

IRPS BULLETIN

Occasional Newsletter
December, 2020

IRPS COUNCIL MEETING

2nd and 3rd December, 2020



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From the Editor

The cover page of this issue shows the present stage of scientific interaction : virtual meetings. In this case it is a meeting of the IRPS Council, held in December, 2020.

At this time almost the whole world is in lock-down to halt the progress of the COVID virus. There are exceptions, Australia for example, had only 2 active cases in the whole country, and all of these are in mandatory 14-day quarantine, following their entry to Australia from elsewhere until recently. But then a driver for international flight crews must have contracted the virus from them, unintentionally infecting his family...and indirectly, many others (42 is the current count). Greater Sydney has been declared a hot-spot and frantic contract tracing ensues. In the meantime State borders have been closed. The only way out of this pandemic is vigilance and adherence to rules of members of the community. And good contact tracing.

This Bulletin/Occasional Newsletter is an outreach by the IRPS Council to its members. Each of its members are well aware of the great dislocation to life and livelihood caused by the pandemic. In this issue a number of members write of their activities during the pandemic

David Bradley has provided a President's Column and as well, a description of how he has fared during 2020. The sequence of the other offerings follows in alphabetical order. **Chris Chantler** describes the effect the pandemic has had on his life, his students' lives, and the wider scientific community. **Malcolm Cooper** describes the continuing progress on his Beamline at the ESRF, Xmas, and comments on the effect the virus has had on its progress. **Dudley Creagh** describes problems he has had in undertaking experiments and his own personal solution to the problem. **Mahomed Gomaa** details his activities and those of his Egyptian colleagues during the shutdown. **Larry Hudson** offers some general advice about coping with problems, and gives his own approach to a solution of the problems. **Shirley McKeown**, my Research Associate, the person who has been responsible for sub-editing and composing the IRPS Bulletin for almost 30 years, astronomer, geologist, bonsai-creator extraordinaire, and avid Death in Paradise watcher writes of her time in isolation and the lessons learned therefrom.

All have very different stories to tell. We are interested to hear from you, the Members, to know how you are faring.

FROM THE PRESIDENT

Jules Verne, Arthur C. Clarke, Apollo 11 and all that

20th July 2019 marked the 50th anniversary of the first person to step foot on the moon. This was a truly remarkable achievement; we must laud the fearlessness, human endurance and of course the science, technology and life-support systems that provided the wherewithal for such voyage. During the celebrations of the event these matters were not highlighted to the extent one might have wished for. In needing to overcome the manifold issues preventing those first literal steps in interplanetary exploration, the voyage benefitted from technologies that most surely represented the state of the art, even with electronics that in modern terms might seem rather rudimentary. This was just a single instance of advancements in S&T that have occurred over the past 50 years. We are driven by the desire to learn, science in part being driven by statements of uncertainty. On the moons' surface dust turned out to be a particular problem, the absence of atmospheric protection from ionization leading to the issue of dust adhering to practically all surfaces, suits and visors included (the low gravity also resulting in material damage, dust kicked-up during a landing attaining incredibly high speeds, a prime mediator of damage). Quite how much preparation had been made for such a situation is perhaps something that one or two readers of this piece might be able to answer.

For us, in this Society of people who show highly expressed interests in radiation and

their interactions, the issue of ionization is fundamental to our work, from the interatomic through to the extra-nuclear, nuclear and nucleon scales. Proton and He-ion bombardment as well as photoionization, photonuclear and particle driven processes (eg PIXE) all play a part in lunar surface and sub-surface phenomenon. In such an environment the dust is thus inevitably 'sticky'. Furthermore, the more penetrating radiations are considered to preclude the establishment of a lunar surface vegetable garden, moisture issues apart. Thus said, there are efforts, notably at the University of Arizona (at the Controlled Environment Agriculture Center, CEAC) to examine the viability of hydroponics retained in buried tubes, a shield against penetrating radiations. The group note CO_2 to simply result from the act of breathing, while water could be extracted from 'astronauturine' and fiber optic light pipes could channel sunlight from the surface to the plants. Incredible for sure and yet it is incredible difficulties that drive science and technology.

While ionized dust was clearly not a part of the Jules Verne 1865 novel, *From the Earth to the Moon*, dust did play a central role in the Arthur C. Clarke 1961 novel *A Fall of Moondust* (Arthur C. Clarke being perhaps better known for his novel *2001: A Space Odyssey*, pub. 1968). The context one is directly alluding to is the desire to know the elemental content of lunar soil and whether

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President's Report (Continued)

this might sustain life. The group at Guelph, famed for GUPIX software (providing analysis of multi-element PIXE spectra), are just one member of a NASA project group that lead to the creation of an alpha particle x-ray spectrometer, excellent in sensitivity and sufficiently small and lightweight (reported to be the size and shape of a Rubik cube) to allow it to form a part of an exploration rover (to-date of Mars); the website

<https://mars.nasa.gov/mer/mission/instruments/apxs>

refers.

Where is one going with this? It is a well-worn phrase, nonetheless true, that necessity is the Mother of Invention. While the efforts of 50 years ago were doubtless driven by the space race and a desire for a high visibility demonstration of S&T prowess, risk being tempered by the prospects of failure, yet the science and technology payoff has been invaluable. The international cooperation resulting from world-wide efforts has as an instance played no small part in the forming of a global family of scientists and none the less so in the radiation sciences. Five decades since that moon landing, radiation continues to pose a great many challenges, offering at the same time the opportunity for gain in fundamental understanding. The IRPS seeks to play its part; some two years ago the International Radiation Physics Society came together in

Argentina, in Cordoba, at ISRP14 (October meeting has now been published in the journal Radiation Physics and Chemistry (Special issue dedicated to the 14th International Symposium on Radiation Physics 'February 2020, Radiation Physics and Chemistry 167(1)\doi10.1016/j.radphyschem.2019.05.020)

More recently still, in Lisbon, we met again, this time for ICDA-3 (May 29th to June 6th, 2019), the Linear No Threshold (LNT) model, the basis of the present legislative approach to radiation protection, being just one of the issues coming under scrutiny. As an example, at the organized tissue level can the complexities of radiation hormesis ever be untangled (read 'understood') to the extent that it can form a practical influencing factor on protection legislation? In this and other matters IRPS is undoubtedly playing its part. The Proceedings of ICDA-3 can be found in volume 171 (June 2020) of the journal Radiation Physics and Chemistry.

We will soon meet again, in the conference IRRMA 2021, this time in Moscow (present plans being for it to be held 4-9 July 2021) and in ISRP-15 in Kuala Lumpur, 6-10 December 2021; we invite our members to push on with their efforts towards aims such as those discussed herein and to present your work at our meetings, to the greater benefit of us all.

We look forward to seeing you.

David Bradley

**Emeritus Professor University of Surrey
Head of the Centre for Biomedical Physics Sunway University
President IRPS**

THE PLAGUE YEAR

From David Bradley

This has been one heck of a year', a truism by any measure but not one stated lightly. Sars-cov-2 came into my personal horizon in March 2020, most vividly in a darkened and largely empty airport terminal (albeit with some fraction of the passengers clothed in disposable chemical suits, a frightening vision, but hardly on the scale of the Hieronymus Bosch scenes of hell). By that time international flights had already become difficult to arrange; had I not been gifted with good fortune and fate notwithstanding, I could well have spent the last eight months in 'grand' isolation, my entire family residing in the city of my destination. This being a small issue when viewed from the much more difficult experiences of many others, I do not doubt my good fortune. Fourteen days of quarantine followed, again not so bad, all things taken into account.

Working life demanded a total rethink, starting with the reality of students not being allowed on campus, research labs all closed and staff all strongly encouraged to work from home (now given the acronym WFH - I had for one brief moment though it stood for something quite different). Online group meetings ensued, with experience gained in use of online platforms also for lectures, seminars and conferences. NORM2020, organized by the IAEA has been the latest experience, spread over

two weeks, with timings arranged to allow for the opportunity for global participation; for me and for others also on my time zone this meant being online from 8 pm to 11.30 pm. Once daylight saving kicked in, it was then from 9 pm to 12.30 am. There was some measure of sleep disturbance but again not much of a sacrifice; global participation had meant there were some 900 attendees.

For the group I am a member of, we agreed that the time now available to us could be used profitably, writing the reviews and book chapters that we had convinced ourselves needed doing. Indeed several of these manuscripts are now in press. Moreover, online platforms, freedom from traffic (international travel included) and time at home have all conspired to present themselves as opportunities. Certainly, no one would have wished for this particular change in working life to have arisen as a result of the particular circumstances. It has come about as a result of need, seeking to make the best of situations.

In signing off, I call attention to the novel of Daniel Defoe (he of Robinson Crusoe fame) and in particular to the mask depicted on the book cover (*photo next page*), one that clearly bears very little resemblance to the now famous N95 mask, albeit pointing to similar function.

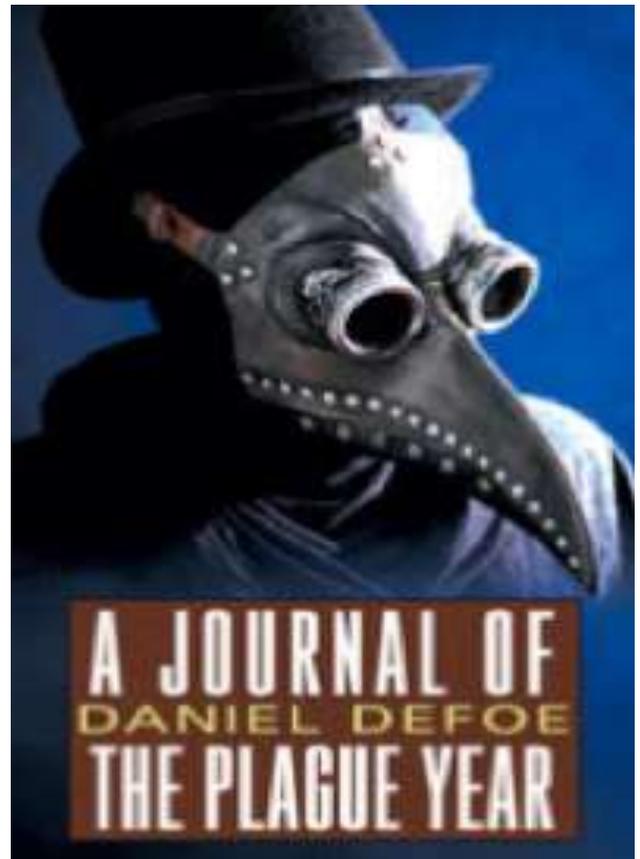
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The Plague Year (Continued)

From my base in south-east Asia, greatly appreciative in this particular plague year of the N95 mask, let me note that its development was due to Wu Lien-Teh, the first medical student of Chinese descent to study at the University of Cambridge but also the first Malayan to be nominated for a Nobel Prize in Medicine, in 1935. He created the mask during a plague that in 1910 fell across Northern China.

David Bradley

**Emeritus Professor University of
Surrey
Head of the Centre for Biomedical
Physics Sunway University
President IRPS**



An Occasional Bulletin Contribution

From Chris Chantler

What a year we have had and are having! Social Contact; Mental Health; Stress; and Isolation have been major influences to our lives, especially in Victoria where the lockdowns have closed a record number of businesses, and draconian level of negligence and suppression of human rights has been enforced by the State (which has not occurred before anywhere near so great and extent). This has occurred because of ministerial mistakes at the highest level of in the autocratic regime which is Victoria!

Then again, Australia in particular has been fortunate in its natural isolation and its border protection systems. With 60 million cases worldwide and counting, and 1.4 millions deaths and counting, Australia is very fortunate to have escaped so far with only 27000 cases and 907 deaths (as we speak) --- mainly the old and infirm, or the overloaded direct health care workers. Then again, Victoria has had over 20 000 of those 27,000 cases. So insidious is the virus that no country can be complacent - not even New Zealand!

Of concern to us in Victoria were the failed hotel quarantine plan, a comedy of intentional errors and incompetence; the consequent curfew across the state; and the locking down of all houses of worship so that all church services were terminated by the State for close to 6 months of this year-- including Holy Week and Easter. This is in a 'democratic' country.

A silver lining, which we do need to find, is that muggins (that is--me) ended up as the video streaming officer for the on-line services. With no attendance, except for those officiating, our congregation swelled from the normal 70 per service and a congregation of say 130, to visits and watchers of up to 4000 per service..... from the UK, the USA and Russia as well as many places in between...

And we are all very well aware that: no country has escaped from this pandemic unscathed; there have been errors of judgement from our lack of understanding of the pandemic at every level; and that we are still learning how to cope. Masks, social distancing, working from home where 'possible' and other measures have been very effective.

On the science front, most conferences have been delayed by a year or so, and we can probably live with that. Perhaps that is preferable to the 14-day quarantine rules at every port of entry on one of our typical 4-country trips! Worst is that many of our experiments have been cancelled or postponed again for a year or more, including some of my favourite experiments in the UK and USA. Most flights from Australia have been simply grounded so that, even if experimental programs were proceeding elsewhere, we could not get to it. University teaching very rapidly and effectively went on-line, though this is really inappropriate for experimental and laboratory sciences, so there is much angst amongst years of students and delays of theses etc.

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In terms of our Radiation Physics Community, we have also had these delays and the cost is perhaps most in terms of social and scientific interaction. In this Occasional Newsletter you see current announcements for our delayed IRRMA in Moscow and our not-yet-delayed ISRP in Kuala Lumpur, and I continue to find both of these exciting and compelling.

Enough of the negatives! Let's look at some positives. Hyperimmune sera and vaccines are coming, they look promising and currently look more promising than we had hoped for. We have learnt how to give effective interactive lectures and meetings by Zoom and to make jokes and indulge in banter, and retain most of our sense of humour (even if we had a bad sense of humour!). We have learnt how to have and maybe cope with Virtual Meetings and Conferences and Hybrid Meetings and Conferences. I am organising one with David Bradley and another two with the International XAFS Society at the moment. I am optimistic about their success, especially under the circumstances.

I welcome you, and look forward to seeing you, all at one of our next conferences - whether Moscow, Kuala Lumpur.....or elsewhere.

We have learnt anew the cost and need for experimental research, lecture demonstrations, laboratory programmes and all experimental sciences. Difficulties of maintaining my experimental (or even theoretical) research programmes and students during the COVID have been non-trivial.

Perhaps most important is regular face contact, even by Zoom, for motivation and camaraderie and support.

Despite the COVID restrictions and an over-full load of lectures, live and streamed, my team has published 5 papers, several accepted or in-review Chapters, three papers under review, and five Chapters under review... This is positive for two reasons:

- firstly, it means we have plenty to talk about at coming conferences, and indeed if funding permits there are excellent young students, MSc, PhD, maybe post-doctoral, who are keen to present at our conferences if and when possible.
- secondly, I am sure the same is true for you and that we can have many and varied discussions about your research in talks and posters etc. This is exciting and I look forward to it.

Our flagship journal Radiation Physics and Chemistry has bounded from strength to strength. Some of you may be justly concerned about delays in reviewing and editing. On an average day I may process, edit or review 10-40 manuscripts, so . also implies that YOU are being productive. I also point out that two of our Associate Editors have been directly affected by COVID and we pray for their swift recovery; and most of us have friends or family who have been directly affected. Probably a significant number of our top reviewers have also been directly affected and have communicated this to me in part by

way of apology. Let me say, and let me thank explicitly, not only all the Associate Editors and Reviewers of Radiation Physics and Chemistry, but of all our peer-review journals, as this permits continued communication and dialogue during isolation.

I am hoping that you have seen the announcement that the Impact Factor of Radiation Physics and Chemistry has risen further to 2.226, so is competing well with prestigious journals across all fields, and remains top tier in Nuclear Physics for example. This again is due to the quality of your submissions, and the quality of the editing and reviewing. For which I thank you.

I note that unlike many journals, this includes the fully-refereed submissions from Special Issues including our ISRP conferences, so thanks again to all who have been involved either in Guest Editorial roles, general editing and Reviewing, and also especially the Authors.

Finally, as I write this, Chanh Tran and I are conducting two back-to-back synchrotron experiments at the Australian Synchrotron. And the scientific results are looking quite promising. We will get back to normal and we will get back to collegial and collaborative activities - as soon as possible.

Prayers and very best wishes for everyone.

Professor Chris Chantler,
School of Physics,
University of Melbourne

Born Again - The XMaS Synchrotron Beamline

From Malcolm Cooper

Back in the 1990s Bill Stirling and I started a UK project to build an x-ray diffraction beamline at Europe's then brand-new synchrotron radiation facility, ESRF, in Grenoble, France, so that British scientists could exploit the novel very bright European source more effectively. In those days our beamline was christened XMaS, short for X-ray Magnetic Scattering, since the study of magnetic materials was then very much in vogue. These days our remit has widened considerably to include a much broader range of materials' studies (semiconductors, soft matter, catalysis, battery chemistry, cultural heritage artefacts, etc. as well as good old magnetic materials). Other techniques as well as single crystal diffraction have been espoused, (e.g. WAXS, SAXS, EXAFS, etc.), but the catchy acronym has survived and now stands appropriately for X-ray Materials Scattering. I am still involved with the project and therefore am sometimes referred to, somewhat irreverently, as "Father XMaS"!

The beamline has operated for over 20 years (it started user operation in 1997) and is now a UK National Research Facility. The ESRF ring with its high brightness magnet lattice has existed for several years longer since when "third generation" machines around the world have proliferated. No wonder that the ESRF recently wanted to regain its position as the pre-eminent synchrotron

centre by rebuilding the machine. specifically the lattice of magnets that constitute the ring, to produce an Extremely Brilliant Source (the EBS). However, this desirable development provided some severe logistical and financial headaches for XMaS, which was sited on a dipole bending magnet.

To begin with our new dipole magnet source is now further upstream (2.7m) of the beamline but, much more agonisingly, its position on the ring also moved radially inwards by some 10cm. Thus the whole beamline (slit vessels, optical components, diffractometer and flight tubes - everything!) needed to move sideways and be re-aligned. Next, to preserve the 1:1 focussing of the mirror the large 11-axis diffractometer (itself subject to a thorough, and thoroughly expensive, refurbishment) needed to move downstream by over 5 metres, necessitating the extension of the lead-lined experimental hutch and annihilating one of the control cabins in the process, all at significant building cost.

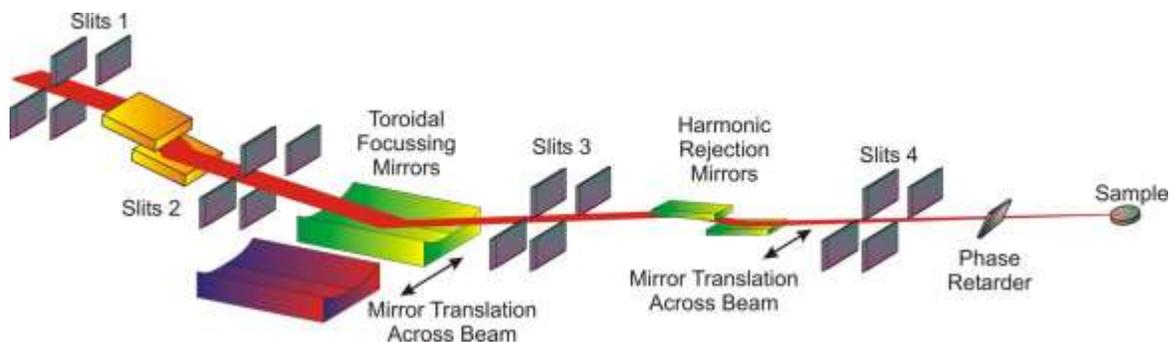
Of course it would have been a travesty to do all the above without worrying about replacing heavily-used key components (monochromator, focussing mirror, detectors etc.) most of which had seen over two decades of sterling service but were not now state-of-the-art. Previously the whole white beam initially impinged on the original double crystal (constant exit) monochromator which had its first silicon crystal water-cooled to

absorb the heat of the beam. However, our new EBS source is at least an order of magnitude brighter and delivers many more photons over a wider energy range (2.1keV - 40keV instead of previously 2.1keV - 15keV) exacerbating the heating problem and so both monochromator crystals now needed to be cooled with liquid nitrogen, entailing a complete redesign and a new build.

Likewise, after 23 years' service, the single toroidal focussing mirror (rhodium-coated silicon) inevitably had a degraded surface and it is now replaced by two new mirrors, (one Pt coated and the other Cr coated, the second of which is can "slide in" and is dedicated to the new higher energy range). Together they cover the enhanced energy range. And, yes, these mirrors combined with the EBS's dipole source do produce a focal spot which is much more compact and contains roughly 10 times more flux. Thus with the use of

KB (Kirkpatrick/Baez) mirrors, it will be possible for XMaS, for the first time, to probe materials on the micron scale. See the schematic layout diagram of the rebuilt beamline (excluding the KB mirrors) and for further details visit <http://www.xmas.ac.uk>

None of the rebirth of the beamline comes cheaply, of course, and my younger colleagues Tom Hase and Chris Lucas, now leading the XMaS project, have been, of necessity, heavily engaged in anxiously petitioning our UK funder, the EPSRC (the UK Engineering and Physical Sciences Research Council) to make the requisite investment into "future-proofing XMaS" which, I am delighted to say, they have done: we are eternally grateful! In total it is a multimillion pound rebuild. Now we can look forward to the shiny new XMaS providing an internationally competitive beamline for UK users at the ESRF for another two decades.



Malcolm Cooper

Professor, University of Warwick
Former President and Treasurer of IRPS

Where there's will

From Dudley Creagh

Many of us at the start of 2020 had grand plans for the year: on the professional side -research projects to undertake, research data to interpret, papers to write, conferences to attend, teaching; on the personal side – concerts, visits to museums and galleries, rugby matches, overseas visits, and so on.

In my case I had the prospect of continuing research at the Australian Nuclear Science and Technology's OPAL facility on a *forensic study of WW2 Japanese swords* in collaboration with Floriana Salvemini, David Thurrowgood, David Hallam. *(Photo below)* In this project the swords are studied using three different techniques: Neutron Tomography (DINGO beamline) to image their internal structures, with a view of deriving information on the way the swords were fabricated; Stress Analysis (KOWARI beamline) to determine the stress distribution and porosity in the blades arising from their method of fabrication. Neutron Diffraction (WOMBAT Beamline) was used to study the elemental composition



Floriana Salvemini and the late David Hallam aligning a sword prior to a Neutron Tomography scan

and strain distribution at selected points along the blade of the sword.

This project remains incomplete because of travel restrictions due to Covid-19 and problems with accessing the very large data files which are created in the experiments.

Another ongoing project is the study of the compositions of the pigments used by prominent artists (including Vincent van Gogh and Arthur Streeton) using THz radiation at the IR/THz beamline at the Australian Synchrotron. David Thurrowgood and I are collaborators on this project. Access to the Australian Synchrotron which is located in Victoria has only recently been possible. Victoria had been in COVID lockdown for months. Although we had data available for analysis, problems existed with the analysis software in the Australian Synchrotron's computers.

For the last five years or more I have been collaborating with my wife, Helen, in a project tracing the social histories of Schools of Arts and Mechanics Institutes in Australia. This, you may think, has nothing to do with radiation physics. And you're right: that is the beauty of it.....*too much work makes Jack a dull boy*, so the saying goes. I find it exciting and interesting to have interests in fields other than physics. Because many who are reading this will be unfamiliar with the School of Arts Movement, some background explanation is necessary.

The existence of Schools of Arts is strongly linked with the *Enlightenment Movement* which existed in Britain in the late 18th Century. That movement had as its primary aim the provision of education to ordinary working people.

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Education at that time was generally a privilege of the well-to-do. In 1796 George Birkbeck, Professor at the Anderson Institute of Glasgow, ran a series of open and free lectures on *the mechanical arts*. To his surprise and delight, by the fourth lecture, 500 people crowded in to listen to his talk. The Edinburgh School of Arts commenced giving lectures in 1821, and contemporary newspaper reports indicate that thousands attended these lectures. So much enthusiasm was stimulated in the community that Schools of Arts buildings were erected in a short time in towns and villages throughout the British Isles. And this enthusiasm for popular learning spread to the colonies as well.

In 1827 George Augustus Robinson started the Van Diemen's Land Mechanics' Institute in Hobart, Tasmania, then a British penal colony. By the middle of the 19th century there were over 3,000 School of Arts/Mechanics Institutes/Literary Institutes in Australia. By the commencement of the 20th century, every town or region with a population of 1000 or more had erected a building **using their own financial resources** to provide education, library facilities, possibilities of community interaction, and opportunities for self-improvement to ordinary folk. In later years many of the institutions evolved to form the basis for the development of adult education courses the creation of technical

and in some cases, universities....and the improvement of the position of women in society.

Helen and I are now collaborating on a new project *Halls in the High Country NSW* concentrating on buildings in, or near to, the Snowy Mountains, New South Wales. Social histories for the Batlow, Tumbarumba and Cooma buildings had been written and we were planning to travel to the Snowy Mountains region to complete our research on other seven Schools of Arts in the region. But in sequence: drought, severe bush fires, and the COVID-19 pandemic have prevented us from visiting the region. *(Photo below)*

It has not been all frustration, doom and gloom, however. I have written two Chapters for the Springer-Verlag series *Handbook on Particle Detection and Imaging*, acted as a referee for some scientific publications, participated in Zoom and Webex meetings on a range of topics, and given technical advice to Government agencies.

Self-isolation created substantial gaps in our diaries: there were no concerts, no recitals, no visits to museums and galleries, no rugby matches.....But these gaps were filled to a substantial extent by the need to rehabilitate our garden which was wrecked by a severe hailstorm: some of the hailstones were as big as cricket balls.



The Batlow Literary Institute, erected 1935.

This is the fourth Mechanics Institute/School of Arts/ Literary Institute in Batlow: the original building was built on another site in 1897 as a Mechanics Institute. This building was a 50' x 20' wooden structure.

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Gardening proved to be very rewarding both physically and psychologically.....a balm to the soul, in fact. The hailstorm had occurred in the late summer, and we had some concern about whether or not some of the trees and shrubs would survive the winter. But it is now

spring, we have had 120mm of rain this month. And everything in the garden is lush and blooming.

If I have learnt anything at all this year I have learned to relax, recline, and smell the roses.....

As well, I learnt how to paddle my own canoe ...



National Champion M500 Category 85-89 2min 57.4

Dudley Creagh

**Emeritus Professor, University of Canberra
Former President of the IRPS
Former Editor of the IRPS Bulletin**

COVID-19 News From Egypt

From Mohamed Goma

During the period from March 2020 until today my colleagues at the Egyptian Atomic Energy Authority (EAEA) and I faced problems in performing our duties in general and my duty as Emeritus Professor of Radiation Physics in particular.

In general the research reactor, accelerator and irradiation facilities as well as a few laboratories were in operation as usual with extra care from COVID-19

Quick summary of work done is outlined below. :

From March to September majority of workers were forced to work from home , implementing governmental instructions. Most of our activities centred about taking care of our families. It was nice for me to read scientific books and Journals. Among my activities was examining an MSc student in the field of theoretical radiation physics from Alexandria University on-line via Zoom.

It was an excellent chance for me to take a long vacation at the beach on the west coast of Northern Egypt from end of June until the beginning of September 2020, with extra protection against COVID-19

Nevertheless, as representative of Egypt at UNSCEAR I participated in the July meeting of UNSCEAR. The 67th session of UNSCEAR was scheduled in July but due to COVID-19 it was decided to be on-line

by preliminary meeting and in the July (3 days) meeting it was decided to hold the official meeting also on-line in November 2020.

From September 2020 until today, my colleagues and I returned to work. I myself as Emeritus Professor concentrated my work in two days a week. I enjoyed attending monthly Departmental Meetings and Radiation Protection Central Committee meeting of EAEA.

During the period from October to December 2020, I participated in the pre-session-meetings as well as the official on-line UNSCEAR 67th session (2-6 November) followed by participating in IAEA International Conference on Radiation Safety for two weeks (9-20 November). Furthermore I was delighted to participate at the IRPS Councillors meeting as IRPS Vice President for Africa and Middle East, for two days (2-3 December). I hope I can participate at the future programs of IRPS in Malaysia or Moscow in 2021

Currently, life has returned to normal. Radiation protection activities resumed through training courses as well as consultations and radiation protection services within EAEA and at medical and industrial facilities.

As Vice President of Egyptian Nuclear Physics Association (ENPA), the first circular of Environmental Physics Conference (EPC-21) was issued and

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distributed among Colleagues in Egypt and abroad. The conference shall be held on a boat from Aswan to Luxor from 5 to 8 March.

During the period from March to December 2020 my colleagues and I lost several Scientists and relatives due to COVID-19 or by other causes.

Hope with vaccination life is better, and a merry Christmas and Happy 2021 New Year.

Mohamed Gomaa

IRPS Vice President for Africa and Middle East

The Life and Times of LT Hudson in the COVID Era

From Larry Hudson

To state the more than obvious, the Covid-19 global pandemic has had an impact on almost every aspect of our lives. We have all received an email box this year full of "We hope this message finds you and your families healthy and doing well." We also resonate with praises for the "essential workers and caregivers" who accept risk on our behalf. Our vital, active, and engaged communities, such as IRPS, are inevitably fraying during the restrictions of Lockdown. "Stay Safe and Sane" was an early email salutation I adopted after Covid-19 made its impact clear. What follows is a few words about staying sane through the months we must still endure in this whirlwind.

Cognition experts tell us that episodic memory capacity requires discrimination of similar experiences (pattern separation) and holistic retrieval of multidimensional experiences, given a cue (pattern completion) [Mem Cogn (2020) <https://doi.org/10.3758/s13421-020-01072-y>

When we socially isolate our lives go virtual in larger part: our multidimensional experiences are projected into a lower-dimensional space, eroding the boundaries of our patterned experiences, causing us to lose somewhat our temporal moorings.

Our social interactions/feedback define in part who we are, and that too has been rendered wobbly by this global pandemic which also is conflated with other societal and economic stressors. Hence, 2020 has

been called "The Year Of the Blur." And we all grieve loss at some level: loss of friends, family, plans, travel, and face-to-face convivial meetings, both personal and professional.



Year of the Blur

When asked to write this, I did not imagine this article could be meaningful or even appropriate. But I recently received an email from a senior manager of our institute addressing the "toll on our psychological and emotional well-being." So, at the risk of bombarding you with platitudes, here are a dozen items to consider for staying sane as we finish this blurry year and beyond:

- [1] Establish routines
- [2] Reconnect with nature
- [3] Get enough sleep and exercise (which promotes both mental and immune-system health)

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I have largely pursued these first three items *via* trail trotting (since my gym is now closed). One of the joys of this awful lockdown has been the discovery of about 15 km of trails accessible by foot from my home. Many are old, secondary trails, upon which I have never seen another human. Three times a week I go trail trotting for an 8 km and variable round trip, making friends with the deer and their wide-eyed-puzzled fawns, skittish red fox, lumbering box turtles, pileated woodpeckers, eye-popping marbled orbweavers, and the great blue herons. It is somehow assuring that they all seem to be carrying on with aplomb. Similarly, the stars and planets above.



Great-blue-heron chicks, spring 2020, atop a tree in a mid-lake island in North Creek Lake, Maryland, 400 m from the author's home



- [4] Adopt new activities/hobbies (eg cooking since the restaurants and institute cafeterias have closed)



“Little Steps for Little Feet”

- [5] Be mindful/contemplative
- [6] Like Jeeves, consume "improving" books rather than a diet of reading doom-scrolling
- [7] Participate in online discussion groups that help navigate this protracted, but finite situation; Zoom with friends and family
- [8] Attend online colloquia and seminars related to your professional interests and beyond
- [9] Find laughter
- [10] Practice gratitude
- [11] Give yourself and others a break
- [12] Help support those who are more impacted by the year of blur

Because the 1918 influenza pandemic was so horrific and aligned with World War I, everyone wanted to move on and forget: leaving historians with relatively few resources. Hence it has been recommended that one should keep a diary during this pandemic. I find documenting the novel corona virus is a

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good way to process the drip, drip, drip of corona statistics and thereby proceed each day with a clearer station. My corona portmanteau includes the following folders:

- Corona Data/URLs/Articles/Virology 101
- Corona Diversions (entertainment streaming, and the proper arts including virtual tours of museums, musical performances, *etc.*)
- Corona Glossary (including: endemic-epidemic-pandemic, *furbizia*, comorbidities, intubation/extubation, zoonotic, covidivorce, cytokine storm, coronabeard, isolationship, herd immunity, R-naught, flattening the curve, the precariat, serologic test, convalescent plasma therapy, N95 masks, recrudescence, UV sterilization, viewneral, superspreader, silent hypoxia, base-rate fallacy, proning, corona bubble, Zoom Shirt, twindemic, distance-learning truancy, psychic doom-spiraling, *etc.*, *etc.*, *etc.*)
- Corona Jokes
- Corona Pics
- Corona Quotes & Philosophy
- Corona Recipes
- Corona Tunes

It would appear we still have months to go in this viral marathon. Final platitude, if you can withstand it: Life is short, the rose is thorny, but human flourishing pushes forward, no—matter—what.

"Stay Safe and Sane"

Larry Hudson, PhD

**Research Team Leader NIST, USA
Vice President North America IRPS
Former Editor of the IRPS Bulletin**

Childhood Interests Can Stay and Grow

From Shirley McKeown

Growing up with parents who loved bushwalking gave me my great interest in the natural world. I was always picking up rocks, watching birds and snakes ! .. noticing the variations in the trees as the prevailing conditions changed..

My Geology degree widened my horizons even more ... how the planets formed, the minerals in the rocks, the amazing way plants have adapted to the enormous changes to our planet over millions of years since its creation.

Radiation is there, too - life evolved, bathed in radiation. I learnt a lot about radiation while working on the IRPS Bulletin and reading the great items members submitted !!

And now that the virus restrictions have eased, I will be travelling to Queensland for a family Christmas ...

and some rock walks

..... and some bush walks

All the very best to everyone for 2021 and onwards

Shirley McKeown

BScHons , Research Associate, University of Canberra
Associate Editor IRPS Bulletin

You have seen what several of us are doing to make life bearable/useful during the dreadful COVID-19 pandemic.

Write and tell us what you are doing!

CONFERENCE REPORTS

Report on IFARP-2

From David Bradley



The 2nd International Forum on Advances in Radiation Physics (IFARP-2), 3 - 4 December 2019, was hosted by the Centre for Biomedical Physics, Sunway University in collaboration with University Putra Malaysia (both situated in the State of Selangor, Malaysia). The meeting followed on from the Buenos Aires International Forum on Advances in Radiation Physics (FORUMBA), held 4-5th May 2017, subsequently recorded in a Special Issue of this journal (volume 154, pages 1 - 90, January 2019), entitled Special Issue on Advances in Radiation Physics

and Applications (and now recognised herein as IFARP-1).

IFARP-1 and IFARP-2 have been focused meetings of the International Radiation Physics Society (IRPS), both being held in conjunction with a Council Meeting of the IRPS, a Society which now in its 35th year of existence was brought into being as a result of²¹ arrangements first agreed in Penang in 1982. We wanted to celebrate this achievement, providing a forum that although looking to the future also served to recognize the many advances

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that have been made in the radiation sciences over the several decades since IRPS made it its purpose to promote the interdisciplinary subject of radiation physics.

We have been particularly proud to have been able to be the host of

IFARP-2, perhaps never imagining that IRPS, a Society that had its start in Penang should have grown in such stature that approaching some four decades later it returned to these shores, we in Malaysia once again giving nurture to the organisation

David Bradley

Emeritus Professor University of Surrey

Head of the Centre for Biomedical Physics Sunway University



**Professor Graeme Wilkinson
Sunway University Vice-Chancellor kindly officiated at the opening of
IFARP-2**



15th International Symposium on Radiation Physics (ISRP) 2021

6th – 10th December 2021

Kuala Lumpur, Malaysia

Conference Topics

Fundamental processes in radiation physics
Theoretical investigation & quantitative analytical techniques in radiation physics
New radiation sources, techniques & detectors
Absorption & fluorescence spectroscopy
Applications of radiation in quantum control
Applications of radiation in material science, nanoscience & nanotechnology
Applications of radiation in agriculture, biology & medical sciences
Applications of radiation in space, aeronautics, earth, energy & environmental sciences
Applications of radiation in cultural heritage & art
Applications of radiation in industry
Radiation physics & nuclear fuel cycle
Education and training in nuclear physics and engineering

Important Dates

Abstract Submission **May - Aug 31, 2021**
Abstract Evaluation **Sept 30, 2021**
Early Registration Dateline **Oct 31, 2021**
Conference dates **Dec 6-10, 2021**
Manuscript submission **(will be announced)**

This conference will be conducted to allow for the option of either physical or virtual presence

Organizers



Call for Abstracts

**Early announcement. Detailed announcements to follow in due course.