CWM NEWSLETTER
ISSUE 3, MAY 2020

Editorial To The Third Issue

Dear Friends and Ambassadors of the International Mathematical Union Committee for Women in Mathematics (CWM),

It is our great pleasure to welcome you to the third issue of the CWM newsletter. As the COVID-19 pandemic continues across the world, destroying individual lives, societies, and economies we are hoping that you and your loved ones are doing OK as far as possible during these difficult times. In such a crisis that affects all of the world, the mathematical events have been affected dramatically too. The launch of the International Day of Mathematics(IDM) is one such example. We have an article in this issue of the newsletter about the details of IDM written by Christiane Rousseau.

Of course, it is not just the gatherings or events that have been badly affected. Probably, the effect on personal lives is much dramatic, especially for women across the world. There are already a few articles about the consequences of "work from home during pandemic" for women scientists which can be found here, here and here for instance. More research is needed and will be done about this effect in the future, but even now it is fair to say that women scientists are the ones who are suffering more compared to their male counterparts. We try to reflect some of the personal experiences in an article written by 5 CWM ambassadors, representing different continents. More of these testimonials will appear soon on the CWM webpage.

Similar to the previous issues, we start the newsletter by an interview with one of the CWM members, Cheryl Praeger. Cheryl has been the second person to be appointed as a Professor of Mathematics at an Australian university (1983) and received the Australian Prime Minister's Prize for Science in 2019. Cheryl tells us about her extremely successful career and personal life. We hope that you find this interview as inspiring as we did. We then continue with "News From CWM". This includes the results of the funding call for 2020.

We invite your feedback and suggestions about the Newsletter and hope you enjoy reading it! Please distribute it in your country and your scientific network.

Ekin Ozman

Interview with Cheryl Praeger

We continue our interview series with Cheryl Praeger who is a CWM member. Cheryl E. Praeger, is an Australian mathematician. Praeger's doctorate is from the University of Oxford in 1973. She has published widely and has advised 31 PhD students. She is currently Emeritus Professor of Mathematics at the University of Western Australia. She is best known for her works in group theory, algebraic graph theory and combinatorial designs. Praeger received many awards during her career including the Prime Minister's Prize for Science in 2019.

Since 2014, the Women in Mathematics Special Interest Group of the Australian Mathematical Society bestows the Cheryl E. Praeger Travel Awards to female mathematicians.Since 2017 the Australian Mathematics Trust has awarded the Cheryl Praeger Medal to the best performing female contestants in the Australian Mathematics Competition.
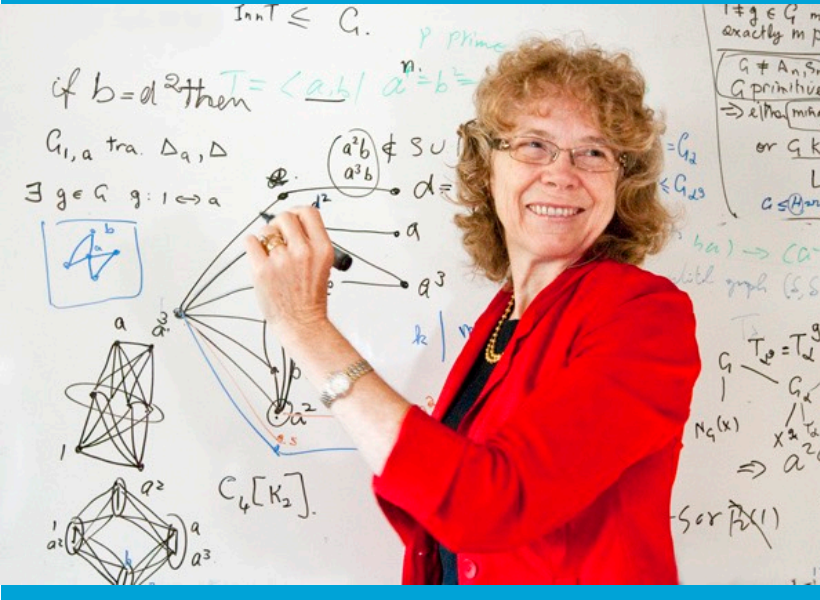
Q: Could you tell us how you got into math? What made you a mathematician? When did you decide to become a mathematician?

C-P: Mathematics has always helped me to understand the world. Very early – I guess I was about six years old – I recall being enormously relieved to learn about negative numbers. It had seemed completely illogical to me that I could not, for example, subtract 5 from 3, but then, in Grade 2, at last it was "allowed" and the answer "minus 2" was acceptable! I liked maths and science more and more at school, and eventually got the chance to study mathematics at the University of Queensland – despite being told by a Queensland Government vocational guidance person that "girls can't do maths; they don't pass!". I spent three months over the summer before my fourth year as an undergraduate at the Australian National University (ANU) in Canberra. Experiencing life in a research mathematics department convinced me to aim for further maths studies. Luckily, I won a (British) Commonwealth Scholarship to St Anne's College, Oxford, in 1970 at the end of my undergraduate degree, and there I was introduced to the area that has captivated me for my entire career: Group Theory, the mathematics of symmetry.

Q: Did you do stuff outside of school, or was it just in class? Were there any pivotal moments where you knew that you wanted to be a mathematician, beyond learning that math research exists?

C-P: When I was at school there were no maths enrichment and challenge programs as there are these days. However, the Queensland Association of Mathematics Teachers ran two annual competitions, for students in years 10 and 12. I took part in both. By the time I was in year 12, I really wanted to continue with maths, but I wasn't sure if I was good enough. After the discouraging words from the vocational guidance person, I decided (but did not tell anyone) that if I did OK in the QAMT competition then I would definitely try to do maths at university. It turned out that I tied for first place. So that was it. I chose a special "honours stream" in both maths and physics. It was a tough course, but I loved it. From my second year I was the only girl in any of my maths classes. My summer vacation scholarship at the ANU as a Vacation Scholar was pivotal for me. It led to my first journal article, in Aequationes Mathematicae, reporting the results of my first research experience, and probably helped me to get the scholarship to Oxford.

Q: Did you have any role models? (male or female?)

C-P: Although I was the only girl in my undergraduate mathematics classes from second year onwards, I did have two excellent female lecturers, Sheila Macdonald (now Sheila Williams) and Anne Penfold Street, so I didn't feel so isolated in my classes, and I was accepted as "one of the guys" by my fellow students. Before coming to the University of Queensland, Sheila had been a fellow at St Hugh's College Oxford. She gave me lots of good advice about where to go to do my doctorate, and she was also my supervisor for an MSc degree I did while waiting to go to Oxford. Anne and I later became research collaborators.
 My major life-long mentor was Professor B. H. (Bernhard) Neumann, who had been my advisor for my undergraduate vacation project at the ANU. Bernhard continued as my mentor and friend until his death in 2002. The Neumann family have been an important part of my life. Bernhard's first wife Hanna was the first woman to be a professor of mathematics at an Australian university. I met her during my vacation scholarship at the ANU and admired her tremendously. She has been my role model of a maths professor. Unfortunately, she died less than three years later while on a lecture tour of Canada. By sheer coincidence (and luck for me), Bernhard's and Hanna's first son Peter was a fellow of the Queen's College, Oxford, and became my doctoral supervisor and, much later, a research colleague.

Q: Can you tell us about your research? What attracted you to this area?

C-P: I have always been fascinated by the power of group theory to give precise measures of the symmetry of mathematical and real-world objects. Groups allow us to distinguish between otherwise similar objects, playing a similar role to genetic

DNA barcodes which are used to distinguish between plant species. During my doctoral studies in Oxford I studied primitive permutation groups. At that time new combinatorial methods were providing a more conceptual, geometric, view of group actions, and one of the directions of my work has been to go in the reverse direction, applying group theoretic methods to study combinatorial structures.

Early in my career, the hugely powerful finite simple group classification was announced. This mega-theorem identified all the building blocks or "atoms" from which every finite symmetry group can be constructed, the finite simple groups. Some are easy to describe, while others are tremendously complicated. I was among the first mathematicians to exploit this watershed result to build new fundamental theory, and new theoretical and computational methods, to study groups and symmetrical structures: like networks used for communication, or designs used for scientific experiments. New computer algorithms my team developed run incredibly fast because they make deductions from a very small amount of data. They rely on the finite simple group classification for their correctness. It's been tremendously exciting research, and the computer systems GAP and MAGMA which incorporate our algorithms are indispensable research tools used by mathematicians and scientists world-wide, as more than 10,000 published research articles can testify.

Q: You are an active researcher, you have other kinds of responsibilities specially as a fellow of the Australian Academy of Science. Can you list the ones that take much of your time and tell us how do you balance all these?

C-P: For four years up to the end of 2018 I was the Foreign Secretary of the Australian Academy of Science. This meant that I was on the Academy's Council and Executive Committee, and I had a special responsibility for the international relations of the Academy, overseeing its international programs and representing the academy at international meetings. Since completing my term I agreed with the new Foreign Secretary to continue with a couple of these roles: during 2019 this meant representing the Academy in Japan, Korea (twice), Sri Lanka, France, and New Zealand – while similar visits this year (France, Germany, Korea, Malaysia) have been cancelled. I am still on the Executive Board of the Association of Academies and Societies of Sciences in Asia (AASSA), and I am Chair of the AASSA Special Committee for Women in Science and Engineering. I am also a member of the newly formed Committee for Freedom and Responsibility in Science of the International Science Council. Within Mathematics, I am on the Nominating Committee for the International Commission for Mathematical Instruction (ICMI). Since the ICME Congress in Shanghai has been postponed till 2021, we are having to arrange for an electronic ICMI General Assembly to be held mid-year. You ask how I balance these things. Well I have to say that I am having quite some difficulties doing this!

Q: Do you enjoy contacts with other disciplines in your activities ?

C-P: I very much enjoy roles where I am representing Mathematics within science. While I was Foreign Secretary, I interacted with the Chairs of the National Committees for all scientific disciplines. There's a lot for all of us to learn from the experiences of other areas, and also, mathematics has a particular contribution to make. We developed an "International Strategic Plan" to guide the academy's new international initiatives: this involved strengthening our links with science academies in our region as well as seeking key roles on international scientific bodies. As Chair of the AASSA-WISE Committee, one of the lovely things we did was to produce a book "Profiles of Women Scientists in Asia" celebrating women's achievements in Science. You can download it from here. This year I had been appointed to lead the Australian Delegation to the Lindau Nobel Laureates Forum but unfortunately that meeting has been postponed to 2021 because of the COVID-19 pandemic.

Q: How do you balance work and family life?

C-P: I'm still trying to learn how to get the right balance! When I was 35 years old, I became the second person (after Hanna Neumann) to be appointed as a Professor of Mathematics at an Australian university. My husband John and I have two sons, and they were aged just 1 and 4 at that stage. Almost immediately I had a huge extra workload, as I was very soon invited onto the new Australian government Curriculum Development Council, as well as some central university committees. The only way to survive was to keep focussed on what was most important to me (work and family). It meant paying for help with cleaning, and simplifying the rest of my life. I lost some of my skills in cooking, for example. I had always been an "over-achiever", preparing far too thoroughly for everything. My kids taught me a better perspective in life, and I had to learn greater self-confidence. There was simply no longer time to go over my lectures three times before giving them. I became very good at multi-tasking, taking advantage of each spare five minutes, so that my research would not suffer.
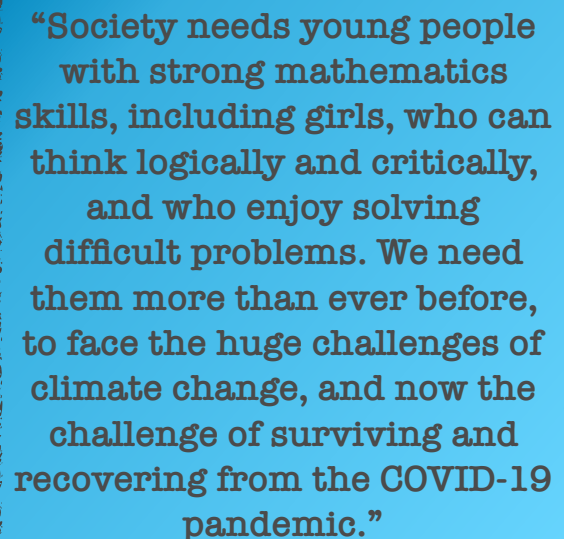
Q: What are your hobbies?

C-P: I love being in the forest, especially the rain forests from South East Queensland where I grew up, and the tall karri forests in South West of Western Australia where I now live. The perfect holiday for me includes lots of walking. These days, with self-isolation from the COVID-19 virus, it's important to me to walk close to my home – sometimes through King's Park, or to the Swan River close by, but I miss kayaking with my husband to see the bird-life on the Canning River. I used to sing in choirs, and I still enjoy chamber music concerts and singing around the house. Sometimes I still play the piano – I had managed to complete my diploma in piano (AMusA) just before heading off to Oxford, but that's one of the skills I lost in seeking my "work-life balance".

Q: Have you faced any challenges as a woman in mathematics? If yes, did you have other kinds of support through these challenges, if any?

C-P: Although I had wonderful role models who helped me believe that it was possible for a woman to be part of the mathematics community, I had no one to provide advice on managing a young family together with the huge leadership expectations that came with my appointment as Professor in 1983– the only female maths professor in the country. As well as serving on government and university committees, including the Prime Minister's Science Council (1989-92), I somehow managed in 1992 to become the first female President of the Australian Mathematical Society at the same time as starting a three-year term as Head of Department (not planned, and definitely not recommended!). On the departmental front, I needed to demonstrate that I could chair a contentious planning meeting successfully, making unilateral decisions on issues when there was no consensus. Somehow this seemed to communicate that I could be "trusted" to represent the department externally; and after that the department "allowed" me to use my preferred more inclusive leadership style. My two-year term as AustMS President was before the days of the internet: I developed a way of moderating email discussions and making decisions instead of waiting for the annual face-to-face council meeting. Lots of

> "Society needs young people with strong mathematics skills, including girls, who can think logically and critically, and who enjoy solving difficult problems. We need them more than ever before, to face the huge challenges of climate change, and now the challenge of surviving and recovering from the COVID-19 pandemic."

initiatives emerged, such as establishing a standing committee for mathematics education with representatives from all Australian states and territories. I got caught up in a fiery national debate over a new national curriculum initiative which would change the way mathematics was taught and assessed in schools. Several wonderful colleagues (all male) volunteered to become a sounding board for me, to discuss ideas and ways of proceeding: Perth was thousands of kilometers from my colleagues in the Eastern States. I appreciated immensely having a local support group.

For most of my career I have worked in a heavily male-dominated environment, and in some sense never really noticed how different it was from "normal society". I was shocked into awareness in 2000 when I began chairing the planning group for my university's Leadership Development for Women program (for its women staff—both academic and professional—in leadership skills). It was a great learning experience for me to work with that group of powerful women. I learned that diversity brings a more stimulating and productive environment for everyone.

Q: Did you have any notions or worries in advance about how the growth of your family would intersect with the growth of your career?

C-P: I wanted to have children very much indeed, and I was also worried about the effect this might have on my being considered a "serious mathematician". When my children came it was vitally important to me to maintain my commitment to research. With my first maternity leave, a colleague from the UK visited to teach my lecture course, and we published two papers on the work we did from his two-month visit. But my first baby slept very badly, and I got completely exhausted trying to be "superwoman" coping with everything. I was so tired, that I felt as if I could not think creatively, and this terrified me. I asked some of my colleagues around Australia if they had any research projects on which they might consider collaborating with me - where they thought my skill set might help. I am so grateful for their generosity – I have an assortment of papers from that period on all sorts of things: combinatorial designs, the mathematics of weaving, matrix permanents, binary sequences, labelled trees. The best outcome was the friendships I made with mathematicians across the country.

Q: You have received numerous awards (Prime Minister's Prize for Science, honorary degrees), can you tell us about the ones that were more significant for you. Do you accept being a role model?

C-P: For someone like me there is no choice about my being a role model. I just am; and I am glad if others are helped by anything I have done. The most heart-warming award for me was to receive the Australian Prime Minister's Prize for Science in

October 2019. It felt to me like a wonderful statement about the importance of mathematics and an acknowledgement of my achievements and those of my research group in the mathematics of symmetry. It was the first time that the recipient was a pure mathematician in the 20-year history of the prize. Looking back, I remember how thrilled I was to be an invited speaker in Algebra at the Beijing International Congress of Mathematicians in 2002. And it was also very special to be awarded in 2013 the Thomas Ranken Lyle Medal of the Australian Academy of Science. I was the first woman to be awarded the Lyle Medal in its history of 83 years! And it led to my becoming the Foreign Secretary of the Academy. Each of my honorary doctorates is

very special to me because of colleagues in those institutions. In some cases, it has led to stronger research links with those universities. For example, my work with colleagues from Brussels following my honorary doctorate from Université Libre de Bruxelles in 2005, led to developing the research project for which I was awarded a Federation Fellowship in 2007 by the Australian Research Council. I was the first pure mathematician to receive an ARC Federation Fellowship!

Q: You have had important responsibilities inside IMU as a member of the Executive Committee (EC) and as Vice President of the International Commission on Mathematical Instruction, and you are now a member of CWM. What do you think of the situation of women in mathematics inside IMU and more generally within mathematics? Do you have suggestions for a way forward?

C-P: It was such a privilege to serve on the IMU EC during the term of the first woman to be IMU President, Ingrid Daubechies. Ingrid's leadership led to the establishment of the CWM. The situation for women within the IMU has changed a lot over the last 20 years: Ragni Piene was the first woman member of an IMU EC (2003-06) and, for example, she had oversight of selecting the first ICM Emmy Noether Lecturer. Ragni and I served together on the next IMU EC (2007-10) and it was my role to present the case at the 2010 IMU General Assembly for adopting the ICM Emmy Noether Lecture as an on-going feature of the international congresses.

The whole world rejoiced at the award of a Fields Medal to Maryam Mirzakhani in 2014, and then mourned her passing just three years later. I hope very much to see another woman win a Fields Medal. But I don't know what to suggest as a way forward, besides making sure that the achievements of brilliant women in mathematics are examined by each Fields Medal Committee. At the very least we should ensure that each IMU EC contains more than one woman in its membership to bring some gender balance to its deliberations across its broad range of work – unfortunately the current IMU EC has only one woman among its members, Vice President Nalini Joshi.

Q: You are also very active in activities for women in math in Australia. Can you tell us more about what organizations exist in your country? When were they established? How did the position of women mathematicians in Australia change over time?

C-P: We have a very active women in maths group in Australia. It is called WIMSIG, the "Women in Mathematics Special Interest Group" of the Australian Mathematical Society. It was established in 2013, but each year in the previous decade, women participating in the annual Australian Mathematical Society conferences met together – at first for morning tea, then lunch or dinner. WIMSIG has several small grant programs of travel and research awards for women, it has a regular newsletter, and it ran a very successful 3-day women in maths conference in 2017. The second such conference was to be held this year but has been postponed because of COVID-19. WIMSIG has links with other women's groups in various STEM disciplines. There are more women in senior positions these days – more than 20 women professors in the mathematical sciences. WIMSIG helps women in maths across Australia to be in contact with each other and provides resources and programs to help their career development, especially with its mentor program established this year.

Q: Do you have advice for young people who might be thinking about doing math?

C-P: Society needs young people with strong mathematics skills, including girls, who can think logically and critically, and who enjoy solving difficult problems. We need them more than ever before, to face the huge challenges of climate change, and now the challenge of surviving and recovering from the COVID-19 pandemic. I give my strongest encouragement to young people considering a career in STEM – especially mathematics. I would say to them: "go for it". Surround yourselves with the best resources – take the most demanding maths courses to prepare yourselves. Build networks with other maths professionals to stimulate and support your work. And "welcome" to a hugely fun and challenging life.

NEWS FROM CWM

● Networks and Schools Funded by CWM in 2020

The CWM 2020 call for Networks, Schools and Workshops received 35 applications of which CWM had funds to support 8. In the selection of grants, priority was given to projects developing regional networks for Women in Mathematics in Africa, Latin America, and Asia. Upgrading and making permanent the May 12 initiative website was also approved. Finally, the project of creating МАТЕМАТИКА, an exhibition on Russian Women in Mathematics, taking place during (WM)² in Saint-Peterbourg in 2022, was supported. Note that some events might have to be postponed or canceled due to the COVID-19 pandemic.

May 12 initiative

May 12 is the birthdate of Maryam Mirzakhani. May 12, Celebrating Women in Mathematics is a joint initiative of European Women in Mathematics, the Association for Women in Mathematics, African Women in Mathematics Association, Indian Women and Mathematics, Colectivo de Mujeres Matemáticas de Chile and the Women's Committee of the Iranian Mathematical Society. CWM, EWM and AWM funding is meant to upgrade and make permanent the initiative's website.

Colombia : 3rd Meeting for Latin American Women in Mathematics

Goals of this meeting are: To gather women mathematicians from the region, present recent research and foster scientific collaboration between participants and to strengthen the Latin American Network of Women in Mathematics. Dates of the meetings are: 30 Nov. - 4 Dec. 2020

Chile: Workshop on Skills for Young Women Mathematicians

This activity will be part of the Chilean Workshop on Skills for Young Scientists 2020, which will be held from September 30 to October 2 at Universidad de Chile, Santiago-Chile. This Workshop is an adapted version of the Career Development Workshop for Women in Physics that has been taking place annually at ICTP in Trieste since 2013 and is the continuation of similar workshops held in Puebla, Mexico in 2014, Buenos Aires, Argentina in 2016, Bogota, Colombia in 2017, Lima, Peru in 2018 and Sao Paulo (ICTP), Brazil in 2019.

India: Mentoring workshop

CWM funding will be mainly used for the follow-up mentoring workshop for 30 selected participants to the Young Women Workshop in Mathematics. It is expected that these participants will be Indian Women in Mathematics mentees in the future. It will be used also for providing travel support to women mathematicians from South Asian Association for Regional Cooperation countries to attend activities of the Indian Women in Mathematics.

Russia: Creation of an exhibition

"МАТЕМАТИКА" through a land of mathematics, by train, creating a (WM)² and ICM2022 Exhibition. The goal of this three-year project is to discover and exhibit women mathematicians who work across Russia. Of particular interest will be their points of view on mathematics, what mathematics gives to them and to society, and how mathematics intertwines with their lives in the different cultural contexts of large Russian cities. The exhibit will furthermore explore how these women see mathematics and their role in mathematics research, communication and education. Beginning in 2020 the plan is to first develop a strategy and protocol of interviews (by meeting several Russian women in mathematics in France), followed by the preparation of a design of a sample exhibition poster and ultimately the purchase of plane tickets.

Sénégal: Women in Sage in Africa

Special sessions of Women in Sage Days have been already organized in 5 different countries (USA, Korea, France, Canada and Crete). All of them have

been a success, and not only have the participants acquired programming skills and learned SageMath but also women have supported each other and created new collaborations.The first Women in Sage conference in Africa will take place at AIMS Senegal with the support of the African Women in Mathematics Association (AWMA) and the Senegalese Women in Mathematics Association (SWMA) in July of 2021. Its scientific preparation starts in 2020.

Turkey: School at the Nesin Mathematics Village

The school "Topics in Applied Mathematics" will take place in the Nesin Mathematics Village from 22-26 October, 2020. The lecturers are Women in Mathematics from Morocco and Irak. CWM will also nominate a female lecturer from the international mathematical community.

Vietnam: Second SouthEast Asian Women Mathematicians

This one day meeting is associated with the 8th Asian Mathematical Conference (AMC 2020) at Halong, Vietnam and has been postponed to 2021. The objective is to continue building a network of women mathematicians in SouthEast Asia. The program addresses issues regarding opportunities, challenges and involvement of women in mathematics. The forum also shares best practices as well as research experiences of women mathematicians in SouthEast Asia from both developed and developing countries.

The Gender Gap in Science Book
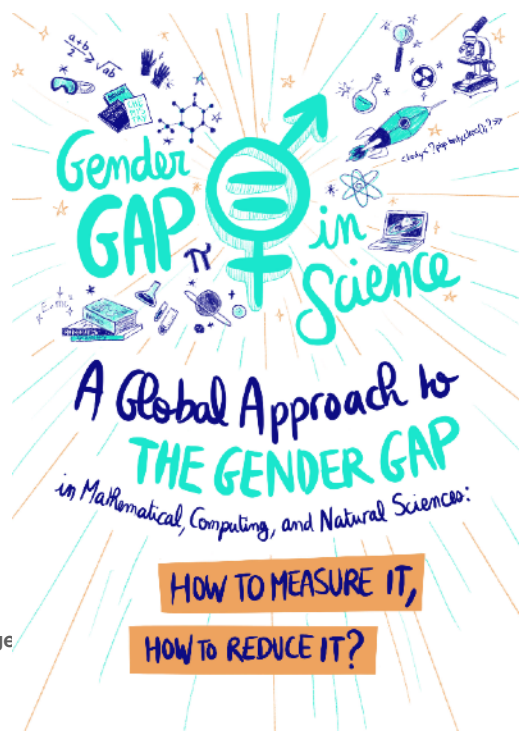
The Gender Gap in Science Book can be found here. An 8 pages booklet (English, French and Spanish versions) containing the summary of the results of the project and the full list of its recommendations can be found here.

OTHER NEWS AND ANNOUNCEMENTS

⦿ May 12, 2020: A Celebration for Women in Mathematics

May 12 was chosen for the Celebration of Women in Mathematics because it is the birthdate of Maryam Mirzakhani. The initiative was proposed by the Women's Committee of the Iranian Mathematical Society and voted by a vast majority of attendees to (WM)², the World Meeting for Women on Mathematics on last July 31 in Rio. Several suggestions for local activities around May 12 are listed here. Please feel free to organize one and mention it on May 12 website.

In the countries where there are restrictions to gatherings because of the coronavirus crisis, organizing collective events with physical presence might be difficult this year. But, adapting our suggestions, it might be possible to organize events differently and virtually. For instance, Zala Films is making "Secrets of the Surface", its new documentary on the life and work of the Iranian mathematician Maryam Mirzakhani available to screen for free through May 19, 2020. You can register directly here to watch the documentary. There are already more than 8500 people registered in more than 100 countries.

⦿ Alessandra Celletti included among Forbes' "100 Italian successful women"

Alessandra Celletti is an Italian mathematician. Her research activity concerns dynamical systems, Kolmogorov–Arnold–Moser (KAM) theory, and celestial mechanics. She is full professor of Mathematical Physics at the University of Rome Tor Vergata. The full list of celebrated women appeared in the Italian edition of Forbes magazine this April.

⦿ ERC Advanced grant for Alice Guionnet

Alice Guionnet, directrice de recherche at CNRS Lyon, is one of the winners of the ERC's 2019 Advanced Grants competition. Alice is a world-leading expert

in Random Matrices; in her ERC grant she will further investigate Large Deviations in Random Matrix Theory.

- ## Katherine Johnson dies at age 101

Katherine Johnson, the American mathematician whose calculations of rocket trajectories were critical to the success of the first and subsequent U.S. crewed spaceflights and who is celebrated in the movie "Hidden Figures", has died at the age of 101. In 2017, the "Katherine G. Johnson Computational Research Facility" was named and dedicated in her honor. During the same year, The Washington Post described her as "the most high-profile of the computers". Here, "computers" refers to the many supremely capable, mostly female NASA mathematicians who performed complex manual calculation for the agency in the pursuit of space flight. Following her death, NASA described Katherine Johnson as an "American hero" whose "pioneering legacy will never be forgotten".

- ## Marithania Silvero Casanova receives Vicent Caselles research prize for disproving a conjecture in knot theory

Marithania Silvero Casanova was not yet born when Louis Kauffman stated in 1983 the conjecture that established that two particular families of knots were equivalent. Silvero, born in Huelva in 1989, refuted the conjecture in 2015. Her finding has been recognized with the Vicent Caselles research prize, awarded by the Royal Spanish Mathematical Society and the BBVA Foundation. See more here.

CONFERENCE ANNOUNCEMENTS

- Because of Covid-19 precautions many events have been switched online. Here you can find a list of online mathematics seminars around the world: https://mathseminars.org/

COVID-19 Testimonies from CWM Ambassadors

Form M. Isabel Cortez, Chile

"In Chile we had our routines altered since October, when from one day to

another, people began to protest against   the inequalities that are prevalent in our country. In the universities, we were preparing ourselves against the possibility that the protests would flare up in March, during the school return. We expected student strikes, police violence, and everything that was customary until January. However, we went from being on the streets to being locked up in our houses, readapting ourselves, and trying to follow the instructions from a government that has almost no credibility. I live this process more and less in calm, I try to work, attend online seminars, do a little

exercise, I have cooked like never before, but I miss the human contact, and I worry about what might happen. These are moments when I wonder if I will continue living as I have done until now"

From Jyoti U. Devkota Nepal

I have been working from home since 18 March 2020. It is when our university cancelled all the lecture classes and also postponed the end of semester exam scheduled for the end of March. Nepal will complete 21 days of lockdown on 15 April 2020. So for nearly three weeks I have been in self isolation with my husband and my son. We are very thankful that nobody from our family and

near acquaintances   has been taken ill from coronavirus. I am conducting my research and enhancing my research endeavors through various materials.   I conducted a two hour online revision class with my students on SKYPE, the day before yesterday. Out of a total of 56 students, 47 students took part in this online course.   I was very much impressed by the success of this online class.The reasons for my pleasure are the following: because of closure of the university the students are scattered across Nepal and not every student has access to internet facilities. But I would like everything to be normal so that I can visit the university and have direct interaction with my colleagues and students.

From Marie Francoise Ouedraogo, Burkina Faso

The first cases of Covid-19 appeared in Burkina Faso on March 09, 2020. The following week, the government, to stop the spread of the virus, closed schools and universities. Other series of measures followed, such as the ban on the assembly of more than 50 people, the curfew from 7 p.m. to 5 a.m., the closure of markets, restaurants and bars, the closure of borders and airports, the quarantine of the affected cities, and the last measure will be the obligatory wearing of a mask. All religions have decided to suspend gatherings in places of worship. The Easter Vigil Mass 2020 was broadcast live on national radio and television. I was struck by the empty church, with only a few nuns to perform the chorus. Economically, a large part of economic activity in Burkina comes from the informal sector. The actors of this sector, although understanding and approving all the

measures taken within the framework of Covid-19, ask for a reduction of these measures and a support of the government to continue to practice their economic activity which supports families from day to day. As part of the mobilization of funding to fight against Covid-19, a "coronathon" was organized on April 18, 2020. I'm happy to be in good health as well as my family. For the pursuit of educational activities, some private television stations broadcast exam class lessons, led by secondary school teachers. We are experimenting with the dissemination of course materials on platforms accessible to students, the use of WhatsApp or tools like ZOOM. I take advantage of confinement to advance in research activities, discussion with fellow researchers or doctoral students by email, WhatsApp, Skype and other possibilities. I hope that we will see the end of the tunnel soon with this Covid-19 and that the lessons learned from this pandemic will allow us to improve our lifestyle in the future.

From Elisabetta Strickland, Italy

Our nightmare due to Covid-19 started on March 8, the International Women's Day. All Italians were asked to remain in their houses and, "stop going to work", unless strictly necessary. In any case all universities and schools have been closed and lessons had to go on via various platforms. I am now Honorary Professor in my University "Tor Vergata" in Rome, which means that I don't teach anymore, as technically I am retired. But I am still part of the committee for equal opportunities, enhancement of worker's health and against discrimination as Honorary President. Moreover I still organize many things and help with the students. All seminars are kept alive using the web, by now we are getting used to see our faces on the screen of our computers in a little stamp on the top. But it's not the same as been there, in front of the speaker, enjoying the talks together. So even if it's true that thanks to on line connections we managed to save a great part of our work, the idea of hundreds and then

thousands of people dying in hospitals because of the virus keeps us in a permanent state of grief, which of course doesn't help while working in abstract fields. All meetings have been cancelled, no gatherings whatsoever, and after being more or less liberated from domestic chores, all of a sudden we found ourselves back to the traditional role of women, i.e. taking care of the house, preparing food for everybody, going to the supermarkets. The domestic help has, as a matter of fact, almost disappeared and I obey the general rule, the danger of contagion has been and is still enormous. So after years of working without domestic duties, we women mathematicians went back to the past of at least fifty years. Much of the time that would normally be used for for research, teaching, and exchanging ideas with other mathematicians, has to be used for other duties. Personally, even if I believe things will never be the same, I sincerely wish we survive this pandemic, mathematics has been such a panacea in our lives, that restoring our habits would be really great!

From Aissa WADE, USA

I'm in Pennsylvania where all schools have moved to remote learning for the remainder of the spring semester. Like many colleagues, I have to take care of

my kids who would otherwise be at school and I work from home. I'm grateful that family and I are healthy.

The Covid-19 restrictions have much perturbed my academic activities. I planned to visit the institute "Institut de Mathématiques et de Sciences Physiques" in Benin and teach a graduate course in March 2020 but I had to postpone this visit and cancel my participation in a CIMPA School in Saida (Algeria) as well as planned workshops in North America. Fortunately, I have been discussing with my collaborators via Skype and I have been participating in research seminars through Zoom.

It is in the spring of 2017 that I had the idea of an International Day of Mathematics, and it took 2.5 years until finally, on November 25 2019, UNESCO proclaimed March 14 as the International Day of Mathematics. During this 2.5 years, we had built a network of supporting organizations that committed to organize celebrations, including AWMA, EWM, AMU-CAWM, and several national associations of women in mathematics.

The chosen theme for the first celebration was Mathematics is everywhere, illustrated on the website in seven languages. The IDM has aroused worldwide enthusiasm with 1043 celebrations announced for 2020 in more than 110 countries, including some celebrations of women in mathematics associations: see map on the website www.idm314.org. The website proposed material related to the theme and the logo was translated into more than 22 languages. Two international official launches were supposed to take place on March 13, the first one at UNESCO in Paris, and

IDM in Philippines

the second one at the Next Einstein Forum (NEF 2020) in Nairobi, Kenya. Unfortunately the COVID-19 epidemic forced the cancellation of the official launch at UNESCO, as well as that of many celebrations around the world. And the African launch at the Next Einstein Forum has been postponed to an undetermined date.

The international launches were replaced by a Live Global Launch on March 14, which premiered the worldwide video, "Mathematics is everywhere".

IDM in Peru

Throughout the whole day starting at 12:00 am New Zealand time, special announcements were posted as well as videos, photos and experiences from the celebrations around the world, including several spontaneous online presentations via videos and recorded talks replacing the cancelled celebrations. About 15 000 unique users visited the IDM website on March 14. The call for video clips for the Mathematics is everywhere video brought nearly 200 entries. Only a few could be presented, realized by girls and boys, and women and men from all around the world.

The participation at IDM 2020 is a success with 1043 celebrations around the world. Where do we go from there? There are probably several million schools around the world, which means that we have not reached many. Can we dream that in the future many schools will celebrate the IDM, either with special activities inside the classroom or with larger celebrations involving the whole school and possibly the parents? UNESCO has a network of 11,000 affiliated schools around the

**IDM in Istanbul, Imaginary Exhibition**

world, and we hope to reach out to these schools with UNESCO help. And we wish to reach out to teachers associations in all countries. You are invited to help: just invite your contacts to the website www.idm314.org!

We invite you to celebrate March 14 next year! If you have not done so, register for the IDM newsletter at http://www.idm314.org. This is how you will be told of the 2021 theme and of the new developments.

IDM in Ghana
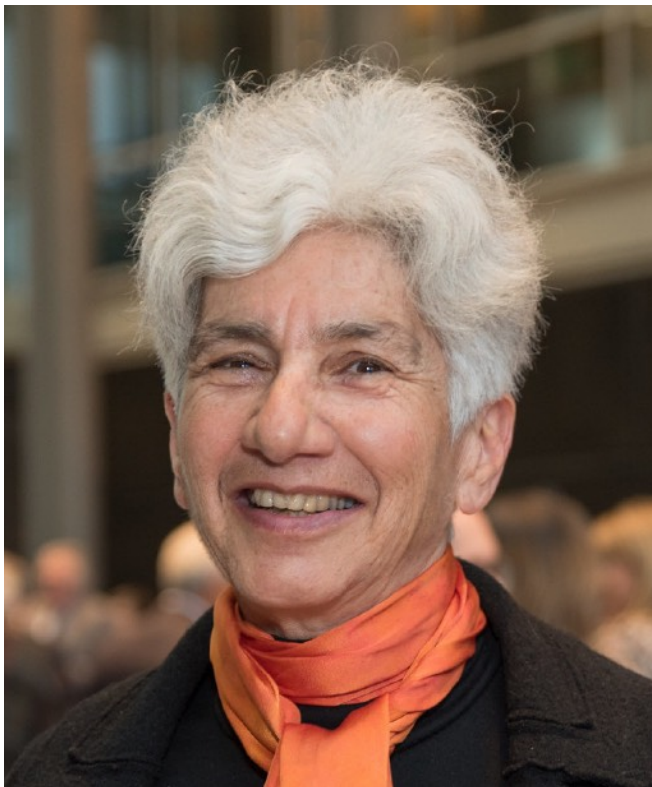
About the Author:

Christiane Rousseau is a Canadian mathematician, a professor in the department of mathematics and statistics at the Université de Montréal. She was president of the Canadian Mathematical Society from 2002 to 2004. She has received the Adrien-Pouliot Prize and the Abel-Gauthier Prize of the Mathematical Association of Québec, the 2009 Graham Wright Award for Distinguished Service from the Canadian Mathematical Society, and the 2014 George Pólya Award of the Mathematical Association of America for her article "How Inge Lehmann Discovered the Inner Core of the Earth". In 2012, she became a fellow of the American Mathematical Society (AMS). In 2017 she became the inaugural recipient of the AMS' Bertrand Russell prize for furthering human values and the common good through mathematics. In 2018 the Canadian Mathematical Society listed her in their inaugural class of fellows.