

letters

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ecutives would thus appear to be many. It is disappointing that the Bell Labs executives appear to be unable to develop constructive discussion and options for the future of Bell Labs other than dire predictions of doom and gloom.

Although I disagree with the Bell System's position regarding the Justice Department suit, I indeed sympathize with the Bell Labs executives concerning Bell Labs' uncertain future. Over its fifty years of existence, Bell Labs has become a legend in industrial research laboratories and has created a most impressive and highly significant record of scientific and technological achievements.

A dismembering of the Bell System followed by the destruction of Bell Labs might indeed be a deplorable calamity for research in communications. However, Bell Labs has perhaps become a bureaucracy suffering from unwieldy enormity, loss of mission, and other problems. Thus, a restructuring of the many entities that comprise Bell Labs, if performed with wisdom and caution for the fragile environment that constitutes research, might solve many of the Lab's problems and result in a new multi-faceted research and development structure that is responsive to both Bell's and the nation's needs in communications.

The challenge to Bell Labs executives is to show the same creativity and ingenuity in openly and objectively exploring and searching the future of Bell Labs and research and development in communications that Bell Labs scientists have shown in their scientific achievements. The views expressed by the Bell Labs executives in the PHYSICS TODAY report simply reflect the standard Bell position and show an unfortunate lack of such creativity and ingenuity.

HOWARD A. LOEHMAN
Somerville, N.J.

REPLY FROM BELL LABS: We agree with Howard Loehman that "a key concern in deciding the fate of the Bell System should be the public and their needs for telecommunications products and services." Indeed, John deButts, AT&T Chairman, and other Bell System officials have repeatedly said that the public-interest standard should be used in settling these issues. Our concern had been that some other standard would be used, for example, competition for its own sake, whether or not it provided benefits to the public.

Loehman acknowledges that Bell Laboratories "has created a most impressive and highly significant record of scientific and technological achievements" but then urges us to exercise "creativity and ingenuity" in taking it apart. The dismemberment he recom-

mends would destroy the *raison d'être* of these achievements. Specifically, he suggests a corporate separation of those functions that support Western Electric and those that support AT&T and Long Lines, including perhaps even a fragmentation of the latter. But it is very tight coupling between the Bell Labs' research and development organizations that perform these functions which has given its research its clear sense of mission and its development strong support in new science and technology. Within Bell Laboratories there are no corporate barriers to interactions, and these organizations work closely together. Indeed, people frequently transfer from one role to another and some organizations support both functions.

Loehman appropriately suggests "wisdom and caution" in restructuring Bell Laboratories and concedes that it might be a "deplorable calamity." If he fully understood the contribution of its organizational structure to its achievements, he too would conclude that Bell Laboratories should retain its present corporate identity in a vertically integrated Bell System.

It seems ironic that the dismantling of something that is acknowledged by Loehman and others to have worked extraordinarily well is being seriously proposed when the country's attention could more profitably be turned to solving problems created by the many institutions that are failing.

N. B. HANNAY
Bell Laboratories
Murray Hill, N.J.

Amorphous contradiction

In as much as "amorphous" means "without form" I find it amusingly contradictory that it is now reported (September, page 17) that amorphous solid water exists in two forms. This must be the first example of a dimorphous amorphous substance.

JERRY DONOHUE
University of Pennsylvania
Philadelphia, Pennsylvania

Political sentence

The news has arrived from some of my friends at the University of Belgrade that Dr Ing Danilo Raskovic, professor of mechanics at the University of Belgrade, has been sentenced to jail for 16 months of hard physical labor.

He has been arrested for criticizing, as his private opinion, a film dealing with national problems in Yugoslavia.

Raskovic is known world-wide in mathematical physics and applied mechanics as a very honest man who suffered tremendously at the hands of the Germans during World War II; after World

War II, because of his philosophical conception of human right and freedom, and because of his orientation as a human being toward Western democracy, he was sentenced several times by Tito's communist government in Yugoslavia. At present, he is 65 years old and is tortured in a jail built by the Turks several centuries ago in Mostar.

I am asking all physicists and mathematicians to write a letter to the Yugoslav government in Belgrade, or to the secretary of the United Nations in New York, protesting the inhuman treatment of such a distinguished intellectual and scientist as Professor Raskovic.

M. M. STANISIC
Purdue University
West Lafayette, Indiana

Auxiliary publication

I read with interest concerning the AIP Physics Auxiliary Publication Service (February, page 71). Would it not be a good idea to publish a listing of the depository items? This could be updated occasionally and would provide better bibliographic control than simply appending as a footnote. In addition, it would reach a larger audience, assuming of course that this larger audience would be interested in materials supplementing an article. As a practicing librarian, I am all too aware of the loss of vital information and like to see all documents listed in some standard reference publication, be it a list or, preferably, an indexing journal.

C. J. MCKOWN
The Pennsylvania State University
University Park, Pennsylvania

AIP COMMENTS: We welcome McKown's suggestion and agree that it is a good one. Accordingly, we are going to publish an annual listing of items deposited in PAPS in two places. One will be in the printed index that accompanies our monthly microfilm service *Current Physics Microform*, and the other will be the annual cumulative issues of *Current Physics Index*, a combined subject-and-author index to the 42 physics journals published by AIP. This 1800-page cumulative index, by the way, is specifically designed for technical librarians, although its low price (\$50) makes it useful to many individuals as well.

A. W. K. METZNER
American Institute of Physics
New York, New York

Public notice of wager

On this the FIFTEENTH DAY of DECEMBER of the YEAR ONE THOUSAND NINE HUNDRED AND SIXTY FIVE, at the luncheon given at the Laboratories of the

European Organization for Nuclear Research (CERN), Meyrin, Geneva, the following WAGER was made between Professor Viktor F. WEISSKOPF and Professor Richard P. FEYNMAN. The terms of the said WAGER are as follows:

Mr FEYNMAN will pay the sum of TEN DOLLARS to Mr WEISSKOPF if at any time during the next TEN YEARS (i.e. before the THIRTY FIRST DAY of DECEMBER of the YEAR ONE THOUSAND NINE HUNDRED AND SEVENTY FIVE), the said Mr FEYNMAN has held a "responsible position."

Conversely, if on the THIRTY FIRST DAY OF DECEMBER of the YEAR ONE THOUSAND NINE HUNDRED AND SEVENTY FIVE, the said Mr FEYNMAN shall have held or be holding no such position, Mr WEISSKOPF will be deemed to have forfeited his wager and will be in duty bound to pay the sum of TEN DOLLARS to Mr FEYNMAN.

For the purpose of the aforementioned WAGER, the term "responsible position" shall be taken to signify a position which, by reason of its nature, compels the holder to issue instructions to other persons to carry out certain acts, notwithstanding the fact that the holder has no understanding whatsoever of that which he is instructing the aforesaid persons to accomplish.

In case of contention or of non-fulfillment of the aforementioned conditions, the sole arbiter shall be Mr Guiseppe COCCONI.

Signed at Meyrin on this the FIFTEENTH DAY of DECEMBER of the YEAR ONE THOUSAND NINE HUNDRED AND SIXTY FIVE.

Richard P. Feynman

Viktor F. Weisskopf

Signed and witnessed: G. Cocconi

Let the record show that the above wager was paid in full by myself on 31 December 1975.

V. F. WEISSKOPF

Massachusetts Institute of Technology
Cambridge, Mass.

New journal defended

As one of the editors of the new letters journal, *Letters in Mathematical Physics*, I wish to make a short comment on the letters by N. P. Wilson and K. G. Mermin and by A. W. K. Metzner that you published in your March issue (page 11). Several reasons influenced the editors as well as the members of the editorial board of *Letters in Mathematical Physics* in the decision to initiate a new journal. The most important reasons are:

► The non-existence (until now) of a letters journal (or even a section) in the field of mathematical physics. In some cases it is important that certain results in the large number of domains covered by mathematical physics should reach the community rather quickly. The existing letters journals in physics do not in general (mildly speaking!) favor contributions in mathematical physics.

► To have such a journal centered mainly in Europe. Very unfortunately many European scientists (from both Western and Eastern countries) suffer from the objective geographical distance between the US and Europe and have difficulties in communication with US journal editors, which in many cases results in a serious delay of publication of their work.

► To have a letters journal open to all areas of mathematical physics, and which publishes articles *without* any fees.

As a matter of fact, for European scientists (mainly for Eastern countries but also for the West) it is practically impossible in the present situation to honor the exceedingly high publication fees required by most of the American journals.

M. FLATO

Editor, *Letters in Mathematical Physics*
Dijon, France

Radiation and particle life

A recent news story (November, page 18), mentions that in work at Stanford Research Institute on Rydberg atoms, lifetime variation—actually lifetime lengthening—was observed. A similar effect was noted here experimentally, (first tests carried out in 1971, at the University of Marseille), with various free particles alone or mixed with inert gases.

The origin of this work was my hypothesis put forward in 1970, postulating lifetime lengthening of a free particle if generated within a grid-isolated intensely irradiated gaseous phase, which we can call "region 1."¹

I assumed that at atmospheric pressure free particles, A^* , would survive the transfer through the grid into a "dark" compartment, (let us call it "region 2") and would trigger subsequent reactions by interacting with other molecules, $B \dots$; $A + h\nu \rightarrow A^*$, in region 1, and after transfer of A^* into region 2, $A^* + B \dots \rightarrow P$. To make this split mechanism work, lifetime L of the free particle had to be longer than transfer times from 1 into 2, irrespective of the particle's trajectory δ within the irradiation chamber: $L > \delta/v$ sec. (v = particle velocity, cm/sec.)

Lifetimes of the free radicals involved in these transfer processes were in the range of 10^{-3} sec at 0.1–0.5 mm Hg (for example, Cl^*).²

Though *a priori* speculations excluded this approach, experimental data, so far,

have proven the validity of the initial hypothesis.³ To explain this effect, I propose the following mechanism:

We sandwich between an intense radiating source and a high-opacity grid an absorbing medium, into which we inject fresh molecules, A , at a rate to replace the fluid leaving region 1, and also to prevent any backflow from region 2 into region 1. Controlled by the grid's optical transparency, photons will continuously leave the irradiated zone.

This system can be considered as a photon trap, and owing to the intense permanent irradiation coupled with high grid opacity (reduced photon losses through wall effect), irradiation density U within the volume contained by the grid will go on increasingly.

As this accretion in energy cannot go on indefinitely, at one moment it will have to reach a limiting threshold value (saturation). Once this state is reached, and in order to keep $dU/dt = 0$, the cavity will be forced to lose the captive energy somehow, through the grid's pores.

Due to its specificity, the system will gradually evolve so as to get rid of this locked-in radiation density in "association" with matter: $A + h\nu \rightarrow A^* (A^{**})$, the only allowed route to overcome the grid's opacity, invincibly opposed to the excess number of photons. Now, because of the "material" vector's flexibility, capable of following linear as well as non-linear trajectories, energy outflow will be unopposed by the grid's presence.

This second route will simply mean that free radicals will be transferred from the irradiation chamber, into the "dark" compartment. Saturation will have a decay-limiting effect, and this then will have to account for the observed lifetime increase of the free particle.

For laser action the cavity needs just two plane mirrors, between which standing waves are generated. Here due to the special openness of the system, the cavity will lose a negligible amount of damped photons; after saturation is reached, with correctly adjusted δ/v values, we will mainly transfer matter, namely, free particles acting in complete contradiction with their anticipated lifetimes.

References

1. G. Lucas, *Informations Chimie* (International Edition) 16 July–August 1971, page 33.
2. *Naturwissenschaften*, 1933, 21–222.
3. G. Lucas, *Photochemistry Symposium*, Ghent (Belgium) 1–5 September 1975. US Patent 3.800.159.

GEORGES LUCAS
Paris, France

Correction

July, page 31—The credit line for figure 7 should read "Emmanuel Lafond, Queensborough Community College." □