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Abstract: The Royal Society of New South Wales was first founded in 1821 as the Philosophical Society of Australasia. At that time New South Wales encompassed the states of Queensland, NSW, Victoria and Tasmania as well as New Zealand. The Society has had a rich and interesting history and is the oldest scientific society in Australia. Founded by interested amateurs, the Society has had some interesting and influential members over the last one hundred and eighty three years. This paper documents some of the history of the Society and also speculates on where science of the present day and the Royal Society of New South Wales may be headed in the future.

Keywords: Royal Society of New South Wales, NSW History, Science History, Australian Science

THE EARLY SOCIETY

I wish to acknowledge that we are here today on the land of the Gadigal people, part of the Eora Nation. We pay tribute to the Gadigal people, to their traditions and to the memory of their ancestors. It is right and just to acknowledge the people whose country this is, who have held it in trust for so long, and who now share it with all of us.

I have called this talk *2021* because in that year our Society will have its 200th birthday. It gives me the opportunity to look back at our beginnings and forward to our future. While 200 years is a very short time in comparison with the many thousands of years this country has been occupied by its original inhabitants, it is almost all of the time that Europeans have been living here.

1821 was the year of the formation of the *Philosophical Society of Australasia*. Therefore, this is our Society's 183rd Anniversary. In 1821, the colony was 33 years old.

Let me try to paint a picture of what it was like. New South Wales *was* Australasia at that time. It included the areas that would become Tasmania (in 1825), South Australia (in 1836),

New Zealand (in 1841), Victoria (in 1851) and Queensland (in 1859). At this time, the word of the Governor of NSW was law. The Legislative Council, the forerunner to the State Parliament of NSW, was yet to be formed. The colony had just come to the end of eleven years of fairly stable governance by Major General Lachlan Macquarie who had undertaken a major building program with the help of his favourite architect, Francis Greenway. Blaxland, Lawson and Wentworth had crossed the Blue Mountains for the first time in 1813 with a road being built over the mountains in 1815, opening up huge areas to the west of the mountains to European settlement. This paved the way for the Gold Rushes of the early 1850s that brought with them a dramatic increase in population.

In 1821, a full census of the population was yet to be done. The first, called "the muster", was held in 1828 and found that the colony had 36,598 people. "People" meant Europeans. Aborigines were not counted in official figures until 1971! Only one in 15 of those counted was free or had been born in the colony – the vast majority were convicts.

And convicts were still being sent. Transportation would only finally come to an end –

after much agitation by the settlers of NSW – in 1848.

In 1821, the Sydney Herald was still ten years from being started. It would become the Sydney Morning Herald in 1842. The Australian Museum, first known as the Colonial Museum, did not open its doors until 1827, six years after the formation of our Society. The flag, the NSW Ensign, would not be designed for another 11 years. It dates to 1832.

There were only 10 original members of our Society and these were interested amateurs rather than professional scientists. They met in turn in each other's houses to discuss the latest ideas and to lend each other books. The first President of the Philosophical Society of Australasia was the sixth Governor of New South Wales, Major General Sir Thomas Brisbane, who was a keen stargazer and a graduate of the University of Edinburgh. He brought with him the latest astronomical equipment and a professional astronomer, the appropriately named Dr Charles Stargard Rumker (Elkin 1968). In fact Brisbane was so keen he established, at his own expense, an observatory at Parramatta and from 1822 meteorological observations were also recorded – the first systematic land-based observations carried out in the new Colony.

Another of the founding members of the Philosophical Society of Australasia was Henry Grattan Douglass, M.D. In 1848, he convinced F.L.S. Merewether and W.C. Wentworth (the same Wentworth who had first crossed the Blue Mountains) to support his idea for a University in Sydney and by 1850 the first Senate of the University had been appointed and Douglass was a member. In fact, his coat of arms was one of ten carved at the eastern end of the Great Hall of Sydney University. Douglass was a man who got things done.

It was clear that the Society needed him. Unfortunately the Philosophical Society of Australasia broke up amid political bickering in 1822. It was Douglass who managed to revive it in 1850 with the help of Dr Alexander Berry after whom the NSW south coast town of Berry is named. Berry had been on the Council of the

earlier Philosophical Society of Australasia and agreed to join Douglass on the Council on the revived *Australian Philosophical Society*. Berry was probably Australia's first millionaire; his estate at the time of his death in 1873 was worth one and a quarter million pounds Sterling, a tidy sum in those days. A member of the Legislative Council from 1829 until 1861, he was a medical graduate of the Universities of Edinburgh and St Andrews. His bequest is believed to have saved St Andrews (recently attended by Prince William) from financial ruin. He also left money for the town of Berry to build a hospital.

So, thirty years after the founding of the original Society came its rebirth. The population of the colonies had dramatically increased. There were now 8 times as many people and some 44,000 of them lived in Sydney. The British Parliament had given the Australian colonies self-government. With all these changes, the society changed its name again, to *The Philosophical Society of New South Wales*, in 1855. The Reverend W.B. Clarke, one of Australia's greatest geologists and Vice President of the Society from 1856–67, had hoped to get more members from the wider community but had given up on "persons whose leisure is generally given to the frivolities of ephemeral excitement, or whose mental occupation is only exercised by sensational novels" (Elkin 1968). Some things never change.

Clarke thought that the name "Philosophical" may have been one of the reasons why they were not attracting more members. Thus Queen Victoria's sanction was sought to change the Society's name yet again to The Royal Society of New South Wales and this occurred at the end of 1866. In the course of 45 years, the Society had had four different names.

W.B. Clarke was determined to find a home for the Society. "A home for meetings and for the library and not be like dwellers in the desert living in tents, without a spot of earth to call our own" (Elkin 1968). In the year of his death, the Society bought its first home "Elizabeth House" at 5 Elizabeth Street. Incorporation followed in 1881.

One of the great pioneers of aviation, Lawrence Hargrave, became a member of the Royal Society of New South Wales in 1877. There were three underlying aeronautical concepts in the first successful aircraft that Hargrave had developed. These were the cellular box-kite wing, the curved wing surface, and the thick leading wing edge or aerofoil (Naughton 2003). He published his papers in the *Journal and Proceedings of the Royal Society of New South Wales* between 1884 and 1909. Hargrave was recognised by the French working in the field – indeed when Gabriel Voisin built the first commercially available aircraft based on the stable lifting surfaces of Hargrave's box kites, he called them "Hargraves".

Hargrave believed in the free interchange of ideas and so never patented any of his designs. He noted "Workers must root out the idea that by keeping the results of their labours to themselves a fortune will be assured to them. Patent fees are so much wasted money. The flying machine of the future will not be born fully fledged and capable of a flight for 1000 miles or so. Like everything else it must be evolved gradually. The first difficulty is to get a thing that will fly at all. When this is made, a full description should be published as an aid to others" (Chanute 1893).

By 1892 Hargrave made known his opposition to connecting flying machines to dynamite missiles. His views about the peaceful promulgation of knowledge were so strict that only one Museum met his conditions and so the Deutsches Technological Museum in Munich received 176 of Hargrave's working models. It is a sad irony that most of them were destroyed during the Allied aerial bombardment of Germany during World War II (Naughton 2003).

He also speaks of the difficulty true visionaries have in convincing the broader community that they are not crazy. "The people of Sydney who can speak of my work without a smile are very scarce; it is doubtless the same with American workers. I know that success is dead sure

to come and therefore do not waste time and words in trying to convince unbelievers" (Chanute 1893).

Professor Archibald Liversidge was a powerful driving force for the Society for the last quarter of the 19th century. It was he who suggested a federation of the scientific bodies that existed in Australia. Called the Australasian Association for the Advancement of Science, it was formed in 1888 and in 1930 became ANZAAS with the addition of New Zealand.

In his prophetic address to the Society in 1901, Liversidge proposed an organization rather like the prestigious Scientific Academies of Europe. The place for such an Academy would be the nation's capital when it was chosen. This became the Academy of Science in 1955. In the same address, Liversidge suggested that we should adopt the metric system of weights and measures and make our currency metric (he suggested we call the new denomination the "Victoria") and argued its introduction would save our children a year or two of school time which could be devoted to modern languages, elementary science and English composition (Elkin 1968).

At the turn of the last century, several members of *The Royal Society of NSW* were lamenting that politicians and the public did not appreciate the contribution made by scientists – just as they do today. Mr C.O. Burge warned in 1904 that we should emulate Germany in promoting science and technical education or, he warned, we would be "rudely awakened from self complacency by some crushing loss in trading or in war." Ten years later, the war came and we discovered that we had become dependent on Germany for fundamental materials. Realising how much a country relies on its scientific research, the Australian National Research Council was formed in 1919 and the CSIR (the Council for Scientific and Industrial Research) in 1920. Members of our Society were crucial to their formation.

THE FIRST ROYAL SOCIETY

The Royal Society in Britain, on which our Society is modelled, is one of the most influential scientific bodies in the world. It was the first society to be given Royal patronage, which is why there is no other identifying name. This honour was bestowed by the newly restored monarch, Charles II, in 1661. The Royal Society was based on the ideas of Sir Francis Bacon who was Lord Chancellor under King James I some fifty years earlier.

When he wasn't being Lord Chancellor, Bacon was an essayist. He argued eloquently for a major shift in the way science was done and seen to be done. He wrote about the "new" scientist because he wished to distance science from the old science of alchemy. The alchemists wanted to change base metals into gold. Some wanted to create a tiny human like Tom Thumb, called an homunculus. These people, Bacon argued, were not using observation and objectivity as the basis for their work. This was the great push towards empirical science which some have argued led to a massive expansion of scientific endeavour and the blossoming of British science. Bacon's ideas were to become the foundation stones of the Royal Society.

Bacon argued that far from setting themselves above God, the "new" scientists were working to uncover the greatness of God. This helped them avoid the wrath of the all-powerful church, at least in part.

Perhaps most interestingly, he argued for a change in attitude from the scientists themselves. "For men have entered into a desire of learning and knowledge, sometimes upon a natural curiosity and inquisitive appetite; sometimes to entertain their minds with variety and delight; sometimes for ornament and reputation; and sometimes to enable them to victory of wit and contradiction; and most times for lucre and profession; and seldom sincerely to give true account of their gift of reason to the benefit and use of men" (Bacon 1605).

These words, though archaic, still have great relevance to the role of scientists today. How

much of our scientific research is aimed at producing commercially successful products? How much is directed at benefiting humanity? Again Bacon writes:

"Lastly I would address one general admonition to all; that they consider what are the true ends of knowledge, and that they seek it not wither for pleasure of the mind, or power or any of these inferior things; but for the benefit and use of life; and that they perfect and govern it in charity" (Bacon 1620).

Sadly, Bacon paid the ultimate price for his belief in observational science. In March, 1626 while driving near Highgate, he decided to conduct an experiment on meat to see if reducing its temperature slowed down the meat's decay. So he bought a fowl and stuffed it with snow. However, in the process, he caught a cold, developed bronchitis and died on April 9th. While that experiment could not have benefited Bacon less, it had the potential to benefit mankind as a whole, although modern refrigeration had to wait several hundred years to come to fruition.

THE PROGRESS OF SCIENCE

We pay lip service to the sentiments of Bacon here at the beginning of the 21st Century – we have ethics committees and departments of History and Philosophy of Science but in reality how much do we really encourage independent thought and altruistic research? Scientists, unless blessed with independent wealth, have always needed support or patronage. For the great astronomer Galileo Galilei, it was Cosimo II, Grand Duke of Tuscany and his Medici family. For Sir William Herschel, who discovered the planet Uranus, it was King George III of England.

By the middle of the Twentieth Century, most of the world's scientists were employed by governments, many of whom upheld the independence of these scientists merely by supporting them with salaries and research funds. Here in Australia, our democratically elected governments set the priorities for our tax-funded scientific research institutes. Hence it was the

Australian public that decided what we wanted our scientists to investigate. As a result, scientists at the CSIRO were among the most trusted members of our society. We knew that they were independent of commercial interests because we paid them to find the truth. They had no need to conceal from us what they had found. As Sir Isaac Newton wrote very early in his scientific career, "Plato is my friend, Aristotle is my friend, but my best friend is truth". Newton was able to be independent. His work was supported by a Fellowship at the University of Cambridge.

You may know that the CSIRO, our government research organisation, is now mostly required to raise 30 percent of its funding from "outside sources". If they enter into an agreement with a private company in order to obtain that 30%, they can be subject to confidentiality agreements that make the substance of their work unavailable to the public and also to the broader science community. Fair enough, you might say, the company is paying good money for the research – 30% to be exact. But who is paying the remaining 70%? We, the taxpayers of Australia are. And yet we have no say about which research is to be done and may have no access to the results when it is completed. Does this seem like a sensible way for us to invest our money? Does it seem like a way to direct our scientific endeavours in order to answer the big questions? Where do we come from? What exists at the far reaches of the universe? How do our brains and bodies work? Are there really many universes? How best can we fight disease?

After atomic bombs were dropped on the Japanese cities of Hiroshima and Nagasaki to end the Second World War in 1945, we came to realise that scientific research can produce great destructive power. The Cold War that followed saw an alarming stockpiling of Nuclear Weapons which had the world afraid for decades that it would blow itself up. Despite that, no major conflagration occurred and the aggression and competitiveness between the world's two greatest powers was diverted at least in part into the space race. In order to prove itself as

competent as the USSR – which had already launched the sputnik – the United States declared it would be the first to land a man on the Moon. The competitiveness of the two nations was diverted to something that had many scientific spin-offs and inspired everyone on Earth. We were now truly in the space age. There was nothing we couldn't do if we set our minds to it and gave the problem adequate resources.

Landing people on the Moon was not something that could happen by chance. Market forces would never have made it happen. It did not make large profits for those who undertook it. But it did pay dividends because it inspired all of the Earth's people. Anyone old enough to remember the first moon landing of Neil Armstrong and Buzz Aldrin on 20th July, 1969 can tell you where they were when it happened. How often is the whole of humanity united like this in wonder? Certainly, it was a propaganda exercise and the role of the USSR in being the first to launch a satellite and first to put a person into orbit was downplayed in the West. Despite that, it was a high point for humanity. It may even be that those images of the Earth as seen from the Moon changed us philosophically. We could not help but see a beautiful but lonely little planet floating precariously in the vast reaches of space, a powerful image for those arguing for greater protection of the Earth's environment.

If we compare the space race of the late 1960's with the way the West is spending its resources now, what do we find?

◊ A "War on Terror" which we are fighting without really knowing who the enemy is or where they are. The uncertainty of this "war" could see us spend far too much on security measures without ensuring our safety, money that could otherwise be spent on the hospitals, schools and public transport so desperately in need of resources.

◊ A War on Iraq because the dictator in charge had "weapons of mass destruction". Despite much searching, these weapons have not been found.

◊ A new Star Wars program aimed at shooting

down missiles within minutes of their launch, a program regarded by many as technically unfeasible.

So, in the world's most powerful nation, the United States, we see public funding of scientific research being increasingly diverted into secretive and aggressive programs. How will these projects benefit and inspire mankind? How will people interpret this trend in the future? Not favourably, is my guess. One might even conclude that we are entering a "New Dark Age".

This is an age where maintaining loyalty to a company or organization is more important than truth and objectivity. Our scientific objectives are being dictated by a desire for profit rather than the wellbeing of humanity. Through restricting research funding and salaries and increasing teaching hours we have reduced the effectiveness of our academics as leading independent thinkers in our community. In my opinion, a community that cannot "afford" to support people who think differently, who are independent of the most powerful forces in the land, is not a civilized community. A community that does not adequately support an independent public broadcaster is not a civilized community. If you grind down Australia's academics, its independent journalists and those who do not agree with the status quo, you grind away at the sophistication and humanity of our society.

With the downsizing of government in the last few decades, we have seen substantial changes in the way science is done in this country. Scientists, once held in the highest regard by the community, are no longer so revered. Many, in order to maintain support for their work, have thrown their lot in with commercial interests. Sometimes this has worked out well, but sometimes it hasn't. The community knows that there are scientists who still maintain, against the evidence of thousands of other scientists, that human-induced global warming is not happening. There are, as well, scientists who have argued against the detrimental health effects of smoking tobacco.

By throwing their lot in with the money

makers, scientists have become partisan. By signing confidentiality agreements, they can no longer publish and inform their fellow scientists of the work they have done. New ideas stay in limbo – perhaps to be re-invented by someone else. Work may be duplicated or lost because of this secretive behaviour. The *efficient* functioning of our scientific research and the dissemination of new ideas can be compromised and I use the word *efficient* deliberately. By representing itself so often as a means to making money, science has lost the moral and philosophical high ground. The reason for science is not to make money. The reason for science is to help us understand the world and ourselves and so to better serve humanity, the animal world and the environment generally.

Our mania for commercialisation is causing great damage to science. We have told ourselves that by reducing the size of government, we can operate more efficiently. The argument is that we need to reduce government, because private companies can provide services more efficiently than government departments. How do they do this? They can in part by being lean and less bureaucratic, partly because the companies are smaller and employees are not as able to form powerful unions to demand better pay and working conditions. Partly, perhaps, these companies are not as answerable to the public about the way they treat their workforce.

The private company may well be more *efficient* than the government department it has replaced, but there is an underlying philosophical problem with this solution. The two entities, the government department and the private company, do not exist for the same reason. The company exists to make money for its owners. Profit taking is its primary function. The government department exists to provide a service to its owners and these are the people who elect the government – the broader community.

How have we got to the stage where we believe *efficiency* is more important than *intention*? Is it better to be an *efficient* housebreaker than an *inefficient* locksmith? Why have we concluded that those who are inefficient should

sink rather than being taught how to swim or given floatation devices? Is it that we think only the fit should survive? And where has this philosophy come from? Perhaps it came from one of the greatest natural scientists of them all – Charles Darwin. Have we become so imbued with the theory of evolution that we believe we should apply it to human society? Has Darwin made us believe that society is a jungle and one must fight to survive?

It seems to me ironic that we are clinging to this misapplication of evolutionary theory at a time when we are doing our best to cheat evolution anyway. IVF is making men and women fertile who otherwise would not have been, and it's a good bet that many IVF babies will also need technological assistance when they want to reproduce. In addition, the human genome project and its discovery of thousands and thousands of human genes has got us thinking about how we can do gene therapy – fix up those little mis-prints in the Book of Life. Is the selfish gene teaching us what the economic rationalists would also have us believe – that altruism is good, but it isn't how the world works? People are basically selfish, but what if that proposition is not true? What does telling people it is true do to them? Matt Ridley in his *The Origins of Virtue* writes, "If people are not rational maximizers of self-interest, then to teach them that such behaviour would be logical is to corrupt them" (Ridley 1996).

The "Prisoners Dilemma" is the most famous game in the new mathematical discipline called Game Theory. It's all about lying and cheating versus co-operation and the calculations that go on in our heads about which is the best tactic. Life would certainly be a lot simpler if everyone told the truth. We wouldn't need the police, most of the tax office, or the legal profession. Think what it would save us!

The Prisoner's Dilemma applies wherever there is a conflict between self-interest and the common good. The classic scenario goes like this. Two prisoners are held on charges of a crime they are accused of having committed together. Each prisoner has two choices – either

testifying against the other (and so reducing his own sentence) or keeping his mouth shut. If he says nothing, one of two things will happen to him, depending on what the other prisoner does. If his fellow prisoner also keeps quiet, both of them would be convicted on a lesser charge or set free due to lack of evidence (and this is the best outcome for the two of them). If he says nothing and the other prisoner "defects", and pins the crime on him, then he will have been cheated and end up worse off, serving a longer sentence for the crime. But if he "defects" and tells the tale on his partner, then he can ensure that the worst scenario doesn't happen to him. In most cases, the argument goes, people defect because they don't believe that the other person is to be trusted.

This cheery little branch of mathematics was created in the middle of last century and one of its practitioners was John Nash, the Princeton mathematician who won a Nobel Prize in Economics for it in 1994, but perhaps more famously was portrayed by Russell Crowe in the Hollywood film, *A Beautiful Mind*.

Cornell University Professor Robert Frank conducted a series of human experiments to further explore the Prisoner's Dilemma. He wanted to know if all people made the assumption that the other person is not to be trusted. Was this human nature or was it cultural? What he found was indeed enlightening. Using the resource closest to him, the University's students, he put students from different disciplines through the tests. Were the proportion of cynics and altruists the same? They were not. Economics students, indoctrinated with modern economic theory were much more likely to defect than astronomy students (Frank 1988). It seems that if you believe that "greed is good" and people are bad it becomes a self-fulfilling prophecy.

Ridley makes the point that, evolutionarily, it makes sense to admire and advocate "virtuous" behaviour such as dying for your country because it's good for the tribe or community as a whole. It's good to *advocate* it but not necessarily to *do* it yourself. So how do we get

people behaving in a co-operative and trusting manner? Ridley believes human beings, for the most part do – that we distinguish ourselves from other animals because of our “groupishness”. We co-operate closely with people who do not share our genes. He argues if you pit one group of people where everyone is out to help only themselves against another group of people where there is a culture of trust, then the trusting group will win.

But we have created a society where we do not co-operate, and yet it is our ability to co-operate which has got us where we are. We wouldn't have lasted long hunting big game without it. Co-operation and trust within a community will help that community survive longer than one where all the individuals are pitted against each other. The alarming rises in health costs have been brought about largely by skyrocketing insurance premiums for doctors. And of course the insurance premiums have gone up ten or twenty times in some cases because so many of us are suing our doctors. It's a perfect example of non-cooperation damaging the community as a whole.

Adam Smith, one of the founders of modern economics, knew that economic life couldn't be separated from the habits, customs and morals of the society in which it occurs. He knew that it operated against a backdrop of culture. This is also true of technological and scientific innovation. Our culture is much more than the marketplace. If the choice is between finding the gene for obesity in humans in order to sell a weight-loss cure, and developing a vaccine for malaria, one would be more lucrative and the other would be more socially important. As a community then, we would choose the vaccine, but as shareholders we could very well urge our company to choose the weight-loss cure. Our primary objective as a community is not to make money. There are grander and more inspiring things for us to do. But from where should we get our inspiration?

Quite often it will come from the imagination of the writers of fiction, those who allow their imaginations freer reign than the rest of us.

Jules Verne was a master of technological prediction. His stories of travel to the Moon may well have inspired the boys and girls who later made it fact. He predicted submarines, helicopters and calculators. He also wrote (Evans 1995) an unpublished novel called *Paris in the 20th Century*, which was completed in 1863, but only uncovered by Verne's great grandson in 1989 and recently translated into English. Verne's 20th Century Paris has skyscrapers of glass and steel, high-speed trains, cars that run on petrol, fax machines and a global communications network. He's out by a few decades on some of it since he's describing Paris in 1960 but it's still very impressive.

But, unlike most of his pro-progress novels, *Paris in the 20th Century* is a tragedy where Verne laments that art, literature and music have either disappeared or become only utilitarian, where education is for vocational purposes only and women dress like men. This is a place where multinational companies hold the real political power and electricity illuminates the streets and commercial advertising, but is also used for executions. The novel does not have a happy ending.

Verne's publisher Pierre-Jules Hetzel refused the manuscript. He wrote “My dear Verne, even if you were a prophet, no one today would believe this prophecy . . . they simply would not be interested in it” (della Riva 1994).

So, what am I saying with all this social science and fiction? I'm saying that the future of technology and our scientific endeavour is far too important to be left only to market forces. We must decide as a community what we want. We must learn again how to prioritise. We won't always get it right but we must try. The free market is a good way of making sure that we get fresh carrots and zucchinis at the right price but it cannot help us decide how to deal with Aboriginal health, our homeless or our prisoners. As Charles Handy writes, “The market is a mechanism for sorting the efficient from the inefficient, it is not a substitute for responsibility” (Handy 1995). We cannot expect the market to provide us with a vision of the future, or to help

us decide what sort of future we want.

I'll give you an example of where things didn't go the way they should have. Barry Marshall and his colleagues at the Royal Perth Hospital found that stomach ulcers were caused not by acid in the stomach but by a bug called *Helicobacter pylori*. At the time, drug companies were selling the most lucrative pharmaceutical agents in the world – H2 receptor blockers. The beauty of these drugs was that the patient had to keep taking them for life! It was a gold mine. Then Barry Marshall claims he can cure ulcers with old drugs – out of patent (and therefore able to be produced by any company). The silence from the drug companies was deafening. It took years for the research to be completed, because no one would fund the research. Eventually Marshall and his colleagues were heard but it took far longer than it should have.

I sometimes wonder if we have also been guilty of selling science as something that provides certainty in this troubling and uncertain world. Perhaps we should hand that one back to the bishops and rabbis and mullahs. Science does not provide certainty and the great discoveries bring with them even more questions. Sometimes great “truths” are found to be untrue. Science is exhilarating precisely because it keeps challenging us and surprising us with its answers. Think about the last few decades. So many of the things we've held to be true have been found not to be.

- ◊ Chocolate and red wine are *not* bad for you (in moderation).
- ◊ The majority of physicists now believe in a myriad of universes – not just one.
- ◊ Low fat, high carbohydrate diets are *not* good for you.
- ◊ Women are *not* born with all their eggs, it seems they make them throughout their lives.
- ◊ The expansion of the Universe is speeding up, *not* slowing down.

Yet in order to make a breakthrough a researcher needs to believe with tremendous conviction that they are right. It is so much easier to bring something down than it is to create something new. The culture of science - that

one must abide by the rules of experimental objectivity, that one must listen to the evidence - is crucial to its working efficiently. It's hard enough for scientists to fight their own emotional attachment to ideas. If they also have to fight the company they work for because what they've found might threaten profits, they may be overwhelmed.

THE FUTURE

When we dream of the future what do we see? I can't hope to match the vision of Jules Verne but I can imagine a society a hundred years hence – perhaps 2121 when our society will be celebrating 300 years of existence – when our attitude to animals and our consumption of them as meat will be seen as barbaric. As barbaric as we now find the use of the rack, the thumbscrew and burning at the stake. A form of meat might still be eaten in the future and enjoyed even more because it will come without guilt. Grown in vats, no sentient will be killed to provide it. Our belief in the market as a way of organising society will be laughed at as being naive and unsophisticated, like an adolescent who has great skill with computer programming but not the faintest idea what to do with it.

What's next in science and technology very much depends on us. We must decide on what sort of a future we want. Just as Jules Verne inspired young men and women to take us to the moon, the vision must come first. Once we pose the right questions and provide resources to carry out the right research, then science can take us wherever we want to go.

For the Royal Society of New South Wales, the climate in which we operate has changed radically in the last hundred years. We are no longer the place where today's Lawrence Hargrave would publish his findings. There are specialist publications for that.

But the Society has a role to play at the beginning of the 21st Century and it is this. New South Wales needs a Society that overarches all the specialties in science. The specialist societies act as professional bodies for those in the

burgeoning number of science specialties. However, sometimes scientists in different fields approach the same problem from different angles. Sometimes people from outside the field can offer insight that is useful. The Royal Society of New South Wales, Australia's first scientific society, must also return to its roots and be a society open to all who are interested in new ideas, not just professional scientists. In this way, our lectures and discussions can make a substantial contribution to the intellectual life of Sydney and New South Wales. We need to co-operate more with the Royal Societies in other states so that we do not duplicate efforts in areas such as publications. Our joint sponsorship – at New South Wales' instigation – of a Eureka award (worth \$10,000) for interdisciplinary science is the first example of what we hope will be further co-operation.

The Council of the Royal Society of New South Wales has accepted a generous offer from the Vice Chancellor of Sydney University, Professor Gavin Brown. We have just taken up residence at 121 Darlington Road as this publication goes to press. I know that the Royal Society of New South Wales will be around to celebrate its Bicentenary in 2021. It may by then have changed its name again, who knows? But our Society has a proud and illustrious history and, I believe, an even greater future.

REFERENCES

- Bacon, F., 1605, *The Advancement of Learning*, Book 1, Works 3, p. 294. In: Montague, B., ed., 1850, *The Works of Francis Bacon, Lord Chancellor of England*, Carey and Hart, Philadelphia.
- Bacon, F., 1620, *Magna Instauratio*, Preface, Works, 4, pp. 20–21. In: Montague, B., ed., 1850, *The Works of Francis Bacon, Lord Chancellor of England*, Carey and Hart, Philadelphia.
- Chanute, O., 1893, *Aeroplanes*, Facsimile reprint (1976) by Lorenz & Herzog, Publishers, Long Beach, CA.
- della Riva, P.G., 1994. Préface. In: Verne, J., 1994, *Paris au XXe siècle*, Hachette, Paris, pp. 15–16.
- Elkin, A.P., 1968, The challenge to science, 1866; the challenge of science, 1966. In: *A Century of Scientific Progress, The Centenary Volume of the Royal Society of New South Wales*, Royal Society of New South Wales, Sydney.
- Evans, A.B., 1995, "Verne: a friend to every boy", *Science Fiction Studies*, **22**, 35–46.
- Frank, R.H., 1988, *Passions Within Reason*, Norton, New York.
- Handy, C., 1995, *The Empty Raincoat – Making Sense of the Future*, Arrow Books, London, p. 12.
- Naughton, R., 2003, The pioneers: Hargrave; Celebrating the Bi-Centennial of Aviation: 1804–2004, <http://www.ctie.monash.edu.au/hargrave/hargrave.html>, p. 5.
- Ridley, M., 1996. *The Origins of Virtue*, Viking, New York, p. 145.

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