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letters

paper should not be published.

After three years of dispute the paper was eventually not published, whereas in the meantime leading journals of high-energy physics rushed to publish many papers claiming further confirmations of quantum chromodynamics based on more data fittings or outright misunderstandings. Even the general physics magazines were pulled in to join the chorus to inform their readers that "gluons" had been discovered and quantum chromodynamics had been confirmed beyond a reasonable doubt as the theory of strong-interaction dynamics. From this personal experience, it is now my firm belief that unless the community of a "big science" can develop an effective system to separate sensational public relations affairs from objective discoveries, it may well degenerate, collapse under its own weight and be transformed into a "big bureaucratic meta-science."

CHIH KWAN CHEN
Lombard, Illinois

2/87

When physicists toss coins

A number of recent letters to PHYSICS TODAY have addressed funding priorities for research, and I wish to bring to the attention of the physics community a significant threat to the rational allocation of research money. I am greatly concerned that if high-energy physicists become interested in investigating coin tosses it will lead to the expenditure of tens of millions of dollars according to the following scenario.

The first step is dangerous because it appears quite innocuous: A theoretician arguing from symmetry (pardon the redundancy) will predict equal numbers of heads and tails. Of course there is always the danger that undergraduates will waste time on interesting questions when they need to be practicing solving square-well potentials, so the theoretician will not use terms like "fifty-fifty" or "half-and-half" but rather will define an abstract mixing angle θ_{ht} and argue that it equals $\pi/4$ radians, thereby insuring that his paper will only be understood by the cognoscenti. Experimental high-energy physicists will then rush to test this argument, and preliminary results will suggest strong confirmation. Later, though, a patient researcher will publish results, based on a stupefying number of coin tosses, that indicate a very slight deviation of θ_{ht} from $\pi/4$. These results, he will claim, cannot be explained as a statistical

fluctuation. Theoreticians will attack the experiment, resulting in bitter, divisive debates full of unpleasant invective; prominent theoreticians will begin to remove equally prominent experimenters from their Christmas card lists. The arguments will become even more vitriolic when the Russians announce that they obtained the same results with kopeks at Serpukhov, and then claim that their experiment has priority.

Out of the blue, a brilliant young researcher (in his tenth postdoc) will announce the results of an experiment that clearly shows a slight mass difference between the head side and the tail side of a coin; the small difference in mass will be calculated to be within 5% of the exact mass needed to cause the deviation of the heads-tails angle from $\pi/4$. This researcher will be awarded the Nobel Prize. Theoreticians will then rediscover an obscure paper published in an even more obscure journal in 1975 predicting the mass difference; the physicist responsible for that paper will not win the Nobel Prize. When the mass difference becomes generally accepted, the threat mentioned at the beginning of this letter will become reality: Tens of millions of dollars will be spent on detectors to look for the particle associated with the symmetry-breaking field.

Even more frightening is the possibility that high-energy physicists will realize that it is also possible for a coin to land on its edge, but will observe that this state is strongly suppressed. In analogy with the GIM mechanism proposed by Sheldon Glashow, John Iliopoulos and Luciano Maiani to explain the suppression of the two-muon decay mode of the K meson, the fact that a coin landing on its edge is almost never observed could be taken as evidence for another generation of quarks. No upper bound can be placed on the expenditures that would result from this suggestion. I therefore urge plasma and condensed-matter physicists to try to steer their high-energy colleagues away from investigating coin tosses.

EMORY KIMBROUGH
Montgomery, Alabama

9/86

How now, 'What's New?'

In the 3 October 1986 edition of *What's New*, the very informative bulletin issued every Friday by The American Physical Society over the signature of Robert L. Park, I read, "The concern of Berkeley scientists for the niceties of peer review may seem to be a recent development to those who recall the tremors produced by the creation of the Center for Advanced Materials at