Lee: Thank you, Richard. Our next speaker will be Beth Ruskai, who is a professor at the University of Massachusetts at Lowell. Beth holds her Ph. D. from Wisconsin, and served as a Battelle Fellow in theoretical physics at the University of Geneva. In addition to publications in mathematical physics, she has written papers on "gender and science" issues. She has held positions at Mittag-Leffler, AT&T Bell Labs, Michigan, Harvard, and MIT, among others. She was President of Lowell’s first Faculty Senate and chairs the Joint Committee on Women in the Mathematical Sciences.

Beth Ruskai:

I should explain, first of all, that the Joint Committee on Women in the Mathematical Sciences is different from the AWM, although we collaborate, since we have mutual interests. The Association of Women in Mathematics, which will be represented by Carol later, is an independent organization. The Joint Committee on Women is about as dependent as you can get, because it's a joint committee of seven organizations. The AMS, the MAA, SIAM (and I believe two of the SIAM reps are in the audience), the National Council of Teachers of Mathematics, the ASA and IMS, both statistical organizations, and also the AWM have a representative on the Joint Committee on Women. The original charge to this Committee was to gather data and give advice to the mathematics organizations, and since I’ve been the Chair I’ve taken that aspect of the charge quite seriously and literally, and have been giving regular advice to the math organizations, whether they want it or not [laughter].

But I will summarize briefly two sets of data which are in some sense in the “good news, bad news” category, discuss what the implications are, and what positive things we might do. The good news is that the past year (1993) was really a boom year for new women in several senses, both in terms of Ph. D. production and, despite the bad job market, hiring. We had a panel at the national math Chairs meeting on the recruitment and retention of women, and the interesting thing is that if you talk to male faculty they'll tell you they're trying to recruit women and there aren't any around. But in fact if you look at the data since the beginning of the eighties, over 20% of the Ph. D.’s in mathematics have gone to women, and if you restrict yourself to U. S. citizens it’s even higher, it’s 24% or 25%, but they are not showing up at the research universities or government and industry at anywhere near that rate — they are disproportionately at Bachelor's institutions, and this is not just historical, it’s recent. Particularly if you look at the data that the AMS
publishes every year, showing where [women] doctorates who got their Ph. D. that past year go. They are never hired into the doctoral institutions at that 20% rate. Now it is true that women are not evenly distributed amongst fields and, for example, there are more women in statistics. Nevertheless, since the beginning of 1980 15% to 17% of the Ph. D.'s from the Group I institutions, which is the top 30 or 40 institutions, have been women. The Group I to III institutions combined have never, until last year, hired women above that rate, and frequently below that. Not only have the Group I institutions usually hired below the 15% to 17% rate at which they’re granting Ph. D.'s to women, but the Group III institutions have also consistently hired, year after year, well below that rate. Group II's occasionally hire above, but only in years when the Group I's hardly hire any women at all. As soon as the Group I's start hiring then the Group II's go way down.

Now the good news is that last year (1993) there was a big jump: the women who got Ph. D.'s were much more evenly distributed. In particular, the percentage of women amongst Ph. D.'s from Group I institutions jumped from a previous high of 17% in 1992 to 22% in 1993. In addition the Group I, Group II, and Group III institutions, for the first time ever, all hired above that 22% rate. If you restrict to U. S. citizens, the rate jumps up to 28% women, so last year, both in terms of the percentage of women getting Ph. D.'s and their opportunities, seems to have been very good. It's not yet clear whether this is a trend or an aberration, but I would like to point out that, partly as a consequence of the job market and partly because of the nature of positions in Group I institutions, most of the women are not in tenure-track positions. I believe none of the positions, for either men or women, in Group I institutions last year were tenure-track. So that means that, for those of you who are trying to recruit women, whether it's to university positions or industry, two or three years down the road there should be a tremendous pool for you to choose from. So you'll really have no excuse! [hearty laughter and sustained applause]

The next set of data is something I came across this summer, almost by accident. While looking into another problem I scanned some meeting programs and was so struck by what I found that I asked the AMS for more details. For some years the AMS has gathered data on the number of speakers at its meetings, and in recent years the percentage of women amongst our speakers has been 8%. That's certainly well below the Ph. D. rate, but
it's consistent with the percentage of senior women. On the other hand, if one looks at the special sessions speakers — these are primarily invited 20-minute talks — for special sessions organized solely by men you also have 7% to 8% women speakers. But if you look at sessions with one or more women among the co-organizers, 15% to 16% of the speakers are women. It's a big difference, and it's consistent, meeting after meeting. One might conjecture a number of reasons for this. Certainly women are not evenly distributed among subfields, and some people thought maybe women are just organizing sessions in which there are more women. I would like to point out that the 15% to 16% for which women are inviting other women to speak is very consistent with the 15% to 16% which have been coming out of Group I institutions for about 15 years now.

But when I scanned the disk and began to talk to people it became very clear that here was another reason. If I saw a session that was organized by men only, that had exactly one woman speaker, it was always someone like Mary Ellen Rudin or Alice Chang. When I talked to people I began to get a lot of anecdotal evidence that some men, where sessions had no women, actually had invited a big-name woman who had turned them down, and it became perfectly clear that the difference between the sessions organized by men and those organized by women was that the men were inviting only the big-name senior women, the same 7% to 8% that could be invited as hour speakers. But the women were including a lot of the lesser luminaries and the younger women. Now this is something that's quite serious. We don't have good data on what happens to women two or three years after the Ph. D., but anecdotally there's some indication that they're less likely to get tenure; less likely in the long term to end up at the Ph. D. institutions. In fact the percentage of women tenured faculty at Ph. D. institutions is 4% among Group I, 5% for Group II, 5% for Group III, and then when you get to the Master's institutions it jumps to about 12%, and then close to 15% at the Bachelor's institutions. I'm coming to believe that part of the reason is the way the women are treated after they leave graduate school.

There are many rumors that all women are being besieged by jobs, by offers to speak. Now we know that's not true. I think that what happens is that thesis advisers, particularly male thesis advisers, do not perhaps make as much effort as they should to ensure that younger women get the opportunities and the exposure that they need. I mean the difference between the
7% and 8% rate that the men are inviting women to the special sessions and the 15% to 16% rate for women organizers basically means that the men are not inviting the promising young women in their field. It doesn’t do a lot of good to just pressure the men who are organizing the special sessions. You have to go from the other direction. So I would like to encourage people who are department heads, whether in academia or industry, to look at the situation from the other way. You should, if you hear of a research conference or a special session being organized, and you know of a young woman in that area, call up the organizer and suggest her name. If you’re invited to something, make sure that the young women that you know about also get invitations. Not only for AMS special sessions but, even more importantly, for things like summer research conferences, and other opportunities that people will have to get some exposure, to network, with other people in their fields, and things like that. I think that’s a responsibility that needs to be taken very seriously, so these promising women that have been coming out of the top institutions in recent years, and are currently in untenured positions, have the opportunity to develop the kind of research expertise that they will need to get senior tenured positions.

I would like to close by following up on one of the things that Richard said also. One should be aware of the importance of inviting women to give math colloquia and things like that. Let me tell you, since I’m a mathematical physicist, what another group has done. The American Physical Society has a list of potential women colloquium speakers. I’ve been on it for many years and, although I occasionally get invited to give a physics colloquium, until about six months ago I never received any response from being on this list. In the last six months I have been almost deluged with invitations to give physics colloquia. Now what’s made the difference? Well the American Physical Society instituted a program whereby (and it doesn’t even have to be someone on this list) if a physics department in one academic year has two or more women colloquium speakers they will pay the expenses for the second speaker [hearty laughter]! You can’t just have one token — but they are generous. If the department is strapped for funds they can invite a local woman to give a colloquium, and invite someone else from out of town, and the APS will pay for the out-of-town speaker. Based both upon my experience and anecdotes, this program has been very successful. I think I’ll close with that.