mented expertise in handling *Ciona* in the laboratory, compared with Kammerer's two or three using laboratory equipment much advanced for his day but much less sophisticated than that available at Woods Hole. Whittaker also mentioned that *Ciona* is a very delicate animal which rarely survives more than six months in captivity, even under optimal conditions.

After Koestler's challenge, Whittaker reviewed Kammerer's *Ciona* work and decided to repeat it for two reasons. "First," he says, "Kammerer always said the *Ciona* work was his best evidence, but he never published it in a primary source, a refereed journal. Yet he did publish extensively on the midwife toad and salamanders." This made Whittaker suspicious. Second, he says, he became more suspicious after reading Kammerer's claim of gonad excision. "Excision of the lower portion of *Ciona* invariably kills them. Anyone who had worked with them couldn't believe that, and I became totally suspicious that Kammerer had even *done* the experiments on the basis of that claim." Whittaker is no longer suspicious. He is now convinced, he says, that Kammerer either did not do the experiments or faked the results.

The only evidence Kammerer did publish, Whittaker says, was a series of photographs showing *Ciona* with very long siphons. But there is a local subpopulation of *Ciona* found in the Mediterranean near Naples with naturally long siphons. "When something real like that already exists in nature, one becomes suspicious of photographic evidence," he says.

Whittaker was not funded directly for this project. But he was able to do the experiments with "the freedom and flexibility afforded by Woods Hole," and general grant support by the National Institutes of Health. His is the first repetition of Kammerer's work, because, he says, "I think it would be impossible to get a grant specifically to repeat the work. Many of one's peers wouldn't believe it worth doing, and it's a priority thing. There is only so much money around, and they are not going to give it to the nut projects."

Does this finding finally close the Kammerer case? "No," Whittaker says, "negative results do not disprove positive claims. In fact, once stated, positive claims are essentially impossible to disprove." He anticipates some objections and disbelief from Koestler and other Kammerer enthusiasts, perhaps along the lines of "Well, you aren't as talented an aquarian as Kammerer and therefore your animals died, and besides, you didn't repeat the experiment exactly, not amputating the siphons twice." (Attempts to reach Koestler in London for comment were unsuccessful.) Despite the probable objections, Whittaker says, "if one feels strongly enough about a scientific claim, then you have to try to repeat it and publish your findings." □

White House will have science adviser

More than two years after the President's Science Advisory Committee (PSAC) was disbanded and the title of science adviser laid on the already burdened shoulders of the National Science Foundation director (SN: 1/27/73, p. 52), President Ford told Congressional leaders last week he was willing to reinstate a White House science office. No appointments will be announced, however, until Congress passes the necessary legislation.

Acting on the advice of Vice President Rockefeller, who headed an ad hoc committee investigating the matter, the President will send a draft bill creating a new post of White House science adviser, including provision for a staff of 10 to 15 assistants. The annual budget is expected to be $1.0-$1.5 million.

Already several bills are pending in both Houses of Congress to reestablish some sort of new Presidential Science advisory apparatus. These are based, in part, on recommendations of the National Academy of Sciences' so-called "Killian Report" (SN: 7/6/74, p. 4) which called for a three-man Council of Science and Technology. Now that the President has requested a single adviser, however, Congress will probably be willing to compromise on this point. James Killian himself says he "would gladly testify in [the bill's] favor."

Frank Moss (D-Utah), chairman of the Senate Aeronautical and Space Sciences Committee, and Olin Teague (D-Tex), chairman of the House Science and Technology Committee, will hold hearings on the new science office beginning June 10.

NSF Director H. Guyford Stever, who is currently acting as Presidential science adviser, says he is "extremely pleased" with the President's new proposal. There has been some speculation that if Stever's two present jobs are split up, he would be chosen to go to the White House.

Arguments over the form of Presidential science advising may seem a bit esoteric to those unfamiliar with the ways of Washington bureaucracy, but in fact, for the last two years, the two city blocks that separate the National Science Foundation and the White House might as well have been the Slough of Despond. Under former President Nixon, Stever was virtually barred from policy-level discussions, reportedly replaced by a shadowy unofficial advisory group (SN: 7/28/73, p. 52), and when SCIENCE NEWS once questioned President Ford's intimate adviser Robert Hartmann about the NSF director's influence in the new Administration, his answer was, "Who's Guyford Stever?"

Other criticisms of the present set-up include charge of conflict of interest—Stever as adviser making decisions that might affect his own agency—and disappointment that independent assessment of new weaponry had been removed entirely from the purview of the science adviser. Whether advice on military affairs will again become a duty of the reinstated White House adviser still remains unclear. □

Racemization dating: Further fine tuning

If it's older than 40,000 years, you may never find out exactly how old it is. And that presents a problem to anthropologists and archaeologists. The radiocarbon method of dating fossils is extremely accurate, but it is limited. The radiocarbon clock runs down in about 40,000 years, and organic matter older than that just can't be dated by the carbon 14 method. Several years ago, Jeffrey L. Bada presented researchers with a longer running clock. Instead of the decay of C-14, he used the racemization of amino acids, which has a much longer half life than radiocarbon (SN: 9/2/72, p. 154).

In living systems, L-amino acid isomers rotate polarized light in a counter-clockwise direction. After death, racemization (conversion of an optically active substance) gradually transforms L to D, or clockwise, isomers. By measuring the ratio of L to D forms, the age of a fossil can be estimated.

Last year, Bada reported that his process had been successful in dating a human skull at 50,000 years (SN: 5/18/74, p. 316). Now, he and Lydia Deems, both of the Scripps Institution of Oceanography, report on some further "fine tuning" of the process. In the May 15 NATURE they describe the dating of various levels of two caves in Southern Cape Province, South Africa.

The caves contain a long sequence of levels or horizons older than 40,000 years and out of reach of radiocarbon. Marine food refuse including seals, birds, fish and shellfish indicates that the caves were occupied by Middle Stone Age peoples. Bada and Deems dated samples from several levels going back to 110,000 years. The racemization dates coincide closely with geological and faunal evidence and suggest that the method can probably be relied upon in situations where geological or other evidence is not available.

With the value and accuracy of the racemization process fairly well established, Bada is now being deluged with samples. In fact, he is getting too many requests to handle. He may soon be getting help, however. The British Museum in London and possibly the U.S. Geological Survey in Menlo Park, Calif., are also planning to begin dating samples by the racemization process. □