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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paper should not be published.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.

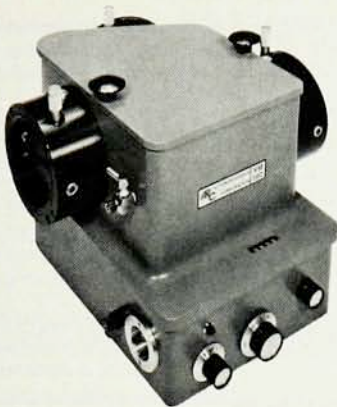
EMORY KIMBROUGH
Montgomery, Alabama

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

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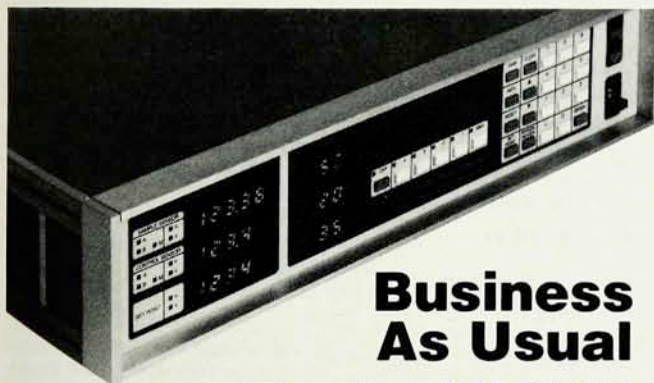
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letters

Berkeley."

With due respect to my good friend Bob Park, I would like to point out that the Marylander traditions of implication of guilt by association and of propagation of half-truths in fancy language may seem to be quite old to those who recall the speeches of Spiro Agnew in the early 1970s.

LEO M. FALICOV

10/86 University of California, Berkeley

Light verse

The photon (after Percy Bysshe Shelley's "The cloud")

*I bring fresh light to the ailing sight,
From all the stars and the sun;
Through the dark I race on the wings
of space,
Its curves turn straight as I run.
Should a massy being, my swiftness
seeing,
Strain to follow my track,
I hold my lead with unlesened speed,
Nor ever my pace shall slack.*

Toward airless spheres my spirit

*steers,
To ricochet again;
Like motes in the eye, like gems in the
sky,
They flash in the sight of men.
I may be as large as the Earth's wide
marge,
Or slim as an atom's hair;
I slip as I may on a glancing ray
Through the windows of the air,
Then spread my hues in the misty
dews,
While rain-drenched travelers stare.*

*Those bits of ore that far from shore
The mariners call lode
Can feel my weight in a tranquil state
To show them a starless road.
And men of old, upon that gold
Their children now call amber,
At the sound of my inaudible cry
Saw dead things quickly clamber.*

*I bend to my task in the chemist's
flask,*

*And Principles join as I please;
Through virtual being, reality fleeing,
I rule their affinities.
The electric points that fill the joints
Of matter's inner grain,
Singing aloud in their uncertain
cloud,*

*May flee my lure in vain;
I free them from cares, I create them in
pairs,
Only to bind them again.*

*Though single I strike, yet I steer alike
With others of my kind;
Like birds of a feathers we cluster
together,*

*Blown by the selfsame wind.
And one of my sides through crystal
slides*

While the other is left behind.

*Unlike poor man, who lays a plan
And then is fettered forever,
No freedom I lose when a path I
choose,*

*Though my soul I seem to sever.
For when I and my brother each far
from the other*

*Have found our way to the goal,
Like a pair of twin elves, my separate
selves*

Cohere in a single whole.

*In the awful blaze of that day of days
When the universe was born,
Like a hammer I sprang from a forge
that rang
With the blast of God's own horn.
And ever since I have left my prints
Where space is stretching under;
My color is bled from blue to red
As the galaxies rush asunder.
With failing strength and tenuous
length,*

*Across unnumbered years,
From here, from there, from
everywhere,*

I whisper to metal ears.

*When my sisters came to be weak and
lame,*

*By heaviness defiled,
Alone I spread my wings and fled,
To be known as an only child.
But under the mast of the timeless
past,*

*When the broken bell rang true,
My sisters three they come to me
In the love that once we knew.
And then we dance to the music of
chance,*

*While Symmetry strokes his lyre;
The short and the long, the weak and
the strong,
All one in the ancient fire.*

RICHARD FRIEDBERG

Columbia University

New York, New York

7/86

Corrections

May, pages S10 and S11—The photograph on page S10 shows a section of the Paladin wiggler at Lawrence Livermore National Laboratory, not Los Alamos National Laboratory. The last half of the last sentence of the caption on page S11 should read, "the Los Alamos FEL uses an rf accelerator."

June, page 50—The honorary degree recipients at the 20th anniversary of Clark University shown in the photo included R. W. Wood, Albert A. Michelson, Ernest Rutherford, Vito Volterra and Carl Barus. Arthur Gordon Webster was the host; he did not receive an honorary degree from Clark. □