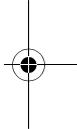
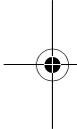
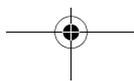


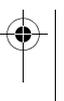
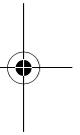
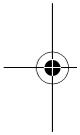
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**Volume 23
2010**



**Sarton Chair of History of Science
Ghent University**





SARTONIANA

Volume 23

2010



Editors: R. Rubens and S. Dupre

Sarton Chair of History of Sciences
Ghent University

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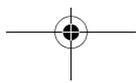
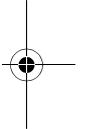
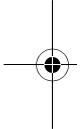
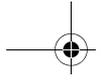
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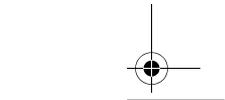
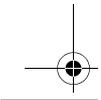
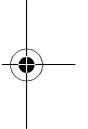
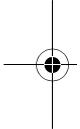
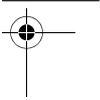
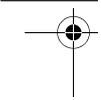
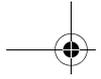
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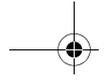
Introduction

Robert Rubens

When 24 years ago Ghent University decided to establish the Sarton Chair for the History of Science nobody would have expected to be at the verge of the 25th edition next year. It was the visionary dream of George Sarton, a science graduate at the Ghent University, to achieve a synthesis between exact sciences and the humanities. One hundred years after his birth the Sarton Chair was founded by Michel Thiery with the help of the alma mater of Sarton.

The lectures of the past academic year brought together in this volume prove the vitality of the chair. Moreover, they are important contributions to the field.

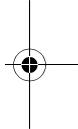
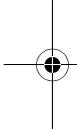
In the first paper Lisa Jardine highlights an important part of British and Dutch history. The close connection between the two seafaring nations has been very important not only for the evolution of constitutional history in the world but also provided some steps to the enlightenment, with its impetus to exact science. It is sometimes forgotten that in the United Provinces the absence of a monarch and a tolerant society made not only Descartes possible but also Locke and Huygens. The connection of the Huygens family so important for the scientific evolution in Holland and Britain has been the research work of Lisa Jardine. As an American born scholar she not only studied the original documents but also learned Dutch. Her important work, already crystallised in the acclaimed book “Going Dutch” is the first paper in this volume in which she further informs us about the importance of the beginnings of the Royal Society and “Dutch Invasion” in the paradigmata of science.



The second paper by Henriet gives an overview of Renard's writings about the basic ideas of geology. The achievements of these scientists a century ago with the powerless instruments they only had are too frequently forgotten. It is mainly based upon their detailed and fine work we have such precise information about the origin of the earth. The detailed study of Henriet whereby he integrates the personal life and scientific career of Renard can inform us about the origin of different steps in his career.

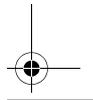
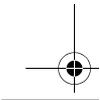
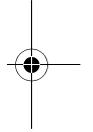
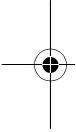
The paper about "arrestographie" by Dauchy highlights one of the important differences between legal history on the continent and in Anglo-saxon nations. Although precedents never have the same power in our continental system, the "arrestographie", although a "science douteuse" has certainly played a role in our legal history.

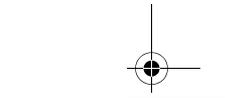
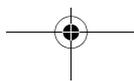
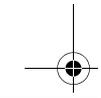
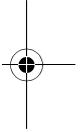
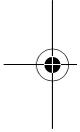
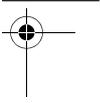
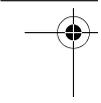
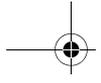
Finally, the paper by Schäffer about the very old relationship between man and dog is a beautiful example of the primary interest in animal welfare of the scientific veterinarian. The human-dog relationship during centuries not only involved the companionship, but also the helping for the wounded and provided basic information in human physiology. The canine race has always provided good hunting aids. However, legally backed respect for the dog itself came only in the 1930s in Germany. Lucky for the species England had already an anti-vivisection act in 1876.





SARTON CHAIR LECTURE





Laudatio Lisa Jardine

Jürgen Pieters

I am very honoured to be able to introduce to you this afternoon, as collega proximus, Professor Lisa Jardine, this year's candidate for the Sarton Chair. To be able to do so by means of an extensive laudatio, in front of this audience, and in this magnificent building, not only honours me, truly so, it actually also thrills me – in the past few years I have pointed so many students in the direction of one or other book professor Jardine has written, that I particularly welcome this moment as the perfect occasion to formally render *homage* to this exceptional scholar.

I could begin by telling you some of the stuff that one is expected to tell at an occasion such as this and give you a brief survey of Lisa Jardine's vita. I could begin by telling you that

- she is Centenary Professor of Renaissance Studies at Queen Mary, University of London and the Director of an outstanding research centre, the Centre for Editing Lives and Letters (the centre's acronym is CELL, which is certainly not a coincidence, since for more than a year now Professor Jardine also serves as Chair of the Human Fertilisation and Embryology Authority in the UK);
- she is a Fellow of the Royal Historical Society;
- she holds honorary doctorates from the University of St Andrews, Sheffield Hallam University and the Open University;
- she is a Trustee of the Victoria & Albert Museum, and Patron of the National Council on Archives;
- during the first semester of the 2008/9 academic year Professor Jardine was Distinguished Visiting Professor at the Netherlands Insti-

tute for Advanced Study in the Humanities and Social Sciences, jointly sponsored by NIAS and the Royal Library in The Hague (the KB). In 2009/10 she will be Scaliger Visiting Professor at the University of Leiden, the Netherlands;

- she is a Commander of the British Empire, and rightly so.

I could start by telling you that. I could also start by saying something about her publications, both the scholarly ones and the ones intended for a larger audience. Let me begin with the latter. Professor Jardine writes and reviews for all the major UK national newspapers and magazines and also for the Washington Post. She appears regularly on arts, history and current affairs programs for TV and radio. She is a regular contributor to the radio-show 'A point of view', on BBC Radio 4. A selection of her talks for that program has recently been published.

Professor Jardine's no less impressive record of scholarly publishing contains no fewer than sixteen books, of which I can only mention some: there are books on Shakespeare and his contemporaries (an early one on the representation of women in Elizabethan and Jacobean drama) and a number of highly acclaimed biographies of major figures from the early modern period: Erasmus, Robert Hooke, Sir Christopher Wren and Sir Francis Bacon (on whose writings she wrote her PhD, which was defended in 1973 at the University of Cambridge).

Lisa Jardine is also the author of two more general introductions to the culture of the early modern period, or the Renaissance, entitled *Worldly Goods* and (co-written with Jerry Brotton) *Global Interests: Renaissance Art between East and West*. Those are two of the books that I keep recommending to my students – they are at the same time thorough and specialized, but also clear in design and execution, and it's this perfect balance between more specialist and more general aims that, I think, are a prime characteristic of Lisa Jardine's work, and one which has deservedly ensured her a very large audience.

A second hallmark of her work is the great attention that she pays to individual lives and to the shaping force of individual decisions for cultural developments, no matter how collectively structured or otherwise constrained these decisions are. Lisa Jardine's interest in the past is an interest in the people of the past. She is a biographer first and foremost, and

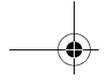
as the full title of the research center that she directs shows – The Centre for Editing Lives and Letters – the historical materials that she studies are the traces that the dead have left to the living, traces that give us an idea of the actual lives that they once led.

So, as I said, I could start with the vita, I could start with the publications. I could do that, but I could also start with a confession – I must say that I have only recently (last year to be precise) gotten to know professor Jardine personally. But, nevertheless, I have always had this thing with her. I promise I won't make this too embarrassingly personal, but in order to make this clear, I need you to join me back in time, for a minute or so, to, say, some fifteen years ago when I was a student doing a post-graduate program in literary theory, trying to figure out (as most post-graduate students do) what to do with the rest of my life which threatened to begin any time now. More specifically, I was trying to find out whether writing a PhD could serve as the beginning of that 'rest of my life' or would merely postpone the rest of my life to happen for another four years. Also, if I were to write a PhD, I would need a topic, a field in which to specialize that could interest me, well, for the rest of my life. In hindsight, there have been (apart from some professors in Ghent and my PhD supervisor in particular) three scholars whose books have had a decisive impact on my own work, in the sense that they determined my decision to write about the past, and about the early modern period more specifically, but to do so from a decidedly presentist position – over the past decade and a half, I have read as much of their work as I could get my hands on. As you will have imagined, Lisa Jardine is one of those three – the other two are Stephen Greenblatt and Catherine Belsey; those of you who are familiar with their names will understand that as far as I am concerned Lisa Jardine is up there with true giants.

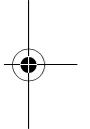
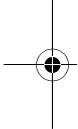
What is it that I found, and still find, so appealing in Professor Jardine's work, and that of her two colleagues? Since I could go on and on about this, but have very little time left, let me try to put it as succinctly as possible. Lisa Jardine's books are – to borrow a phrase first coined by the French historian Jules Michelet – marked by a great amount of tenderness for the past. She cares about the past, and its inhabitants, and it is this passionate interest in the actual lives of actual people that, in my view, are at the core of her work and of its obvious success. Readers warm to her writings (and

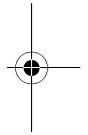
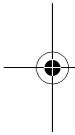
I'm referring to actual experiences here, not simply my own, but also to that of a number of students with whom I talked about Jardine's work) – readers warm to her writings because these writings are warm, because their embrace of the past is a heart-felt one and her books clearly manage to infect their readers with this enthusiasm. My earlier reference to Michelet was not a casual one, since in his ideal conception of a poetical historiography (a form of history-writing that has the aspirations and the capacities of literary writings) the work of the historian needs to have a transferential aim, and doubly so; it needs to bring back to life the past (to translate it into something present) while at the same time drawing its readers into the past, but into a live past. To read Jardine on Erasmus, on Francis Bacon, on the murder of 'Willem van Oranje' (the first assassination of a head of state with a hand-gun, as the subtitle of Jardine's *The Awful End of Prince William the Silent* has it) or, in her latest book, on Constantijn and Christiaan Huygens has the effect which Michelet's writing can have: the reader faces the past, in a dramatized version, a live version as it were, because the imagination of the historians renders the past present. But at the same time the historian's voice keeps interfering, not in a meddlesome way, but in a continued attempt to point the reader at the strangeness of the effect of what is happening on the page. Something that is definitely no longer there (something of the past) is made present, conjured up, and this very activity is the core-business of historians, of those who write history and in doing so make history. In her latest book, Jardine hints at several points to the present from which the past is being portrayed, and it is in persistently addressing that mutual relationship (between past and present) that she is able to make clear why and how the past can matter to us. '*I want to use the past and present to stimulate and challenge the listener and seduce them into thinking differently*', she writes in one of her books. She cares about the past because she cares about the present. The past is not there simply to illuminate the present, or to illuminate it in a simple way. It is there to make us wonder what we are doing, what we have done, and what we are going to do. As she writes in another of her books: "The task is not nostalgic reminiscence but a fresh understanding of the rootedness of our present uncertainties."

Lisa Jardine's latest book, *Going Dutch*. Subtitle: *How England Plundered Holland's Glory* deals with the cultural, political and scientific interactions



between Dutch and English culture in the seventeenth century, a topic which serves as the background of her lecture tonight. *Going Dutch* has been translated into Dutch as *Gedeelde Weelde*, and has now been short-listed (together with two other competitor volumes) for the Cundill International Prize in History, the world's largest non-fiction award in historical literature. The fact that she has been shortlisted for this award is further evidence to the broad appeal of her work, both on a scholarly community of specialists and peers, and on a more general audience. It is a good tradition that the Sarton Committee selects its candidates among scholars who not only bridge the gap between what C.P. Snow famously called the two cultures (and only recently, Lisa Jardine held the CP Snow lecture at Christ's College in Cambridge, her alma mater) but also between the ivory towers of academia and society at large. In light of these criteria, and in light of all the above, I am sure Lisa Jardine is a perfect candidate for the honorary degree we are today bestowing upon her.

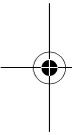




Accidental Anglo-Dutch Collaborations: Seventeenth-Century Science in London and The Hague

Lisa Jardine

Director Centre for Editing Lives and Letters, Queen Mary, University of London



On 23 January 1675 – as every historian of science knows – Sir Constantijn Huygens’s second son, Christiaan, who had for almost ten years been the leading scientist at the Académie Royale des Sciences in Paris, drew in his notebook a sketch of a coiled hair-spring with one end attached to the centre of the balance of a pocket-watch, and wrote underneath it, ‘eureka’. The exclamation signified his triumph at having devised a method of harnessing the isochronous properties of a spring, to allow it to be used to regulate the mechanism of a compact timekeeper, just as a swinging pendulum could regulate a clock.¹

A week later Huygens sent a letter to Henry Oldenburg, Secretary of the Royal Society in London, officially lodging with the Society an anagram cryptically containing the secret of his spring-driven balance. On 20 February, having heard that his French clock-maker Isaac Thuret had gone to the authorities claiming the clock he had made to Huygens’s technical specifications was his own, Huygens went public with his timekeeping breakthrough. He rapidly secured a French *privilège* or patent for the watch, and published an account of it (with diagrams) in the next issue of

¹ A coiled spring was a standard feature of a traditional clock, incorporated as a driver of the mechanism (wound up with a key to drive the clock-work as in any modern clock-work toy); Huygens’s original idea was to move it to act as a regulator of the balance.



the journal of the Royal Society's French counterpart, the Académie Royale des Sciences.

On 20 February Huygens wrote to Oldenburg disclosing the solution to the cipher: 'The arbor of the moving ring [the balance wheel] is fixed at the centre of an iron spiral'. He proceeded to enlarge on this with a verbal description:

The fact is, this invention consists of a spring coiled into a spiral, attached at the end of its middle [i.e. the interior end of the coil] to the arbor of a poised, circular balance which turns on its pivots; and at its other end to a piece that is fast to the watch-plate. Which spring, when the Ballance-wheel is once set a going, alternately shuts and opens its spires, and with the small help it hath from the watch-wheels, keeps up the motion of the Ballance-wheel, so as that, though it turn more or less, the times of its reciprocations are always equal to one another.²

London's leading expert in time-keeper development, the Curator of Experiments at the Royal Society, Robert Hooke, learned of Huygens's claim to be the first to invent a spring-regulated clock while dining with Robert Boyle (son of the Earl of Cork, and a distinguished scientist who had once employed Hooke as his laboratory assistant) on 25 February 1675 (London style). The following day Hooke lodged a formal complaint at a meeting of the Royal Society. He reminded the members that he had himself produced spring-regulated clocks at their meetings on several occasions in the 1660s, and declared that Huygens's version was 'not worth a farthing'. The affair rumbled on for several years. In the end, Huygens's priority claim was by-and-large accepted, even in England. Although (in spite of Oldenburg's best efforts) he was never granted an English patent for his balance-spring watch, he was issued with patents or licences in France and the northern Netherlands, and is today generally credited with this significant innovation in horology.

But was this really how it was? Instead of rushing to look for a 'winner' in the 'race' to find a precise longitude timekeeper, perhaps we should take our cue from the draft notes for a lecture by Hooke delivered around 1676, responding to Huygens's 'eureka moment', and preserved in the treasure-

² Oldenburg *Correspondence* 11, 186 (translation from the French taken from the version published by Oldenburg in the *Philosophical Transactions* of the Royal Society in November 1676).

trove of Sloane scientific papers in the British Library. In it he queries Huygens's claim to single-handed solution of the problem:

He should also have Remembred that Golden Rule to doe to others as he would have others doe to him <&> not to have vaine gloriously & most Disingenuously Indeavourd to Depri[ve] others of their Inventions that he might magnify himself and wth. the Jack Daw pride himself in the plumes of others.³

In the spirit of which, I propose to take another look at the evidence, to try to decide whether Hooke might have been right. Did that Anglo-Dutch exchange of ideas effectively amount to an international collaboration, and ought the two men in fact have been given the credit for a ground-breaking horological invention, the balance-spring regulator for a pocket-watch? The story begins in the Netherlands in the 1650s, almost twenty years before Huygens's eureka moment.

In the late 1650s, almost a decade after the execution of Charles I, and at the height of the English Commonwealth, the Scottish courtier Sir Robert Moray and his old friend Alexander Bruce (later second Earl of Kincardine) were both living in exile in the Low Countries.⁴ Bruce was attached to the itinerant court of Charles II, while Moray had settled in Maastricht, where he was part of a substantial English garrison assisting the Dutch Orangists to protect the southern Protestant Dutch border.⁵ The two were staunch royalists whose families had been closely involved in the fortunes of the Stuarts. Now, cut off from familiar social circles, and with no likelihood (or so it seemed) that they would ever be able to return to Britain, both were occupying their spare time in recreational scientific activities – Moray had a chemistry laboratory complete with a number of stills, and both men were interested in pharmaceuticals and medical remedies.⁶

³ BL Sloane MS 1039, f. 129.

⁴ Moray and Bruce were related by marriage I believe (there are too many Morays/Murrays and Bruces to be able to prove this). They were both probably prominent Speculative Freemasons – Moray certainly was, and the fact that the present Earl of Elgin and Kincardine was Grand Master of Scotland suggests the Kincardines are connected dynastically.

⁵ On the English community at Maastricht during the Commonwealth years see J. P. Vander Motten, 'Thomas Killigrew's "lost years", 1655-1660', *Neophilologus* 82 (1998), 311-334.

⁶ For the text of the correspondence between Sir Robert Moray and Alexander Bruce, earl of Kincardine, see now D. Stevenson, *Letters of Sir Robert Moray to the Earl of Kincardine, 1657-73* (Aldershot, Hampshire: Ashgate, 2007). On Moray's laboratory see e.g.: 'I have been working all day and must be at it again tomorrow morning, by God's favour. You never saw such a shop as my laboratory is' (*ibid.*, p. 82).

They were also interested in precision timekeepers. In April 1658, Moray wrote to Bruce (who was at this point in Bremen where his family had salt and coal business interests):

I haue a second=watch can measure pulses, but no art can make a watch measure 2 minutes equally, unless yong Zulicom [Christiaan Huygens] at the Hague have found it out, who they say makes clocks that fail not a minute in 6 moneths. But this you will beleave as litle as I do, for I can demonstrate that it must go wrong to keep foot with the sun.⁷

A week later, Moray was able to tell Bruce (who had moved on to Hamburg) that he had now seen and handled one of the new pendulum clocks:

I have yet to tell you that I have this day seen an exceeding pretty invention of a new way of watch, which indeed I take to be the very exactest that ever was thought upon.⁸

The brief examination of the clock which Moray had had, had whetted his horological appetite: 'I needed no more for that than the very first glance I had of it. The rest is but a matter of adjusting of numbers for wheels and pinions'.⁹ If Bruce were prepared to put up the money, he went on, the two of them together could easily construct an improved version of Huygens's clock:

⁷ Stevenson, *Letters of Sir Robert Moray*, p. 190. See J. H. Leopold, 'Christiaan Huygens, the Royal Society and Horology', *Antiquarian Horology* 21 (1993), 37-42; 37. It appears from this form of words a) that Moray had a good understanding of the improvement in accuracy achieved by the pendulum clock developed by Huygens from 1657, and b) he understood the need for correction to bring clock time in line with solar time.

⁸ 'The Rhynggrave shew it me. It is long since I heard of it, but did not expect what now I see. The inventor undertakes it shall not vary one minute in 6 moneths, and verily I think he is not much too bold. He is a young gentleman of 22, second son to Zulicon [Sir Constantijn Huygens], the Prince of Orange's secretary, a rare mathematician, excellent in all the parts of it. I need not describe it to you till we meet, and then I believe I may get you a sight of it.' Stevenson, *Letters of Sir Robert Moray*, p. 197.

⁹ The local Commander had shown it to him because it had a defect, and Moray could see what that was: 'I find the greatest matter I have at hand to do it with, is that clock I told you of in my last. It is one of the prettiest tricks you ever saw. It stayed no longer here then just to let me see it, as if God had sent it hither of purpose. It was a good part of the time in my hands. It hath a defect and the Rhynggrave sent it to me to consider of, for all that buy them oblige themselves not to put them into workemen's hands. I needed not look upon it long to know all was in it. I needed no more for that than the very first glance I had of it. The rest is but matter of adjusting of numbers for the wheels and pinions.' However, he thought it best to advise that the clock be returned to its maker, Solomon Coster.

If I thought you had a mind to bestow 40 dollars or some less on one of them I would think to have it ready for you against you come. Never any other design made wanrests¹⁰ go so equally. ... If I make any, I will make it beat another time then this doeth, for it beats at the rate of 80 strokes of the wanrest or thereby to a minute. and I will make it beat just 60 which will be the seconds, and will put an index to shew them. But there is no end of tricks of this kind. When you come to the shop you may perhaps find there will and weal.¹¹

Moray had, it seems, not at this point met Christiaan Huygens in person, but he was aware of his reputation.¹² It is likely that Bruce already knew the Huygens family too, as they were supporters of Charles II and his sister Mary Stuart (widow of William II of Orange), and frequenters of the social and cultural court circle of Elizabeth of Bohemia (Charles I's widowed sister, resident for thirty years in the Hague). By September that year he certainly had met Christiaan, and they had established a shared interest in maritime timekeepers. Bruce was one of the recipients of a presentation copy of Huygens's first publication on timekeepers, *Horologium* (1658) – the book in which Huygens announced his invention of the pendulum clock, and his proof of the isochronous properties of cycloids.¹³

In any case, it is Moray who is urging Bruce to take an active interest in the new pendulum clocks, which he himself clearly understands a good deal about already. And Bruce soon had ample occasion to follow his friend's advice.

¹⁰ Parts of the escapement mechanism in clocks.

¹¹ Stevenson, *Letters of Sir Robert Moray*, pp. 198-9.

¹² Since Christiaan's father, the diplomat and lifelong servant of the Princes of Orange Sir Constantijn Huygens, boasted about his son on every possible occasion – his 'Archimedes' as he dubbed him –, and Moray and he moved in the same circles, this is not surprising. The first surviving communication between Moray and Christiaan Huygens is a letter dated 22 March 1661 (o.s.), shortly before Huygens arrived in London for the first time from Paris. *Oeuvres Complètes* 3, 260-1. However, it is clear that the two already know one another well, since it concludes: 'Je n'ay rien a present à y adiouter si ce n'est que vous verre par le liure que le porteur vous presentera que J'ay eu raison de vous persecuter comme J'y ay fait, de ce que vous tardez tant de donner au iour les traitez dont Je vous ay si souuent parlé. ... Escriuez moy souuent.'

¹³ Huygens, *Oeuvres Complètes* 2, 209. Elizabeth of Bohemia, sister of Charles I, was another recipient, suggesting that Huygens and Bruce had met in her court circle at the Hague. In *Horologium* Huygens writes: 'I omit to speak of the so-called science of longitude, which, if ever it existed, and so had provided the greatly desired help to navigation, could have been obtained in no other way, as many agree with me, than by taking to sea the most exquisitely constructed timepieces free from all error. But this matter will occupy me or others later.'



The following year, in 1659, Alexander Bruce married Veronica van Aerssen van Sommelsdyck, daughter of Cornelis van Aerssen, Heer van Sommelsdyck, the wealthiest man – and one of the most politically prominent – in the United Provinces, and set up home in the Hague. The van Aerssens were a distinguished diplomatic family, who had served the house of Orange for three generations. They were neighbours of the Huygenses, in het Plein, the smartest quarter of the Hague, close to the Mauritshuis.¹⁴ On the eve of the Restoration of Charles II, Bruce – now the Earl of Kincardine – became an extremely rich and influential man in Holland, and a family friend of one of the most celebrated horologists in Europe. He retained his Scottish rank and position also – Dr Samuel Johnson’s friend and biographer James Boswell was a direct descendant.

From Moray’s correspondence we learn that Alexander Bruce and Christiaan Huygens began working on clocks together almost as soon as they met. In early 1660 Moray (now in Paris, probably helping negotiate the terms of the return to the English throne of Charles), wrote responding to a description of this work by Bruce:

If all Mr Zulicom’s addition to his invention be no more but the making of a clock of the size that the pendule beats the seconds, that is every stroak takes up a second, I do not consider that of [importance at] all. For I know the pendule must be about a yard long to do that, and it is believed here that all the church clock’s in the Hague are made after his way, so that they ever strike all at once, for so it hath been said here to our queen [Henrietta Maria]. I have not seen his book, nor think it can be bought here. therefore think of sending me one. If you recommend it to Sir Alexander Hume¹⁵ and bid him send it by some of the Earl of St Albans’s servants it will come safe. If I see him here I will talk to him of his perspective glasses, and mean to make my court with him upon your account.¹⁶

¹⁴ Lodewijk Huygens writes to his brother Christiaan in this period saying that the van Aerssens house is the most fashionable, and most frequented house in the Hague.

¹⁵ Hume was chamberlain to Maria (Mary), Princess of Orange. In 1665. Moray referred to ‘Sr Alexander Hume who was a kinde of Mayordomo, to the late princess Royalle and well known to Mr Huygens,’ Oldenburg, *Correspondence*, 2, 477.

¹⁶ Stevenson, *Letters of Sir Robert Moray*, p. 211.

So Moray and Huygens had still not met, though Moray was intent on their doing so, to discuss lenses and telescopes with him, and in order that he might ‘make [his] court’ on Bruce’s account.

In summer 1660, Sir Robert Moray returned to London, where he was given a senior Scottish appointment in the new government of Charles II, and became part of the close inner circle of courtiers, with lodgings within Whitehall Palace itself.¹⁷ By now Bruce has ordered a Huygens-designed clock for Moray, at his own expense, whose delivery Moray was eagerly awaiting.¹⁸

Alexander Bruce and his Dutch wife, meanwhile, settled into a well-to-do international life-style pattern which involved moving between the family home in the Hague, London, and Bruce’s family home (and coal-mines) at Culross (Fife) in Scotland.¹⁹ In 1668, for example, Veronica’s mother, in a letter to Constantijn Huygens congratulating him on the marriage of his son Constantijn junior, told him that she was currently staying with her daughter and son-in-law at Culross, which she found very beautiful (she planted tulips), though she was having trouble learning English.²⁰

The Royal Society was established in London on 28 November 1660 by a group of scientific enthusiasts that also included John Wilkins, Robert

¹⁷ Moray had played a prominent role in negotiations in Scotland, during events preceding the arrest and execution of Charles I. Charles II recompensed handsomely those who had stood by his father right up to his end. See now David Stevenson’s introduction to his edition of the Kincardine correspondence.

¹⁸ ‘I am well pleased with Mr Zulicem’s ordering of my clock. Let it be so, and I will thank him when I see him. I have not time now to talk of that curiosity you mention, but where people think it needless and that those watches are best that have the pendule fast to the axeltree that hath the two pallets [E.L. Edwardes, *The Story of the Pendulum Clock* (1977), 41, interprets this as a reference to a type of ‘crutch’ (a fork-like device through which a clock pendulum runs) that Huygens had introduced], but I am not yet of their mind, nor for that advantage he speaks of in the stoppers you mention. I shall onely say more of this that if the watch do not mark the inequality of the days, it goes not equally.’ Stevenson, *Letters of Sir Robert Moray*, p. 217.

¹⁹ On Culross, the Bruce family home, see *Royal Commission on Ancient and Historical Monuments and Constructions of Scotland: Fife, Kinross and Clackmannan* (Edinburgh: HMSO, 1933), pp. 69-87. See also Dutch-style water landscape of Culross (across the Forth of Firth) by John Slezer (1693).

²⁰ ‘[Dutch summary] I shall be going home shortly, because the winter is coming on. I regret that I did not come here three months earlier, then I would have made a little progress with the language. [French verbatim] And I would have had the contentment of spending [more] time with the Count of Kincardine and my daughter, and this agreeable peace and civility [civile noblesse]. [Dutch summary] It is very beautiful and fruitful here. The Lord of Kincardine’s house lies on a high hill and the park is delightfully close by. My daughter is extremely sad that I am leaving.’ Culross, 15 September 1668, Worp letter 6677.

Boyle and Christopher Wren.²¹ Sir Robert Moray and Alexander Bruce were founder members. The records show them to have been extremely active – usually together – in the Society’s early meetings.²² Precision timekeepers were on the agenda of these from the outset – particularly Huygens’s new pendulum clocks. The pendulum improved the accuracy of mechanical clocks dramatically – from a variance of 15 to 30 minutes a day, to less than a minute.²³ Its potential for naval and military use looked extremely promising.

Throughout the 1660s, the records of the Royal Society document a steady sequence of experiments involving pendulums and other isochronous oscillators in timekeeping.²⁴ Moray was not the only enthusiast, but his prominent position (he chaired the meetings) meant that his encouragement of improvements to Huygens’s published designs was important.



Christiaan Huygens paid his first visit to London in April 1661, as part of the official United Provinces delegation attending Charles II’s Coronation. It was his existing Anglo-Dutch social connections that were responsible for Huygens’s developing cordial social relations with those with similar scientific and technological interests to his own in London. Almost the first courtesy call Huygens paid was on Bruce’s Dutch wife Veronica, to deliver a package to her from a Dutch mutual friend he had spent time with in Paris.²⁵ The next day Bruce took Huygens to a meeting of the Royal Society at

²¹ Moray was delayed in Paris, negotiating the terms of Charles II’s return with the French, until summer 1660.

²² See references in G. E. Scala, ‘An index of proper names in Thomas Birch, “The History of the Royal Society (London, 1756-1757)”, *Notes and Records of the Royal Society of London* 28 (1974), 263-329. Moray remained an enthusiastic member; Bruce, however, was eventually too occupied with his own Scottish and Dutch affairs to participate actively. See M. Hunter, *Establishing the New Science: The Experience of the Early Royal Society* (Woodbridge: Boydell Press, 1989), p. 81.

²³ See D. S. Landes, ‘Hand and mind in time measurement: the contribution of art and science’, *Notes and Records of the Royal Society of London* 43 (1989), 57-69, p. 61.

²⁴ For a full and clear account of these see L. D. Patterson, ‘Pendulums of Wren and Hooke’, *Osiris* 10 (1952), 277-321.

²⁵ Huygens was given a commission in Paris 14 March 1661 to convey to Mme Bruce (Veronica van Aerssen van Somelsdijk) – *Oeuvres Complètes* 22, 561. Having arrived in London, on 4 April he duly visited Bruce and Mme Bruce, following which Bruce took him to Whitehall garden ‘veoir la / machine pour dresser le telescope de 35 pieds. Attendu M. Morre [Moray] dans sa chambre, qui ne vint point.’ [*Oeuvres Complètes* 22, 568-9]. 5 April, ‘apres souper M. Brus et Morre me vinrent querir pour observer au jardin de Weithall mais ne vismes rien a cause des nuées. M. Robert Morre nous donna des kaecks et du sec. M. Paul Neel de son Cidre fort excellent.’

Gresham College, at which Moray was presiding, following which, Dr Goddard took Huygens to his Gresham rooms and showed him three handsome pendulum clocks.²⁶

Thereafter Huygens spent much of his time in the company of Bruce and Moray (both of whom we should remember, spoke fluent French and good Dutch and had many Dutch social connections), and other Fellows of the Royal Society.²⁷ He did not even bother to attend the Coronation of Charles II, preferring to observe a lunar eclipse with members of the Society. Bruce showed Huygens pendulum clocks of his own design, in which Huygens took a particular interest.²⁸ John Evelyn tells us in his Diary that he and Huygens visited the clock-maker Ahasuerus Fromanteel on 3 May, ‘to see some pendules’.²⁹

By the time Huygens returned to the Hague in late May, a deep and lasting friendship had been established between himself and Moray, his relationship with Bruce had been consolidated, and he was also well-integrated with other leading members of the Royal Society. Thereafter he took a close personal interest in advancing the cause of pendulum-clocks in Britain, both scientifically and commercially. Thereafter, too, there was a regular to-and-fro Anglo-Dutch movement of letters and information exchanged between them, reinforced by social proximity and ease.

In October 1662, Bruce arrived in the Hague on one of his regular round trips to and from his home in Culross, having used the journey in both directions to test pendulum clocks modified to his own design for their suit-

²⁶ 6 April [*Oeuvres Complètes* 22, 569-70]: ‘[Johan Boreel] me mena veoir couper le peintre ou M. Brus me vint prendre et allames a l’assemblee à Greshams colleg. ou M. Morre presidoit, et me complimenta. on y recoit tous les lords, et non pas les simples gentilshommes sinon par election a la quelle il faut avoir les 2/3 des voix. qui parle oste le chapeau. l’on m’y apprit que les larmes de verre qui se cassent se sont en les trempant dans l’eau froide et les retirant subitement. Le doctor Godart nous mena veoir dans son apartement trois beaux horloges a pendules. de la fumes au jardin de Withall observer la Lune, Jupiter et / Saturne, mais cette lunette de 35 pieds ne me sembla pas bien distincte comme la miene de 22, dont je promis de faire venir les verres.’

²⁷ 11 April, Bruce, Moray and Huygens [plus Paul Neile, Brouncker, Boreel, Godard and ‘Vermuijen [Cornelis Vermuyden?] dined in ‘a cabaret’ and they would not let Huygens pay. 12 April Huygens ‘dit adieu a M. Brus’. 13 April went to Oxford. Saw Bruce and Moray again on 20 April. p. 576: ‘M. Moray nous regala souvent dans sa chambre la aupres de kaeks, bottelail et vin. J’y appris a connoistre le Dr. Wilkins, autheur du livre que la lune peut estre un monde, et la terre une planete. Il est apres a faire une langue universelle.’ Huygens remarks twice in his diary on Moray’s generous hospitality and the ‘kaeks’ and ‘bottelail’ he provided as refreshments.

²⁸ *Oeuvres Complètes* 22, 606.

²⁹ E. S. de Beer (ed.), *The Diary of John Evelyn* 6 vols. (Oxford: Oxford University Press, reprinted 2000) 3, 285-6.

ability as longitude timekeepers.³⁰ According to Bruce, it was the success of these first trials which convinced Huygens that it was worth pursuing the possibility of adapting his new clocks to determine longitude at sea. He reminded Huygens later:

At my first arivall at the Hage, after the tryall I had made betwixt Scotland & that [the Hague] of my watch, when you did me the favour to see me at my chamber, we fell upon the subject of the going of the pendule watches at sea; & you told me positively then that it was your opinione that it was impossible, that you hade been making experiments of it, and all the effects of them was, to be settled in that opinion by them: you did lykewise urge reasons of the impossibility of it.³¹

It is not clear whether Bruce's marine clock had been built for him in Holland or England, by Dutch or English technicians, but it was certainly pendulum-regulated.³² He later told Huygens that this clock of his was the same one he had had in his possession in London eighteen months earlier when he and Huygens met there, and that it differed significantly from Huygens.³³

Encouraged by their mutual interest, and complementary expertise, Bruce and Huygens now began working collaboratively at the Hague, adapting pendulum clocks for sea-travel. Bruce favoured clocks with short pendulums for portability; it was he who added a 'double crutch' to keep the pendulum swinging in a single plane, and designed the methods of support

³⁰ Huygens, *Oeuvres Complètes* 4, 256, Huygens to Lodewijk Huygens, 31 October/9 November 1662: 'Je n'en suis pas encore si avant avec l'invention de Longitudes, comme il semble que vous croiez, et je voudrois que Mon Pere n'en parlast pas seulement tant que je ne l'aye assuré que la chose reussira. Monsieur Brus qui s'en est retournè en Escosse, aura fait une experience sur mer dont j'attens le succes avec impatience parce qu'elle est de grand importance, dans cette affaire.'

³¹ This version of events is confirmed in Hooke's 1674/5 Cutlerian lecture.

³² A description of this clock is to be found in Huygens's *Horologium Oscillatorium* (1673). See M. Mahoney, 'Christian Huygens: the measurement of time and of longitude at sea, in *Studies on Christiaan Huygens*, ed. H.J.M. Bos *et al.* (Lisse: Swets, 1980), pp. 234-270. In an unpublished Cutlerian lecture of 1674/5, rewritten (I believe) around 1678, Hooke describes the various clocks used in these trials.

³³ 'I came afterwards to see that watch by w[hich] you hade made your experiment; & I believe you will acknowledge that it was so farre different from mine in the whole way of it that it is not lyke they should ever have met. And the rather I thinke this, that I showed you at London 18 moneths before that tyme the same watch w[hich] received very small amendments thereafter; & if you hade thought that way able to bring it to passe, you might from that view have ordered one to be made for your tryell.' Huygens, *Oeuvres Complètes* 22, 606. Although by this time Bruce and Huygens had fallen out, there is no reason to doubt the accuracy of Bruce's memory of how their collaboration started. The letter is among the Kincardine Papers, and was intercepted by Robert Moray before it could be sent to Huygens.

and suspension which it was hoped would protect the clocks from the most violent of motions arising from storms and high seas (Huygens had simply tried suspending them from ropes).³⁴

It was the wealthy Bruce who paid for two state-of-the-art pendulum clocks, made by Huygens's current preferred Dutch clock-maker, Severijn Oosterwyck, which they agreed Bruce would test on his next journey to Britain, this time to London. By December the clocks were almost ready, and the two men were spending a lot of time together. On 4/14 December 1662, Christiaan told his brother Lodewijk that he had been slow responding to a letter, 'because of several visits I have received, and principally by that of Mr Brus [Bruce], who did not leave me alone for a single moment all afternoon. And he has been doing that quite often, ever since we set about perfecting our invention for [measuring] Longitudes.'³⁵

In other words, the earliest trials of pendulum-regulated longitude timekeepers – much discussed by historians of science – began as a robustly Anglo-Dutch venture. And once Bruce arrived in London, the correspondence with Huygens that followed demonstrates an extraordinary level of continuing Anglo-Dutch collaboration, with the English contributors now making the running.



For two weeks Huygens waited anxiously for news from London. He consulted the van Aerssens, but even they had not yet heard from their son-in-law. Eventually Huygens received a letter from Bruce, written on 2 January 1663 (English style). He apologised for having 'forgotten' to write, blaming this on the fact that he had nothing very positive to tell Huygens about the performance of 'his' (that is, Bruce's) clocks. The sea trials of the two pendulum timekeepers during his journey to London had not been a success. As they left the harbour, the 'packet-boat' which Bruce had secured for the crossing was hit by a contrary wind, 'and the boat was so small that even though it really was not a storm, the ship was shaken more strongly than one can shake a cradle, so that the suspending shaft [vis] that

³⁴ See Leopold, 'Christiaan Huygens, the Royal Society and Horology', p. 39.

³⁵ Huygens, *Oeuvres Complètes* 4, 278. Several days later, Huygens was expressing exasperation to Lodewijk that the enthusiastic Bruce had not yet left and was monopolising of his time. Christian to Lodewijk, 18/28 December 1662, *Oeuvres Complètes* 4, 284-5.

went into the ball and socket [boule] broke under the vibrations of the ship, and the older [clock] fell, while the newer [clock] stopped'.³⁶

A flurry of letters from Bruce and Sir Robert Moray to Huygens followed, detailing what had happened during the trials, and describing work the two Scots were now doing together in London, to improve the clocks' performance against the next trials. On 9/19 January Moray wrote to Huygens from London to tell him that he and Bruce were in discussions about 'your clocks', and 'the design which would make them succeed at sea'. More modifications, then, were being undertaken, this time with the help of the English clock-maker Ahasuerus Fromanteel (whose son John had recently returned from several years training in the Hague, learning to manufacture the new pendulum clocks with Huygens's original clock-maker Salomon Coster).³⁷ The clock which had fallen during the journey was too badly damaged to be repaired, and was replaced by one entirely manufactured in London by Fromanteel.

On 16 January 1663 (London style) Bruce wrote to tell Huygens that the damaged clocks were about to arrive (they had been held up at customs): 'I expect them tomorrow and then I shall show them to Sir Robert Moray & lett yow know their [his] opinions of them'.³⁸ Huygens remained optimistic. 'The lack of success you have had does not bother me,' he responded, 'nor does it diminish my good opinion of our undertaking'.³⁹ He told Bruce that he had begun modifying his clock-design in consultation with his Dutch clock-maker Severijn Oosterwijk, and would let him know how the improved mechanisms behaved.⁴⁰

At the beginning of March 1663, Moray wrote to Huygens letting him know that he and Bruce were going to conduct further trials 'at sea, going as far as the Dunes, to try out Mr Bruce's clocks, which he is trying to adjust to the best of his ability'.⁴¹ (Note that for Moray, now, 'your clocks'

³⁶ *Oeuvres Complètes* 4, 290-1, Bruce to Huygens, 2/12 January 1663.

³⁷ Leopold, 'Clockmaking', p. 159. In a later article, 'Christiaan Huygens, the Royal Society and Horology', Leopold attributes this clock to another Dutch clock-maker working in London, John Hilderson. He bases this on a reference by Moray (in a letter to Huygens) to having taken clocks to be adjusted at Hilderson's. Both clock-makers may well have been involved.

³⁸ *Oeuvres Complètes* 4, 301-2 Bruce to Huygens, 16/26 January 1663.

³⁹ Huygens to Bruce, 9/19 January 1663 *Oeuvres Complètes* 22, 593 (this is a letter from the Kincardine papers, so out of order in the *Oeuvres Complètes*).

⁴⁰ See J. H. Leopold, 'Clockmaking in Britain and the Netherlands', *Notes and Records of the Royal Society of London* 43 (1989), 155-65; 159.

⁴¹ *Oeuvres Complètes* 4, 318, Moray to Huygens, 19 February/1 March 1663.

(Huygens's) have now become 'Mr Bruce's clocks', though essentially the same two timekeepers are involved.) The usually conciliatory and tentative Moray continues, somewhat testily:

You are right in saying that the movement of large boats is gentler than that of small ones, but in heavy swells, particularly when the wind is head on, or when the ship is at anchor, the shocks are stronger and more violent. But what I fear most is not the agitation the ship gives to the whole body of the clock (though I am worried that that may have its effect also) but rather that the sudden movements of the ship downwards, and in the contrary direction, which in the one case will make the pendulum slow down, in the other will accelerate it. sometimes making it heavier, sometimes lighter, and either way unequally, which it seems to me is bound to cause deregulation in the movement of the clock's mechanism. But it still seems worth testing this experimentally.⁴²

The sharp critical tone of this commentary on the whole Bruce-Huygens project suggests that Moray (usually genial and urbane) is drawing on broader Royal Society discussions which had taken place concerning the performance of the clocks. Indeed, I'm afraid this sounds awfully like an expert assessment by Robert Hooke (who is just about to enter this part of our story).⁴³

Sure enough, we learn that Lord Brouncker (President of the Royal Society) and Robert Hooke (Curator of Experiments) had both taken part in those trials 'at sea, going as far as the Dunes' on 'one of his Majesties *Pleasure-Boats*'.⁴⁴ And according to Hooke, they 'experimentally found

⁴² Huygens, *Oeuvres Complètes* 4, 318.

⁴³ This suspicion is confirmed by the fact that Hooke's criticism of the Huygens longitude clocks, as recorded in the minutes of the Royal Society in 1665, repeat these criticisms in very similar words.

⁴⁴ In *A Description of Helioscopes and some other Instruments* (London: T. R. for J. Martyn, 1676) (conveniently to be found cited at length in Huygens, *Oeuvres Complètes* 7, 517-26) Hooke gives the date of this trial as 1662. In BL Sloane MS 1039, fol. 129v, in his Cutlerian lecture on the subject delivered in 1678 [?], he recalls the date as March 1664. I am confident that the actual date is March 1663. Pepys records another occasion on which a similar group took a boat to conduct scientific trials: Pepys records in his diary one such trip, in which he too happened to participate, in 1665: '1 [May]. [A]t noon, going to the Change [Royal Exchange], met my Lord Bruncker [Brouncker], Sir Robert Murry [Morauy], <Deane Wilkins> [John Wilkins], and Mr. Hooke, going by coach to Collonell Blunt's to dinner. So they stopped and took me with them. Landed at the Tower-wharf and thence by water to Greenwich, and there coaches met us and to his house, a very stately seat for situation and brave plantations; and among others, a Vineyard, the first that ever I did see.'

[the method of suspension] useless to that effect', though Hooke claimed he could see ways to correct the deficiencies of Bruce's ball-and-socket suspension arrangement.⁴⁵ Both Hooke and Brouncker had experience working with precision timekeepers, and both had an interest in perfecting their use to determine longitude at sea.⁴⁶ Both are now collaborating with Bruce (who, we recall, had impeccable connections on both sides of the Narrow Sea, in London and the Hague) in the hope of achieving a clock-based solution to the longitude problem.⁴⁷

So by early 1663, Robert Hooke has joined the team of Dutch, Scottish and English clock-experts collaborating in the development of precision longitude timekeepers. As he later insisted, he had been conducting experiments with clock-design for several years; now that experience is funnelled into the Bruce-Huygens project.

As far as Huygens was concerned, Hooke was a background figure in the activities of the Royal Society, an experimentalist and instrument-maker, who was inclined to make exaggerated claims for his technical instruments. Both Moray and Brouncker were well-informed amateurs, with a private and a professional interest in precision timekeepers (both owned state-of-the-art clocks and watches themselves, and knew how to look after them).⁴⁸ For the purposes of the longitude-timekeeper developments and trials, Hooke was their expert technician, acting as advisor and consultant on the English end of design and testing, who fed his results into Moray and

⁴⁵ Conveniently to be found cited at length in *Oeuvres Complètes* 7, 519.

⁴⁶ On 22 December 1665 Pepys recorded in his diary: 'I to my Lord Brouncker's and there spent the evening by my desire in seeing his lordship open to pieces and make up again his watch, thereby being taught what I never knew before; and it is a thing very well worth my having seen, and am mightily pleased and satisfied with it.' cit. Leopold, 'Christiaan Huygens, the Royal Society and Horology', p. 39.

⁴⁷ In 1663 Christiaan Huygens was again in London with his father, and frequented the Royal Society, which made him a foreign Fellow. The recently discovered 'Hooke folio' reveals that in early 1678, when Hooke was obsessively combing the early Journal Books of the Royal Society for all signs of Oldenburg's having 'done him down', and Huygens was beginning to claim that he had made key microscopical observations ahead of anybody else, one of the items Hooke chose to transcribe records a quite routine sort of occasion in 1663 when he and Henry Power (one of Hooke's fellow-microscopists at the Royal Society) carried out three experiments with the improved mechanism at the weekly Society meeting. 'Huygens [there]', Hooke has reminded himself aggressively between square brackets. And indeed, both Sir Constantijn and Christiaan attended this meeting.

⁴⁸ See e.g. Pepys, *Diary* 6, p. 377: 'I to my Lord Brouncker and there spend the evening, by my desire in seeing his Lordship open to pieces and make up again his Watch, thereby being taught what I never knew before; and it is a thing very well worth my having seen, and I am mightily pleased and satisfied with it', and Moray's exchanges with Huygens about the new-design clock he is trying to get William Davidson to collect from the Hague for him in early 1665.

Brouncker's dealings on this topic with the Royal Society (including Bruce and Huygens). Everything Hooke told Moray was directly communicated to Huygens; all Huygens's comments were relayed back to the Royal Society. The fact that England and Holland were at war for much of this period was apparently irrelevant.⁴⁹



Both knowingly and inadvertently, then, years before Christiaan Huygens's public announcement of his balance-spring solution to regulating a pocket-watch, English and Dutch scientists were in long-distance collaboration. Not everyone involved was as comfortable about this two-way traffic in intellectual property as were the elite, cosmopolitan amateurs, Bruce and Huygens, Brouncker and Moray. Robert Hooke had already taken issue with Christiaan Huygens's *On Pendulum Clocks* publicly, in one of his Thursday Cutlerian lectures. It was probably delivered in 1672-3, and survives in an autograph copy in Hooke's hand in the BL. Hooke makes a particular point of challenging the originality of Huygens's pendulum time-keeper on the grounds that others (including Hooke himself) had played a significant part in its development.⁵⁰

There is no mistaking Hooke's tone in this lecture – not for the first time he was deeply affronted that experimental results on a topic he considered one

⁴⁹ Patterson does, however, quotes a comment on the Bruce-Huygens trials by Abraham Hill which 'indicates that the problem of the free discovery of invention versus national security already had reared its head; "the only difficulty is, whether such arcana may be divulged, and so become of as much advantage to foreigners as to ourselves."' (L. D. Patterson, 'Pendulums of Wren and Hooke', *Osiris* 10 (1952), 277-321; 283.)

⁵⁰ The opening paragraph makes it clear that this was a Cutlerian lecture, written shortly after the arrival in London of the 12 presentation copies of Huygens's new work. There is a pattern, however, in other surviving lectures among the Royal Society papers, of Hooke's writing the lecture, and possibly delivering it, as a Cutlerian lecture, and then 'reading' it again to the Royal Society some four to six months later. The surviving manuscript of the lecture dealt with here begins: 'Gentlemen [this para struck through] I am very glad you haue giuen me an opportunity of Presenting the De-signe of Sr John Cutler and of Reading his Lecture <again> in this Place where it was first begun. I think I need not tell you that it was appointed in order to the prosecution of the History of Nature and of art a subject soe copious that tis not to be expected from the single indeauour of <any> one person how able soeuer that there should be any very notable progresse made therein, much lesse from my weak abilities. But tis from <the> vnited indeauours of the Royall Society <wth> whose <noble> designe <this> is coincident that great product is to be expected, Into whose <Grand> treasury however I shall not (god willing) be wanting to cast in my mite.' It looks to me as if Hooke first wrote the lecture when he got the *Horologium oscillatorium*, 1673-4, then rewrote it (and redelivered it?) when Huygens sent his eureka! announcement about the balance-spring watch in January/February 1675.

of his own specialist areas of interest should arrive on his desk in published form, without any acknowledgement from the author of Hooke's own contributions to the field, nor indeed, any reference to discussions he and Christiaan Huygens might have had on these or related topics.⁵¹

The two-way investigative traffic between London and the Hague, plus Hooke's less than generous protest against Huygens's priority claims, together provide a context for the collection of scattered papers belonging to Hooke which are now in the Wren Library at Trinity College Cambridge. These are undated, but the first section seems to correspond to a period of ongoing discussions between Hooke, Brouncker and Moray (with some interventions by Wilkins and Boyle), preparatory to Hooke's lodging a patent claim for a longitude clock of his own design on behalf of the Royal Society, during the period 1663-5.⁵² After Hooke's death, his friend and executor Richard Waller claims to have seen the draft patent document in Moray's hand among Hooke's papers.⁵³ We are now in a position to note the importance of the fact that Moray was also the person who had drafted a competing patent on behalf of Bruce and Huygens for *their* longitude timekeepers, which was being negotiated at exactly the same time.

On 13 January 1664, 10 months after Hooke had assisted at the trials of the Bruce-Huygens clocks and pronounced them unsatisfactory, Brouncker reported to the Royal Society that Hooke had 'discovered' to himself, Sir Robert Moray and Bishop John Wilkins (Hooke's mentor, and founder of the Society) in confidence 'an invention which might prove very beneficial to England, and to the world'.⁵⁴ The Society agreed to pay up to £10 for

⁵¹ 'I haue Lately Receiued from the Inquisitiue Hugenius van Zulichem a book <written by himself> containing a description of seuerall mechanicall & mathematicall Inuentions Intituled *Christiani hugenij Zulichemij test, f. Horologice[m] Oscillatoriu[m] siue de motu pendulorum ad Horologia aplaate demonstrationes geometricae*. There are <in it indeed> many things very ingenious and very usefull but there are not wanting also seuerall things that are of a <quite> contrary nature <as I shall show you by some few obseruations which I haue made in the Cursory reading of it hauing not yet had time to examine euey particular hereof more strictly.' Sloane MS 1039 fol. 129 r (Hooke's hand).

⁵² Having finally examined the Trinity College Cambridge Hooke papers myself I am now confident that sheets A-L of the longitude papers are early (early 1660s), but that everything thereafter is from the 1670s, possibly as late as 1678-9. I am grateful to the Wren Library, Trinity College Cambridge, for giving me access to these papers.

⁵³ Richard Waller, *Posthumous Works of Robert Hooke* (1705), p. v. On the Moray negotiations with Bruce and Huygens see the Kincardine papers (RS transcript), pp. 406-7.

⁵⁴ I base this account on the important article by Michael Wright. M. Wright, 'Robert Hooke's longitude timekeeper', in M. Hunter and S. Schaffer (eds), *Robert Hooke: New Studies* (Woodbridge: The Boydell Press, 1989), pp. 63-118. Wright's compilation of key recorded moments in Hooke's spring-regulated timekeeper development is at pp. 76-8.

trials. Moray later described it as ‘an invention of his for measuring time at sea better than pendulum clocks can, and indeed as well as they do on land’, and told Huygens, that Hooke had been working on it for some time. He had ‘given a proof [preuve] of it to the President, on a watch which I lent him’. However, Moray added that ‘having compared it to his own pendulum clock [the President] found that [Hooke’s] did not keep good time’⁵⁵ On 15 September Hooke wrote to his patron Robert Boyle that he hoped ‘shortly to make some observations ... with an exact timekeeper, which, I have some reason to believe, shall not be much excelled by any whatever. But these are not yet completed.’

On 18 January 1665, it was announced at the Royal Society meeting that Hooke was ready to apply for a patent for his longitude timekeeper.⁵⁶ At the meeting in question doubts had been expressed as to how satisfactorily the Bruce-Huygens clocks had performed during lengthy trials to Guinea and back (I will return to these trials shortly). The Society had backed the Guinea trials heavily, and staked a lot on their success; now Hooke offered them an alternative timekeeper.

Hooke’s first biographer, Richard Waller, has preserved a fragment of a memoir by Hooke himself, describing what happened next:

I shew’d a Pocket-watch, accommodated by a Spring, apply’d to the Arbor of the Ballance to regulate the motion thereof; concealing the way I had for finding the Longitude; this was so well approv’d of, that Sir *Robert Moray* drew me up the form of a Patent, the principal part whereof, *viz.* the description of the Watch, so regulated, is his own hand Writing, which I have yet by me.⁵⁷

⁵⁵ Huygens *Oeuvres Complètes* 5, 503-4 [letter 1481]. This is one of the two letters Hooke considered to constitute a betrayal of his confidence to Huygens on Moray’s part. The other letter is that of 22 July 1665, Huygens *Oeuvres Complètes* 5, 426-8 [letter 1436]. Hooke copied out the relevant passages of both letters in 1678 as part of his scouring of the Oldenburg papers for evidence of senior members of the Society’s having been responsible for giving away his technical secrets, thereby depriving him of credit.

⁵⁶ ‘Mr. Hooke having made a proposition of giving the discovery of the longitude, as he conceived it, to the society, it was ordered, that he should choose such persons to commit this business to, as he thought good, and make the experiment; that by such persons chosen, the council might be satisfied of the truth and practicableness of his invention, and proceed accordingly to take out a patent for him.’

⁵⁷ Richard Waller, *Posthumous Works of Robert Hooke* (1705), p. v.

Waller goes on to confirm Hooke's statement on the strength of original documents then in his possession, shortly after Hooke's death:

In confirmation of what is abovesaid, I met with a Draught of an Agreement between the Lord *Brouncher*, Mr. *Boyle*, and Sir *Robert Moray*, with *Robert Hooke* Master of Arts to this purpose, that *Robert Hooke* should discover to them the whole of his Invention to measure the parts of Time at Sea as exactly and truly as they are at Land by the Pendulum Clocks invented by Monsieur Huygens; ... as also of a Warrant to be granted by the King to *Robert Hooke, M.A. &c.* for a Patent for the sole use of the said Invention for fourteen Years, and sign'd by his Majesty's Command, *William Morrice*.⁵⁸

This last document surfaced briefly at auction some years ago, only to disappear again to a private buyer.⁵⁹ It clearly confirms all the key points from Waller's account: it describes (in Hooke's hand, inserted into a document largely in Morrice's) a spring-regulated longitude timekeeper, 'different from all other watches or clockes by hauing instead of a Ballance a Spring of mettall. wood quill /bone/ glass or other fit matter so aplyed to the Arbor of the Ballance that it makes it moue alwise equally'; it is signed by William Morrice in his capacity as Secretary of State (a position he held until September 1668); and it also invokes the names of Sir Geoffrey Palmer 'Attorney Generall' and Sir Heneage Finch 'Solicitor Generall' (both men left these posts before 1670). It allows us to say with reasonable confidence therefore, though sadly without the evidence before us, that Hooke had indeed come close to applying for such a patent, in direct response to the Bruce-Huygens pendulum-clock based attempts at a longitude timekeeper, during the first half of 1665.

There is no doubt that Hooke's idea of using springs as isochronous regulators in place of pendula was transmitted to Huygens by both Moray and Oldenburg.

On 30 September 1665 (the very day on which Moray told Huygens in a letter that Hooke had demonstrated a spring-regulated clock or watch to

⁵⁸ *ibid.*

⁵⁹ I am extremely grateful to Felix Pryor for assisting me in tracking down this document, and giving me sight of a legible xerox copy. A second document sold with it, describing the levy to be paid by mariners using Hooke timekeepers, matches Waller's description of another of the patent-related drafts he had sight of.

himself and Lord Brouncker two years earlier), for example, Moray wrote to Oldenburg (in a letter Waller saw, now lost):

You will be the first that knows when his [Huygens's] Watches will be ready, and I will therefore expect from you an account of them, and if he imparts to you what he does, let me know it; to that purpose you may ask him if he doth not *apply a Spring to the Arbor of the Ballance*, and that will give occasion to say somewhat to you; if it be that, you may tell him what *Hooke has done in that matter, and what he intends more*.⁶⁰

Hooke's not-so-confidential negotiations with Brouncker, Moray and Wilkins to obtain a patent on behalf of the Royal Society for Hooke's longitude timekeeper broke down in mid-1665. The Senior officers of the Society were of the opinion that because Hooke insisted on stating that a spring-regulator could be applied to a timekeeper in many different ways, no patent would be granted, since to do so would be to inhibit developments other than Hooke's based on the same principle.



Now, at precisely the same time that they were dealing 'in secret' with Hooke's proposed revolutionary designs for longitude timekeepers, Brouncker and Moray had taken it upon themselves to move the Bruce-Huygens clock trials onto a more systematic footing (and in fact Moray was also secretly discussing a patent claim for *their* clocks), with the Royal Society's official backing. They arranged for Robert Holmes, captain of the 'Jersey' to carry the two pendulum clocks to and from Lisbon (1663), and then on a longer voyage to Guinea and back (1663-4).⁶¹

For the history of development of longitude timekeepers these trials were a turning point. By contrast with Bruce's trials, those conducted during Holmes's voyages – particularly on the voyage to Guinea – were spectacularly successful. The clocks ran well throughout the journey, Holmes set

⁶⁰ 'Now tho' this does not mention the Springs being spiral or fastened to the Arbor of the Ballance, yet it appears by what is related above and a Passage I have seen in a Letter from Sir Robert Moray to Mr. Oldenburgh, dated Oxon Sept. 30 1665. clears it' (Waller, *Posthumous Works*, p. vi). Corroborating evidence that Waller is as usual telling the truth here can be taken from the fact that Moray's letter to Huygens of the same date was indeed written from Oxford.

⁶¹ Holmes was already carrying out tests of deep-sea sounding devices for the Royal Society.

them regularly and kept them running, and crucially, the clocks allowed Holmes to make a calculation of his position at a key moment in the Guinea voyage which revealed the inadequacy of traditional longitude-finding methods.

On the return journey, Holmes had been obliged to sail several hundred nautical miles westwards in order to pick up a favourable wind. Having done so, the *Jersey* and the three ships accompanying her sailed several hundred more miles north-eastwards. At which point, the four captains found that water was running worryingly low on board. Holmes's three fellow-captains produced three conflicting calculations of their current position based on traditional reckoning, but all agreed that they were dangerously far from any potential source of water. Not so, declared Holmes. According to his calculations – based on the pendulum clocks – they were a mere 90 miles west of the island of Fuego [Fogo], one of the Cape Verde islands. He persuaded the party to set their course due east – whereupon, the very next day, around noon, they indeed made landfall on Fuego, exactly as predicted.⁶²

Lost off the coast of Africa, and running short of water, Huygens's clocks saved the day, by enabling Holmes to locate the Cape Verde islands. This was exactly the kind of publicity the pendulum timekeepers needed in order to capture the public imagination. Moray's report of this dramatic success, in a letter to Huygens dated 23 January 1665, is clear as to its impact: 'At last Captain Holmes has returned, and the account he has given us of the experiment with the pendulum clocks leaves us in absolutely no doubt as to their success'.⁶³

The following day Huygens replied. He was delighted to hear of Holmes's success with the clocks; every line of the account gave him the greatest

⁶² Holmes's account of this incident is recorded in the Journal Books of the Royal Society for 11 January 1665. See Birch 2, 4-5.

⁶³ Huygens, *Oeuvres Complètes* 5, 204 [letter 1315]. On 5 February Huygens wrote to a close friend to tell him of his successful application to the States General for a Dutch patent for his longitude clock, based on Holmes's testimony: 'On his return, Captain Holmes has lodged his report concerning the usefulness of pendulum clocks, which goes far beyond my expectations. I could never have imagined that clocks of this first, preliminary mode of construction could have succeeded so well, and I had reserved my principal hopes for the new ones. But since these have already been so successful, and that the other are even more precise, I feel entitled to believe that the discovery of true longitude will shortly reach its final perfection.' 'The pendulum clocks are a success, The Estates General want to see the clock at their Assembly.' (summary). Huygens, *Oeuvres Complètes* 5, 222-3 [letter 1324].

pleasure, and he thanked Moray for being the bearer of such good tidings.⁶⁴ Holmes's report was published verbatim in the Royal Society's *Philosophical Transactions* and in French in the *Journal des sçavans*, eventually featuring as the unique account of a sea-trial of pendulum clocks to be included in Huygens's landmark book on pendulum clocks, the *Horologium oscillatorium*, published in 1673.⁶⁵ Right down to the present day, it is the spectacular success of these trials which is invoked as the crucial evidence, on the basis of which Huygens's pendulum-clock timekeepers take their place as a significant step along the timeline from the theoretical aspiration to determine longitude at sea using a precision clock, to the realisation of that dream with John Harrison's longitude timekeeper.

The success of the Holmes trials probably did lead directly to Moray and Brouncker abandoning attempts to agree a patent document with Hooke (by this time too, ironically, Moray had given up hope of getting Bruce and Huygens to agree a fair distribution of financial reward, and abandoned their patent bid also).⁶⁶

So it might appear that there is some justice in the fact that Huygens has continued to receive most of the credit for early longitude clock trials, and developments culminating in the balance-spring regulated pocket-watch, ever since. But new evidence suggests that Hooke deserves more credit, and Huygens, perhaps, a little less.



The problem with this part of the story is that Sir Robert Holmes (as he later became) was not known as a person who could be relied upon. He is, in fact, infamous as the hot-tempered, violent and uncontrollable commander of the English fleet, whose impetuous naval exploits were responsible for starting both the second and third Anglo-Dutch wars. He had served under Prince Rupert and James, Duke of York, and eventually rose to the rank of Admiral. In 1664, on the very voyage on which he was ostensibly testing the Bruce-Huygens clocks, he sacked the Dutch trading-stations along the

⁶⁴ Huygens, *Oeuvres Complètes* 5, 224 [letter 1325].

⁶⁵ *Philosophical Transactions* 1, 6 March 1665.

⁶⁶ The grave outbreak of plague in July 1665, which necessitated the removal of the Court first to Hampton Court and then to Oxford, and the dispersal of the Royal Society members to the safety of the country, marked the end of this phase in Hooke's longitude timekeeper aspirations.

coast of Guinea one by one, seizing goods and property and laying waste the Dutch settlements. On his return he was twice imprisoned in the Tower of London (on 9 January and 14 February 1665), for having gone beyond orders or for failing to bring back adequate amounts of booty (it is not quite clear which). His actions led directly to the Dutch declaring war on 22 February 1665 (by announcing that they would retaliate against any British shipping in the Guinea region), at which point Holmes was released and pardoned, in order to command his Majesty's forces. In August 1666 Holmes attacked and destroyed by fire 150 East-Indiamen in the Vlie estuary and sacked the town of Westerschelling on adjacent Terschelling island.

Samuel Pepys was afraid of him ('an idle, proud, conceited, though stout fellow'), and on several occasions expressed reluctance at having to deal with him on matters of naval discipline. After the second Dutch war he was rewarded for his exploits with the Governorship of the Isle of Wight; he eventually became extremely rich and somewhat more respectable.⁶⁷

Huygens himself was the first to raise concern about Holmes's report (as a Dutchman he might be expected to have a particularly low opinion of Holmes's integrity). On 6 February 1665, in his first response to Moray, Huygens, after expressing his delight at the dramatic outcome of the trials, added a small caveat:

I have to confess that I had not expected such a spectacular result from these clocks. To give me ultimate satisfaction, I beg you to tell me what you and your colleagues at the Royal Society think of this Relation [of Holmes's], and if the said Captain seems a sincere man whom one can absolutely trust. For it must be said that I am amazed that the clocks were sufficiently accurate to allow him by their means to find such a tiny island [as Fuego].⁶⁸

On 6 March, Huygens was still pressing Moray for 'something of the detail of what you have learned from Mr Holmes, principally in order to know

⁶⁷ It is via the Isle of Wight route that Holmes's path crossed that of Robert Hooke (born on that island). It has been plausibly argued that Grace, Robert's niece, was the mother of Holmes's illegitimate daughter Mary. See L. Jardine, *The Curious Life of Robert Hooke: The Man Who Measured London* (London: HarperCollins, 2003).

⁶⁸ Huygens, *Oeuvres Complètes* 5, 224 [letter 1325]. Huygens's attitude to his first longitude clocks was entirely consistent: he doubted their suitability from the start (*Oeuvres Complètes* 4, 285).

how the clocks behaved in a storm, and if in that climate rust did not eventually cause them to stop'.⁶⁹

The matter of Holmes's trustworthiness was raised at the March 8 meeting of the Royal Society (at which Huygens's concerns were raised, and the letter of 6 March read):

There being also mention made again of Major Holmes's relation of the late performances of the pendulum watches in his voyage to Guinea, it was affirmed by several of the members, that there was an error in that relation, as to the island named therein; and that it was not the island of Fuego, which the Major's ships had touched in order to water there, but another thirty leagues distant from it.⁷⁰

Samuel Pepys (recently elected a Fellow) was 'desired to visit the Major, and to inquire farther concerning this particular for the satisfaction of the society'. In practice this meant visiting Holmes in the Tower, where he was still imprisoned for his conduct towards the Dutch settlements at Guinea, during his voyage.⁷¹ On 14 March Pepys attended 'a farewell dinner which [Sir John Robinson, Lieutenant of the Tower] gives Major Holmes at his going out of the Tower', 'Here a great deal of good victuals and company'.⁷²

On 15 March both Pepys and Moray reported on their dealings with Holmes. Pepys had spoken to the master of 'the Jersey ship' – that is, Holmes's own vessel:

The said master affirmed, that the vulgar reckoning proved as near as that of the watches, which [the clocks], added he, had varied from one another unequally, sometimes backward, sometimes forward, to 4, 6, 7, 3, 5 minutes; as also that they had been corrected by the usual account. And as to the island, at which they had watered, the said master declared, that it was not Fuego, but another 30 miles distant from the same westward.⁷³

⁶⁹ Huygens, *Oeuvres Complètes* 5, 256 [letter 1345].

⁷⁰ Birch 2, 21.

⁷¹ For a clear sense of the concern caused by Holmes's conduct on that voyage, and Pepys's lack of trust of him, see Pepys, *Diary* 6, p. 43.

⁷² Pepys, *Diary* 6, p. 56.

⁷³ Birch 2, 23.

According to the Master of Holmes's ship, then, there was not much to choose between the old way of calculating longitude, and that using the new clocks. Moray, who had spoken to Holmes himself, corrected 'some mistakes in the number of the leagues formerly mentioned'. He confirmed that the ships had not watered on Fuego, 'yet they had made that island at the time, which the Major had foretold, and were gone from thence to another, more convenient, for watering'.⁷⁴

This was the meeting at which, immediately following Moray's rather obviously fudged report, Hooke told the Royal Society 'that he intended to put his [own] secret concerning the longitude into the hand of the president, to be disposed of as his lordship should think fit'. In his opinion, 'no certainty could be had from [pendulum] watches for the longitude'.

At the very next meeting, on 22 March, 'Mr Pepys was desired to procure the journals of those masters of ships, who had been with Major Holmes in Guinea, and differed from him in the relation concerning the pendulum watches'.⁷⁵ Nothing further was heard, however, of discrepancies between the ship's journals and his 'relation concerning the pendulum clocks'. Had that convivial dinner a week earlier perhaps predisposed Pepys to draw a veil over the matter? Holmes's account has been firmly lodged on the record ever since.

However, a presentation copy of Holmes's Guinea voyage journals, which Pepys had indeed procured, as instructed by the Royal Society, still survives in the Pepys Library at Magdalene College, Cambridge. I believe that I am one of the first scholars to have consulted it in the context of the Holmes trials, on that voyage, of Huygens's longitude clocks.⁷⁶

Holmes's journal is extremely full and specific. It is also rather well written – Holmes has a nice line in racy narratives, particularly where bombarding

⁷⁴ Moray also added two further experiments Holmes claimed to have carried out with the clocks (Birch 2, 23).

⁷⁵ Birch 2, 26.

⁷⁶ I owe this discovery to some chance remarks in C. H. Wilson, 'Who captured New Amsterdam?', *The English Historical Review*, 72 (1957), 469-74: 'Fortunately our answer [to the question of whether Holmes was involved in the capture of New Amsterdam in 1664] need not rest on surmise, for we have Holmes's own account of his movements during the months when he is supposed by some historians to have been on his way to America, and capturing New Amsterdam [*Captain Robert Holmes his Journalls of Two Voyages into Guynea in his Mts Ships The Henrietta and the Jersey*, Pepys Library Sea MSS. No. 2698].' (pp. 472-3).

and plundering Dutch merchant ships is concerned.⁷⁷ Day by day he chronicles the progress of his band of ships – the Jersey, the Brill, the Golden Lyon and the Expedition. Only once in the course of the entire voyage does he mention the pendulum clocks (in connection with the incident we have already heard about), and it is hard to see how they could have been kept going steadily throughout, given naval battles with Dutch East Indiamen in which (for instance) Holmes's topmast and mainsail were shot away.

In July Holmes was on San Thome, reprovisioning and rewatering. He set out for home on 11 August. For more than a month strong currents, contrary winds and becalmings bedevilled him. By the third week of September they were well and truly lost on the open seas. There is indeed a full sequence of entries relating to Holmes and his fellow captains getting lost and running short of water, which does, uniquely in the entire journal, mention 'pendula' (this is a fair copy of the journal, prepared for James, Duke of York). It was with great reluctance that Holmes's companions agreed to turn westwards. It was three days before they sighted land, during which time variable winds took them in several different directions. As Pepys had learned, they did not land on Fuego, but some time later on another of the Cape Verde Islands, Brava. Holmes had, at the very least, greatly exaggerated.

But once Holmes had lodged his misleading report, with its bravura claims for the pendulum clocks, Huygens's claim to priority in relation to longitude timekeepers was assured. The account was prominently reprinted in 1673 in the *Horologium Oscillatorium*, and then followed within the year by the announcement from Paris of the balance-spring watch. Huygens's impressive sequence of horological innovations – pendulum clock (1658), longitude pendulum timekeepers (1665) and balance-spring regulator (1674) – entitled him to precedence over others working close to him, and assured his lasting reputation as the preeminent figure in the field.

⁷⁷ For Holmes's buccaneering style, see for example the following, in a letter he transcribes into his journal: 'Since my Letters from Cape Coast wee have taken in Aga & Anamaboa the former by storm, and after promseing Quarter to the Flemins & taken possession our men being somewhat greedy of Plunder, the Flemins treacherously blew up the Powder & withall 80 or 90 whites and Blacks which the Blacks rewarded by cutting of all their heads; At my Return from the Coast all things were in a good Posture, & well settled. ... I know not how my Actions vpon the Coast of Guyny are resented at Court, nor how my Condiscon stands' *Captain Robert Holmes his Journalls of Two Voyages into Guynea in his M[ajestie]s Ships the Henrietta and the Jersey*, Pepys Library Sea MSS. No. 2698, p. 168.

By this time, however, both Moray and Oldenburg were of the opinion that Huygens was overstating his personal claims for priority. On 27 June 1673, Oldenburg himself urged Huygens to be more generous in his acknowledgements, and urged a more collaborative approach in the interest of scientific progress. Indeed, let us (for once) leave Oldenburg the final word. For his response to Huygens was tantamount to a public plea for more structured, acknowledged Anglo-Dutch scientific research:

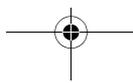
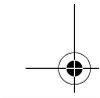
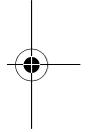
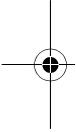
If candour reigned everywhere, what friendships might we be able to establish amongst the learned, and what advantages might the public derive?⁷⁸

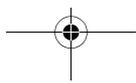
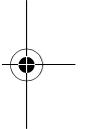
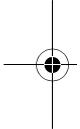
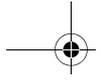
What friendships indeed. How much more robustly Anglo-Dutch scientific endeavours might have developed thereafter. And how much more generous and international the history of precision timekeeping in this period would appear today, had Christiaan Huygens acknowledged the network of information and practitioners whose work had contributed to his own brilliant contributions.

⁷⁸ Huygens, *Oeuvres Complètes* 7, 323-4. Bruce's response to receiving his own complimentary copy of Huygens's *Horologium oscillatorium* was similarly critical. See Leopold, 'Clockmaking in Britain and the Netherlands', p. 41.



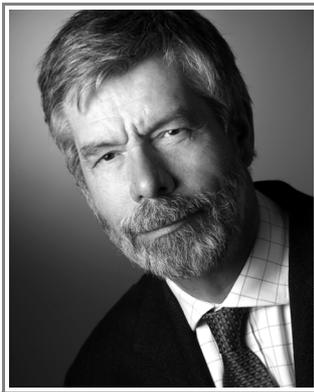
SARTON MEDAL LECTURES





Laudatio Jean-Pierre Henriet

Danny Segers



Jean-Pierre Henriet was born in Ghent the 28th of June 1945.

He received his secondary education at the Royal Atheneum in Ghent, the first year at the Ottogracht and in subsequent years at the Voskenslaan, option Latin-Mathematics.

In 1962 he started university studies in Geology and Mineralogy at the State University of Ghent. He obtained his diploma of licentiate in Geology and Mineralogy *summa cum laude* in June 1966.

Jean-Pierre Henriet became assistant at Ghent University and was involved in the supervision of several practical exercises.

He fulfilled his military obligations in the period 1967-1968.

Besides his basic university education Jean-Pierre Henriet attended supplementary university trainings. In 1967 he obtained at Ghent University the postgraduate diploma of licentiate in Soil Survey *magna cum laude*. After residing 72 weeks in Denmark he obtained the 'Magister Scient.' diploma in Applied Geophysics at Aarhus University in 1971. In 1974 he obtained his doctorate at Ghent University, *summa cum laude*.

During his entire career he attended different post-academic training courses, for instance in seismology, but also in management. Jean-Pierre Henriet also has a wide interest in languages. He gained more in depth

knowledge of the German, the Spanish and the Russian languages. He followed those courses in Ghent and also in Brest during a long-term stay at that place. It was during the course in German that he met Christine Iserentant, whom he married in 1967. They have three daughters. Meanwhile he is the grandfather of eight grandchildren.

From 1978 till 1991 he was senior assistant at Ghent University and guest lecturer at various institutions. In the period 1986 till 1990 he also was lecturer at Ghent University. In 1991 he became senior lecturer.

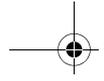
By courtesy of Ghent University, he could take a leave to become director of the “Département Géosciences Marines” at the “Institut Français de Recherche pour l’Exploitation de la Mer (IFREMER)” in Brest during the period 1990 till 1995.

In 1999 he became professor (hoogleraar) at Ghent University and from the 1st of October 2005 he became full professor (gewoon hoogleraar) at the Faculty of Sciences. At present he lectures at Ghent University on Marine Geology and Geophysics. He also is in charge of the Renard Centre of Marine Geology at Ghent University.

During his scientific career he participated in different expeditions, both oceanic expeditions and expeditions to Antarctica. His scientific research resulted in a number of peer-reviewed publications and communications and participations at conferences on invitation, or as a session chairman or member of the organizing committee. He is also the editor of several books.

He succeeded in obtaining a significant amount of resources and research grants to support a large number of PhD theses under his leadership.

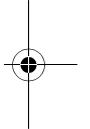
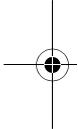
He obtained different scientific awards and prices. In 1991, he founded – in the capacity of President of the European Association of Exploration Geophysicists – the PACE Foundation, which helped several Geophysical Associations in countries such as Romania, Poland, Hungary, Albany, Ukraine and Kazakhstan to secure their existence and patrimony. He was the president of the PACE Foundation for three years. He obtained in Bucharest the Grand Medal ‘Sabba Stefanescu’. In 1995, in recognition of his efforts through the PACE Foundation, the Romanian Association of Geophysics and the Romanian Academy, National Committee of Geodesy and Geophysics, granted to him the Commemorative Medal of ‘70 Years of Romanian Geophysical Prospection’. He is an elected member of the

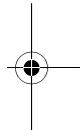
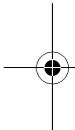


Royal Flemish Academy of Belgium for Science and the Arts, section Natural Sciences. Until recently he was “Vice-Président étranger de la Société Géologique de France”.

Jean-Pierre Henriët also collaborated in the organization of several exhibitions. For example in 1997 he was co-organizer of an exhibition in the Museum for the History of Sciences on ‘100 years Belgica’.

His interest in both the history of his discipline and the human dimension reflects in his talk with the title: “*Veritas Liberavit eum. Prof. Alphonse-François Renard (1842-1903) en zijn tijd: een Jezuïet, geoloog, mens en durfdenker in het oog van de storm*”.

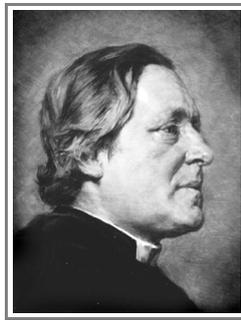




***The Face of the Ocean:* Alphonse-François Renard (1842-1903) and the Rise of Marine Geology**

Jean-Pierre Henriët

Renard Centre of Marine Geology, Faculty of Sciences, Ghent University



Prof. A.-F. Renard

*The Report on Deep-Sea Deposits based on the specimens collected during the voyage of H.M.S. Challenger in the years 1872 to 1876, signed by John Murray – one of the Naturalists of the Expedition – and Rev. A.F. Renard – Professor of Geology and Mineralogy in the University of Ghent – was published in 1891. This report, which is considered as the founding work of marine geology, may be regarded as a team work implying three exceptional scientists: Sir Wyville Thomson, John Murray and Alphonse-François Renard. This paper focuses on the role of Alphonse-François Renard, who was curator at the Musée Royal d’Histoire Naturelle in Brussels at the time of the initial contacts with the *Challenger Office* in Edinburgh. In 1888, Renard was appointed professor of geology and mineralogy at Ghent University. While several biographies have already narrated Renard’s life, a few key moments remained elusive. Some newly consulted documents, such as a set of 52 letters of Alphonse-François Renard to Sir Archibald Geikie kept at the Library of the University of Edinburgh, confronted with archives in Brussels and available literature, shed some new light e.g. on Renard’s early discovery of the world of geological science at the Abbey of Maria Laach in the Eifel and on the chronology and circumstances of his stays in Austria and Scotland. By the same token, they*

suggest a maybe hitherto overlooked role of Sir Archibald Geikie in the alliance between these three scientists.

The Cruise of the Challenger (1872-1876)

The very first words in George Sarton's *La Synthèse Géologique de 1775 à 1918* (1), published in 1919 in the first post-war issue of *ISIS*, pay tribute to Eduard Suess' *Das Antlitz der Erde* (1909) – *The Face of the Earth* – which he considers as the masterpiece of geological synthesis at the turn of the century¹. In this review, George Sarton identifies three major periods of geological synthesis between the late 18th and the early 20th century, each spanning about half a century. He chose 1775, when Abraham Gottlob Werner started lecturing at the Mining Academy in Freiberg, as the pivotal year between the early youth of geological science and 'adolescence'. The main players in the first period of the 'adolescence' of geological science (1775-1820), according to Sarton, are Werner, Hutton, William Smith, Lamarck, Cuvier and Brongniart. This "âge héroïque" is followed by the period of the first syntheses, from 1820-25 to 1870-75: those of Charles Lyell, Leopold von Buch, Alexander von Humboldt and Elie de Beaumont. The second period closes amid the turmoil caused by Darwin's work. Just like the voyage of the *Beagle* (1831-36) had marked in some way the beginning of the second period, it is the cruise of HMS *Challenger* (1872-1876) that would herald the third period.

The brain behind the cruise of the *Challenger* was Charles Wyville Thomson (1830-82), who would become Professor of Natural History in Edinburgh in 1870. It is commonly reported that Wyville Thomson challenged the statement of Edward Forbes, his predecessor at Edinburgh University, who had postulated an 'azoic' zone in the oceans, below 500m. Thomson had observed the variety of animal specimens brought up off the Lofoten islands in Norway from depths well below Forbes' 'azoic frontier'. Moreover a broken telegraph cable between Cagliari and Bone in the Mediterranean, hauled up for repair from depths beyond 2000m, had been found amply colonized by animals which evoked fossil communities.

¹ Sarton had read the French translation of Suess' monumental work: *La face de la Terre*, edited by Emmanuel de Margerie (2).

What is less commonly reported, but stands as a prominent statement in the first pages of *The Depths of the Sea* (3), is that Thomson soon had rallied to the ideas of Darwin, Wallace and Haeckel. These stood in opposition to most of the ‘laws’ formulated by Forbes, which commonly argued for the immutability of species. In a letter of May 30th, 1868 addressed to William Benjamin Carpenter, member of the Royal Society, Thomson argues that dredging the depth of the seas might reveal the affinity between presently living species and fossil ‘parents’. The crinoids found on telegraph cables, for instance, could be traced to species which thrived in Jurassic times. Thomson’s argument was remarkably successful. Two months after his writing, on August 4th, 1868, he could sail from Pembroke on board of HMS *Lightning* to dredge the flanks of a ridge between Scotland and the Faeroe². A more seaworthy vessel – HMS *Porcupine* – would be made available by the Admiralty in 1869.

Soon, the debate would amplify. Both the soundings across the deeper North Atlantic in view of the telegraph connection between Europe and America and the first dredges of the *Lightning* (1868) and the *Porcupine* (1869) had brought to the surface a calcareous ooze, almost entirely consisting of shells of foraminifera (*Globigerina*). The resemblance with chalk, commonly found for instance in the cliffs of Folkestone, was so striking that Thomson soon boldly referred to the ‘modern chalk’ of the Atlantic. A full chapter in his book *The Depths of the Sea* deals with the ‘present-day formation of chalk’. Thomson acknowledges a vivid debate with Charles Lyell and Roderick Murchison, who had criticized an early statement of him suggesting that the “modern chalk” found in the Atlantic Ocean should be regarded as ‘the’ Cretaceous chalk, still in formation in the present deep ocean – *mutatis mutandis*, an early concept of a ‘Jurassic (or Cretaceous) Park’?

Wyville Thomson’s bold statements however paid off, and he obtained from the Royal Society and the Admiralty a three-masted, square-rigged corvette, HMS *Challenger*, to sail for a prolonged and ambitious voyage of exploration of the abyss across the world. The *Challenger* expedition (1872-1876) would open the era of modern oceanography. A tremendous amount of data, collected world-wide and to the greatest depths ever, would

² This ridge would later be named the Wyville-Thomson Ridge.

become available to scientists. The exploitation of this treasure – through an international ‘network of excellence’ *avant la lettre* – was unprecedented. Experts from many parts of the world were solicited and worked for years in *Challenger Lodge*, a stylish Georgian House built in Edinburgh in 1825, possibly to the design of William Playfair. Among these foreign experts were the Belgian malacologist Paul Pelseneer (1863-1945) and the geologist and mineralogist Alphonse-François Renard (1842-1903), at that time curator at the Royal Museum of Natural History in Brussels. The comprehensive and influential *Report on Deep-Sea Deposits* (4) would be signed by John Murray – *one of the Naturalists of the Expedition* – and Rev. A.F. Renard – *Professor of Geology and Mineralogy in the University of Ghent*.

The studies which led to the *Report on Deep-Sea Deposits* laid the base for a nomenclature of deep-sea sediments, still largely in use (5). This classification enabled Murray and Renard to draft the very first map of the deep-sea sediments of the world oceans (6). In addition, over a period of 20 years, Alphonse-François Renard would analyze the composition of the rocks of all islands visited by the *Challenger*, publishing his observations in not less than 20 papers. Many of these islands had been visited and sampled by Darwin with the *Beagle*, and Renard systematically confronted the *Challenger* data with Darwin’s observations. While already showing the symptoms of the illness which would prove fatal, Alphonse-François Renard would still finalize and publish the first French translation (7) of Darwin’s Part II of *The geology of the voyage of the Beagle – Geological observations on the volcanic islands visited during the voyage of H.M.S. Beagle* (8). The remarkable preface of this book may be read as his scientific and philosophical testament.

Alphonse-François Renard’s scientific achievement in marine geology over 25 years, from 1876 to 1901, encompasses both the study of deep-sea sediments – as expression of processes in the ocean – and the study of the volcanic and metamorphic rocks outcropping on oceanic islands – as a window on the dynamics of the Earth’s mantle. We might say that at the dawn of the 20th century, Alphonse-François Renard’s global and holistic geological research over the ocean realm has contributed to lift the veil of the ‘*Face of the Ocean*’. A major difference between Renard’s *opus* and Eduard Suess’ *Face of the Earth* is that the latter work, also representing

an impressive effort over many years, is by essence a global synthesis, an impressive, solitary and visionary compilation of the science of the Earth. Alphonse-François Renard's work, in contrast, has the merit of being analytical throughout, and as regards the study of the deep-sea sediments, it was modern team work with John Murray. Yet, like Suess, Renard personally signed several thematic and historical reviews. It is widely recognized that the *Report on Deep-Sea Deposits* has laid the foundation for the sedimentology of the deep ocean floor (Seibold and Berger 1982) (9). Eduard Suess himself amply refers to Murray and Renard's work in *Das Antlitz der Erde*. Hence, it is a more than remarkable observation that George Sarton, whose *Synthèse Géologique de 1775 à 1918* clearly argues for a careful lecture of Eduard Suess' *magnum opus* and who refers to the cruise of the *Challenger* as a milestone – even occasionally citing John Murray – ignores in his *Synthèse Géologique* both Alphonse-François Renard and the seminal *Report on Deep-Sea Deposits*.

The shaping of a Jesuit

The life of Alphonse-François Renard has been narrated by several authors. We can cite the biographies or obituaries written by Georges Kaiser (10), Sir Archibald Geikie (11, 12), Charles Fiévez (13), Henriette Renard (14), Paul Mansion (15), H. Buttgenbach (16), André Roekeloos (17), R. Van Tassel (18), Guy T. Houvenaghel (19, 20), Leopold Walschot (21) and a few anonymous texts (22, 23).

Alphonse-François Renard was born of modest parentage in Renaix (Ronse), in Eastern Flanders, on September 27th, 1842. He received his early education in his native town, at the primary school and the St. Antonius College. At the age of 12, he would have been recruited as a clerk to the textile manufacturer Vandeputte in Renaix, though André Roekeloos claims a more adventurous track, as the young Alphonse would have tried to escape and sign on – in vain – as a ship's boy on an Antwerp vessel, while his brother Alfred would have entered the factory. In 1856, through intercession of a Jesuit, Alphonse got access to the Episcopal College in Renaix. Four years later, he proceeded with his humanities at the Jesuit College in Turnhout. In 1863, Alphonse-François Renard entered the Novitiate of the Society of Jesus in Drongen, close to Ghent. From 1866 to

1870, he acted as superintendent and teacher of English at the Collège de la Paix in Namur. In 1870, he was sent to the Jesuit Training College at the Abbey of Maria Laach, for studying philosophy and science. The Jesuit *Collegium Maximum* in Maria Laach had been installed in 1864, in the premises of the old abbey which had been founded in 1093 as a priory of the Benedictine Affligem Abbey (Brabant, Belgium). The *Collegium Maximum* was staffed by some 40 Jesuits, most of them lecturing to some 120 students.

The shaping of a geologist

The Abbey of Maria Laach occupies an exceptional site on the rim of the Laacher volcanic lake, well fitted to kindle in any receptive student an interest in geology. A mere walk around the lake offers exposures of both Devonian sedimentary strata and Quaternary volcanic tuffs (24). Within walking distance, the pumice exploitation of the Wingertsberg offers a stunning cross section through the deposits of the gigantic explosion of the Laacher volcano, barely some 13.000 years ago old. There is no doubt that the focus at the *Collegium Maximum* was on theology and philosophy. Still, such exceptional setting could only spark the interest of both Jesuit lecturers and scholars for natural science, and geology in particular. Jozef Kolberg, P. Martinus Bischoff and Wilhelm Graffweg were his lecturers in natural sciences (25). Jesuit L. Dressel published in 1871 the “Geognostisch-geologische Skizze der Laacher Vulkangegend” (26), while Theodor Wolf, who would later (1873) emigrate to lay the base of geological research in Ecuador, apparently had developed advanced equipment for teaching mineralogy, petrography and geology, by the time of Renard’s stay (12).

The Franco-Prussian war (July 1870-May 1871) would shorten Renard’s first study period in Maria Laach. He returned to Belgium and became superintendent and teacher of German in the Jesuit College of Tournai (Doornik). When the war had ceased in 1871, he returned to Maria Laach. In 1872-73 however, the Jesuit Training College of Maria Laach had to close and Jesuits exiled under pressure of Bismarck’s *Kulturkampf*. Rather than joining Theodor Wolf and two fellow Jesuits to Ecuador, Renard returned to Belgium to proceed with studies in philosophy and theology in

Louvain (Leuven). Quite soon, in 1873-74, he became lecturer in chemistry and in mineralogy at the College of Jesuits in Leuven.

In association with Charles de la Vallée-Poussin, professor of geology and mineralogy at the Catholic University of Leuven, he submitted in 1874 to the Belgian Academy a substantial monograph on the mineralogical and stratigraphical characters of the rocks 'named plutonic' in Belgium and the French Ardennes. This monograph would be published in 1876 as a *Mémoire couronné* of that institution (27).

The shaping of a petrologist: Renard and petrographical microscopy

The Memoir published by the Academy (1876) contains ample microscopic work illustrated by beautiful colour reproductions of thin sections of rocks. In the preface, Renard acknowledges the collaboration of Ferdinand Zirkel (1838-1912), who had introduced on the Continent the technique of microscopical petrography developed by Henry Clifton Sorby (1826-1908). Sorby, who had furthered the Edinburgh pioneer work of David Brewster (1781-1868) and William Nicol (1768-1851), had published in 1858 a seminal paper entitled *On the microscopical structure of crystals, indicating the origin of minerals and rocks* (28). As narrated by Jacques Touret (29), it is on a Rhine cruise in 1862 that Ferdinand Zirkel and Hermann Vogelsang (1838-1874) had met Henry Clifton Sorby. Zirkel had published in 1859 a memoir on the volcanic rocks of the Eifel, and in 1864, Vogelsang would likewise submit to the Dutch Society of Geology in Haarlem a memoir on the Eifel volcanics. The Eifel apparently having developed as a testing ground for advanced petrographical studies in Germany in the sixties, it is no surprise that Renard would have found the state of the art in this discipline upon arrival in 1870 in Maria Laach. Renard, who soon would patiently prepare his own thin sections of rocks of the Ardennes for microscopical investigation in the years 1872-74, can thus take his place among the first disciples of Zirkel on the Continent. As reported by Jacques Touret, the 'rising star' of French petrography Ferdinand Fouqué (1828-1904) would first get acquainted with the technique one year later, in 1873, while visiting Harry Rosenbusch (1836-1914) in Heidelberg (29).

In April 1876, Renard presented a summary of the Ardennes study at the Royal Microscopical Society in London: *Some results of a Microscopical Study of the Belgian Plutonic Rocks* (30). In this conference, he proved his command of the most advanced techniques of microscopy by moving – in the footsteps of Sorby – the study of quartz crystals to the frontiers of fluid inclusion analysis and the calculation of the temperature and pressure at the moment of crystallization. But microscopical petrography would for Renard not only become a powerful technique: it would become a passion, as expressed a few years later in lyric terms at an evening conference of The Royal Institution of Great Britain in London, which had as theme ‘*La Reproduction Artificielle des Roches Volcaniques*’ (31):

Pouvoir retracer avec une stricte fidélité dans une masse rocheuse, où l’œil nu ne découvre qu’un amas indistinct et tout d’une venue, la marche de la cristallisation, pénétrer dans ce admirable tissu des produits volcaniques où, dans un centimètre cube, viennent s’agencer des millions de polyèdres, déterminer avec une précision mathématique la nature de chacun de ces corps infiniment petits, les prendre à leur naissance, les suivre jusqu’à leur entier développement, retrouver la trace de toutes les modifications qu’ils ont pu subir sous l’influence des agents physiques et chimiques, voilà ce que ce puissant mode d’investigation, l’analyse microscopique, a permis de réaliser.

The conference in London in April 1876 was perfectly timed: one month later, May 24th, *H.M.S. Challenger* anchored at Spithead, concluding her voyage and delivering to science a bulk load of sediments and rocks, urging for analysis.

Wyville Thomson and Alphonse-François Renard

In April 1877, Renard presents a second conference at the Royal Microscopical Society in London: *On the Mineralogical Composition and the Microscopical Structure of the Belgian Whetstones* (32), which would earn him a second *Mémoire couronné* of the Academy in 1878. In July 1877, he gets appointed as Curator at the Royal Natural History Museum of Brussels. A few months later, he is ordained a priest (1877).

In those years, Renard apparently had not escaped the fever of the debates on 'calcareous ooze', triggered by Wyville Thomson. His personal interest for what we nowadays commonly would name 'the carbonate factory' had been sparked by the microscopical study of Belgian Carboniferous limestone. October 28th, 1877, he applies to the director of the Museum, Edouard Dupont, for a travel of some 8 days to London:

Monsieur le Directeur,

Les recherches que je fais en ce moment sur les roches du calcaire carbonifère de Belgique, m'ont montré que les organismes microscopiques, principalement les foraminifères jouent un rôle considérable dans la formation de ces roches. Malheureusement nous ne possédons en Belgique aucun des échantillons types avec lesquels nous puissions identifier les foraminifères que je découvre et personne ne s'est occupé dans notre pays de la détermination de ces organismes du calcaire Carbonifère. Dans l'intérêt de mes travaux je crois qu'il est important d'aller étudier en Angleterre les types qui ont servi aux savants anglais, auxquels on est redevable des connaissances que nous possédons de ces foraminifères du terrain Carbonifère.

On November 9th, 1877, he reports about his visit to William Kitchen Parker (1823-90) in London:

Je suis arrivé à Londres lundi matin et j'ai commencé immédiatement avec M. Parker l'étude des foraminifères. J'espère avoir fini dans le courant de la semaine prochaine la révision de toutes les formes qui se rapportent aux foraminifères du terrain Carbonifère et je compte me rendre alors à Newcastle on Tyne pour examiner la collection de M. Brady qui s'est spécialement occupé de la question qui nous intéresse. M. Parker connaît surtout les foraminifères tertiaires et récents. Ce savant est Darwiniste à un degré exceptionnellement élevé; il est cependant trop exalté pour m'émouvoir. Je n'ai pas encore vu Ramsay mais on m'a fait entrevoir que je n'aurais pas de difficulté à me procurer par voie d'échange les roches types du Carbonifère anglais.

It is tempting to speculate that Renard next proceeded from Newcastle on Tyne to Edinburgh, to meet for the first time Wyville Thomson and see the collections of the Challenger. Indeed, Edouard Dupont reports in a letter of 1878:



Déjà à l'automne dernier, il s'était rendu à Edimbourg pour examiner les roches calcaires recueillies par le Challenger afin de mieux se rendre compte des circonstances qui avaient présidé au dépôt de nos grands massifs de calcaire.

Les organismes microscopiques de l'Océan et leur action en Géologie (1878)

Straight after his visit to Edinburgh in fall 1877, Renard demonstrates his remarkable capacity to assimilate and directly exploit new information in a substantial review paper: *Les organismes microscopiques de l'Océan et leur action en Géologie* (33). Starting from the discoveries made by the *Challenger* team and published in preliminary reports and papers by John Murray, Renard reviews and discusses a wide spectrum of literature sources, back to Ehrenberg (1843, 1853) and Huxley (1858), to discuss the nature and role of phytoplankton (coccoliths, diatoms) and zooplankton (foraminifera, radiolaria) in geology. An interesting early debate relates to the depth where the zooplankton would thrive: at the surface or at the seafloor, where the shells were found. Trawling fine-mazed plankton nets at different depths, John Murray had been able to address the question, comparing the shells of live species close to the surface with the shells collected on the seabed and coming to the conclusion of a significant transport from the surface to the seabed.

Noteworthy in this early publication, from a marine geological perspective, is the confrontation of different views on the progressive disappearance of calcareous shells on the seafloor, as depth increases beyond 5500 m in the Atlantic. The deeper seabed, both in the Atlantic and the Pacific, is composed of red clay, completely lacking any carbonate. This depth-dependency of carbonate content in the seafloor sediments had been observed along the first cross-section through the Atlantic, sailed by the *Challenger*, between Tenerife and St. Thomas (Antilles). Wyville Thomson considered an organic origin for the red clays: they would result from the accumulation of the tiny fractions of non-calcareous components (clays) contained in the shells of the foraminifera. When sinking to the depths, the calcareous shells dissolve, leaving the clay fraction as residue. John Murray, on the other hand, initially considered the weathering of

volcanic ash, accumulated in the deeper parts of the ocean, as the most plausible origin. Renard supports Wyville Thomson's hypothesis, arguing that the (pressure controlled) concentration of carbon dioxide at various depths is the major factor of dissolution of carbonate. Later, in the *Report on Deep-Sea Deposits*, the interpretations of Murray and Renard would converge and, building upon Sorby's early studies on the variable nature of the carbonate shells of marine organisms – some being composed of calcite while others of aragonite crystals – they would come to a formulation, quite close to our present insights in the 'carbonate compensation depth' (CCD), for both calcite and aragonite.

Renard concludes this review paper with some philosophical considerations. The introduction is of pure Lyell style:

En nous initiant aux phénomènes géologiques de la période que nous traversons, en suivant d'un oeil attentif la manifestation des forces qui agissent autour de nous, nous apprenons à relier les phénomènes anciens à leurs causes et à les interpréter. Cette méthode inductive, base la plus assurée de nos connaissances sur le passé de la terre, conduit le géologue à se demander quel fut le rôle des organismes inférieurs dans la formation des couches aux temps les plus primitifs de notre planète.

This being stated, Renard straightforwardly warns against a common abuse of such approach:

...la plupart des savants qui, dans ces derniers temps, ont traité le sujet, l'ont fait sous l'empire d'idées systématiques qui les portaient à exagérer singulièrement l'importance des dépôts fournis par les êtres inférieurs.

Referring to his earlier visit to Parker, where he had not been particularly impressed by the latter's thrill for Darwinism, Renard refutes Parker's prophecy that the detailed study of the Carboniferous limestone would soon prove the analogy with the calcareous sedimentation, presently accumulating on the seafloor. Renard observes, having scrutinized for several months thin sections of Carboniferous limestone,

... qu'aucun des échantillons étudiés ne peut être considéré, pour la totalité des éléments, comme dû aux organismes inférieurs.

The following lines confirm the early lack of empathy between Renard and Darwinism:

Or si nous voyons à peine dans ces couches l’empreinte des organismes inférieurs que réclame la théorie, quelle ne doit pas être notre réserve en face des assertions d’une école qui, sous prétexte de défendre la théorie des causes actuelles, substitue à l’observation des faits une conception qui se rattache par bien des points aux idées matérialistes sur l’apparition et l’évolution des organismes. En effet, si l’on part des principes transformistes...

The conclusions go *crescendo*:

De cette façon il leur semble plus aisé de rejeter loin d’eux l’idée d’une force créatrice, c’est le temps qui devient le grand facteur. La vie n’est plus qu’une combinaison particulière et fortuite des éléments matériels; elle s’est manifestée dans un passé lointain, débutant par des êtres qui se différenciaient à peine des substances minérales auxquelles elles devaient leur origine, et qui se modifiaient suivant les conditions du milieu où ils se trouvaient placés. Mais il est bien permis de se demander si, en substituant ainsi des idées systématiques aux conclusions qui découlent des faits, on reste fidèle au véritable esprit scientifique et à la marche rationnelle qui doit assurer le progrès.

The style of such *envoi* is not uncommon in geological debates of the 19th century, even prior to the polemics around Darwin’s ideas. But from about 1870 onwards, polemics in Belgium geared up on the background of an amplifying ideological polarization of society (34, 35). The first Vatican Council in 1870, which had defined the dogma of Papal Infallibility, had fueled an overall radicalization. Science would not escape. The ‘materialist’ interpretation which some German scientists, with Haeckel in the front line, soon had given to Darwin’s ideas, had further contributed to polemics (36).

Renard had published *Les organismes microscopiques de l’Océan et leur action en Géologie* in the *Revue des Questions scientifiques*, an outreach publication of the *Société scientifique de Bruxelles* founded in 1875 by Jesuits. The general objective of this Society was to promote full harmony between science and religion, however opposing materialism. Soon this

Society would count some 700 members, competing successfully with the more 'neutral' Academy of Sciences.

The shaping of Marine Geology: the '*Report on Deep-Sea Deposits*'

Renard's early publications and presentations had steadily gained approbation both in his own country and in Great Britain. He receives a letter from Edinburgh, dated September 5th, 1878:

My dear Sir,

During the scientific voyage of the "Challenger" many samples were procured illustrating the deposits now in process of formation at the bottom of the sea.

From the great attention you have paid to the structure of rocks and the many valuable contributions which you have made to knowledge on this and kindred subjects, I believe it would be important to science if you could make it consistent with your arrangements to examine these samples systematically and to contribute an account of them with suitable illustrations to the Official Report of the Expedition now in course of preparation. I will be greatly obliged if you kindly let me know if you can undertake this portion of the work.

I am my dear Sir yours with much respect
S. Wyville Thomson, Director of the Scientific Staff

Renard apparently was not fully unprepared, as the letter he would write to his director Edouard Dupont to solicit the authorization to respond positively to this invitation, is equally dated September 5th, 1878.

In this letter, Renard again developed the actualist argument which had been so successful a year earlier, however now referring to the Carboniferous limestone 'analogy' in such subtle terms, that he could not be caught in contradicting his recently published conclusions. The reason for his continuing allegiance to uniformitarian arguments in the letter to Dupont, notwithstanding his conviction of the lack of direct evidence in the Carboniferous, might have been tactical in quite a few aspects. It is in that

same year 1878 that the first French translation of Darwin's Part I of *The geology of the voyage of the Beagle – The structure and distribution of coral reefs* had appeared (37), stirring the interest of the French-speaking community on the Continent, not the least of Edouard Dupont. Three years later, Edouard Dupont presents at the Academy evidence for the coral reef origin of Belgian Devonian limestones, based on the analogy with those described in modern seas by Darwin. In his paper *Les îles coralliennes de Roly et de Philippeville* (38), he straightforwardly compares the Devonian "Atoll of Roly" with the Keeling Atoll, described in detail in Darwin's book³.

Covered by the agreement of the Minister of the Interior, Edouard Dupont indeed grants authorization to Renard to carry out these investigations, still recommending him to carefully avoid neglecting his administrative duties at the Museum. Renard would straightforwardly travel to Edinburgh to meet John Murray. While he primarily had been invited by Wyville Thomson to assist Murray in the examination and description of the *Challenger* collection of marine deposits, especially with reference to Renard's expertise in the mineralogical and petrographical aspects of the subject, it was soon arranged that the Report, to be published conjointly by Murray and Renard, would encompass all available samples of deep-sea deposits, whether collected by the *Challenger* or otherwise.

Back in Brussels, Renard writes a letter October 29th, 1878 to gratefully acknowledge the hospitality of Archibald Geikie, in those days director of the Scotland branch of the Geological Survey and first occupant of the Murchison Chair of Geology and Mineralogy at the University of Edinburgh. In an overview paper on *Recent Petrographical Literature* in *Nature* 1871, Geikie had noted that after the pioneering work of Sorby, the expertise in microscopical petrography had moved to the Continent:

English petrography does not exist; what we have in its stead is an indefinite obsolete grouping of rocks patched up with occasional borrowings from the Continent. ... Among the Continental petrographers who have led the way in the recent reform and extension of this branch of science, none can claim a more prominent place than Dr. Zirkel.

³ The coral reef origin of those Devonian limestones would be further popularized in the 1930's by Michel Thierry, founder of a museum of natural history in Ghent (39).

Clearly, there was a place at the *Challenger Office* for a zealous disciple of Zirkel. Renard had meanwhile demonstrated his full technical command of the discipline by publishing the same year an adaptation of Rosenbusch's design of a petrographical microscope, which he got built by Voigt and Hochgesang in Göttingen (40). With an enlargement of 1266x, he for the first time could provide evidence with this tool of fluid inclusions of carbon dioxide in ottrelite schists of the Ardennes.

This letter to Geikie would be the first of a long correspondence: 52 letters of Renard to Archibald Geikie, spanning the period from 1878 to 1893, are preserved in the Library of the University of Edinburgh. Up to 1891, Renard usually addresses Geikie as '*mon cher ami*' and from 1891 onwards reverently as '*Sir Archibald Geikie*', when the latter had received the honour of knighthood. These letters shed a new light on Alphonse-François Renard as a scientist and as a man.

The analytical work and the writing of the *Report on Deep-Sea Deposits* was a gigantic effort, spanning a full 13 years, from 1878 to 1891. Geikie states that this great monograph forms to the geologist perhaps the most valuable of all the massive *quarto* volumes of the *Challenger Reports* (12). This is a most laudatory statement, considering that some previous volumes had been signed by prestigious scientists such as Agassiz and Haeckel. Murray and Renard divided the deep-sea deposits mainly into two groups distinguished by the terms 'pelagic' and 'terrigenous'. The pelagic sediments encompass foraminiferal (*Globigerina*) ooze, pteropod ooze, diatom ooze, radiolarian ooze and pelagic clays, mainly the 'red clays'. Additional groups comprise volcanic sands or muds and coral sands or muds. This nomenclature for deep-sea sediments is still in use today. In addition, the Report and subsequent publications shed a new light on the role of cosmic dust which as a fine rain slowly accumulates on the sea floor, they revealed the low-temperature formation of zeolite crystals in the seabed sediments and they documented the distribution and mode of occurrence of manganese concretions, glauconitic deposits and phosphates. The study of phosphates dredged by the *Challenger* off the Cape Province would herald further studies on phosphates in the Basin of Mons by one of Renard's students, Jules Cornet (1865-1929), who would later gain fame by his role in the exploration of Katanga (Bia-Franqui expedition 1891-93).



One of the most spectacular outcomes is the first global map of deep-sea deposits. An early, large-size draft of this map is still kept at Ghent University. The final map, printed both in the *Report on Deep-Sea Deposits* and in a separate paper (6), results from the compilation of collections from more than 35 hydrographic, oceanographic and industrial cruises (mainly telegraph cable surveys).

The shaping of a geochemist: Renard in Vienna (1879-80)

Less than a year after the commencement of the cooperation with Edinburgh, Renard seeks to develop his geochemical skills, both for furthering the work on the geology of Belgium and for analyzing the sediments and rocks collected by the Challenger. On October 8th, 1879, he solicits the authorization of Edouard Dupont for spending some 5 to 6 months in Vienna which, according to German colleagues, would be the best choice for his purpose:

Cette ville, centre scientifique important pour les études géologiques, possède un établissement unique en son genre destiné aux recherches de chimie minérale; c'est le laboratoire de la Handelsakademie dirigé par M. E. Ludwig, l'un des plus célèbres analystes de l'époque. Enfin j'aurai l'occasion d'y être en rapport avec des savants tels que M. M. Tschermak et Hochstetter qui se sont occupés d'études analogues à celles que je suis chargé de faire.

With the support of a reference letter from Jean-Servais Stas (1813-1891), one of the leading chemists in Belgium in the mid-nineteenth century, and with a grant of the government of thousand franks, Renard would stay in Vienna from the end of October 1879 to June 1880. On his way back, he visits Ferdinand Zirkel in Leipzig, with whom he had maintained a close collaboration and friendship. Renard's stay in Vienna would become the start of numerous contacts with both Ludwig and Tschermak von Seysenegg (1836-1927), who had moved in 1877 from a position of director of the "Mineralogische Hof-Cabinet" to a full-time position as Professor for Mineralogy and Petrography at the University of Vienna. Many years later, Gustav Tschermak's son Erich, who had met Renard in the laboratory of his father in Vienna, would pursue studies in Botany at

Ghent University and enjoy the hospitality at Renard's home in Wetteren. In 1882, Constantin Klement, a chemist and student of Ludwig and Tschermak, would be recruited at the Natural History Museum in Brussels. When Renard moved to Ghent University in 1888, it is Klement who became his successor as curator in Brussels.

Renard's profound interest in the chemical and physical properties of rocks would find its expression in not less than 13 studies in experimental petrology, of which 3 dealing with the synthesis of rocks. In his conference '*La Reproduction Artificielle des Roches Volcaniques*' at The Royal Institution of Great Britain in London in 1888 (31), he expresses a view which in no term would differ from what a petrologist might state today:

La géologie, après avoir passé par les phases successive de l'observation et de l'analyse, est donc entrée dans celle de l'expérience et de la synthèse, où l'on s'efforce d'imiter la puissance créatrice de la nature, couronnant ainsi l'édifice scientifique par des procédés qui permettent d'entrevoir l'action des causes dont la connaissance est le but final des sciences physiques et naturelles.

Alphonse-François Renard in Scotland (1880-81)

Barely a few months after his return from Vienna, Renard would move in October 1880 to Scotland for some prolonged stays of several months at the *Challenger* office in Edinburgh, till early December 1881: the bulk of the work on the *Challenger* samples had begun. When Wyville Thomson had to resign from overseeing the 50 reports of the expedition in 1881, to pass away as a burnt-out man in March 1882, John Murray took over all editorial tasks for the reports, which no doubt amplified Renard's share of the work.

Once in Edinburgh, Renard would keep in touch with Archibald Geikie, even starting to translate in French the first edition of Geikie's *Textbook of Geology*. In his letters, he regularly acknowledges with sincere gratitude the hospitality offered at Geikie's home, where he enjoyed teaching the rudiments of French to his host's little daughter Lucy. Now and then, Geikie took Renard on field trips in Scotland, as far North as Cape Wrath, where the latter passed the night at the lighthouse-keeper's, sitting on a wooden chair with his arms and head resting on the table (12). While

crossing the North-Western Highlands, Geikie must have guided Renard to Inverpolly, where a heated debate had developed in previous years between Roderick Murchison, supported by Geikie, who saw a normal sequence of superimposed layers in Knockan Cliff, and Professor Nicol, soon supported by Lapworth, who identified amid the sequence a major low-angle fault, to be called the Moine thrust plane. The latter interpretation would imply an impressive horizontal displacement of a whole terrain. Such observation, adding to similar contemporaneous findings in more ‘recent’ mountain chains on the Continent, would herald the shift from ‘verticalism’ to ‘horizontalism’ in the models of deformation of the Earth’s crust. The move to horizontalism would pave the way for the paradigm of plate tectonics in the later part of the 20th century. In a letter written June 2nd, 1881, during a brief stay on the Continent in between two stays in Edinburgh, Renard acknowledges the field trip to the Highlands as the ‘crowning’ of his stay. At a meeting of the Société de Géologie in Brussels, preceded by a meeting in Lille with Charles Barrois (1858-1939) and Jules Gosselet (1832-1916), Renard had enthusiastically reported about Murchison and Geikie’s views on Knockan Cliff and claims general consent, except – to Renard’s dismay – from Albert-Auguste de Lapparent (1839-1908) who had attended the Brussels meeting:

Il part d’une manière de voir qui me paraît tellement absolue, qu’elle ne peut être vraie. D’après lui les terrains anciens doivent être plus bouleversés qu’ils ne l’apparaissent, l’architecture des Highlands est trop simple, il faut compliquer sa structure par des failles... Bref, il n’y a souvent rien à répondre à un charmeur comme de Lapparent, je lui ai dit seulement d’y aller voir et que ces questions ne se discutaient pas au coin d’une table. Je lui ai rappelé à ce sujet le mot de Quenstedt: *Für einem Geologe sind oft gute Beine nützlicher als einen guter Kopf.*

As a matter of fact, de Lapparent would turn out to be right, and Geikie would soon revise his opinion after having commissioned an impartial investigation, which in 1884 reported in favour of the interpretation of Nicol and Lapworth. This letter however interestingly shows how Renard stood at least as an interested witness of some of the major geological debates of his time, besides playing an active role in some of them. Moreover, it illustrates the style of many of Renard’s writings to Geikie, half serious, half jest, and not always deprived of some gentle touch of flattery.

The debate on St. Paul's Rocks

In the same letter of June 2nd, 1881, Renard acknowledges Geikie's advice on a manuscript dealing with rock samples, collected by the *Challenger* on St. Paul's Rocks, a cluster of rocks midway Brasil and Africa, close to the equator:

... pour vous remercier spécialement de l'excessive bonté que vous m'aviez témoignée en remaniant, avec le talent qui vous distingue, mon pauvre manuscrit de St. Paul.

Renard must have received samples of St. Paul's Rocks while in Edinburgh in fall 1878, considering that he had published a first paper in March 1879 in the *Neues Jahrbuch für Mineralogie*: “*Peridotit von der St. Paul's-Insel im Atlantischen Ocean*” (41).

These small islands had already been visited and sampled by Darwin, who had postulated that the rocks, containing thin veins of serpentine, formed an exception to the general volcanic nature of oceanic islands. The St. Paul's Rocks had been regarded by many authors as the last remnants of a vast drowned continent, an Atlantis, or at least the remnant of continental masses which had supported faunal migration between the African and American continents⁴. The peridotites identified by Renard are mantle rocks nearly fully composed of olivine. In the monograph published in the *Annales de la Société belge de microscopie*, 1882 (43), Renard had related these rocks to a metamorphic complex, in French petrographical terms of the 19th century commonly referred to as “schistes cristallins”. This paper would give rise to comments of Archibald Geikie in *Nature* (1882) and of the American petrologist Marshman Edward Wadsworth (1847-1921) in *Science* (1883), both claiming a volcanic origin of St. Paul's Rocks. Renard diplomatically eludes Geikie's comments but writes with eloquence in a 12 pages long reply in the *Annales de la Société belge de microscopie* (44) a delightful and detailed refutation of Wadsworth's criticisms, in particular those suggesting that Renard would have claimed “...that these rocks may be *metamorphic sedimentary rocks*, and therefore, according to him, true

⁴ The hypothesis of a land bridge between Africa and Brasil through St. Paul's Rocks would persist till the 1930's, in particular in papers of Bailey Willis (42).

schists”. Those were the times where a simple semantic confusion between French and Anglo-Saxon writers could earn a citation in *Science*.

The papers on St. Paul’s Rocks would be the first of a whole list of publications on the petrology of the islands, visited by the *Challenger*: Fernando-Noronha (1882) (45), on which Renard further elaborates in his correspondence with Geikie in 1883, the Falklands (1885) (46), Tristan da Cunha (1885) (47), Juan Fernandez (1885) (48), the Camiguin volcano (1885) (49) and the Cebu and Malanipa Islands in the Philippines (1886) (50), the active Ternate volcano on the Mollucca Islands (1886) (51), the Kantuvu Island in the Fidji Archipelago (1886) (52), the Goonong-Api on Banda Islands (1886) (53), Marion Island (1886) (54), Kerguelen (1886) (55), Heard Island (1886) (56), the Inaccessible and Nightingale Islands (1887) in the Tristan da Cunha Group (57), Asuncion (1887) (58), Pico de Teyde on Tenerife (1887) (59), Cabo Verde (1888) (60). In addition, Renard would report on the composition of the Krakatau ashes collected in Batavia, barely a few months after the eruption of August 27th, 1883 (61).

This clearly demonstrates that Renard did not ‘confine’ himself to the already gigantic data set from the deep-sea deposits, but that he also ventured to explore and understand the magmatic processes from the oceanic realm. As we know today, the studied islands are the surface expression of processes of volcanism related to seafloor spreading, plate subduction and mantle plume activity, as well as metamorphic processes associated to fracture zones, all intimately linked to the grand paradigm of mantle dynamics and plate tectonics which would take another 80 years to move to the forefront of Geosciences. In contrast to the team work of the ‘Report on Deep-Sea Deposits’, Renard’s description of the oceanic islands was largely a solitary exercise.

The shaping of a professor: Renard at Ghent University

The eighties had not only been tremendously productive years for Renard, but also very turbulent ones. It also looks as if he blurred traces in the beginning of the eighties. While his move to Vienna from October 1879 to June 1880 is clearly documented in the archives of the Royal Museum of Natural History, the Catalogue of the Belgian Province of the Society of Jesus records that he resumed studies in Philosophy at the Catholic Univer-

sity of Leuven in 1879-80, even being 'Bidel' or spokesman of his class to the Rector. In 1880, his name would definitively disappear from the Catalogue. Shortly before leaving to Scotland in fall 1880, he would have travelled to Florence to meet the General of the Society of Jesus. He had not yet taken the final step that would have completed his attachment to that Order, and took the liberty he still had to go no farther. His departure from the Society of Jesus, confirmed to him in 1883, did not imply he would leave the Church. He remained for many years one of the secular clergy. In 1881, he moved with his mother to the elegant avenue Brugmann in Ukkel (Brussels).

In December 1882, Renard is elected corresponding member of the Academy of Sciences. Having been elected a Foreign Correspondent of the Geological Society of London in 1880, immediately after the commencement of the publication of his contributions to the *Challenger* studies, he becomes Foreign Member in 1884. He also had been elected Honorary fellow of the Royal Society of Edinburgh. In a long letter to Geikie dated January 1885, he reports the increased difficulties he experiences at the Museum, to the point that he looks out for an alternative position.

“J’ai été appelé il y a quelques jours à Louvain où le Recteur m’a offert de prendre de nouveau la minéralogie et la lithologie avec la chimie minérale. Les relations que j’ai avec de la Vallée ne me permettent pas d’accepter et je n’y pense plus. A l’Université de Gand, un professeur de Géologie illustre inconnu qui n’a jamais écrit une ligne sur cette science⁵ doit se retirer pour cause d’âge. Cette nomination est une décision qui ne dépend pas du conseil académique ni du Recteur mais des Ministres. Je voudrais aller à Gand, mais je trouve M. Mourlon sur mon chemin et il a des soutiens qui sont puissants, son beau-frère étant Ministre Chef du Cabinet. Je ne puis m’appuyer que sur mes connaissances scientifiques pour demander cette position, qui me fixerait d’une manière conforme à mes aptitudes, et à mon goût. Dans ces circonstances il me serait fortement utile de me voir appuyé par un moyen sur lequel mon attention a été attirée lors de mon dernier séjour à Londres. On m’a parlé des distinctions qu’accorde la Société Géologique tous les ans en mars ou en février. J’ai appris qu’il y a 4 ans M. Philips m’avait présenté au Conseil comme candidat pour le prix de Bigsby, on lui a répondu que j’appartenais à une communauté religieuse et que les

⁵ Renard refers to Maximilien Louis Gustave Dugniolle (1822-1903).

fonds ne seraient pas donnés à moi. Laissant à d'autres le soin d'évaluer mes titres, je prends la liberté de vous demander confidentiellement si dans les circonstances actuelles, vous ne voyez pas le moyen de faire renaître ma candidature et de la faire appuyer. ... Je ne demande pas la distinction Bigsby, mais n'importe quel petit grant que ce soit, il ne s'agit pas d'une affaire d'argent, je l'abandonnerais volontier aux pauvres; mais tout ce qui me viendrait de la Société Géologique de Londres serait un fort appui moral pour obtenir la position que je demande.”

Renard would receive the Bigsby Medal a few months later, in 1885. Further honours would follow. On the 13th of June 1888, at the VIIIth Centenary celebration of the University of Bologna in the Archiginnasio galleries – *Festa dell'intelligenza* – a honorary degree was conferred upon some of the most illustrious scholars, scientists, jurists and politicians of the time: *la laurea d'onore* (62). Renard received the golden ring with seal and the silver commemoration plate, among other laureates such as Alexander Agassiz, Louis Pasteur, Herman Helmholtz, Ernest Renan, Marcellin Berthelot, Robert Bunsen, William Thomson (Lord Kelvin), Ferdinand de Lesseps, Valentin Boussinesq, Charles Hermite, Leopold Kronecker, Thomas Huxley, Robert Koch, and many others. A few months later, the 30th of August 1888, he could take the chair of geology and mineralogy at Ghent University.

If the subtle ‘fishing’ for the Bigsby medal, revealed by his correspondence with Geikie, sounds amusing and quite human, one should not overlook that Renard had not acquired any formal academic degree to qualify for a professorate, and hence was totally dependent on his scientific productivity and on any explicit peer recognition for credentials. The passport to the position of curator at the Museum had been the memoir crowned by the Academy, which is beyond doubt of the level of a PhD, but it was a co-authored work, what still nowadays would be *avant-garde* in terms of academic qualification. That it would take a full 3 years to obtain the earnestly desired position at Ghent University, as appears from his correspondence with Geikie, is under such circumstances not utterly surprising. We speculate that the prestigious *laurea d'onore* of Bologna might significantly have contributed to the final move of the Ministry. Further honours would be conferred upon him in later years, for instance as invited guest of

the Tercentenary Celebration of Trinity College, Dublin, in July 1892 (63). In 1901, he figures on the list of the 20 Honorary Members of the Mineralogical Society, among founder fathers of this discipline such as Dana, Fouqué, Lacroix, Lévy, Ludwig, Rosenbusch, Tschermak and Zirkel.

The tensions at the Museum and the attitude of his close colleague Michel Murlon (1845-1915), evoked by Renard in his letter to Geikie of January 29th, 1883, were probably not unrelated to the turbulent early days of the official geological map of Belgium and the crisis which eventually led to the grand schism in Belgian geology and the creation of a second geological society, next to the *Société géologique de Belgique* founded in Liège: the *Société belge de Géologie, de Paléontologie et d'Hydrologie* was founded in Brussels in 1887 (64, 65). Renard became a founding member of the new society.

The *début* of Alphonse-François Renard as professor at Ghent University would not be an easy ride either. The initial hostility of the – not excessively clerically-minded – students of Ghent University towards ‘l’abbé Renard’ would however soon turn into appreciation and respect, not the least by the quality of his lectures and the intensity of the field work he introduced, building upon his in-depth knowledge of the geology of Belgium (10). A hand-written copy of part of his course notes is still kept in the Library of Ghent University. While still at the Museum, Renard had demonstrated his “gute Beine” by organizing excursions in the Ardennes with day trips up to 30km (18): the way to win the hearts and minds of students in geology. It is at Ghent University that Renard would recover the time, freedom and serenity to complete his *magnum opus* with John Murray – the *Report on Deep-Sea Deposits* (1891). In parallel, he would not neglect the preparation of lasting scholarly works, like *Les Fondateurs de la Minéralogie* in 1896 (66) and the *Notions de Minéralogie* in 1900, a book of 374 pages and 732 intercalated figures, co-authored by his collaborator F. Stöber (67).

The shaping of a union: Alphonse-François and Henriette

The nomination of Alphonse-François Renard at Ghent University would compel him to move from Ukkel. Since 1882, he had got closely befriended with his neighbours, the family Van Gobbelschroy. Mr. Van Gobbelschroy

had clear sympathies for the French revolution of '89. Henriette, his daughter, was aged 16 when she first met Renard. In a 'souvenir' paper, she recalls sweet moments (14):

A ce foyer, et tandis que la jeune fille accumulait laborieusement ses travaux d'école, l'abbé Renard venait s'asseoir volontiers. Les discussions philosophiques, ardentes mais courtoises, faisaient le fond de la conversation et, maintes fois, le regard interrogateur de la jeune fille se leva sur ce prêtre à l'esprit lumineux... Six années se sont écoulées: dans la famille amie où, si souvent, l'abbé Renard s'est senti accueillir avec une chaude sympathie malgré la divergence d'opinions, le nouveau professeur de géologie à l'Université de Gand vient faire ses adieux. La toute jeune fille d'autrefois a vingt-et-un ans et c'est dans son coeur, soudain, un déchirement qui fait la lumière: cet ami si lointain dans sa robe de deuil, ce pauvre savant à jamais solitaire et qui en souffre, elle le sent avec son intuition de femme, elle l'aime depuis longtemps, depuis leur première rencontre!...

Ghent – the 'Manchester of the Continent' – still featured in 1888 a medieval texture, heavily overprinted by the industrial revolution. The choice in 1881 of the location of the new building for the Institute of Sciences, to be built by architect A. Pauli to open its doors in 1890, had been primarily guided by concerns of urban sanitation. The selected 'Batavia' sector of the *cit  ouvri re* where Pierre De Geyter was born (1848), composer of the hymn 'Internationale' (1888), has been immortalized by prints of Jules De Bruycker (1870-1945). The city itself, with its network of polluted canals and rivers, was barely habitable. Intellectuals and artists had already exiled to St. Martens-Latem. Renard had been acquainted for years with Prof. Emile Van Ermengem (1851-1932) of Ghent University, who has gained fame for his studies of cholera, typhus and botulism. He had equally stayed in Edinburgh, Vienna and London, in addition to Koch's laboratory in Berlin, and he shared Renard's passion for microscopy. When Renard was president of the *Soci t  belge de Microscopie*, Van Ermengem was adjunct-secretary. Van Rentergem lived in a nice villa with a large garden and pond in Wetteren, and we speculate that it was him who advised Renard to settle in this village, conveniently connected to Ghent by the railway. The village of Wetteren of the second half of the 19th century has been evoked in many novels of Van

Ermengem's son, better known as writer under the pseudonym of Franz Hellens⁶, whose first collection of poems, dedicated to Ghent and illustrated by De Bruycker, sounds eloquent: *En ville morte*.

Renard's key moments of intellectual and ideological crisis have been vividly depicted by Henriette Van Gobbelschroy (14):

Alphonse Renard est à Wetteren, dans une charmante vieille maison. En dehors de ses cours, il vit dans une solitude studieuse, "tout à ses cailloux", comme il le dit avec un mélancolique sourire. Cependant, l'abbé Renard revoit de loin en loin M. Van Gobbelschroy et sa famille... Un jour, au cours d'une visite, l'abbé Renard s'est laissé emporter par son enthousiasme de savant, en exposant devant ses amis la théorie du transformisme: son langage a eu une telle netteté d'inébranlable conviction que Mlle Van Gobbelschroy fait cette involontaire réflexion: "Au point où vous êtes arrivé, vous ne pouvez plus admettre la Révélation!" L'homme de science et de raison s'est dévoilé à l'insu du prêtre, mais le prêtre, anxieusement et comme si un attouchement cruel venait d'effleurer une plaie de son âme, répond à la jeune fille: "Si cela était, je n'aurais plus qu'à déposer ma soutane!" La phrase est tombée dans le silence profond de la salle de famille. Et se fut par une inoubliable matinée d'avril que M. Renard dit à Mlle Van Gobbelschroy ces inoubliables paroles: "Oui, il y a longtemps qu'en moi la foi du prêtre est morte! J'avais quarante ans quand je l'ai sentie mourir. Mais ma mère était là; pour elle j'ai fait taire ma raison suppliciée."

On October 21st, 1898, Renard's mother passes away. The first signs of illness show up and Renard undergoes two surgeries for cancer of the tongue in 1899. He leaves the Church early 1901. On March 21st, 1901, he marries Henriette Van Gobbelschroy in London. Paying a visit to Westminster Abbey, he points to his wife the tomb of Lyell: *là repose celui à qui je dois mon affranchissement*.

⁶ The Wetteren of Renard's time is depicted in Franz Hellens' books in the author's typically contrasting styles, ranging from early youth memories (*Frédéric*) (68) to social drama in the Wetteren of the industrial revolution (*Les marées de l'Escaut*) (69).

Renard and *Les Amis Philantropes*

In 1902, two years after having resigned from the *Société scientifique de Bruxelles*, of which he had been a member for 25 years, Renard is embraced by *Les Amis Philantropes*, a prominent lodge in the history of Belgian freemasonry. In 1834, Théodore Verhaegen, *Vénérable Maître* of *Les Amis Philantropes*, had called for the creation of the *Université Libre de Bruxelles*. The ULB would be born in 1837. Though *Les Amis Philantropes* can be regarded as its cradle, the ULB strived from its very first years towards a national profile and in critical moments, it clearly confirmed its autonomy (70). The original refusal of dogma in scientific matters would soon lead to the broadest concept of *libre examen*, comprising the generalized expression of contradictory opinions. This would indirectly contribute to a crisis in 1894, when the French geographer Elisée Reclus (1830-1905), who just had been appointed as chairholder of comparative geography at ULB, saw his lectures suspended for reasons of alleged links with French anarchists. This was a surprising decision of ULB, as the least one could say is that, throughout his life, Reclus had made no secret of his vibrant sense of anarchy, only rivaled by his prolific scientific productivity. Progressive brothers of the *Amis Philantropes* then decided to create a competing and resolutely modern university – *l'Université Nouvelle de Bruxelles* – a move that eventually resulted in a schism in *Les Amis Philantropes* itself, the more traditionalist members creating the *Amis Philantropes n°2*. This story around Elisée Reclus and geography is maybe not irrelevant. In 1898, Renard had made a remarked plea for strengthening physical geography – to include a. o. oceanography – in academic curricula in Belgium, documenting extensively examples in Vienna (Penck), Prague and Germany (71).

The shaping of Belgium's Antarctic epos: Renard and the *Belgica*

Shortly after the publication of Murray and Renard's map of the deep-sea sediments (1894), both Pelseneer and Renard were contacted by Adrien de Gerlache de Gomery (1866-1934), a young naval officer who fostered plans for a Belgian Antarctic expedition. Adrien de Gerlache had previ-

ously taken contacts with Nordenskjöld for a common enterprise, but in vain. The enthusiastic support of both Pelseneer and Renard would be decisive (72). Renard's reaction was clear:

Je tiens à vous dire que je suis prêt à seconder très sérieusement vos démarches. Je suis désireux de les voir aboutir et je vous promets de vous donner l'appui que je puis vous prêter.

Fund raising became successful in 1895, with a significant support from the scientific societies and Ernest Solvay. In 1896, the Norwegian *Patria* would be christened *Belgica* in Sandefjord. She would sail from Ostend to the Antarctic in August 1897, to return in November 1899 to Antwerp, after completion of the first Antarctic overwintering. In 1901, Arctowski and Renard published the *Notice préliminaire sur les Sédiments Marins recueillis par l'Expédition de la "Belgica"* (73), containing a bathymetric map of Drake Passage from the soundings of the research vessel. Renard would also start with the preparation of the petrographical analysis of the rock samples collected by the *Belgica*, but he could not proceed, due to his illness. After Renard's death, some 700 thin sections were handed over by Arctowski to A. Pelikan and D. Sístek in Prague, who would publish their analyses in the Scientific Reports of the Commission of the *Belgica* in 1909. Chemical analyses were carried out at Ludwig's laboratory in Vienna. One of the most impressive capes of the Antarctic continent, in Gerlache Strait, has been named *Cape Renard*. Wildlife artist and explorer Keith Shackleton caught in a beautiful painting the summer light, the snow and ice and the play of the Antarctic petrels at the foot of Cape Renard.

Epilogue

This paper has focused on Alphonse-François Renard's contribution to the rise of marine geology, with due attention for the human dimension. It may be regarded as a curiosity-driven quest of the author to the sources of the *Report on Deep-Sea Deposits*. If we gladly pay tribute to Luigi Ferdinando Marsili (1658-1730) as the early 18th century pioneer of ocean science who featured a genuine interest for geology (74), it is generally recognized that it is in the achievements of the cruise of *H.M.S. Challenger* that we may see the dawn of modern ocean science, and in particular of marine geology.

One indeed might reasonably state that marine geology could only start as a scientific discipline when team work was invented. Any major marine geological venture builds upon the combination of entrepreneurship, technology, seamanship, scientific excellence and editorial skills. Sir Wyville Thomson, John Murray and Alphonse-François Renard deserve to move into the history of marine geology jointly, as an exceptional team: Thomson as visionary entrepreneur and first manager, Murray as brilliant scientific sailor and persevering editor, Renard as indefatigable analyst and erudite writer.

As we realize today from Renard's correspondence, we maybe should not overlook in this story Sir Archibald Geikie, as an influential political ally, efficient scout and coach, who from the sideline catalyzed contacts between the Scottish scientists and targeted experts from the Continent. Renard had manifested himself at the right moment, as the right man on the right place. He mastered the German language and his command in microscopical petrography, a legacy of Zirkel, was exactly what Geikie and Thomson had been keen to get into the project. In the exploitation of the data on deep-sea sediments from the *Challenger*, Brussels and Ghent would thus take between 1878 and 1891 a pivotal position between the poles of Scottish entrepreneurship in marine science and German analytical power in petrography.

Apparently fluent in French, Geikie would intelligently second Renard morally through years of heavy workload. While no doubt primarily driven by concerns for the success of the project, Geikie still conveyed to Renard tokens of sincere friendship. Between the lines of Renard's letters, one reads an inspiring enjoyment of his regular stays at the Geikie's, among the kids Lucy, Rodrick and Mady. Many years later, Renard's words to his physicians, when he got informed of the disease which would become fatal, were anything but equivocal: *Je dois vivre, je viens de fonder une famille!* (14).

Along this quest, we indeed had the opportunity to get access to some sources and letters, largely unexplored and unexploited yet. They gave us some insight in Renard's soul, at some decisive moments, in decisive issues. These sources still do contain a wealth of information, which may help to better position Renard as a geologist amid the leading geological minds and circles of his time, and as a man. There are many more pages to read and write, not only about the significance of Renard's analyses of

deep-sea sediments, but also about Renard's insights in the geology of Belgium, his vision on experimental petrography and on Earth Science in general. As to Renard's philosophical attitude and its evolution in the turbulent second half of the 19th century, elements of it have been reported in quite a few of the cited biographies, but new insights may soon arise from ongoing studies in human sciences.

Already in pains of intestine cancer and with the ultimate deadline in sight, Renard remained a scientist, a thinker and an indefatigable worker. He finished in 1902 the translation of Darwin's geological observations on the volcanic islands, visited by the *Beagle* (7). The last lines of the prologue are eloquent:

J'estime qu'il est bon de rappeler aux consciences ces héros de la vérité qui n'eurent d'autres armes que leur intelligence libérée des préjugés, leur raison éclairée, leur travail opiniâtre et calme et qui surent remplir au prix d'amertumes sans nombre la si difficile tâche d'avoir fait accomplir à la pensée humaine un pas en avant. Entre eux, Darwin est des premiers.

Among those who assisted Alphonse-François Renard in his last moments, we note Adrien de Gerlache and Ernest Solvay. His funeral was attended by the Rector of Ghent University, Prof. Vandermensbrugghe, by the Mayor of Ghent, Emile Braun, by Lecointe and Arctowski, members of the *Belgica* expedition, by Elisée Reclus and many other dignitaries. Renard's tombstone in the cemetery of Ixelles (Elsene), on which had been engraved the words *Veritas eum liberavit*, has disappeared. The Belgian sculptor Constantin Meunier (1831-1905) has been buried next to Renard's tomb, two years later.

Ixelles has commemorated Renard by naming a street after him, and the ULB organized for years a cycle of *Conférences Alphonse Renard*. About 100 years after Renard's nomination as professor at Ghent University, the 'Renard Centre of Marine Geology' (RCMG) was founded at this institution (1987). When RCMG discovered in 2002 two spectacular ridges speckled with cold-water coral mounds and dwarfed by giant mud volcanoes off Morocco (75), these ridges were respectively named in honour of Wladimir Ivanovich Vernadsky (1863-1945) and Alphonse-François Renard, each in his domain a pioneer in the unveiling of the role of life in geology.



A statue made by sculptor A. De Tombay stands between the Jardin du Roi and the Elsene lakes. Under some angle and illumination, Renard's face offers a boyish look. De Tombay's artwork is heavily weathered and invaded by moss, the stone decaying grain by grain, as if Renard wished to convey with a twinkle an ultimate demonstration of Lyell's laws.

Alphonse-François Renard's *envoi* at the London conference of 1888, borrowed from Leibniz, comes to our mind: *car la nature n'est qu'un art en plus grand*.

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Laudatio Serge Dauchy, 24.02.2010

Georges Martyn

Ladies and gentlemen,
Dear colleague, Serge Dauchy,

Your journey to Ghent today may, I imagine, have felt in a certain sense like coming back home. Wandering through our beautiful capital of the old Flemish county may well have awakened fond juvenile memories but perhaps also induced mixed feelings... After all, Ghent University – when you studied here, still a Belgian state institution – is your *alma mater*. And together with you, I especially appreciate the presence of your ‘doctor father’, professor em. dr. dr. honoris causae multiplex, Raoul Charles Baron van Caenegem, just like you in a few moments, Serge, Sarton medalist of our Law Faculty.

Together with Dirk Heirbaut and Rik Opsommer, my legal history colleagues, I am truly happy that you are being awarded the Sarton Medal. When we were invited to present a faculty candidate to the Sarton University Committee, the three of us immediately agreed on proposing your name, and by doing so expressing our admiration for the academic career of one of our university’s own alumni. And this proposal was not just an act of personal sympathy and friendship towards a legal historian of our own generation and national background. In the first place, the presentation of the medal is intended as the expression of our sincere appreciation for the vast amount of work you have been doing, both within the community of legal historians of the Low Countries and also, more generally, in the international academic world. Our Ghent Legal History Institute, in the heart of the historic county of Flanders, admires the achievements of your

internationally respected research centre, the *Centre d'Histoire Judiciaire* in that other old Flemish town of Rijsel, 'Ville Flamande'. Within the broader context of European legal history, you have managed to bring together in Lille a dynamic group of young and established scholars with a particular interest in the old Flemish institutions and jurists. Reason enough to add your name to the list of Sarton medallists for legal history, along with Robert Feenstra, Philippe Godding, Ditlev Tamm, Anne-Lefebvre-Teillard, Jean-Louis Thireau and Alain Wijffels, to name just some of them.

Indeed, by honoring you personally, on the one hand, we also want, on the other hand, to congratulate the many collaborators of your research centre.

Ladies and gentleman, Serge Dauchy, born at the Flemish seaside in the sixties (Ostend, February 21st 1963), is a man of the true Belgian type that has become very rare these days. Speaking fluently both Dutch and French, he has studied and worked in Flanders, Brussels and France. Having obtained a history degree in Ghent in 1985, he took a *diplôme d'études approfondies en histoire du droit et des institutions* in Paris in 1987. For his thesis, *Les voies de recours extraordinaire: proposition d'erreur et requête civile de Saint-Louis à l'ordonnance de 1667*, he won a prize from the University of Paris II, which also published his work, a work of reference for scholars dealing with problems of procedural law in the ancien régime. Four years later, Serge obtained his Ph.D. degree in history at the Faculty of Arts of the University of Ghent, with a thorough study of the Flemish appeals to the *Parlement de Paris* from the fourteenth to sixteenth centuries. His research was awarded the Flemish Academy prize. Finally, in Lille, in 1997, he was awarded the French *habilitation à diriger des recherches* in law.

His extensive and painstaking research into the archives of the Flemish and French judicial institutions was, and still is, the solid basis of many publications that have followed, in total some hundred articles, contributions to volumes and edited volumes. I shall come back to these publications – of legal sources on the one hand and of conference proceedings on the other – in a while. But let me first point at some very relevant topics which have appeared in papers presented at international conferences or published in A1-periodicals such as the *Legal History Review*.

Having a solid grounding in both legal and historical scholarship, Serge Dauchy always manages to guide his readers safely through the labyrinth of old procedures and enigmatic archival sources. Late medieval process files provide us with, on the one hand, picturesque cases as mirrors of everyday life. But on the other hand, they also show us legal solutions as mirrors of power and authority. Articles focusing on the former find their way to local and national history reviews, those focusing on the latter to specific legal history periodicals and international conferences. Serge has become a well respected specialist in judicial history, with articles, for instance, on *fol appel*, arbitration, conflicts of competence and problems of execution of the verdict, and even the early foundations of the recently so popular phenomenon of (judicial and extra-judicial) mediation. In these articles, special attention is drawn to the role of central courts, the motivation for court decisions and the emergence of case law literature in the continental tradition, the subject on which he will be addressing us in a few moments. Recently, topics in colonial law have also been dealt with. As an inhabitant of, and professor in, Ghent, I am also very grateful to Professor Dauchy for introducing 'our' Filips Wielant into the recent *Dictionnaire historique des juristes français*. Flemish or French? What does it matter? Filips Wielant, like Serge Dauchy, aren't we all Europeans?

Serge Dauchy, to be sure, is a European! Moreover, he is a universally recognised scholar. In 2000 he became professor at the *Facultés Universitaires Saint-Louis* in Brussels, where he teaches Critical Study of Historical Sources and History of Law and Institutions, courses very well evaluated by the numerous students, who appreciate his teaching style as *clair et sympathique*. In his courses, again, we find the fruitful interaction between law and history, between legal and historical scholarship. Legal sources are also important historical sources, as he has demonstrated in some of his articles. In recognition of his expertise in this interdisciplinary field, Professor Dauchy, in 2001, was appointed, by royal decree, President of the Royal Commission for the Editing of the Old Laws and Ordinances of Belgium.

The importance he attaches to the painstaking editing of old legal texts is one of the major reasons for dedicating to him the Sarton Medal. Serge Dauchy underlines, and rightly so, the importance to scholarship of good editing. His recent publication, in collaboration with Veronique Demars-

Sion, of the eighteenth century case commentaries of Georges de Ghewiet is a veritable scholarly monument. And it deserves special congratulations to deliver this kind of work today, now that source editions are pretty poorly or even not at all appreciated by supposedly scientific ‘auditing commissions’.

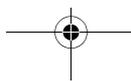
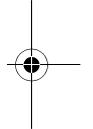
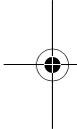
The publication of the de Ghewiet edition, the several conference proceedings already mentioned, and, not to forget, the recent setting up of the *Fontes Historiae Iuris* website, where references to digitalised old legal sources are brought together in a systematic overview, all bring me to a few words on the *Centre d’Histoire Judiciaire* in Lille. The medal that Serge Dauchy receives today is also dedicated to the centre and its many members. If the director is today globally recognised, this is, to a large extent, also thanks to his many collaborators. And conversely, if the centre is a flourishing research school, this is the work of Serge as its director and Veronique Demars-Sion as its co-director.

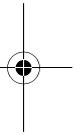
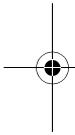
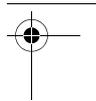
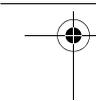
Since my ever first steps in the world of legal history, whether this was on the occasion of the famous *journées internationales* of both the ‘big’ and the ‘small’ *sociétés* (*Société d’Histoire du Droit* and *Société d’Histoire du Droit et des Institutions des Pays flamands, picards et wallons*) or that of a research conference in Lille, I have always been impressed by the scientific enthusiasm and the warm hospitality of Jean-Pierre Royer, Renée Martinage and their many collaborators. I congratulate the whole team and each of its members, especially the youngest researchers, who have come to Ghent today and presented this morning their Ph.D. and post-doctoral research. May this meeting be the start of a lasting and fruitful cooperation between our institutions. You in Lille, we in Ghent, we share a common legal culture, with many research possibilities to explore. I wish all these young legal historians great success. May they model themselves on the active research spirit of Serge Dauchy, a pearl in the crown of legal history.

But there is one more point I would like to make. For a jewel to sparkle, it sometimes needs some polishing. This brings me to some final words on the strong and intelligent wife at Serge’s side, a proud woman, ready to move regularly from place to place and open to the scientific adventures of her husband. I have to admit, Mrs Dauchy, dear Emanuelle, that if, on the one hand, I appreciate your husband for his hard working spirit and his scientific achievement, on the other hand, I also admire his art of life, the



way he enjoys a tasty dish and a glass of good wine, talking about his holidays in Brittany with you and your children, Simon, Vincent, Héloïse and Eléonore. And when I see the twinkle in his eyes, I know that the steam engine in locomotive Serge is called love. That is why my final congratulations are addressed, not to Serge alone, but to the two of you.





L'arrestographie, science fort douteuse?

Serge Dauchy

Centre d'Histoire Judiciaire
CNRS - Université Lille - Nord de France

On cherchera en vain le mot *arrestographie* dans les dictionnaires et répertoires anciens ou modernes. Si le *Dictionnaire universel contenant les mots français et les termes de toutes les sciences et des arts* d'Antoine Furetière (1690) connaît le terme *arrestographe* – présenté comme synonyme de *arrêtiste*, c'est-à-dire “auteur qui a fait un recueil de plusieurs arrêts” – il n'est en revanche nulle part fait mention de *arrestographie*. De même, dans son *Répertoire universel et raisonné de jurisprudence civile, criminelle, canonique et bénéficiale* (1784-1785), *verbo* ‘Arrêt’, Guyot utilise indifféremment les termes *arrêtiste* et *arrestographe* pour désigner les auteurs de recueils de jurisprudence, mais l'idée qu'on puisse parler d'arrestographie lui est totalement étrangère, et cette observation vaut pour l'ensemble des dictionnaires mais également des ouvrages juridiques d'Ancien Régime. Contrairement à ce que l'on pourrait penser, le mot ‘arrestographie’ apparaît au XIX^e siècle pour désigner les différentes entreprises qui, à l'instar du projet initié dans les années 1820 par Désiré Dalloz, se fixent pour objectif de réunir et d'exposer, sous la forme d'un traité et pour chaque matière, la jurisprudence générale des cours et tribunaux. L'arrestographie doit donc être comprise, pour reprendre l'idée avancée par Edouard Meynial dans *Le livre du Centenaire du Code civil*¹, comme “une rencontre entre pratique et doctrine”.

¹ E. Meynial, “Les recueils d'arrêts et les arrêtistes”, dans *Le Code civil, 1804-1904. Le livre du Centenaire*, rééd. présentée par J.-L. Halpérin, Paris, 2004, p. 176.

C'est un historien du droit, Christian Chêne, spécialiste de l'enseignement du droit sous l'Ancien Régime, qui popularisera le mot dans son acception historique, l'arrestographie devenant ainsi le terme générique pour désigner l'ensemble de la production de recueils d'arrêts et de dictionnaires de jurisprudence antérieure à la Révolution française ou, plus précisément encore, l'ensemble des recueils imprimés réunissant des arrêts (en principe commentés) prononcés par les cours souveraines. En 1985, il y a donc précisément vingt-cinq ans, Christian Chêne publia un article intitulé "L'arrestographie, science fort douteuse"². L'auteur s'efforce d'y démontrer – le titre de sa contribution se termine par un point et adopte donc un registre affirmatif – que la grande majorité des recueils d'arrêts d'Ancien Régime sont de qualité douteuse et que leurs auteurs étaient souvent médiocres. Son jugement s'appuie d'abord sur des erreurs ou inexactitudes formelles (date des arrêts, nom des parties et identification des magistrats-rapporteurs erronés, voire même des confusions quant à l'identification de la cour qui a rendu la décision commentée), mais également sur le peu de crédit qu'il faut accorder à l'analyse des questions de droit, au sens de la décision prononcée et, peut-être surtout, aux conclusions que les auteurs en tirent. Ces recueils étant globalement peu fiables, tout conduit donc, selon Christian Chêne, à douter de l'objet, de la valeur et même de l'intérêt historique de cette source. Le trait est certainement forcé et Véronique Demars a pu conclure, à partir d'une confrontation des recueils avec les archives judiciaires, que les arrestographes étaient dans leur grande majorité fiables³. Quoi qu'il en soit, une constatation s'impose: cette littérature qui constitue une source particulièrement prisée pour la connaissance de l'ancien droit et pour l'histoire de la procédure judiciaire a toujours été et est encore une source fort décriée.

Mon propos ici n'est pas de dresser la liste des arrestographes fiables ou non et pas davantage de trancher les querelles et règlements de compte entre auteurs qui, de leur vivant déjà, n'hésitaient pas – dans les préfaces, avant-propos et autres avertissements qui introduisent et vantent leur entre-

² Dans *Mémoires et travaux de la Société d'histoire du droit et des institutions des anciens pays de droit écrit*, Montpellier, 1985, p. 179-187.

³ V. Demars-Sion, "Les recueils d'arrêts et dictionnaires ou répertoires de jurisprudence à l'épreuve de la pratique: l'exemple des mariages à la Gaulmine", dans S. Dauchy et V. Demars-Sion (dir.), *Les recueils d'arrêts et dictionnaires de jurisprudence (XVI^e-XVIII^e siècles)*, Paris, 2005, p. 283-451.

prise – à adresser critiques et reproches à leurs confrères⁴. En reprenant le titre de l'article de Christian Chêne, non comme une affirmation mais sous une forme interrogative, j'envisage au contraire de revisiter l'arrestographie sous l'angle d'un double questionnement. Tout d'abord, que faut-il entendre sous le vocable et à quels buts et objectifs répond ce genre très particulier de la littérature juridique dont le succès ne s'est jamais démenti si l'on considère le nombre de titres parus à travers toute l'Europe depuis la découverte de l'imprimerie jusqu'à la fin du XVIII^e siècle (et même au-delà) comme le nombre de rééditions dont certains ouvrages ont fait l'objet? Ensuite, peut-on parler d'une science? Était-il justifié de créer au XIX^e siècle – par le simple ajout du suffixe 'graphie' au mot 'arrêt' – un néologisme élevant le commentaire d'arrêt et sa mise à disposition du public sous la forme de recueils imprimés au rang de science, avec ses règles et sa méthode? Voici l'objet de cette réflexion qui, pour reprendre les propos et l'esprit de Georges Sarton, s'inscrit pleinement dans une étude désintéressée de l'histoire des sciences.

Qu'est-ce que l'arrestographie? Genèse et objectifs d'un genre particulier de la littérature juridique

L'habitude de retranscrire des décisions de justice ou de rassembler des notes est probablement aussi ancienne que le développement, à partir du XIII^e siècle, d'une justice rationnelle et centralisée incarnée par le Parlement, cour souveraine du royaume de France. Cette habitude est surtout liée à la progressive généralisation de la procédure romano-canonique, une procédure d'enquête où l'écrit domine à tous les stades de la marche de l'instance civile, de la requête introductive jusqu'à la décision finale. Cette procédure, synthèse du droit romain redécouvert et de la pratique des juridictions ecclésiastiques est aussi, en raison de sa grande technicité, affaire de professionnels formés dans les Universités: des juges à présent permanents et des auxiliaires de justice chargés de représenter les parties dans la conduite de leur procès (les procureurs) ou capables d'argumenter en droit et en fait (les avocats). Ce sont ces professionnels qui ont très tôt – et d'abord à des fins strictement personnelles – pris l'initiative de réunir des

⁴ N. Derasse, "La mise en valeur des recueils d'arrêts et des dictionnaires de jurisprudence à travers les préfaces", dans *Ibid.*, p. 41-68.

informations qui leur semblaient utiles ou qui pouvaient exciter leur curiosité: arrêts de règlement ou décisions qui constitueront inmanquablement des précédents, controverses juridique ou affaires opposant des litigants célèbres, questions fréquentes ou contentieux insolites. Ces praticiens, à l’instar d’un Jean Lecoq, avocat au parlement de Paris qui réunit déjà au XIV^e siècle des notes sous la forme de *Quæstiones*⁵, se constituaient ainsi une documentation personnelle leur permettant de connaître, dans ses grandes lignes, la jurisprudence d’une cour et dans laquelle ils pouvaient surtout puiser des arguments pour étayer leurs plaidoiries. Ces notes manuscrites étaient également essentielles à la formation pratique des nouveaux juges et des jeunes membres du barreau. N’oublions pas, en effet, que le cursus universitaire fut longtemps axé, et à peu près partout en Europe, sur l’étude et l’enseignement du seul droit savant. C’est ce que rappelle encore Georges de Ghewiet (1651-1745) qui exerça pendant un demi-siècle la profession d’avocat au conseil souverain de Tournai puis au parlement de Flandre, dans sa *Méthode pour étudier la profession d’avocat*: “Quand nos licentiés quittent les universités et reviennent chez eux, ils se trouvent *tamquam in novum orbem*; ils ne comprennent rien au langage qu’on y tient par rapport à la profession; ce qu’ils entendent dire des ordonnances, des coutumes ou des usages du pays leur paroît un vrai jargon...”⁶.

De nombreux conseillers gardaient donc des notes des contentieux qu’eux-mêmes ou leurs confrères avaient eu à juger et ils retranscrivaient également des décisions plus anciennes qu’ils trouvaient dans les registres déposés aux greffes. Quant aux avocats, ils travaillaient probablement de la même façon que François Perrier, arrestographe dijonnais de la seconde moitié du XVII^e siècle, qui dans son recueil imprimé s’étend longuement sur ses sources d’information. François Perrier affirme d’abord être intervenu personnellement dans plusieurs causes en qualité d’avocat d’une des parties ou comme substitut du procureur du roi. Pour d’autres causes rapportées dans son recueil, il déclare avoir été présent à l’audience lorsqu’elle fut plaidée ou avoir échangé des notes avec d’autres jeunes

⁵ M. Boulet (éd.), *Questiones Johannis Galli*, Paris, 1944 (Bibliothèque des Écoles françaises d’Athènes et de Rome. Fasc. n° 156).

⁶ S. Dauchy et V. Demars-Sion (éd.), *Jurisprudence du Parlement de Flandre de Georges de Ghewiet*, Bruxelles (Commission royale pour la publication des anciennes lois et ordonnances de Belgique, Recueil de l’ancienne jurisprudence de Belgique, deuxième série), 2008, p. 737.

confrères qui, comme lui, prenaient place sur les bancs réservés aux avocats postulants. Enfin, il avoue avoir largement profité des confidences que lui faisait le Premier président Nicolas Bruland chez qui il logea durant plusieurs années au début de sa carrière⁷. Ils ont certainement été nombreux au cours des siècles et jusqu'à la fin de l'Ancien Régime, dans tous les parlements du royaume comme dans les Pays-Bas, en Italie, dans l'Empire et ailleurs, à avoir rassemblé des notes. Leur but était seulement de comprendre le sens des décisions des cours souveraines afin de pouvoir en dégager les principes qui semblaient fonder la jurisprudence. Il s'agissait donc bien, au départ, d'une documentation à usage personnel qui n'avait nullement vocation à être diffusée et qui n'était en aucun cas destinée à un large public. Tout au plus, les auteurs de ces compilations manuscrites acceptaient-ils de mettre leur documentation à la disposition de confrères qui en réalisaient parfois des copies qu'on peut encore retrouver aujourd'hui dans les archives et bibliothèques, reliées aux armoiries de quelque dynastie parlementaire ou pourvues de l'ex-libris d'un ténor du barreau. Tout va changer avec l'invention de l'imprimerie.

On a trop peu insisté sur le rôle des imprimeurs et libraires dans l'essor de l'arrestographie. Comme l'a souligné Jacques Poumarède à propos de Toulouse, c'est d'abord et avant tout parce que le monde du livre a décelé dans les manuscrits dont ils avaient connaissance ou qu'on leur présentait un marché économique prometteur que les recueils imprimés ont connu un tel succès⁸. Les imprimeurs et libraires ont en effet vite compris que ces recueils – au départ surtout des œuvres posthumes – pouvaient intéresser un large public. Aborder la question du public visé par cette nouvelle production, c'est avant tout s'interroger sur les buts poursuivis par leurs auteurs et s'intéresser aux raisons qui ont conduit les libraires et imprimeurs à en assurer une large diffusion, car ce sont bien eux qui en assurent, à travers les préfaces et avertissements, la publicité. A en croire leurs promoteurs, ces recueils sont d'abord destinés à la formation des jeunes praticiens – avocats, procureurs et juges – pas encore rompus aux complexités du droit et aux subtilités de la procédure. Les arrestographes, souvent des avocats établis et des présidents de chambre, entendaient en d'autres termes donner à leurs jeunes confrères les outils indispensables à la compréhension de leur

⁷ M. Petitjean, "Regards sur l'arrestographie bourguignonne", dans *Les recueils d'arrêts et dictionnaires de jurisprudence*, op. cit., p. 91-104.

⁸ J. Poumarède, "Les arrestographes toulousains", dans *Ibid.*, p. 67-89.

profession, outils que la Faculté a longtemps négligé de leur enseigner. Toutefois, car il faut atteindre un public aussi large que possible, les libraires et imprimeurs n'oublient pas pour autant les juristes plus expérimentés. Les recueils imprimés leur fournissent, ainsi qu'il est rappelé dans les préfaces, des arguments tirés de la doctrine et de la jurisprudence susceptibles d'enrichir leur plaidoyers et mémoires; ils constituent surtout le seul moyen de connaître les motifs des décisions rendues par les cours et tribunaux.

“Plusieurs arrêts conformes sur une même question de droit forment ce que l'on appelle la jurisprudence des arrêts ou des cours”. “La posséder”, rappelle l'*Encyclopédie méthodique*, “c'est avoir la science, c'est posséder la connaissance des décisions que les cours sont dans l'usage de porter sur ces sortes de questions”. Toutefois, comme le souligne également l'auteur de la notice, “il est en général, à l'exception des arrêts portant règlement, fort dangereux de déterminer le sort qu'aura un procès par ce qui a été jugé dans une espèce qui paraît renfermer quelques similitudes”. L'auteur de cet article, rédigé en 1782, aurait en outre pu ajouter: *d'autant plus que les décisions de justice ne sont pas motivées*. Quel rapport avec l'arrestographie? Les décisions de justice n'étant pas motivées – non pas parce que le droit romain ou les ordonnances royales l'interdisaient mais parce que, sous l'influence des canonistes du Moyen Age, il avait paru plus sage de ne pas le faire, d'autant plus que cet usage préconisé également par le style du parlement de Paris renforçait l'indépendance des conseillers – il était bien difficile de connaître les raisons et motifs qui avaient déterminé les juges. Par conséquence, il était périlleux de tirer de la jurisprudence des cours souveraines des précédents susceptibles d'être avancés comme arguments et davantage encore d'en extraire des principes généraux. A défaut de motivation, les praticiens (à l'exception des juges ayant participé aux délibérations d'une cause) en étaient donc réduits à procéder par déduction. On estimait généralement pouvoir reconstituer la motivation à partir de l'exposé des faits et de l'argumentation juridique des avocats, des informations reprises dans le texte de l'arrêt. C'est surtout l'argumentation de la partie qui avait gagné le procès qui semblait pouvoir offrir quelque base solide à partir de laquelle il devait être possible de reconstituer la réflexion des magistrats et donc les motifs de leur décision. La formule introduisant le dispositif d'un arrêt pouvait d'ailleurs laisser penser que les moyens de

la partie gagnante avaient bien emporté l'adhésion de la cour et que ces moyens pouvaient dès lors être repris au titre de motifs. Pourtant, s'en remettre aveuglément à ce genre de déduction nous apparaît comme aléatoire et les contemporains en étaient également conscients. Les juges ne se déterminent pas nécessairement en fonction des arguments et autorités allégués par les plaideurs, ils peuvent défendre – lorsqu'ils délibèrent en formation collégiale – une même solution à partir d'un raisonnement différent et, au-delà des arguments de droit, des considérations d'équité peuvent également influencer leur décision.

L'arrestographie flamande des XVII^e et XVIII^e siècles fournit une belle illustration du caractère aléatoire d'une entreprise consistant à vouloir déduire les motifs d'un arrêt à partir de l'argumentation des parties, voire des seuls arguments de la partie ayant obtenu gain de cause. En raison du rattachement tardif de la Flandre (française) à la Couronne, l'arrestographie de cette province septentrionale longtemps soumise au ressort du Grand Conseil de Malines présente quelques particularités. Tout d'abord, la quasi-totalité des auteurs de recueils imprimés et manuscrits sont des magistrats ayant exercé à la fin du XVII^e siècle, c'est-à-dire durant les décennies qui ont suivi 1667, date de l'établissement d'une cour souveraine dans la province (d'abord à Tournai, puis à Cambrai de 1709 à 1713 et enfin à Douai). A l'exception de deux d'entre eux, à savoir Matthieu Pinault des Jaunaux⁹ et Jacques Pollet¹⁰ dont les recueils ont été édités au début du XVIII^e siècle – à titre posthume pour ce qui concerne le premier; du vivant de son auteur s'agissant du second – les auteurs se sont contentés de réunir des notes qu'ils réservaient à leur propre usage ou à celui de la cour. Ces recueils qu'un libraire lillois décidera d'imprimer bien plus tard, en 1773¹¹, étaient donc à l'origine nullement destinés au grand public, pas même aux membres du barreau local, ce qui explique leur caractère insolite voire indécent pour l'époque et en même temps leur intérêt pour les historiens. Insolites et indécentes au regard des pratiques de l'époque, ces recueils manuscrits le sont en raison du fait que leurs auteurs – des magistrats – y exposent les motifs des arrêts commentés en dévoilant même, pour

⁹ M. Pinault des Jaunaux, *Recueil d'arrêts notables du Parlement de Tournai*, Valenciennes, 1702 et *Suite des arrêts notables du Parlement de Flandres*, Douai, 1715.

¹⁰ J. Pollet, *Arrêts du parlement de Flandre sur diverses questions de droit, de coutume et de pratique, ouvrage utile pour l'intelligence des coutumes et usages du pays*, Lille, 1716.

¹¹ *Recueils d'arrêts du parlement de Flandres*, par MM. Dubois d'Hermaville, de Baralle, de Blye et de Flines, 2 vol., Lille, 1773.

les décisions auxquelles ils ont participé, les opinions des juges et le partage des voix, enfreignant ainsi ouvertement le principe, imposé par les ordonnances royales, du secret des délibérés. Ainsi, le conseiller de Flines n'hésite pas à livrer nominativement les opinions respectives – *consentientibus et dissentientibus* – du rapporteur et des conseillers ayant participé à la délibération. Son témoignage montre à quel point il est aléatoire voire trompeur de s'en remettre aveuglément aux moyens des parties pour connaître la *ratio decidendi*. Rapportant un litige ayant opposé un débiteur à son créateur au sujet de la division d'une dette entre coobligés, de Flines expose d'abord les arguments avancés par chacune des parties: l'avocat du créateur jugeait la demande de son client légitime en s'appuyant sur l'autorité d'Alciat alors que la partie adverse soutenait le contraire en invoquant Bartole. De Flines résume ensuite les échanges entre les conseillers présents lors de la délibération de cette affaire: le rapporteur et deux autres conseillers penchaient plutôt pour les arguments d'Alciat alors que trois autres conseillers – dont de Flines lui-même – avaient été davantage convaincus par les thèses de Bartole; quant au Premier président, il estimait que le différend pouvait aisément être tranché en suivant – *deus ex machina* – la coutume de Berghes que personne n'avait mentionnée. La dispute entre Bartole et Alciat fut donc finalement décidée par la coutume locale, solution à laquelle une majorité de conseillers, dont de Flines lui-même, s'étaient finalement rangés. A défaut de ces indiscretions contraires au principe toujours en vigueur du secret des délibérés – ce qui prouve une fois de plus, s'il en était besoin, que ces notes n'avaient pas à l'origine vocation à être éditées – et en suivant la méthode consistant à déduire les motifs d'une décision des arguments proposés par la partie gagnante, personne n'aurait pu soupçonner que dans cette affaire le litige avait été tranché conformément aux dispositions de la coutume locale. Au contraire même, l'historien aurait pu, en toute bonne foi mais de manière tout à fait erronée, conclure à une influence déterminante de la doctrine savante au détriment du droit coutumier.

Partant de cet exemple et de plusieurs autres que nous fournissons les arrestographes flamands de la fin du XVII^e siècle – de Flines mais également de Baralle et Dubois d'Hermaville – il serait tentant de rejeter comme peu scientifique la démarche des arrestographes, à savoir déduire les motifs d'une décision des arguments présentés par les parties, mais également la

finalité même des recueils d’Ancien Régime qui se proposaient de dégager des arrêts la jurisprudence des cours souveraines du royaume. Faut-il alors donner raison à Christian Chêne: l’arrestographie – néologisme impropre – est-elle une science douteuse... et peut-on seulement parler de science?

L’arrestographie, une science? Une science douteuse?

Ce que les historiens du droit désignent par le nom générique d’arrestographie recouvre certes un genre spécifique et bien identifiable de la littérature juridique d’Ancien Régime, mais un genre littéraire qui au cours des siècles a connu une évolution sensible. Si en effet la décision judiciaire, et d’abord celles des parlements, occupe dans cette littérature une place centrale, la présentation et la structure de l’ouvrage tout comme le traitement de l’information peuvent prendre des formes extrêmement variées. A l’origine, l’arrestographie se résume à des compilations de décisions présentées dans un ordre chronologique ou classées alphabétiquement en fonction de la question traitée dans chaque arrêt sélectionné. L’information y est souvent synthétisée: une brève présentation des faits nécessaires à la compréhension du litige et de la question juridique à trancher (parfois sans la mention des noms des parties ou même de la date), un résumé des arguments de l’une ou des deux parties, le cas échéant complété par les conclusions du Ministère public et, en quelques mots, la décision de la Cour. Dans la tradition des *consilia* continentaux et des *Law Reports* anglais, ces premiers recueils – principalement des ouvrages posthumes tirés de notes mises à disposition par les héritiers – se contentaient en d’autres mots de rassembler les informations que le praticien jugeait nécessaires ou utiles à la compréhension d’une décision à l’élaboration de laquelle il avait souvent participé lui-même. A titre d’exemple de cette arrestographie de première génération on peut citer les *Decisiones* de Guy Pape du début du XVI^e siècle. Dans un deuxième temps, les auteurs – ou les libraires qui assurent l’édition des manuscrits et en rédigent aussi la préface – vont s’appliquer à fournir à leurs lecteurs une reproduction in extenso d’arrêts regroupés en chapitres ou présentés alphabétiquement et pourvus chacun d’un chapeau introductif souvent sous une forme interrogative. Cette présentation fut introduite en France par George Louet pour son *Recueils d’arrests notables* paru en 1602 et aboutit aux grandes entreprises collectives de la

seconde moitié du XVII^e siècle que sont le *Journal du Palais* et le *Journal des Audiences*; ils constituent le modèle de la période classique de l'arrestographie, modèle aussi suivi, certes avec un certain décalage dans le temps, par les auteurs réunissant des arrêts d'un parlement de province, comme par exemple dans le ressort du parlement de Flandre.

Au cours de la seconde moitié du XVII^e siècle, la littérature arrestographique évolue progressivement, une évolution qui coïncide avec une nouvelle génération d'auteurs à présent majoritairement issus des rangs du barreau. La décision de justice ne constitue plus qu'une partie, parfois même une infime partie, de l'exposé. Elle apparaît même de plus en plus souvent comme un simple point de départ – voire comme prétexte – d'une dissertation doctrinale mêlant des citations tirées du droit romain et canonique, des coutumes, de la législation royale et princière et de la doctrine savante et coutumière, sans oublier des décisions de justice puisées dans des recueils imprimés, français comme étrangers. Ces commentaires d'arrêts – qui s'éloignent régulièrement de la question de droit soulevée dans l'arrêt qui leur sert pourtant de point de départ – se présentent en d'autres termes comme de véritables œuvres doctrinales, répondant aux canons de la rhétorique tout en s'inscrivant dans une culture juridique résolument européenne. *La jurisprudence du Parlement de Flandre* de Georges de Ghewiet fournit un exemple du caractère transfrontalier des sources utilisées par l'arrestographie de la fin du XVII^e et du début du XVIII^e siècle. Non seulement notre arrestographe flamand cite des auteurs de toutes les époques et de tous les horizons, mais la découverte du catalogue de sa bibliothèque – dressé après sa mort, en 1745, par un libraire lillois en vue de la vente publique de celle-ci et fort de quelques 700 titres¹² – prouve de surcroît que la grande majorité des ouvrages cités garnissaient les rayonnages de sa bibliothèque personnelle.

En 1970, le grand juriste français Jean Carbonnier rédigea dans le *Recueil Dalloz* une brève notice intitulée *Note sur des notes d'arrêts*¹³. On peut y lire le passage suivant: "L'arrestographie, comme on disait audacieusement au siècle dernier, est l'art ou la science de suggérer tous les possibles

¹² S. Dauchy et V. Demars-Sion, "La bibliothèque d'un juriste du 18^e siècle" dans *Bulletin de la Commission royale pour la publication des Anciennes Lois et Ordonnances de Belgique*, Bruxelles, vol. XLVIII (2007), p. 277-320.

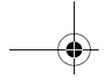
¹³ Dalloz, 1970, p. 138.

ou leur contraire dont chaque arrêt est le point de départ, et d'en mettre un en relief comme le plus probable. L'art suprême consiste alors à faire que le probable rejoigne le souhaitable car c'est à la science de l'arrêtiste qu'il revient d'orienter la jurisprudence dans ce sens". Et de conclure, "car le commentaire d'arrêt utile, celui qui fait jurisprudence, est le commentaire qui réussit à convaincre les juges que la suite est déjà dans le précédent". Ce que Jean Carbonnier rapporte ici à propos des notes et commentaires d'arrêts – qualifiés par lui d'arrestographie contemporaine – rejoint la position exprimée au XVIII^e siècle par Valin dans la préface de son *Commentaire de la coutume de La Rochelle*. L'utilité première et ouvertement affichée de la jurisprudence des arrêts telle qu'elle ressort de l'arrestographie de la fin de l'Ancien Régime – dont les ouvrages sont plus volontiers qualifiés de *dictionnaires de jurisprudence* que de *recueils d'arrêts* – est de dégager des principes par le raisonnement et de faire ainsi œuvre de doctrine pour guider les juges, les avocats et même les professeur de droit français. Comme l'a bien résumé Jean Hilaire, à la fin du XVIII^e siècle on privilégie une science des arrêts qui, se fondant sur une sélection des meilleures décisions, éclaire les praticiens par une présentation unitaire de la jurisprudence. Le temps est loin où l'arrestographie était assimilée à un catalogue de cas d'espèce mettant en exergue la diversité, les similitudes et les contradictions entre solutions juridiques¹⁴. Dans ces conditions, nous devons nous interroger sur la définition de l'arrestographie. Ce terme semble bien désigner l'œuvre d'auteurs, tous praticiens, qui s'appuient sur la jurisprudence des cours souveraines pour livrer à leurs lecteurs, également des praticiens ou futurs praticiens, une jurisprudence des arrestographes bien plus qu'une jurisprudence des arrêts. L'arrestographie, en effet, ne se réduit pas à une simple compilation ordonnée de décisions rendues par une ou plusieurs cours, mais doit au contraire être comprise plus largement comme faisant partie – et occupant une place importante – de la doctrine. L'arrestographie a surtout eu le mérite de vaincre la méfiance affichée par la doctrine – et peut-être aussi par le pouvoir royal – à l'égard des décisions des parlements, en général, et à l'égard du précédent judiciaire, en particulier. Cette méfiance était d'autant plus compréhensible qu'il n'était, à la fin de l'Ancien Régime, toujours pas d'usage de motiver

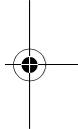
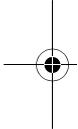
¹⁴ J. Hilaire, "Questions autour de la jurisprudence des arrêts", dans *Les recueils d'arrêts et dictionnaires de jurisprudence*, op. cit., p. 91-104.

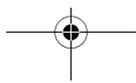
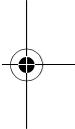
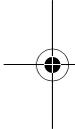
les décisions et par ailleurs, comme aujourd'hui, formellement interdit de révéler le secret des délibérés. L'arrestographie a favorisé la participation, certes indirecte, des cours supérieures et la contribution de leur jurisprudence à la construction d'un droit plus unifié, et cela en effaçant les incohérences et contradictions entre coutumes ou en renforçant le rôle supplétoire du droit romain. L'arrestographie s'est surtout efforcée de réduire les cas d'espèces à des principes, principes dont les décisions judiciaires ne sont alors plus que des exemples concrets d'application. L'arrestographie préfigure ainsi les bouleversements de la fin du XVIII^e et du début du XIX^e siècle: la codification du droit, l'affirmation de la suprématie de la loi et, ironie du sort, une véritable défiance à l'égard de juges à présent contraints de motiver leurs décisions. Ce mouvement a été engagé dès la fin de l'Ancien Régime et en partie à l'initiative des arrestographes, acteurs – certes méconnus – de la science juridique.

Alors, en conclusion, l'arrestographie est-elle une science fort douteuse? Est-ce seulement une science? Certainement pas si l'on n'admet qu'une vision restrictive de la science, entendue comme la connaissance tirée des observations expérimentales ou rationnelles de phénomènes objectifs qui échappent à la volonté humaine. Toutefois, si l'on s'en tient à cette définition, le droit n'est pas davantage une science et la notion de sciences humaines et sociales devient au mieux une *contradictio in terminis* et au pire une hérésie. Toutefois, le terme 'science' peut également désigner la connaissance, le savoir-faire, l'érudition, autant d'idées que l'on retrouve dans le mot néerlandais *geleerdheid*. En distinguant ainsi *geleerdheid* et *wetenschap*, la langue de Vondel reconnaît aussi les deux faces du mot *science*. L'arrestographie des Temps modernes répondait à une méthode, à une démarche et à un raisonnement et poursuivait un objectif unique: tirer des principes généraux de la diversité des cas d'espèces. Ce n'est pas parce qu'elle se fonde sur le raisonnement, la déduction, l'analogie, l'abstraction ou la généralisation et pas davantage parce que certains auteurs sont moins scrupuleux que d'autres, moins consciencieux ou simplement plus brouillons, qu'il y a lieu de prononcer sur eux l'anathème et de qualifier de ce fait péremptoirement l'arrestographie de science douteuse. N'oublions pas que ce néologisme n'est apparu qu'au XIX^e siècle et que nos anciens arrestographes, s'ils ont voulu faire œuvre utile, n'ont jamais eu la prétention de faire œuvre scientifique. "Par l'arrestographie", affirmait



E. Meynial, “la pratique et la doctrine se sont lentement connus et plus lentement encore appréciés”. Pour cette seule raison déjà, elle mérite d’être reconnue à sa juste valeur.





Laudatio Prof. Dr. Johann Schaeffer

Piet Deprez

In the song “Tomorrow people” by Ziggy Marley there is a line that says: “If you don’t know your past, you don’t know your future”.

As veterinarians and scientists we try to keep up with the exponentially expanding scientific knowledge and every day we are busy looking for the latest publications. In doing so we tend to look somewhat down on the “old” literature.

And this is wrong. There are several examples of knowledge that has been lost or forgotten over the course of the years and suddenly reappears as a “new” discovery. Perhaps we forget to soon certain findings or thoughts from the past, or don’t learn enough from the discoveries and evolutions in the past.

Remember: If you don’t know your past, you don’t know your future

But there is hope. We have guardians, we have guardians of the past. And today we have such a guardian amongst us: prof. Johann Schaeffer.

Prof. Johann Schaeffer holds the chair for history of veterinary medicine and domestic animals, “Geschichte der Veterinärmedizin und der Haustiere”, at the University of veterinary medicine in Hannover.

We don’t have such a chair in our faculty. Many, if not most, veterinary faculties around the world do not have such a chair. Therefore, prof. Johann Schaeffer is a very important person, a VIP, for our profession.

And to thank and honour such persons, we have the George Sarton medals. In remembrance of the work of George Sarton, the University of Ghent

awards every year a medal to a select group of persons who have contributed, on an academic level, to the discipline of the history of science.

Today we are here to present this prestigious medal to prof. Johann Schaeffer, who has devoted his career to the history of veterinary medicine.

Prof. Schaeffer was born in 1952 in Munich and graduated as a veterinarian, "Tierarzt" in Germany, in 1979.

He was immediately fascinated by the past and started in 1980 as a researcher in the "Institut für Palaeoanatomie, Domestikationsforschung und Geschichte der Tiermedizin" in Munich, where he obtained his "promotion" (Ph.D.) in 1981 with a dissertation on the recipes in the Corpus Hippiatricorum Graecorum, an ancient collection of texts about equine medicine.

He continued his research in this field and obtained his "Habilitation" (D.Sc.) in 1990 with a thesis on "Animal birth and obstetrics in ancient Mesopotamia and Egypt. In German this sounds like: "Tiergeburt und Tiergeburtshilfe im Alten Mesopotamien und Ägypten".

In 1991 he became a professor in the history of veterinary medicine, and after a short stay in Munich, he moved to Hannover where he is still working at this moment.

Prof. Schaeffer is an academic, that means that he combines many activities.

First of all, he is a teacher, an enthusiastic teacher on the history of veterinary medicine and domestic animals, on medical terminology and also on professional administration and legislation.

Secondly, he is an organizer. He runs the department of history of veterinary medicine and he is also in charge of the archives of the university and especially of the Museum for the history of veterinary medicine. In times where money becomes increasingly difficult to find, he managed to expand this museum from the traditional small and dark room to an entire building. Next to these activities, he has organized numerous congresses and exhibitions to promote his favorite topic outside his faculty and outside his country.

But most of all, he is a researcher. His long list of publications, close to 200, can vouch for that. Additionally, he has supervised approximately 100

dissertations. He has published on all aspects of the history of veterinary medicine: for example the evolution of obstetrics in large animals is a topic that he has elaborated and nourished throughout the years and in which he has become a leading expert.

Currently he is devoting all his spare time to the redaction of his “magnum opus”, as he likes to call it, namely a complete inventory of the history of veterinary medicine, called: “Chronik des Tiermedizin: Ein Wegweiser durch fünf Jahrtausende”. A work we are of course all impatiently awaiting.

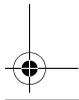
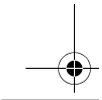
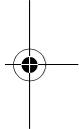
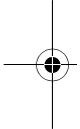
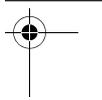
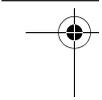
From early on in his professional career, prof. Schaeffer has also developed a keen interest in animal welfare, its evolution throughout time and the lessons we can learn from achievements and failures in the past.

Especially the troublesome relation we have had with our cattle, with our horses and especially with the man’s best friend, the dog, has retained his attention. He is not only interested in the academic aspect of this topic, but he combines it with an active involvement in, for example, training programs to teach children how to handle dogs. Thanks to his knowledge of the history of both dogs and man, he can explain the reason for the sometimes difficult relation we have with our pets, and more important, he can offer solutions for our future relations with these animals.

If you don’t know your past, you don’t know your future

Therefore, it is a great pleasure and honour for me to introduce Prof Schaeffer who will lead us to a better understanding of living together with dogs with his lecture on:

“The Ugly Frederick – Traumatic aspects in the history of the human-dog relationship”.





The Ugly Frederick

Traumatic Aspects in the History of the Human-Dog Relationship

Johann Schäffer¹

Abstract

Protagoras postulated that “Man is the measure of all things”. The resulting hierarchy of living creatures has existed in a modified form until today. Animals are simply only imperfect humans, humans only imperfect gods. In the first place domestic animals bring man diverse benefits. In extreme cases they are a source of food and therapist in one “person”. Animals are, however, also dangerous. They can bite, strangle, scratch, pounce on someone, tread on someone ... This has not changed in the course of animal domestication.

No domestic animal was and is used in such a versatile way and is thus as vulnerable as the dog. Using the example of the dog, attempts are made to expose particularly drastic aspects in the history of the human-dog relationship, to pursue their historic roots and to trace their effective history. The past and present of this ambivalent relationship is displayed as a philosophy of ideas discussed in seven chapters, the headings of which speak for themselves.

When you consider the painting *Vivisection* by Emile Edouard Mouchy (1832) with the dog whining from pain on the post-mortem table and the already impatiently waiting next victim, then we had better called this

¹ This lecture was a scientific story of ideas concerning the history of the human-dog relationship and the contribution lived by many pictures which cannot be published here. The used literature is online available on my homepage <http://www.vethis.de/index.php?mensch-tier-beziehung>.

theme “*Trauma and Drama of quite an old relationship*”. But, let’s begin this philosophy for the time being right from the very beginning.

Chapter 1

From the wolf to the dog – Tim loves his master

The history of the dog starts with a defective dentition. One of the earliest proofs of this is a lower jaw half showing loss of premolars and shortening, found in a double grave from the Magdalenian period in Oberkassel near Bonn. This discovery dates back to the period of circa 12,000 B.C.

The dog was meat and fur provider, waste disposer, later on companion dog, guard dog, an animal used in transport, he was trained to smuggle and for many other tasks. – Unfortunately we do not know since when the dog has had to act as a partner substitute.

One thing is certain: man’s incarnation of the dog began to develop very early on with this bad dentition and also with its ADHD, its **A**ttention **D**eficit **H**yperactive **D**isorder, and indeed over varying intermediate stages, up to Rin Tin Tin who almost playfully replies to his fan post.

The close man-dog relationship from the very beginning is particularly clearly proved by a grave discovery in Ain Malaha in Israel. The left hand of the buried dead in a crouching position is lying on the body of a puppy. The burial dates back to circa 9,600 B.C.

Today this is completely different: dogs are no longer buried alongside but feature as mourning bereaved in death announcements. Here the dog Tim, the dead person’s dog, who is accepted as an equal member in the close group of mourners. (fig. 1)

As in other societies too, the young men in Athens practised animal fights in a playful manner. “*The youth of the Athenian high society*” loved these fights, “*the participants are dressed in coats, [...] and they sit on beautifully carved stools. The men wear fashionable short hair*”, as stated in art history. – Since then we have the first wicked Fredericks, and many more would follow them.

At all times and in all countries it was the tradition to generate aggressive breeds and types of dogs and to train them, not only for the fight “dog

Tim liebt seinen Herrn Tim loves his master

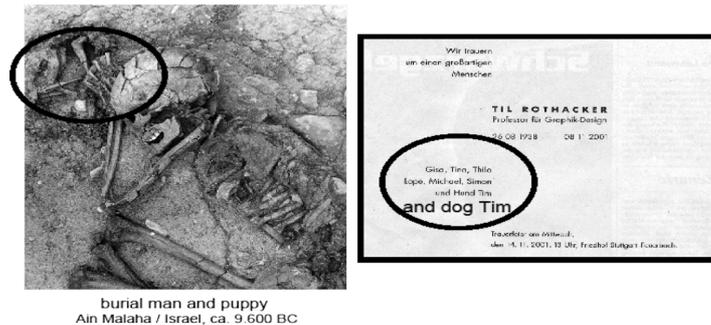


Fig. 1: Ancient burial and modern death announcement.

against bull”, but also for “dog against dog”, and “dog against bear”, bears which were usually chained. The problem today is well known to all of you: *“Hector has passed the ‘canine behavioral testing’ and is no longer a ‘dangerous dog’. Furthermore, he is pleased, of course ...”*

The young men of Athens, of course, had no idea where this development would eventually go, i.e. a time when dogs and cats have to consult psychiatrists. Aristotle, the founder of comparative ethology was not yet born, and therefore the young men only had their own powers of observation or they had the memory of the mythology, the most spectacular human misunderstanding in history was described. Aktaion surprises Diana and the nymphs bathing. Because the goddess is unarmed she sprinkles him with spring water and turns him into a stag (Ovid, Met III). – *“That I should not do”*, this insight comes Aktaion obviously too late. Aktaion’s dogs no longer recognize their master, they attack him, because he is a stag, and the dogs bite him dead. – Only Aktaion’s death removed the wrath of the goddess, and she is softened again.

Ethological trained kyniaters, that is to say dog doctors with additional academic title, did not yet exist in Ancient Greece; there were only hippiaters, horse doctors. However, there were Peripatetics such as Plato and Aristotle. The development of the animal medicine was initiated by these peripatetic philosophers. Since Plato’s writings *“Timaios”* the animals were positioned in the status under man, since they neither have a psyche or soul, nor sanity. The initiator of these thoughts was, however, another

philosopher. It was Protagoras of Abdera, who coined the “*Homo-mensura-principle*”: “man is the measure of all things”.

Aristotle developed an animal hierarchy which exists today in a modified form and which was fateful for our profession as veterinarians: for in striving for perfection and esteem, human doctors, the half-gods in white can only be placed at this position in the hierarchy, between gods and men. I ask you, where should veterinarians find any space? That `s only possible one position lower, between men and animals. And that is our crux until today.

Chapter 2

On the field of honour – medics were made of Molossers

The employment of dogs in war-time has been traditional since Babylonian times. Trained war dogs were popular objects of prey, also after the Battle of Marathon. The desirous fighting look of the Celtic warrior and his dog on his right, a historicised depiction from 19th century speak for themselves.

In the 20th century the fight “dog against man” naturally no longer stood in the foreground, but the locating of mines, the delivery of messages and the searching for wounded became important (fig. 2). The Austrian messenger dog was perfectly equipped with protective clothing and gas mask, and in all armies teams of dogs pulled machine guns and lighter equipment. In Vietnam ca. 4.000 American dogs were employed, the German Shepherd being the preferred breed.

Gentle paramedics were made of murderous Molossers of once and when they were no longer operational at the front they became patient guide dogs for the blind. In the medical service the dogs were similar to hunting dogs who search wounded “animals”, but in a completely different environment, not in the peaceful forest, but on the enemy`s battlefield.

With the command “*Such verwund!*” (‘*search for wounded*’) the paramedic sent his four-legged friend off. If the search was successful the dog learnt to reply as follows: “*Verwund gefunden!*” (‘*Wounded found*’).

The result on the German side alone:

- 1914: 570 dogs in operation
- 1915: 2.500 dogs in operation

- The balance in 1918:
- ca. 5.000 soldiers rescued
 - ca. 7.000 dogs dead.

Aus Molossern wurden ...
 Molossers changed to ...



Austrian messenger dog
 World War I



British MG-Troop in Belgium
 World War I



4.000 American dogs in Vietnam

Fig. 2: Dog helping man in war.

In the medical service of World War II the so called “Kamerad Bring-selverweiser” got a new important friend, the “Kamerad Essenholer”, the “Comrade Food Carrier”.

The military employment of dogs continued after 1945. A particularly memorable dog was the astronaut dog Laika – without a return ticket – in Sputnik II, 05.11.1957.

In Great Britain in 2004 a memorial was erected which remembers those “animals in war”, – also the dogs: the “ANIMALS IN WAR”– memorial at Park Lane, London, inaugurated in the presence of the Queen. “THEY HAD NO CHOICE” is recorded there.

From time to time one also remembers veterinary surgeons. On the 8th of August 2008 the barracks of the Service Dog School of the German army in Ulmen was named after a woman, the Berlin veterinary surgeon and resistance fighter Dr. Maria countess von Maltzan.

Countess von Maltzan helped more than 60 Jews to escape during World War II to Sweden and Switzerland. Her Jewish husband, Hans Hirschel, was in hiding in her house for three years. In 1987 she was given the honorary title “*Gerechte unter den Völkern*” (“*Righteous Among The Nations*”) and her name is on the Wall of Honor in Yad Vashem.

Chapter 3

Plinius’s fear of lyssa (rabies) – “Lyssa-Extractors” in Prussia

Aristotle writes in his *Historia animalium* that the three most important dog diseases are lyssa (canine madness), cynanche (severe obstructive laryngitis), and podagra (foot pain). 1.300 years later Avicenna wrote almost the same on parchment paper: rabies, squinantia (= strong pain in mouth and throat), podagra. Here, we cannot necessarily talk of progress in reasoning, but simply of an Aristotle’s reception.

Let us pick rabies as an example, of which we have had a particular fear of since time immemorial. The behavioural changes and the lethal effect of the bite of rabies infected dogs and cats to humans have been known since antiquity, even though Aristotle had denied this transfer. The farmers and herdsmen, however, knew it better. Rabies-suspect or diseased wolves and dogs were rigorously pursued and killed.

Another way to protect yourself from dog biting was to call St. Walburga of Heidenheim. The abbess was the saint against dog bites in general. When traveling, it was customary to carry “Walburgisöl”. The name Walburga’s, incidentally has nothing to do with Midsummer and Walpurgis Night, but in Old High German it means “*the protection giving battlefield*”.

In many churches and chapels one can also find votive images, Ex votos, alike the one in a chapel in Sarnen in Switzerland. These images were founded as an acknowledgment of deep gratitude when the person has survived the bite of a dog.

A sentence from Pliny the Elder was particularly fatal for the dogs themselves. Circa 65 A.D. Columella had merely recommended as a prophylaxis against rabies to dock the tail of a 40-day-old dog, but Pliny recommended that the lyssa be removed from young dogs. Lyssa is a small

string of connective tissue inside the tongue of dogs. Plinius wrote (Nat. hist. 29, 32):

“... est vermiculus in lingua canum qui vocatur a Graecis lytta,
quo exempto infantibus catulis nec rabidi fiunt nec fastidium sentiunt.”

The powerful effect of this recommendation was enormous as you can read in the “Vossische Zeitung”, a supraregional and reputable newspaper in Berlin. In the year 1769 the police directorate of the town intensely searched for a man who was able to resect the Lyssa of dogs for rabies prevention. In English the operation is called “worming” (fig. 3)

For centuries, bite prevention was identical to rabies prevention and it is so in less developed countries of Southeast Asia, Africa and Latin America to this day. The history of rabies was surrounded by myths and superstitions. Fears and fantasies of people have been fuelled by the disease. On the same principle, for example, is rooted the belief that the origin of the werewolf lies in rabies disease in humans.

„Es wird ein tüchtiger und bescheidener Mann, welcher das Schneiden des sogenannten Tollwurms bey den Hunden verstehet und deshalb gute Attesta beybringen kan, zum Wurmschneider in hiesigen Residenzien verlanget. Es empfängt selbiger inclusive des Scheins für jeden genommenen Tollwurm 3 Groschen. Wer dieses übernehmen will, kan sich deshalb auf der Polizey-verhörstube melden und nähere Anweisung gewärtigen.

Berlin, den 12. May 1769.

Königl. Preuß. Polizeydirektorium.
Kircheisen. Philippi.“

Fig. 3: Searching a “Lyssa-Extractor” in Prussia.

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Today it is completely different. In nations where the dog has long been a close family member, having made the way off the street to the couch and regularly being inoculated since 1885, bite prevention has taken on a completely different meaning: the prevention of injuries caused by dog bites within the family and in public. The newest program is the “Blue Dog”.

Chapter 4

Back from the boar hunt – wounded hunting dogs and nursing them



Gaston Phoebus
1343-1391



Fig. 4: Wounded hunting dogs. Gaston Phoebus: *Livre de Chasse*. 1410

Since ancient times hunting dogs were above all endangered during bear, sow or deer hunts. Wild boars were mostly killed with a boar spear after the dog had hounded and confronted them. For these heavy and valuable animals called “Saupacker” elaborate armour made of leather or strong linen were constructed which should protect them from the tusks of the wild boar.

The first pictorial images of dog diseases are come across in the High Middle Ages, in the region of Gascony, France. Gaston Phoebus compiled his famous “*Livre de chasse*” (“Book of the Hunt”, 1410). Under the supervision of a master eight dog handlers are each looking after a dog. Claw injuries, splinters in the pads, torsions and fractures belong to the most frequent injuries. (fig. 4)

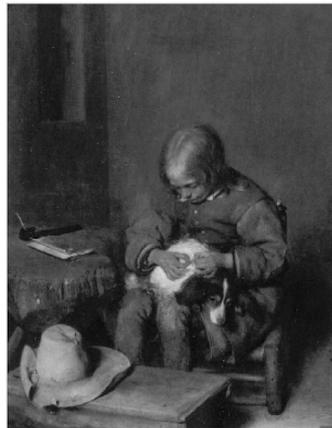
The dog on the left has actually got a thorn in his foot. Just look how he is suffering! Even a tear is running down his cheek. In such cases plasters and

also dusting powder was applied to soften the wound and then the splinter was pulled out.

All this was performed under the instructions of a dog groom, a nobleman, let`s call him therefore somewhat more elegantly a “*European Diplomat in Cynology*”. At first the teeth and the muzzle were examined, then it was the turn of the ears, which were frequently smitten with mange mites. When in contrast only fleas, lice or biting lice had to be treated then two methods of therapy were possible.

On the one hand we have the somewhat troublesome and time-consuming manual search for parasites as Gerard ter Borch (1617-1681) immortalised in his painting “A boy defleas his dog”. (fig. 5)

Ektoparasitenbekämpfung Ectoparasites Control



Gerard ter Borch
1617-1681

Ein Knabe floht seinen Hund
A boy defleas his dog
München, Alte Pinakothek

Fig. 5: Gerard ter Borch: A boy defleas his dog.

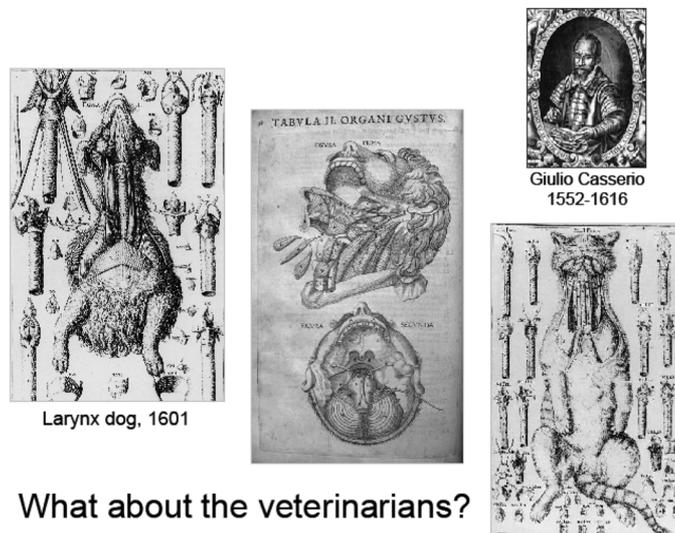
On the other hand there is, however, a much quicker and more elegant method, namely the so-called therapy treatment according to Wilhelm Busch which is quite simple. “In ein Faß voll Tobakslauge, / Tunkt man ihn mit Haut und Haar, / Ob er gleich sich heftig sträubte / Und durchaus dagegen war. // Drauf so wird in einem Stalle / Er mit Vorsicht interniert, / Bis, was man zu tadeln findet, / So allmählich sich verliert.” // (Wilhelm Busch, Story on Pater Filucius).

Just until this year 1872, when this poem was composed, the professional title “Tierarzt”, “Veterinarian”, was outlawed in Germany.

Chapter 5 In the service of science – the Führer’s victory over vivisection

From the early 17th century onwards the dog gradually became the classic laboratory animal in physiological experimental research. The reasoning was admittedly almost exclusively in the hands of physicians. The discovery of the circulation of blood by William Harvey (1619), but also Reinier de Graaf’s anatomical-physiological investigations into pancreas secretion (1664) were based mainly on dog experiments (Leiden 1677).

The cat also landed predominantly on the experimental and vivisectional table. Giulio Casserio’s comparable anatomy studies in Padua were classics, – here the larynx of a dog (on the left), human (in the middle) as well as of a cat and rabbit (on the right) from a 1601 edition. – Veterinarians are not yet visible. (fig. 6)



What about the veterinarians?

Fig. 6: Giulio Casserio: Larynx of dog, man and cat

A century later, the physiological experimental research also covered the horse. The English botanist, physiologist and clergyman Stephen Hales experimented with an apparatus for the quantitative measurement of blood pressure in the horse. Hales tried to find out, how high the blood rushing from the jugular vein in a thin glass tube bearing a level mark. His findings were published 1733.

At this time a counter-movement slowly began to grow: A contemporary of Stephen Hales was William Hogarth, born in 1697 in London. Hogarth, a painter and graphic artist was much interested in the social aspects of his time. In paintings and engravings he denounced the manners of his time relentlessly and with bitter irony. He was the first artist who has created an engraving series entitled "*The Four Stages of Cruelty*", and he also described this in the form of verses.

In the first stage of animal cruelty boys and young men are hanging a big bone on the tail of a dog, are hanging up cats in pairs or are burning out the eyes of birds. In the figure of the boy Tom Nero, the main character of this series, the torture reaches its climax, he introduces an arrow into a dog's anus. Another guy wants to dissuade Tom Nero from his cruel deed, he offers him a piece of cake.

The first stage of animal cruelty was performed by boys and young men, in the second stage adults are mistreating the animals and beating defenceless sheep, or beating a horse which is already on the ground with a broken metacarpal bone, because the carriage with four stout people and heavy luggage is hopelessly overloaded.

The third stage is *Cruelty in perfection*. Tom Nero is older now, he has led a life of debauchery and became rich at the expense of others. Now his brutality knows no further moral bounds. Tom Nero becomes a murderer. Made of pure avarice, he kills his business partner and lover Ann Gill, who is pregnant by him. With a slit throat she lies on the floor.

The reward of cruelty ("Lohn der Tierquälerei") is then the final. After a life full of cruelty to animal and man Tom Nero is dead and he is autopsied by a group of sadistic surgeons. Although he is dead, Tom seems to feel excruciating pain, and his heart is eaten by a dog, – a final symbolic act of revenge.

There were no veterinarians active in the early days of the animal welfare movement in England, but lawyers and philosophers such as Jeremy Bentham (1748-1832), or later the aristocrat and leading feminist of her time, Frances Power Cobbe (1822-1904). She organized the first public campaign against vivisection, and in 1863 she published an essay entitled *“The Rights of Man, the Claims of Brutes”*. You might wonder again: and what about the veterinarians?

The veterinarians meanwhile had enough to do with the blood-letting and administering of daily enemas. *“La folie du Jour”*, the coloured etching from the Empire is titled, *“The madness of the day”*. Was the lady of the house well-cared for and happy, then the lap dog’s time came to get an enema (fig. 7 Veterinary History Museum Hannover). The recognized medical concept was the humoral theory, the four humours theory of blood, yellow bile, black bile, and phlegm.

In Germany it took to the year 1933 when the veterinary surgeons were there, under the leadership of the later Reich Veterinarian Leader Dr. Friedrich Weber, graduate of the Munich faculty, leader of the Bund Oberland and close friend of Hitler.

The *“Animal Welfare Act”* of the 24th of November 1933 banned vivisection finally. Principal author of the text was not Weber, but Dr. Heribert Giese, veterinarian and ministry official in the Reich Ministry of the Interior.

“Der Führer ist ein großer Tierfreund, und seinem eigenen Innern entsprang die Initiative zu diesem Gesetz. Diesen Gedanken die rechte Bahn gewiesen zu haben, ist das Verdienst des Führers des Einheitsstandes der deutschen Tierärzte, Dr. Weber, der bei seinem Empfang im Sommer durch den Führer mit ihm die Tierschutzfragen besprach”, – so far the official comment. This should mean: animal welfare is a top priority, and the veterinary profession is officially represented and legitimized by its senior veterinarian Dr. Weber.

Some years later in the countryside unbelievable and yet real scenes took place similar to those hundreds of years earlier documented in the Swiss chronicle by Stump: the hanging of a Jew in 1553, together with two dogs which brutally maltreated the delinquent and thereby made everybody aware of the canine devotion of this man. In the light of this painting and



Fig. 7: "La folie du jour": Lapdog gets enema (caricature)

connection Mussolini's words "*Animal welfare is the utmost form of culture of mind of a people*" have a scornful effect. – But, things were different then.

Chapter 6

What we experienced as children – fairytales, stories and other traffic accidents

When Franz von Defregger painted this picture, dogs medicine was still in its infancy (fig. 8). We do not know the outcome of this scene, but Josef Griehl in his profession as a cattle doctor does not appear to be very excited about the visit of the small patient, since the first thing that immediately comes to mind when visually examining the dachshund is that he must undergo a stomach operation, and he had little practice at this. However, he recalls the tales of his mother.

And he recalls the first laparotomy ever with total gastric emptying in a member of the canidae. After the stomach wound had been stitched up

6. Was wir als Kinder erlebten – Märchen, Geschichten und andere Verkehrsunfälle
 What we experienced as children – fairytales, stories and other traffic accidents

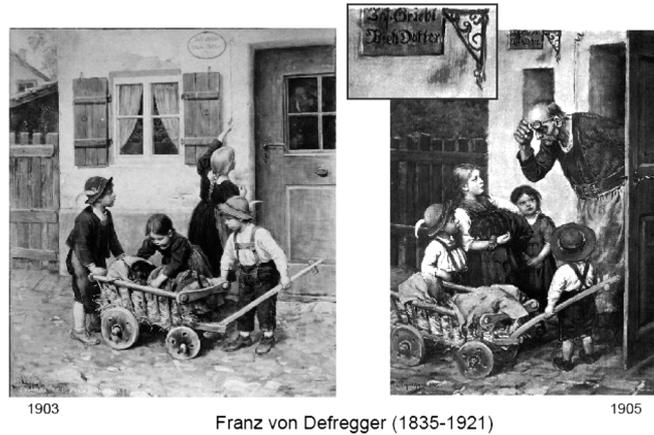


Fig. 8: Children and dog medicine.

properly and lege artis the stupid wolf actually drowned itself. As to whether it was the kids' mother or the experienced huntsman who managed to free the little Red Riding Hood and her grandmother by means of laparotomy from their awkward position is meaningless. In fairytales and children's stories a world of man-dog relationship is opened up containing dramatic aspects in abundance.

A classic incident was immortalised by Mark Twain the famous American author with Hans Stare-in-the-Air.

“Now when this lad to school did go,
 He never saw what's here below;
 His eyes were always in the sky,
 'Mong roofs and clouds and things that fly;
 He never saw, along the street,
 The common things about his feet,
 So people used to cry, “Ah, there!
 That is Hans Stare-in-the-Air!”

There came a dog a-tearing by,
 Hans was gawking at the sky
 Just as ca'm
 As a ham –

No one warned him with a yell.
What befell?
Whack! Ker-blim! and down they go –
Boy and doglet in a row!” (Mark Twain, 1891)

What is the result? Hans and the dog are staying in coma, and Hans has a severe craniocerebral injury.

And then at long last the story of the ugly or wicked Frederick, – ugly is the translation of the older German word “böse, garstig” by Mark Twain (fig. 9):

A dog stood drinking at a pump –
The way he made that doglet jump!
He sneaked upon him unaware,
He whacked him here, he whacked him there,
He whacked with all his might and main,
He made him howl and dance with pain,
Until, o’ercome by woe and grief,
The dog, desiring some relief,
Did bite that brutal boy full sore,
Which made the latter prance and roar.
And then the dog did grab the whip,
And with it homeward he did skip. (Mark Twain 1891)

Die Geschichte vom bösen Friederich The Story of Ugly Frederick



Fig. 9: The story of Ugly Frederick.

In the legend of the dog as soul saviour, no whip, but a bloody human foot is dragged away by the watchdog. The relic of a blasphemer picking cherries who did not want to go on a pilgrimage to Freising in Bavaria can be viewed at the Sigismund altar in the Cathedral in this town. With this traumatic and dramatic action the farmer's dog saved the soul of its master. The whole story of this legend you can read in a book with the title "*Journey through the Bavarian district ...*" from the year 1789 (Lexicon of Bavaria, I., 634. Journey through the Bavarian district, Salzburg and Leipzig 1789, Page 79).

Chapter 7

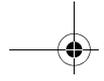
Getting kicked, crushed, trodden on – the traumatised veterinary surgeon and his veterinary nurse

Alfred Wight alias James Herriot wrote in his book "Every Living Thing": "But it was indeed strange that I should be perpetually hard up. Siegfried and I had built up a good, successful practice. I worked nearly all the time, seven days a week, in the evenings and often during the night and it was hard work, too – rolling about on cobbled floors fighting with tough calvings to the point of exhaustion, getting kicked, crushed, trodden on and sprayed with muck." (Every Living Thing 2006, p. 26)

It is no longer the case today, and therefore we have to change the title of the chapter to: "*7. Bitten, scratched, disabled – the traumatised (female) veterinary surgeon and her veterinary nurse*".

For the veterinary profession has changed enormously from a gender point of view. The ideal male veterinarian doesn't exist anywhere. The ideal veterinarian of today is female and she treats small pets. The most popular course of studies for women has developed from the apprenticeship to a blacksmith who also undertook simple medical treatment or horse doctor of once upon a time.

Let us remain in the male domain of insurance German. The BGW, this is the "Employer's liability Insurance Association", wrote in 2000 that "The veterinary surgeon's most violent patient is the cat", and continued: "Out of 449 injuries registered in 1999 inflicted by animals 156 derive from cats. Dogs are scarcely more pleasant: they bit 105 times".



In January 2006 it was further stated: “77 % of most accidents of veterinary assistants occurring at the workplace are caused by animals – over half of these by cats. Dogs are not quite as unpredictable and are responsible for 22 per cent of the cases, followed closely by horses with 18 per cent.”

The most sensational thing of all still is: according to an announcement from 2004 “Veterinary surgeons and pest controllers are at the greatest risk of having an accident at the workplace”.

Now at the beginning of the 21st century as veterinarians being on the same level as pest controllers, who remove pests like roaches, rats, mice, spiders, ants and bedbugs, – with our own strength we cannot escape this dilemma. Only one thing can help: to fill up your glass with one of the original Munich strong beers, in the first instance a Triumphator for premedication and then a Salvator in introducing the level of tolerance, not intended for you in the auditory but for my Collega Proximus of today, for Piet I, whom I would like to thank very much for all his efforts.

