and Bush presidencies. (The report did not tally appointments made after the second year in office.) It blames the decline, from 27% in 1982 to 12% in 1994, in large part on the screening process, which it says has grown so cumbersome that it deters potential hires. Indeed, several executives noted that the long delay between initial consideration and confirmation—data from the panel show that a majority of people now wait more than 4 months—is a big disincentive for industrial leaders, who must put their enterprises on hold while awaiting resolution of their job status.

Part of the problem are rules that require divestiture of stock, stock options, and other financial stakes that could be seen as a potential conflict of interest. To try to avoid these problems, the panel calls for the creation of a bipartisan panel, involving the White House and Congress, that would examine ways "to reduce unreasonable financial and professional losses" for nominees.

However, industry officials say a more important barrier than the ethics rules is the fact that a job in Washington may not look as good on the résumé of a rising executive as it might on the CV of a university administrator.The economy also plays a role in determining the pool of applicants, say industry officials. And good times don't last forever, Newell notes. "Just wait until the next recession," he says. "That could change things in a hurry."

–JEFFREY MERVIS



Timely hires. Clinton was the speediest of recent U.S. presidents to name his first science adviser.

NEUROSCIENCE

A New Look at How Neurons Compute

The eyes, considered windows to the soul, may offer views of the brain as well. Researchers seeking a simple system in which to study how neurons perform computations—such as tallying the myriad of incoming signals they receive and concluding whether or not to fire—have for decades focused on the retina, which contains neurons that fire only in response to objects moving in certain directions. By studying how those neurons calculate the direction of movement, they hoped to learn general lessons about how brain neurons compute. But the studies were handicapped because no one knew which retinal neurons do the math. Now, on page 2347, a team led by W. Rowland Taylor of Australian National University in Canberra and David Vaney of the University of Queensland in Brisbane, Australia, reports evidence that the directional computations take place in retinal neurons called ganglion cells.

"This is really important work," says Alexander Borst, a neuroscientist at the University of California, Berkeley—especially because it offers researchers a welcome chance to explore how neurons compute in a well-defined system. The Australian work might not be the last word, however. Another group has evidence that the site of computation lies elsewhere—a discrepancy that is likely to spark a flurry