These developments have been among the most exciting events in the recent annals of physics. I personally was a witness during the weeks preceding the actual announcement of the spectacular sharp peaks (*1*), when the members of the Lawrence Berkeley Laboratory (LBL)–Stanford Linear Accelerator Center (SLAC) team struggled to understand the anomalous counting rates observed near a collision energy of 3.1 Gev. What finally became the now famous sharp peak initially manifested itself through a peculiarly high point at 3.2 Gev. Further scanning exhibited a lack of reproducibility of readings near 3.1 Gev, since the energy of the storage rings was not controlled commensurate to the sharpness of the peak and therefore malfunctions were suspected. After all relevant parameters were put under control, the spectacular peak initially of the 3.1 Gev particle, followed very soon thereafter by the discovery of the 3.7 Gev psi particle, became obvious.

There is no question that the Massachusetts Institute of Technology–Brookhaven National Laboratory discovery represented a very difficult and superbly instrumented piece of work in high-energy experimental physics, and the authors deserve full credit for that achievement. Similarly, the independent LBL-SLAC discoveries represented a spectacular demonstration of the powers of electron-positron storage rings in discovering new particle states and in exploring the spectroscopy and intrinsic properties of such particles. This should be a joyous occasion for all physicists.

WOLFGANG K. H. PANOFSKY
Stanford Linear Accelerator Center
Stanford University,
Stanford, California 94305

References

1. J.-E. Augustin *et al.*, *Phys. Rev. Lett.* **33**, 1406 (1974).
2. J. J. Aubert *et al.*, *ibid.*, p. 1404.

Promising Chimpanzee

The important article "Putting a face together" by David Premack (18 April, p. 228) opens with the following statement: "Chimpanzees do not, so far as is known, construct copies of existing or imaginary figures by any device—drawing, assembling pieces of existing material, or otherwise." In fact, a paper published 66 years ago presented suggestive data that were recognized as theoretically important in comparing the mental abilities of apes and humans. This was an intriguing account by Witmer (*1*) of the remarkable performing chimpanzee, Peter. He was able to accurately copy, with chalk on a blackboard, the letter W drawn by Witmer. When asked to do so again, Peter complied. Witmer was a respected psychologist, and Peter's performance was observed by several other astonished persons. No differentiation was made, however, between copying the figure and copying the writing movements. S. J. Holmes, in his 1911 book (*2*), reproduced a photograph of a blackboard with the letters that Peter copied and stated in his review, "It is unfortunate that more extended and thorough experiments were not carried out with so promising a subject."

GORDON M. BURGHARDT
Department of Psychology,
University of Tennessee,
Knoxville 37916

References

1. L. Witmer, *Psychol. Clinic* **3**, 179 (1909)
2. S. J. Holmes, *The Evolution of Animal Intelligence* (Holt, New York, 1911), p. 272.

Those of us whose university libraries do not have the texts in question are indebted to Burghardt for calling them to our attention. It is not clear whether the animal copied the trainer's movements, visual product, or both, but in any case the example can be contrasted with that of Sarah, one of our chimpanzee subjects. Her visual production was not based on copying; she regularly reassembled the face without an external model.

The relation between copying an item and reconstructing it from memory is an interesting one. Certainly common sense suggests that it is possible to copy items which cannot be reconstructed from memory. On the other hand, we have some recent findings suggesting that, in some cases at least, if the subject cannot reconstruct an item from memory, it cannot copy it either.

In pursuing the matter of what one must know in order to be able to reassemble a face from memory, we gave Sarah disassembled pictures of faces different from previous ones. The parts were no longer eyes, nose, and mouth, but either (i) conjoint canonical parts, such as an eye joined to the nose; or (ii) disassembled canonical parts, such as an eye cut into four arbitrary pieces. Sarah reassembled the face from the conjoint pieces but failed to reassemble the disassembled eye. Moreover, when given an assembled eye (identical to the disassembled one) as a model, she was no more successful in copying the eye than she was in reassembling it from memory.

DAVID PREMACK
Department of Psychology,
University of Pennsylvania,
Philadelphia 19104