

GETTING OUT THE WORD: AN INSIDER'S VIEW OF PHYSICAL REVIEW LETTERS

"Why did my last manuscript take almost four months to get through the editorial process at *Physical Review Letters*? A one-year stint at the journal yields answers to this and other fashionable grumbles.

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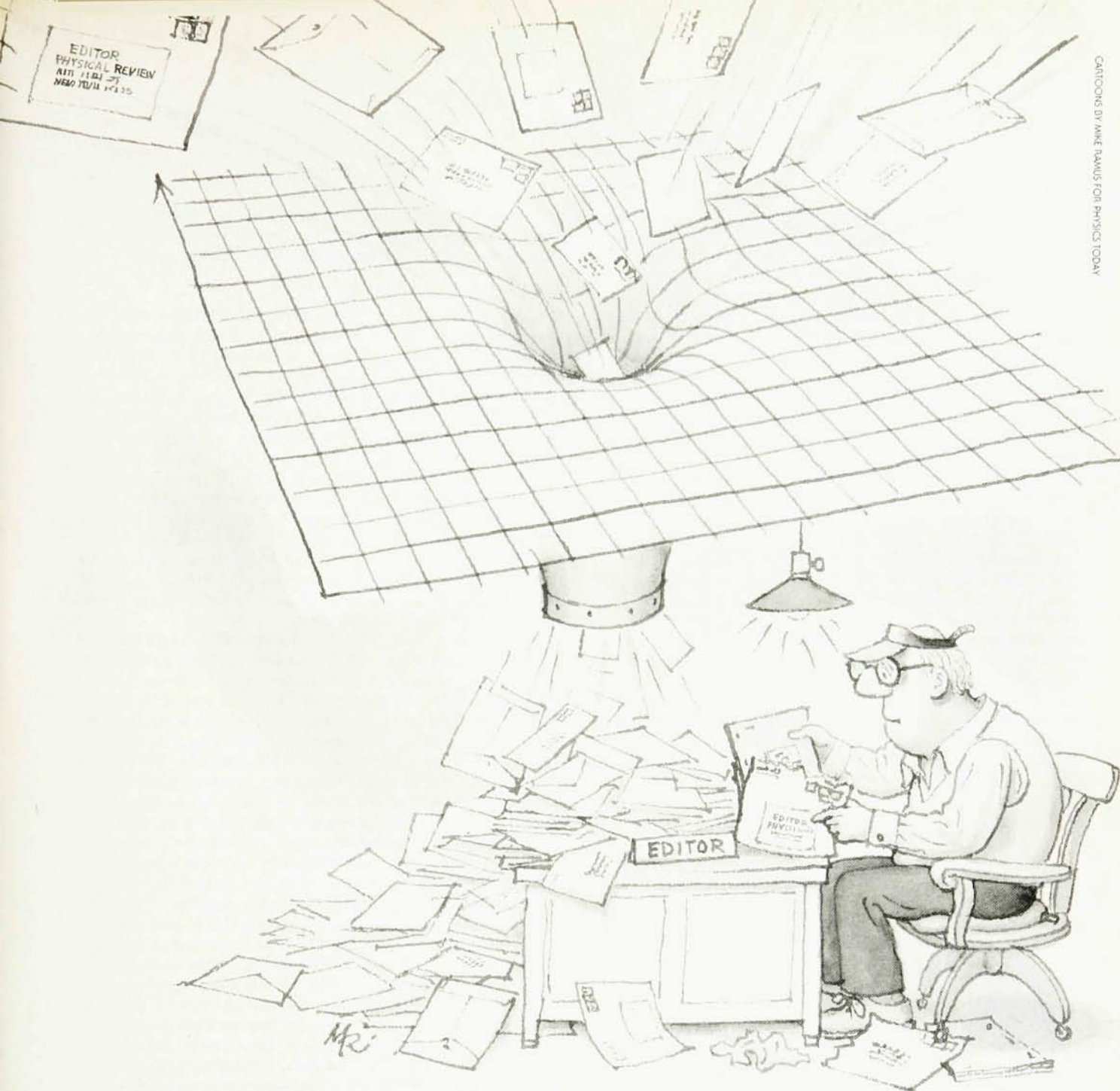
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Those of you who are in the habit of reading the mastheads of journals may have noticed that Gene Wells—after a well-earned sabbatical at Los Alamos National Laboratory—has returned to his accustomed post as editor of the condensed matter physics section of *Physical Review Letters*. I was one of the "gang of four" who filled in for him while he was away (the others were Per Bak, Kelvin Lynn and Myron Strongin), and now that the dust has settled a bit and the ringing in my ears has died down, I'd like to share the experience with you.

I should explain by way of introduction that all four of us are just run-of-the-mill solid-state physicists and that none of us, apart from occasionally submitting a manuscript to *Physical Review Letters* (and occasionally having one accepted), had had any contact with the editorial process before. How then did we come to spend a year as editors of *Physical Review Letters*? Well, simply put, it was because we all happen to be Brookhaven National Laboratory employees and Brookhaven is just down the road from the editorial offices of *Physical Review*. So when the late George Vineyard, who was then both a member of the Brookhaven staff and editor of *Physical Review Letters*, was on the lookout for a person (or persons) who knew something about condensed matter physics to fill in while Gene was away, there we were!

A smoothly running operation

When you become an editor of *Physical Review Letters* and start reading the mail that comes in from authors and referees, the first thing that hits you is that there is a



small but very vocal minority within the scientific community that seems to think that the journal staff is made up almost entirely of defrocked scientists and elderly pensioners. So let me begin by assuring those of you with this fixation that you've got it wrong. The members of the staff are thoroughly competent people and, as it happens, are mostly on the near side of middle age. They are also impressively energetic and take their responsibilities very seriously.

Whatever your perceptions, the editorial office is, in fact, a remarkably efficient and smoothly running operation. At any given time literally hundreds of manuscripts are being processed: Some are on their way to referees; others have just returned; new, shorter versions of texts show up as substitutes for older, longer ones; new figures appear; textual corrections arrive; new references come in; and so on. The staff handles all of this calmly and expeditiously. Considering the possibilities for tumult,

the scene at the editorial office is—in reality—remarkably tranquil. Don't get me wrong. The system isn't perfect. But it didn't take us part-timers long to realize that very few of the problems that authors routinely grumble about are actually caused by faults inside the organization.

"Why then," you ask, "did my last manuscript take almost four months to get through the editorial process?" Well, let me tell you why. Assume you have just completed an investigation that you judge to be a cut above average. You have prepared a manuscript describing the results and have sent it off to *Physical Review Letters*. When it arrives, a clerk logs it in, gives it a manuscript number, puts it in a manila folder and sends it on its way to an editor's desk. What does the editor do? Despite what many of you think, he doesn't read it through from first page to last. He hasn't the time, and chances are he hasn't enough firsthand knowledge of your field to get much out of it anyway. So he scans the abstract and then turns to

the reference list and PACS numbers and begins searching the computerized referee database to find two qualified referees who haven't already been sent other manuscripts to review. With luck he finds them in a reasonable time and forwards the manuscript to a secretary, who makes sure it is soon on its way to the referees. This process takes anywhere from five to ten working days depending on how many manuscripts are on hand.

Now the problems begin! Quite commonly, one or both referees decide that they are either too busy to review your manuscript or lack expert knowledge of the field. Some, being conscientious, return it in a week or two with a list of possible referees. A not insignificant number, however, simply let it sit on their desks until queried three weeks later. Then maybe they return it in a week or two with a report, or maybe their attention span isn't all it should be and they get distracted by something else and let it slide again. If after five weeks they still haven't sent in a report, they get prodded a second time. Sometimes this does the trick. Often it doesn't, and the editors, after another week or two of waiting, have to give up and try someone else. Remember too that many of our referees are away from their home institutions for extended periods. If they fail to advise the journal of their current addresses and do not make arrangements to have someone answer the telephone and check the mail, that can also delay the process. The end result is that it takes at least a month, usually two and sometimes even three to assemble

two referee reports. It is not unusual for three or four referees in succession to send a manuscript back without a report, some after holding it for a considerable time.

Equivocal referees

Let us say, however, that your turnaround time was about average and that your manuscript and two reports from referees found their way back to an editor's desk in two months. Within a few days the editor will take a second look at the abstract and read through the comments of the referees. On rare occasions he finds that both feel that your paper is wonderful and should be accepted immediately. Once in a while there is complete agreement that the paper is fatally flawed and ought to be summarily rejected. Somewhat more often, the referees agree that the subject matter is inappropriate for a "letters" journal or not of sufficient general interest and recommend that the manuscript be sent elsewhere, quite commonly to *Physical Review*. In these circumstances you get a quick decision, maybe not one you're particularly happy with, but a quick decision nonetheless.

Most of the time, however, the referees' responses are equivocal: They like some parts of your manuscript but not others, and as often as not, don't even agree on what they like and what they don't. This is a problem for the editor. Not having expert knowledge of the field himself, he cannot properly evaluate the conflicting comments from the referees. So he sends them back to you with a noncommittal letter to the effect that maybe, with appropriate modifications, you could get a more enthusiastic reaction. Because it is your manuscript and you are anxious to get it published, you get right to work and send it back two or three weeks later, rewritten to a greater or lesser degree and with a long, carefully argued and (if your self-control is very good) tactfully worded letter of rebuttal. Now the editor takes his third look at the correspondence. Remember, he's still the same guy he was three weeks ago and hasn't, in the interval, suddenly become an expert in your field. So the editor really is not in any better position to make a decision than he was the first time around. Moreover, he can't even follow your letter of resubmission in detail because it focuses on technical issues that he doesn't understand very well. So he does what you would do in the same circumstances: He sends the rewritten manuscript and your letter back to the referees, or he sends them to a new referee if, as sometimes happens, he or you have doubts about the competence, diligence or objectivity of one of those he consulted originally.

At this point another week has gone by and you're three months down the road with no decision in sight. Moreover, you have three or four more weeks of waiting ahead until the referees get around to sending in their replies. There's your four months! Note that during this entire period your manuscript spent two weeks, or at most three, in the hands of the editors and clerical staff. The rest of the time it was either in the mail, in your office or sitting on the desk of a referee.

I know it's fashionable to grumble about the slow turnaround at *Physical Review Letters*. I do it myself now and again. It's an image thing. But how about a little objectivity? Complain if you must, but at least aim the complaint in the right direction—at the primary cause of





the problem, which is not the editors or clerical staff, but your peers!

Suggestions for authors

Are we in agreement that in an era of rampant specialization, refereeing is the only practical way to maintain reasonable standards in the scientific literature? And do we also have a consensus that objectivity is better served if two referees are consulted rather than one? If so, and if you believed what I just told you about how the editorial process actually goes, you have probably already realized that the best way to improve turnaround is not to fuss endlessly about organizational details or the imagined shortcomings of the editorial or clerical staffs but rather to improve our collective performance as authors and referees. I don't want to sound preachy but there are, in fact, some things we could do.

▷ When you send a manuscript to *Physical Review Letters* (or *Physical Review* for that matter) do yourself and the editors a favor by including in your letter of submission a list of eight or ten experts in your field who you feel certain would make competent referees. The editors may choose one of the people on your list, but even if they don't, they will use the names you give them to find their way to the right places in the referee database. The reports you get back will then be much more likely to be informative and well reasoned.

▷ Do a little self-refereeing before you send your latest masterwork to *Physical Review Letters*. Despite appearances, there is a certain degree of predictability to the outcome. If you submit something that doesn't really belong in a letters journal in the hope that it might sneak through, all you are likely to do, apart from pushing up your blood pressure, is delay publication in an appropriate journal by four to six months. In the process you will also add to the already heavy burden of the clerical staff, editors and referees.

▷ When you receive one of those computer-printed letters from *Physical Review* asking you to update the informa-

tion in the editors' files, don't throw it away unanswered. They have a very good reason for wanting to know your current research interests: to keep the refereeing process as efficient as possible. Remember, it is to your advantage to supply them with the names of as many colleagues familiar with your field as you can think of (properly spelled if possible). That builds up the referee database and spreads the refereeing load more evenly.

▷ If you are going to be away for an extended period, notify *Physical Review* so they can note this in their database. At the very least make sure your mail gets checked once in a while. It could spare someone the experience of waiting interminably for your report if you're asked to be a referee.

▷ Before you toss the next manuscript you get from *Physical Review Letters* into the in-basket on your desk unopened, think for a minute about your own experiences as an author. The manuscript may, of course, be one that you can review; in that case a wait of a week or two isn't unreasonable. But don't assume that the editors are all-knowing. Maybe you are out of touch with the field these days and therefore aren't a very good choice as referee. Or perhaps you are too busy to give the manuscript the attention it deserves. Whatever the reason, you could speed things up considerably by immediately popping the manuscript back into the mail with the names of a few people who do have expert knowledge of the field and might have more time to spare.

OK, that's the message. Now that you have heard it and have perhaps decided to take it to heart, let's turn to the big question: What does *Physical Review Letters* accept, what doesn't it accept, and why?

Acceptance and rejection

The first thing you have to understand about *Physical Review Letters* is that it is not, and was never intended to be, an archival journal. It exists because there is general agreement within the profession that there is a continuing need to know what is new and possibly important in the



world of physics. This, of itself, places some very severe constraints on the makeup of the journal.

First of all, such a journal can't be many pages thick, because we already have archival journals that are thick tomes, and nobody has the time to read them. I submit that the only way to keep a scientific journal from overloading its readers is to impose standards of selectivity that simply do not apply to archival journals. So when you send a manuscript to *Physical Review Letters*, keep in mind that the referees view being "right" as a necessary, but not sufficient, condition for acceptance. Now I know that some of you are going to tell me that the track record of *Physical Review Letters* for the ultimate correctness of what it publishes is not as good as that of its archival equivalent, *Physical Review*. Maybe so. It's hard to say. But remember, the same group of referees does the reviewing for both journals. So if there is a difference, it is probably because *Physical Review Letters* manuscripts are more likely to be concerned with new and relatively untested ideas, presented in a highly condensed form that is not always easy for the reviewers to follow. Anyway, the objection just isn't relevant. Everyone in the research business knows that a higher error rate is inevitable when one is exploring unfamiliar territory.

In an archival journal, a referee is basically called upon to determine whether or not the manuscript is appropriate for the journal and to check for statements or interpretations that are wrong, misleading or written in a way that is difficult to understand. In a letters journal, however, the editors ask the referee to do more: specifically, to estimate the article's potential interest to the readers. This is what causes most of the fur to fly. Authors, quite understandably, find it difficult to believe that something that has fascinated them for years is not of equal interest to their colleagues, and they accuse the editors of making purely arbitrary decisions. It is true that the editors make these admittedly painful choices between manuscripts. But at *Physical Review Letters* they make them, almost without exception, on the basis of the referees' (not the editor's) perceptions of what will be of greatest interest to the scientific community.

Nobody is perfect, and it does happen that referees sometimes fail to appreciate good work. This is why *Physical Review Letters* prefers to seek two opinions rather than one. What can you do if you are misunderstood? If you are a typical author you will first sulk a bit

and then, knowing how the system works, write a letter objecting to the shabby treatment you received and asking the editors to consult new referees. More than likely the editors will be sympathetic because they've had the same experience themselves and know how you feel. But you should be aware that the new referees will be sent all the preceding correspondence, so you're going to have an uphill battle on your hands. You'll have to persuade the new referees that the original judgments were wrong. It's not always easy to do. Furthermore, it is certain to be very time consuming because you are, in effect, starting the whole reviewing process over. You presumably approached *Physical Review Letters* in the first place because you wanted rapid publication, so you are faced with a painful dilemma. Perhaps you'll succeed in persuading the new referees that you were unjustly treated the first time around and perhaps you won't. It's a gamble. But whatever the outcome, one thing is sure: You'll delay the final decision on your manuscript at least two months, probably more. The choice is up to you.

Let us suppose that your brilliant insights are, alas, totally misunderstood and even after a second round of refereeing you haven't made any headway against the establishment. Is all lost? Well, not necessarily. There is one more possibility. It's going to take time but you can appeal your case to a divisional associate editor. If you ask the editor to do this he will choose the associate editor who has the greatest familiarity with your field and send him the entire correspondence, including the names of all referees. In terms of technical content, the associate editor's decision, which typically will take another month, possibly longer, will be final. You can in principle appeal to the editor in chief and, beyond that, to The American Physical Society's publications committee. But practically speaking, if the divisional associate editor says no, that's it. The answer, once and for all, is "no"!

The reason I'm going on about this is that I've become a little thin-skinned during the past year. All of us have encountered at one time or another someone who proclaimed loudly to all who would listen that it took him eight months to get a decision from the editors of *Physical Review Letters* and then the answer was "no." Sure, I've seen it happen. But what you have to understand is that when it happens it happens by the author's choice, not because the editors or clerical staff aren't doing their jobs.

The bandwagon

While we're on the subject of complaints, let's talk about another one: that some individuals or institutions receive favored treatment from the editors of *Physical Review Letters*. Let's be clear about what this really means. If such favoritism actually exists (and it is debatable whether it does), it comes about in one of two ways. Either these individuals or institutions are better at impressing the referees with the value of their work or they are more persistent about appealing when it isn't well received. Basically, the dialogue is between authors and referees with the editor serving primarily as an "honest broker" between them. As far as I know, none of my coeditors has ever overruled a "consensus" opinion of his referees,

although he may, if he happens to be well informed about the technical issues involved, weight one referee's comments more heavily than another's. While in principle the editor decides what the journal will accept, in practice the referees make the determination.

Now I want to turn to a touchy subject, one that has disturbed me and the other part-time editors considerably during the past year. We have seen all kinds of evidence that publication in *Physical Review Letters* has become one of the major criteria for the promotion of young physicists in the United States. In fact in one instance we were actually told that an individual's job would depend on whether or not we accepted a manuscript he had submitted. If yours is one of the many institutions that puts great weight on articles published in *Physical Review Letters*, then I think it is incumbent on you to think a bit about what you are doing. Let's put aside the lofty ideals for a minute and note that letters journals tend to focus on what's currently fashionable in science, at the expense of work that isn't as "flashy" but that may in the long run be of equal or greater importance. Letters journals swing back and forth from one field to another while the archival journals plod resolutely along, collecting and cataloging the accumulating wisdom of the scientific community. Putting excessive emphasis on letter publication reinforces the message young scientists are already getting from the funding agencies: If you want to survive, jump on

the bandwagon, whatever it happens to be. I need hardly remind you that such important discoveries as the high-temperature superconductors would never have been made if every research organization followed this policy.

Finally, a word or two about what the future is likely to hold. My colleagues, the full-time editors, tell me that submissions to *Physical Review Letters* increase relentlessly at a rate of about 10% per year. There is universal agreement that the journal's size cannot be increased without defeating its intended purpose. Therefore unless it is split into sections or the community itself starts cutting back on submissions, the editors will have no alternative but to accept a smaller and smaller fraction of the manuscripts submitted. As I hope I've made clear, the only practical way to accomplish this is to apply the criterion of "general interest" more and more rigorously. If you think it's a "popularity contest" now, imagine what it's going to be like in another few years!

Let me close by offering some small measure of consolation to those of you who lament the fact that *Physical Review Letters*—like other human institutions—falls short of perfection. To paraphrase the words of the late Sam Goudsmit, who was for many years editor in chief of *Physical Review*, you get from a journal like *Physical Review Letters* "statistical justice." Over the years, if you submit enough manuscripts, your acceptance rate will be just about what you deserve. ■

