

DENTAL HISTORY MAGAZINE

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Contents

- 4 Update
- 6 Reminiscence: Professor Khursheed Moos
- 11 Archaeology, Forensic Dentistry and Mineral Structure of the Dental Organ:
Some Historical Cases
- 15 U.S. Army Surgeon General's Report:
Conference with Repatriated P.O.W. Personnel, Medical Corps, Army, December 1953
- 17 Word of Mouth: *The Officers' Ward* by Marc Dugain
- 18 Web News: Images of St. Apollonia and 'Your Pictures' Website
- 19 List of Subscribers

Update

Spring Lecture 2012

The HNHDRG were delighted to welcome Dr Maureen Park, art historian, author and lecturer at the University of Glasgow, to the Royal College of Physicians and Surgeons of Glasgow on 26 March 2012. The subject of Dr Park's lecture was the Menzies Campbell Collection of dental pictures and artefacts which is housed at the Museum of the Royal College of Surgeons of Edinburgh. As our regular readers will be aware, a number of pictures from the Collection, have appeared on the cover pages of *Dental History Magazine*. In an absorbing tour of these cover pictures and many others from the Collection, Dr Park guided us through developments in the depiction of the practice of dentistry over five centuries. She disclosed how dentists gradually progressed from the itinerant tradesmen portrayed in the earlier works, to the well dressed gentlemen of the eighteenth century. Since pictures have layers of meaning beyond the surface content, we learned how to respond to a work by reading the symbols in the painting, which refer to the political, commercial or religious milieu of the artist. It was interesting to see that a bird cage is a recurrent object in pictures portraying a dentist and his patient. The cage refers to the latter's wealth. If the gate to the cage is closed, and the bird is still inside, the patient's finances will remain reasonably intact but alas, if the gate is open and the bird has flown, his or her purse may well be emptied by the unscrupulous dental operator. This fascinating lecture has enabled us to appreciate our cover pictures in greater depth. [For an example of the bird cage symbol in a dental picture from the Collection, see, 'The Town Tooth Drawer' by William Davison, *DHM*, 4:1, p.2.]

Autumn Lecture 2012

Dr Paul Riley, a former senior executive of Unilever, will give the HNHDRG Autumn Lecture which will be combined with the Menzies Campbell Lecture. Dr Riley's subject will be the role of fluoride toothpastes in the improvement of dental health in the UK over the last sixty years. Dr Riley is currently writing a book on dental history. The lecture will take place at Glasgow Dental Hospital and School on 23 October, 2012.

Reminiscences: Professor Khursheed Moos

In a welcome return of our oral history series, *Reminiscences*, Professor Khursheed Moos expands upon his testimony at the Witness Seminar which was held at The University of Glasgow on 12 May 2010. See *DHM*, 4:2, pp. 8-9.

Archaeology Forensic Dentistry and Mineral Structure of the Dental Organ

In the previous edition of *Dental History Magazine*, [*DHM*, 5:2, 2011], Xavier Riaud considered the importance of DNA in historical research. In this edition, he discusses what archaeologists and historians can learn from the analysis of other dental tissues by reviewing some fascinating cases.

U.S. Army Surgeon General's Report: Conference with Repatriated P.O.W. Personnel, Medical Corps, December, 1953

Eugene Feldman recounts the results of his research in the U.S. Military History Institute in Pennsylvania. His report concerns the testimony of five Medical Corps Captains who were prisoners of war in Korea.

Word of Mouth

Jo Cummins reviews *The Officers' Ward* by Marc Dugain. Apparently based on a true case, this is the story of a handsome young French army officer who suffers severe facial disfigurement during the Great War. He subsequently spends five years in the maxillofacial wing of the Val de Grâce Hospital in Paris. Although it is a harrowing account of war and its aftermath, it is also an inspiring story about moral strength and recovery in every sense.

Web News

Carol Parry considers the story of St Apollonia, the patron saint of dentists and victims of toothache. She identifies catalogues containing images or other artefacts relating to Saint Apollonia's life. In addition, she draws our readers attention to the, 'Your Paintings Website' a ground-breaking joint venture between the BBC and the Public Catalogue Foundation which is becoming a treasure trove for anyone interested in art.

Further Note on Flood Damage

In a previous edition of *DHM*, (vol. 5:1, p. 5) we reported the severe flooding at Glasgow Dental Hospital and School and the efforts of the HNHDRG to rescue and preserve the historically important items which were damaged. Some of the material saved by Rufus Ross, David McGowan, Khursheed Moos, Pat Lilly and others continues to be stored at the homes of members and their relatives. The group are particularly grateful to Sandy Littlejohn, of the Littlejohn Laboratory. As a keen collector of dental memorabilia, Mr Littlejohn kindly stepped in to answer our distress call for additional storage space.



Photo: Pat Lilly

Warren Harvey Papers

Warren Harvey was a consultant dental surgeon at the Glasgow Dental Hospital and School in the late 1950s and early 1960s. He was the lead dental expert in the Biggar Murder which resulted in the first criminal conviction for murder founded on forensic dentistry, [See *DHM*, 4:1, pp. 15-21]. Harvey later wrote an influential book on forensic odontology, entitled, *Dental Identification and Forensic Odontology*, Kimpton, 1976. The HNHDRG have been contacted by Robin Day, Warren Harvey's son-in-law and his literary executor regarding the late author's papers. Dr Robin Orchardson, a member of the Group's executive committee is currently reviewing and collating this unique material.

BBC Television

BBC Television have contacted the HNHDRG to ask for assistance in making a documentary about the practice of dentistry before 1948. If you were in practice at that time, please contact our secretary.

Cal Poly Pomona

Our Chairman, Dr Rufus Ross has received an enthusiastic communication from Meghan Maldonado, a senior at California State Polytechnic University, Pomona, California. The University is also known as 'Cal Poly Pomona'. Ms Maldonado is a history major and also a Registered Dental Assistant (RDA) who plans to train as a dental hygienist after her taking her BA in History. Ms Maldonado was inspired to make Doc. Holliday and dentistry the subject of her thesis after reading Dr Ross's article on Holliday of which she writes in glowing terms [*HNHDRG Newsletter*, No.9, 2001]. If any of our readers have information on Doc. Holliday which would further assist Ms Maldonado, please contact our secretary.

Professor David McGowan – An Appreciation on Retirement as Editor by Rufus M Ross

The Henry Noble History of Dentistry Research Group *Newsletter* and its successor, *Dental History Magazine* is intimately bound up with the formation of the group in January 1996. The first *Newsletter* appeared in October 1997. It was produced by the group's secretary at that time, Dr Rufus Ross. In 2002, Ms Edna Robertson assumed the responsibility of editing the *Newsletter*, which benefited from her professional touch as former assistant editor at the *Herald* newspaper. Professor David McGowan took over the editorial reins from Edna in 2004. In May 2006, he was joined by Dr Jo Cummins as assistant editor. David and Jo transformed the format of the *Newsletter* and changed the title to *Dental History Magazine*. During his time as editor, David contributed notable articles and introduced new features to the publication including our much admired cover pages of historical paintings on dental subjects from the Menzies Campbell Collection at the Royal College of Surgeons of Edinburgh. He is also responsible for our end covers which feature contemporary works of art by dentists. In David's tour of duty as editor, the magazine has developed into a multi page publication which is acclaimed for its excellent content and format, quite different from the first *Newsletter* of eleven pages. The Henry Noble History of Dentistry Research Group places on record its appreciation and thanks to Professor David McGowan for his outstanding achievements during the past eight years. He has agreed to continue on the newly formed Consultant Editors' Panel along with Dr Rufus Ross, Professor Khursheed Moos and Dr Michael Gow. Dr Jo Cummins is the new editor.

Reminiscences

Professor Khursheed Moos

The following article is the unabridged and updated version of Professor Moos' testimony at the HNHDRG Witness Seminar, University of Glasgow, 12 May, 2010.

Health Service

My remit today was not to talk principally about the Hospital Service, but rather about my experiences at the beginning of the Health Service some of which were in dental practice. I thought that these might have been slightly different from Scotland because I came from the London area, that is we were living on the borders of Kent and London. Most of my experience of practice was obtained in South London undertaking locums and in the process seeing a number of different practices while-working as an assistant, as Bill Smith¹ mentioned earlier; so I would put down much of this as 'Experience of the Health Service' because I did not play a full part in General Dental Practice.

My first experiences really were as a school-boy of 13 or 14 years of age, living in Beckenham, Kent on the borders of South London – after a routine dental check-up our local dentist said, 'You need some orthodontic treatment'. I did not have any caries in my mouth at the time and I was sent to an orthodontic specialist for an opinion and was advised to have orthodontic treatment with a removable appliance - I had a slight class II division 2 occlusion which you would probably still recognise. My parents were strongly advised that this ought to be done. They agreed to this but really struggled to afford it because this was private in those days - just before the Health Service started - that would be in about 1947 and it seemed to go on and on. I kept going to the orthodontist who was in practice in Lewisham, which was a walk and a tram ride from where I went to school, but eventually after about a year and a half with a removable appliance it was abandoned – at least my parents said 'There's no point in going on, nothing is happening, nothing seems to have changed'. So that was packed in and I believe that it was not an uncommon experience at the time. The cost of expensive

orthodontic treatment to an average middle-class parent who was struggling to put a business together for himself was not easy and in those days those expenses were considered quite high. It was all forgotten about but then, while I was at Dulwich College a few years later, I decided I would go in for dentistry and was fortunate enough to obtain a place at Guy's Hospital. After a successful student-ship I qualified in 1957. I decided that I did not want to do general practice - I was not quite sure why but I thought I would like to do oral surgery. I knew that would mean I would also need to do medicine which had been an earlier interest of mine. I needed to pay my way through the course by doing part-time and temporary dental jobs principally because my parents could not afford the cost of supporting me further and it was not possible to obtain a scholarship for a second degree so one had to go ahead and earn some money for fees.

NHS: The Only Way Forward

I did a few locums at that time, working in the NHS because this was now some ten years on from the start of the NHS and it was more or less accepted that the NHS was 'the only way forward'. At that time very few people in my qualifying year went into private practice; there were few opportunities for private practice in most cases, so unless you came from a 'dental family' one went into the Health Service hoping to earn enough to pay one's way. It seemed that was the most appropriate thing to do at the time.

We had no real preparation for general practice in the Dental School; that was thought to be something one did not discuss. Nowadays students are taught how and what happens in general practice whereas we really did not know how to start, we had no knowledge how to advertise, we asked our fellow students especially those coming from a dental background but nothing was ever taught to us about it in the dental school. That was just not something we talked about, you did not seem to discuss money and you did not talk about dental practice. It was not the best of preparations.

Foot Treadle Engine and Vulcanite Dentures

After looking inside the *BDJ* for adverts and asking one's colleagues, 'Are there any locums around?' I eventually found one. First of all I did a few weeks locum for a practitioner who had carcinoma of the pancreas; he was in a difficult situation in a very basic practice in the London suburbs near to my home. When the dental drill - an electric engine packed up, there was always available an old foot treadle engine which I'd never been trained to use but you could rely on that when all else failed; treadles were still around in a number of dental practices I considered at the time. What I did experience there - this was a working class area practice - was gross caries, teeth only for extraction when in pain, ill-fitting acrylic dentures and some vulcanite ones which were usually for repair. The acrylic dentures of the time often appeared to cause quite a lot of damage, whereas the vulcanite ones we saw caused very little damage and I believe that was a general experience in those days. We discovered that although acrylic dentures were so much more aesthetic, in fact there were far more problems with the fit of them than with the old vulcanite ones.

Grateful Patients

Patients were very grateful for everything you did; that was one of the big highs of general practice, there was never any suing, if things went wrong then it was just one of those things, it was their fault, not your fault. From that point of view general practice was very satisfying. The surroundings were pretty scruffy, sterilisation was with boiling water and a very small range of instruments was available in 1958. Burrs were used over and over again until very blunt or they broke, little or no planning was done for overall care, scaling and polishing was starting to be done on a regular basis and that was principally because with NHS patients everyone got a scale and polish - whether it was necessary or not, I'm not quite sure!

To 'Do' and 'Not to Do'

At the next practice where I attended for interview I was given a job for a few months, and was greeted with a list of 'do's' and 'don'ts' and with a paper to sign that I would stick to this and so on - and this was very unusual in those days - and the dentist's final comment before I left the interview was 'You will not interfere with the nurses!' I am

not quite sure what he meant by that, but you can imagine! It was a rather scruffy practice in Downham, South London. There was a great deal of pressure in the Health Service to treat as many patients as possible and as fast as possible and this I found was quite difficult. It was pointed out that there was a necessity to get on with it and not fiddle around, particularly with dentures and things like that, that advice was certainly so for assistants. The Principals paid them 30-35% of what they actually earned.

Dental & Oral House Officer

After leaving the Downham practice, because I was going to a house officer job, I had difficulty getting the pay that was due to me. Nothing had been put down properly in writing because one did not know much about contracts and the necessity of putting things down in writing. Eventually after letters and talking to a number of colleagues most of what was due to me was eventually paid by the Principal and I accepted that. My first dental & oral surgical house officer post was a residential one in Brighton at the princely sum of £440 per year. This sum didn't even allow me to get home once a month because there was not enough left after paying for basic necessities so it was not an easy life. My SHO job was a great learning experience but it was very much up to you to make the most of it. Supervision was usually quite limited for trauma and dento-alveolar surgery but the boss always supported you when you had done your best. Work in those days was very much a total commitment but not infrequently accompanied by some very 'alcoholic' late night parties with junior medical staff.

Patients Rendered Black with Nitrous Oxide

I started my pre-clinical medical course at University College, London paying my way by working in dentistry throughout that time which usually involved three nights a week and weekends in practice in South London at New Cross. New Cross was also a very poor area but there was plenty to do there; my impressions were of very grateful patients, many with absolutely appalling mouths which usually ended up with dental clearances under general anaesthesia from a visiting GP, or occasionally an anaesthetist. Patients were rendered black with nitrous oxide and as they recovered the teeth came out and I believe many of you will have had experience of that, which, of course never happens nowadays.

Dental Inheritance

Occasionally immediate dentures were fitted, usually for the ladies but these prostheses only lasted for a short time. Relatively rarely we saw for example, a middle-aged woman presenting with an ill-fitting denture and when you asked her how long she had had it, she replied, 'Well I had them when my mother died. I took the dentures out and put them in my mouth and they seemed eventually to settle in and they've been there for the last five or six years'. Now, that wasn't common but it was certainly an experience that some of you may have met. These inherited dentures were worn for a few years until the patient came back demanding something better.

Something one noticed in those days was the persistent pressure for free or nearly free, NHS dentures. In many cases there was a dental technician in a back room who did all the lab-work very quickly and efficiently. There was very little referral of patients to hospital but when it was necessary, it was usually to one's own alma mater and then largely for pathology. Patients with large abscesses did not come to us first; they usually went directly to casualty departments. As a medical student, I practiced dentistry as an assistant. My experience was improved by having nursing friends, students and junior doctors as patients; we had a nice practice, rather different from doing locums, and by now I also had the opportunity of doing regular minor oral surgery.

National Service

In 1959 I had to do two years National Service in the middle of doing medicine. I was not happy about the situation but in the end, I quite enjoyed my time in the army. I was rather lucky, although I did not think so at the time. After we completed our basic training in Aldershot, we were posted out. All the married men who wanted to stay in the country were sent abroad and all the single men like myself were kept in the UK!

I was fortunate to be posted to a major military hospital – The Royal Herbert Hospital in Woolwich. My superior officers were a Colonel in charge and a retired Major General from the RADG. The Colonel in charge, looked after the dental supplies and services for the south east command/region. The General saw all the senior officers, prisoners and

WRAC, as his dentistry tended to be very basic, and I saw all the doctors and nursing staff which was very pleasant. I enjoyed the two year period of duty with the army. I also did much oral surgery there because I had previously had a surgical house job. Initially I used to ring up my old boss to ask what I should be doing with certain fractures or how to manage that pathology, as these cases had been 'cas-evac'ed to be treated in the UK at Millbank but most never reached there. I was perhaps lucky that nothing went wrong, as there was no proper surgical back up! I was also very fortunate to complete both parts of my fellowship (FDS RCS) at this time and to meet my future wife - a nursing officer, before she was posted to the then, West Germany.

Waiting Tables and Sadlers Wells

After completing National Service I entered Westminster Hospital as a clinical medical student and returned to part time dentistry at New Cross. In order to pay my living expenses and save up to get married the following year, I also took on other jobs at the same time. I worked as a lunch time waiter in an Italian restaurant opposite the hospital and secured the occasional 'walking on' part at Sadler's Wells Opera. The return to Dentistry was not difficult, except for the conflict between studying and working. A scooter was a great help except in some very cold winters of snow and ice.

At that time, from my student days, we had been taught that the isolation of teeth for root canal therapy was essential. It had been imprinted in our minds and that we had to use rubber dam. I followed this advice and used it routinely. However as the years went by, I discovered that most dentists had largely abandoned rubber dam. Nevertheless, since this had been my practice, I continued with that as my norm and we had very few recurrent infections. Likewise routine pre-operative and post-operative radiographs were always taken.

It was also the case that one had to obtain approval for items - it was probably true here in Scotland too, from the estimates boards for items such as crowns, partial dentures and other special items. In one practice I discovered that, after I had signed my payment forms, the senior dental nurse who was also the practice manager and the sister of the dentist who owned the practice, was adding a scale and polish as a routine whether it was done or not.

We had to stop that very quickly but those were the sorts of things that sometimes went on. And that was a practice, which employed a number of medical students trying to earn their living; we just came in to do the work and left and they filled in all the forms and we often did not realise what was going on behind the scenes.

An Eye Opener and a Turning Point

After qualifying in medicine I did very little general dental practice as all junior hospital jobs were pretty much full time and my wife and I had already had our first born. My first surgical job was an eye opener as HS to Professor Harold Ellis at Westminster Hospital. I believe I learnt more about surgery in my time there than at any other time in my career. This was followed by an excellent educative House Physician post in Warwick which taught me most of what I know of medicine. This was the turning point for me into oral and maxillofacial surgery. I joined the well established Mount Vernon Plastic and Maxillofacial Unit, one of the three premier units in south east England as a registrar. The appointment taught me much about the basic management of trauma, deformity, temporomandibular joint surgery and infections from three well established surgeons, one of whom, Paul Toller, had a real interest in research.

Wales

From Mount Vernon I went on to a new senior registrar post in Cardiff linked to the Chepstow MF Unit. I found I could do most of the surgery but at that time, there was no one prepared to manage the major cold surgery and the major emergencies. You had to find out how to do it for yourself. Eighteen months later an able consultant colleague was appointed. Since he came from the Roehampton Unit and I from Mount Vernon, we were able to combine our different traditions and skills to our mutual advantage and to our patients'!

While in South Wales I had the occasional opportunity of doing some general practice locums. One of the highlights of general practice was going up the Rhondda Valley to do extractions for miners. On one occasion I went up with a Cardiff anaesthetist whom I knew for a 'gas session'. On arrival we found twenty miners waiting. We looked around for the 'gas cylinders' but all we could find was nitrous oxide cylinders, there was no oxygen whatso-

ever, so we did everything on air and nitrous oxide. We did not dare to tell the miners to go away because we would have been lynched. This was their Saturday off and with twenty of them waiting there and grumbling away because we were fiddling around we just had to get on with it and we did. Fortunately all the teeth came out quickly with just forcep extraction. The instruments were simply dipped into boiling water to sterilise them. Even so, our stress levels were high and the anaesthetist and I vowed we would never go back again, and we didn't. All of this was, of course, under the NHS. There were rarely any complications, which is surprising. Looking back, we worked very hard and enjoyed it; the patients were great, but we were paid a pittance. Usually as an assistant we were paid somewhere around 30% of the NHS price of what was being done which was just enough in those days to pay the rent as a student before the luxury of National Service.

Memories

Other memories of that time were of friends and colleagues, most of whom seemed to smoke, often diving out for a quick one between patients. Teeth staining, periodontal disease and caries, were frequent indications for clearances of teeth. Clearances were routine and commonplace, and sometimes a prelude to marriage! There was rarely a problem with bleeding, most were unsutured and many had immediate dentures but bone loss in old age was severe, making prosthetic treatment a challenge, particularly making good full dentures; generally nothing else was available. Gas burners were routine on the units – many will no doubt remember the occasional burns, from hot sticky wax dropped on yourself when something had distracted your attention. Short-cuts with hot-water sterilisers and dipping into cold sterilising fluids were commonplace. We hadn't, of course heard about hepatitis and HIV in those days. We tried hard to keep good dental records for the patients but we were rarely RDO'd and that was usually only if we were asking for something special like a crown. I only clearly remember it happening once. I believe it may have happened on another occasion but there was never a problem in that respect. Although my experience of general practice was perhaps somewhat down-market, it was a means to an end and I enjoyed it; good contact with the patients and their appreciation was the source of this fulfilment. The bureaucracy at that time was nothing like it is now

and I certainly would not have found it easy going into general practice.

After that I was appointed to a new consultant post in South Warwickshire where I'd been a medical student and later a house physician. My ex-senior colleagues there set up a new post for me. I worked happily on my own for five years with no junior staff. I was on-call all the time with large numbers of fractures in the summer holiday season. I do not remember going home with my wife after a party with GPs or dentists on a Friday night because I was invariably being called out for emergencies. My wife was always taken home by somebody else in the whole of my time there! It was very busy but also very enjoyable. It was a great learning experience as well as a management exercise, which, required one to work very hard and be efficient. I was impressed most by the tremendous *esprit de corps* that was present with the consultant colleagues. However the area was blighted by the refusal of the Birmingham Regional Hospital Board to accept another medical school at Coventry and Warwick - that went to Leicester. One was not set up in the Warwick area for another thirty years.

Canniesburn, Glasgow

I was unsettled by this and several other senior staff left. I came up to Glasgow to visit Canniesburn Hospital with two colleagues because the new unit was making a name for itself in managing major facial deformity. I knew Derek Henderson, the oral & maxillofacial surgeon, well from my school days and as a consequence of this, he invited me to apply for a new post there in 1974. I was offered the position which I accepted. A little later Derek Henderson left for the politics of St. Thomas's Hospital. There were great opportunities at Canniesburn to develop the surgical specialty in the fields of trauma and facial deformity and for research and much later, implantology and craniofacial skull reconstruction, TMJ & secondary cleft surgery. We attracted many excellent young surgeons to the unit and many visitors from overseas to our courses, as well as exchanges with our North American and Australasian colleagues. This allowed our senior registrars to travel to the Indian subcontinent and Africa. We also worked closely with colleagues at the Glasgow Dental Hospital and School, teaching both undergraduates and post-graduates which was stimulating and sometimes challenging. My colleague Amir El Attar and I really enjoyed that. That, in brief, gives a glimpse

into my career in the Health Service but says little about the challenges of treating major trauma and deformity and the extension of maxillofacial surgery now into head & neck cancer surgery, craniofacial cleft and cosmetic surgery, adding a new dimension to the specialty. Teaching and research were the third and fourth dimension with our academic colleagues. Stem cells and navigational surgery are extending our gifted young colleagues' activities into the 21st century but that is another story.

More Thoughts on National Service

I did National Service between doing dentistry and doing medicine. I'd already started my medical degree which was interrupted half-way because they were short of dental officers in the Services. Because I was in London, I was also able to get on with higher qualifications so we had a very interesting group in the RAMC mess in Woolwich of young national service officers all of whom were keen to progress in the hospital service and other things; we really had a great time. During the day I did routine dentistry while they worked in the hospital or did general practice including obstetrics and gynaecology and other practices. In the evenings we decided that we would have four nights in the week when we would study. There was a physiotherapy school in the adjacent army hospital and we were able to take bits of body out. I had a head in my room for some months which I'd re-dissected - much to the wrath of the cleaners in the place, they didn't like the smell because it was unpleasant, but my colleagues did the same thing with limbs and hands. We did our primary fellowship examinations and then our final examinations. We had two nights of sports and one night for a party. It was just a regular programme which we really enjoyed. Some of us have kept in contact with our colleagues of that time. We learned a lot, working together. I spent some time in hospital work and fortunately, during that time everything went smoothly, and like other officers, I met my future wife there who was in the nursing corps. We had a good time, drank too much and some smoked too much, because in those days everything was cheap, especially if you were abroad. When I visited my future wife, the gin in the mess was one penny and the tonic was two pence. Those are some trivialities of the period before I began specialist training.

1. Bill Smith, See 'Witness Seminar Supplement' or *DHM* 4:2, p. 8.

Archaeology, Forensic Dentistry and Mineral Structure of the Dental Organ *Some Historical Cases*

by
Xavier Riaud

If DNA is a source of essential information in the archaeological study and understanding of history, other elements from the dental organ belonging to the mineral structure and notably the isotopes, can also yield significant information. What are they ?

Body temperature

The California Institute of Technology, more commonly known as 'Caltech', succeeded in determining the body temperature of dinosaurs from isotopes extracted from their teeth. This produced a reading as accurate as if the temperature had been gauged by a rectal thermometer. The Brachiosaurus was said to have a temperature reaching 38.2 °C and the Camarasaurus, 35.7 °C (Lewino, 2011, p. 30).

Geographical origin

The 'H. L. Hunley' was a Confederate States of America submarine which sank in 1864 during the blockade of Charleston in the course of the American Civil War. It was only used once and was the first submarine to sink another vessel from the opposite camp. The eight men steering the submarine died during the naval operation. The vessel was raised in 2000. After studying the remains, the forensic investigators began the identification of the crew. The researchers hoped that isotopic analysis of their teeth would identify these unfortunate sailors (Hénaff-Madec, 2009).

As Rozenn Hénaff-Madec stated (2009, pp. 55-58), 'the tooth develops according a well-known chronology. The developing enamel fixes elements such as carbon, oxygen, nitrogen and strontium under different isotopic shapes. Water and food are the source of those elements. Therefore, isotopes develop in different concentrations according to geographic origins and diets.

Hall's work (1967) on the ¹³C concentration (heavy but stable isotope of Carbon-12) in maize, Smith and Epstein's research (1971) on the different types of C3 et C4 photosynthesis, and finally,

De Niro and Epstein's major works (1978-1981) which proved the isotopic connection of Carbon-13 / Carbon-12 with Nitrogen-15 / Nitrogen-14 are all interlocked to diet. This scientific research was the corner stone of the use of stable isotopes in archaeology and paleoanthropology.'

The same author (2009, pp. 55-58) added that:

"Collagen is not the only element to use for isotopic analyses. The mineral fraction of the bones and teeth (carbonate and phosphate) is also propitious for analyses. Indeed, this mineral fraction reflects a person's total diet whereas collagen only reveals the presence of proteins. The mineral fraction also contains isotopes of oxygen ¹⁸O₂ and of strontium ⁸⁷Sr which are elements related to a particular geographical context.

The mineral phase forms 70% of bone and of dentine, and 97% of the enamel which is mainly made up of carbonated hydroxyapatite (bioapatite). The organic component is made up of 90% of type 1 collagen. The dentine is also made up of type 1 collagen."

Rozenn Hénaff-Madec (2009, pp. 55-58) commented:

"During the growth or the renewal of bone cells, there is some sort of action coming from the osteoblast / osteoclast pair which is subjected to numerous hormonal and local factors. However, while the bone is constantly on the move, the dentine and the enamel are no longer subjected to the modification of their chemical composition once they are mature enough. Therefore, dental collagen contains more contemporary signals when developing itself. Moreover, the isotopic signals are variable from a bone sample to another as it is subjected to the variations of its renewal."

To conclude her study, the young woman (2009, pp. 55-58) stated that:

"In the case of samples taken from the molars of the Hunley's crew, it seemed that for four of the men, the results of the analysis showed a diet made up of wheat, rye, barley which they followed from an early age. Thus, these men were born in Europe. Among those

four people, two of them had been living in the United States for a long time because the isotopic analyses carried out from their femurs showed really close results to those who were born and now lived in North America. In the four other cases, the sailors had grown up having a diet based on maize and other plants of the same group. As this type of diet was similar to that of the Americans of the time, they were subsequently born in the new world.”

In 2011, a grave was exhumed in Dorset where many Vikings lay buried (54 bodies and 51 skulls). They had been killed by native British. After examination, it was found that the central incisors of the Vikings had been filed in some way. The researchers assumed that the filing was a tribal mutilation used by the Vikings to terrify their enemies. The isotopic examination of these particular teeth confirmed their origin. The researchers even noted that one of the Viking cadavers came from the northern part of the arctic circle (Kennedy, 2011).

Age determination

There are several methods to determine the age of a body from teeth. There is Gustafson's method (1947) who used six criteria of physiological modifications of the examined teeth according to their ageing. There is that of Lamendin (1988) who initially proposed a simplified version of Gustafson's formula which only relied on three criteria and which in the end, the Frenchman considered to be less reliable. Then, he defined a method which relied on only two criteria and considered the links between the degrees of translucence, of parodontosis (except obvious pathology) with the height of the root. This is Lamendin's formula (1990). In 1989, Drusini focused on the translucence of the radicular dentin on full teeth (Lamendin, 2006, pp. 130-131 & Riaud, 2008, p. 76). As for H el ene Martin (1996), she looked for a method of age determination from dental cement. There is also Guy Collet's (1999) radicular chart. He studied the colour of dental roots of different ages and of different population samples. He created a benchmark chart from the results he gathered (Lamendin, 2006, pp. 130-131 & Riaud, 2008, p. 76).

In 1976 and 1977, the Mummy Of Ramses II (1314-1213 BC), the Egyptian Pharaoh, was transferred to the Mus e de l'Homme in Paris for restoration. When the forensic examinations were carried out on the mummy, the teeth were not over-

looked. Gustafson's method of age determination allowed it to be ascertained that the Egyptian Pharaoh died 80 years of age, with a margin of error of more or less five years (Monier, 2006, pp. 151-157).

Saint Roseline

On November-December 1995, during the transfer of Saint Roseline's body (1270-1329), forensic examinations were carried out. Dr Franck Domart was in charge of the odontological study. He gave up using Lamendin's method because it involved extracting teeth. He decided, instead, to use Drusini's method to determine the age of the relic and finally, he succeeded in discovering that Saint Roseline died at the age of 41 and a half years with a margin of error of more or less ten years. Later, Franck Domart used the simplified method of Gustafson to pinpoint the age range of the body. He stated that the age of death was between 50 and 60 years old with a margin of error of 10% (Gr evin, Boyer et al., 2006).

Diet

Australopithecus afarensis, which existed between 4,100 000 and 3,000 000 years ago, has a V-shaped forward reducing jaw. The teeth share common features with current teeth. However, they differ from various aspects of specialization. The most commonly known example, popularized under the name 'Lucy', came from the region of Afar in Ethiopia. Its molars and premolars are large-sized. The incisors are well-developed and the canine teeth are prominent. The palate is not very deep. The mandibles are extremely robust. The jaws are projecting forward (Heim & Granat, 2001, pp. 10-37 ; Picq, 1999). The wear and tear of the teeth tells what *Australopithecus afarensis* used to eat. The sturdiness of the mandibular and dental bones suggests that its diet was made up of a great amount of tough vegetables. The study of the wear and tear marks brings more precision to the nature of this diet. The leaf consumption left marks on the incisors. Subsoil food which contains abrasive elements such as dust or grit caused the formation of little craters in the molar enamel. When studying its teeth, one knows that the southern apes of Afar consumed copiously underground plants (roots, bulbs, tubers, rhizomes, onions) and other tough nutrients such as vegetables and fruits from shrubs of the savannas. All this diet is tougher than the food found in humid forested environments which

explains the sturdy face of Lucy and her kin. Neanderthal Man existed between 100,000 and 30,000 years ago in Europe and in the Middle East. Neanderthal remains show that they had forward projecting faces with a regular and slanting shape which spreads from the nose to the zygomatic arch. The cheekbones completely disappeared. The dental arches project forward to such an extent that, if you turn the skull sideways, there is a retromolar space which separates the last molar from the mounting mandibular branch. They were flesh-eating human beings (Picq, 1999).

Profession

A macroscopic study as well as an electronic macroscopic study which scanned two lower human premolars from a Middle Neolithic individual highlighted uncommon wear and tear which was unphysiological since it was due to using teeth as tools.

In March 2008, X-ray computed tomography was carried out on the mummy of a woman from the Coptic period which was kept in the collections of the Museum of Fine Arts in Grenoble. The study took place in the academic clinic of radiology of the Hospital A. Michallon (Janot, 2010, pp. 89-97). According to Francis Janot (2010, pp. 89-97), 'The woman's coronary surfaces of the upper incise group (noted below as: 11, 12, 21, 22) carried a transverse mesiodistal groove: a loss of substance which was not the simple consequence of chewing. It started from the upper left lateral incisor (22) to finish to the distal contact point of the upper right lateral incisor. From a palatine exposure, the teeth revealed that the contact surfaces which show polymorphous aspects were marked. The subsequently uncovered dentine bears a pattern of chewing due to repetitive rubbing on a hard substance which was introduced across the mouth. Therefore, the object which was introduced only spared a modest section of vestibular and palatine enamel of the crown of the upper left incisor. Moreover, parallel striae which were horizontal, one on the top of the other, were identified on the vestibular side of the left canine. They were obviously due to the repetitive introduction of the same object

Signs gathered from the dental anatomy of the subject showed the interposition and movement of an object between the teeth which started from the left side (from 22). The vestibular side of the canine (23) was used as a guide. Therefore, it was possible to assert that this woman was left-handed.'

The same author (2010, pp. 89-97) maintained that: 'The functional movement which was repeated thousands of times was indisputably due to the position hold (sic) by the deceased. Therefore, it is possible to recreate the movement that she habitually made. The polymorphous wear and tear identified on the upper incise group were caused by a mandibular functional back and forth movement which is the counterpart of the manual oscillatory movement of the left hand and which also created a back and forth movement to result in a dilaceration of the root fibres. The vestibular side of 23 played the role of support while the crown of 22 played the role of positioning guide. Moreover, the maximal wear and tear of the occlusal surfaces of the right incise group (11, 12) was caused to the muscular masseter activity due to the multiple forces carried out during the dilaceration of the fibres. The muscular activity shaped the external side of the right mounting mandibular branch and caused maximal pressure on the bone area of the lower insertion of the muscle at the mandibular angle level. The exostosis (or enthesion) noticed on the goniac angle was a direct consequence. It was the bone answer to the repeated pressure throughout the professional activity of the deceased of Grenoble. Naturally, the whole movement led to abundant salivation.'

Francis Janot (2010, pp. 89-97) was convinced that: 'Our goal, now, is to find the object which caused such abrasion. Several hypotheses can be ventured: a musical activity, some work involving basket-making or ropes, weaving work or leatherwork as well as bruxism. Unfortunately, none of the marks caused by each of those activities corresponded to those noticed on the deceased of Grenoble. However this forensic mark has a parallel in African statuary. Indeed, the interposition movement of a root was recognized on wood statuettes of chiefs and soothsayer of the kôngo/vili and kôngo/yombe ethnies of the Republic of the Congo. With a movement of fibre dilaceration of the root - *munkwisa*, the extracted juice has hallucinogenic virtues which are thought to heighten the powers of perception and vision. Pharmacological studies showed that the bark of this shrub contains a powerful alkaloid: the ibogaine which stimulates the central nervous system. The consumed dose leads to hallucinations, trembling and convulsions. A mind reading activity perhaps?

The anatomical signs which have been highlighted in this article, invite us to further research in an overlooked area, that is, the dental remains of

the religious staff in charge of oracular, oral and written matters from the New Empire in Egypt. It may then be found that the ancient Egyptian from the Museum of Fine Arts in Grenoble bears the mark on her teeth which reveals her to have been a priestess or oracle.

In conclusion, it seems necessary to recall that the teeth are relatively incorruptible and therefore, they constitute extraordinary forensic tools as well as a great source of information which, if they are used appropriately, can turn out to be an almost unfailing source of information.



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Author: Xavier Riaud, Nantes, France

U.S. Army Surgeon General's Report Conference with Repatriated P.O.W. Personnel Medical Corps, U.S. Army, 1 December, 1953

by
Eugene Feldman

Dr Feldman writes:

I live 60 miles north of the U.S. Army Military History Institute at the Carlisle War Barracks in central Pennsylvania. It is the greatest source of Army history in the country. It was there on one of my research visits that I discovered a report of a conference on 1 December 1953 with five repatriated prisoners of war who served as Captains in the Medical Corps during the Korean War. They had been prisoners of the Chinese. Brigadier General Rawley F. Chambers, Medical Corps (MC) was in charge in his office. Their experiences would be invaluable in the practice of medicine once one became a POW, how to survive, and what kind of medicine would or would not be available. Eight divisions were represented to ask specific questions from their services such as Research and Development, Preventative Medicine, and for my purpose the Dental Division. The first question came from Major General Walter D. Love, Chief of the Dental Division, concerning dental care: 'Was there any dental treatment made available to prisoners and to what extent was treatment given?'

The first to reply was Captain William R. Shadish. He said that compared with the others he had more to do with dental care, although the others responded in turn. He had a friend in dental school and, when allowed by the Chinese, he recalled conversations with his dental school friend and did some extractions. He did not elaborate further about his 'ability' at first. He said that there was originally a 'single extraction forceps about six inches in length.' It seemed small to him but he was told that no other was available. Of course he didn't know how to inject procaine properly, but he used morphine in doses of 1/6 or 1/8 grains sometimes mixed with caffeine (this is new to me). Then he decided to learn some nerve blocks. Apparently he learned how to inject procaine and in

the summer of 1951 he did about 15-20 extractions. I had some doubts about his 'learning' but I could be wrong. In June or July, he said, the Chinese gave him a larger forceps. The Chinese tried to do some extractions, but failed. However, a British physician P.O.W. named Hickey impressed Shadish as 'very good' at extractions. Later on several types of forceps became available, but the Chinese MDs could not perform extractions.

Plenty of broken roots

In June 1953 a Chinese dentist appeared and began extractions, but he didn't want to clean out cavities left by the extractions. I suspect that he left plenty of broken roots behind and spicules of bone as well. After the dentist removed about 25 teeth, he packed his equipment and left. In about a month he returned and worked for a couple of days.

Captain Clarence L. Anderson spoke next and said that he tried to learn nerve blocks. He said that a Chinese dentist did place some temporary fillings in some patients and also did some extractions, but no post-operative complaints were noted. The P.O.W.s lacked toothbrushes and the only way to clean their teeth was through, improvisation of some sort or just with their fingers! It was common for them to find grit in their daily food and as a result their teeth would often break and fillings were lost. Captain Shadish interjected and said that the Chinese dentist would insert something like 'putty' when he prepared a cavity. General Love then asked this question:

'Did dental diseases affect any appreciable number of prisoners?' He continued, 'Can you give an estimate of those having caries or other tooth conditions?'

Captain Esensten replied that the figure was about 90 per cent. Many men had even removed their own teeth when loose. Captain Alexander H. Boyesen said he saw an unusual arrangement by either an Englishman or Irishman. He 'took a piece of

wire, rigged it with a pull cord, wrapped it around 12 teeth, and pulled the teeth.’ Captain Gene M. Lam said he saw a P.O.W. use some sort of wire to extract 56 teeth while, ‘he knew absolutely nothing about dentistry.’ This is astonishing!

General Love continued: ‘Prior to the time of getting tooth brushes were there any hygienic methods?’ Captain Anderson said that, ‘Some men would use a piece of wood to chew on for cleaning and exercise.’ He wanted some soap but it wasn’t available. Captain Boysen said that in early July tooth brushes became available, but many broke or their Korean guards became angry about some minor incident and confiscated them.

Captain Shadish recalled that either in May or June of 1951 a mouth disease broke out in the camp, almost an epidemic infection. ‘Some cases of infection were very severe, forming large ulcers, some almost penetrating through the jaws.’ The Chinese cooperated when he asked for potassium permanganate to treat the victims. He also asked for, and got, vitamin C thereafter the infection cleared up, but sadly one or two men still died. He also wanted peroxide but couldn’t get it.

Captain Boysen reported that at least three cases of this epidemic infection occurred in his camp. The only drug available was a bit of iodine but he wasn’t permitted to use it. Mercurochrome could be had but it was so diluted as to be useless. It was Captain Shadish’s opinion that the infection spread to about two-thirds of his camp.

General Chambers asked the final question: ‘Was there any bacillary or fungus type of disease?’ Captain Shadish said that there was no fungus at all, ‘just an angry-type lesion.’



Dr Feldman continues with an anecdote about a wartime experience in Southampton, England:

Consider the plight of many dentists thrust into practising medicine during the war. My own experience serves as an example. I was a First Lieutenant in the Army Dental Corps stationed in Northern Ireland with the Fifth Infantry Division in June 1944. Shortly after D-Day I was transferred to Southampton where I was assigned

to the 59th Signal Battalion attached to the 8th Corps. We were due to embark for France around the 14 June. I arrived the day before. I recall that it was warm and sunny in Southampton that day. As far as I can remember, the medical detachment was situated in the field, in a large tent. Captain Bruce McVay, the medical officer in command, was elsewhere. We would not meet until landing in France.

The non-commissioned officer, a four-stripe sergeant, greeted me in the reserved area. After I looked around he told me that a soldier wanted to see me. The GI and I went off to an area reserved for private consultations. He extended a sheet of white paper and a vial of fluid and told me, as I took the vial, that he needed a final injection to complete his treatment for syphilis which would end with the thirtieth injection. This would enable him to remain with his unit. If not he would be left behind when we shipped out.

After I had read the instructions on the paper, the injection dates and the signatures of officers, I agreed to carry out the last injection. I got a syringe from an aide, and some alcohol and cotton, and aspirated the required ccs listed on the vial. I told the soldier to bare his left arm, sought the antecubital point, cleaned it and injected the fluid. I believe that I gave a skilful and painless injection of what may have been a gold compound then in use for syphilis or maybe neosalvarsan or something else unknown to me. I bandaged him, signed the paper as directed and dismissed him. I was surprised at how confident I had been when carrying out the procedure because this was my first intravenous injection; giving such an injection hadn’t been part of my training, and yet...I had completed the final treatment for a disease I had never contemplated treating. I told the sergeant to send the GI to the nearest field hospital.

Author: Eugene Feldman, Pennsylvania, USA.

Editor’s Note: Dr Feldman goes on to recall correctly diagnosing and treating two more soldiers in quick succession the same day for sexually transmitted disease. He looks back with wry amusement on this highly unusual introduction to dental practice during the Second World War.

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Photo: Red Cross Helmet, Wilson History and research Center

Word of Mouth

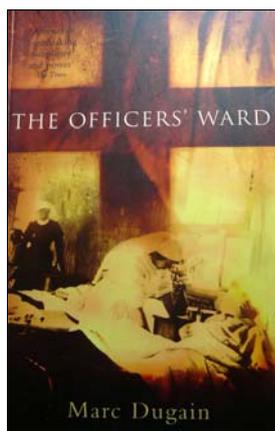
Reviewer: Jo Cummins

The Officers' Ward

by Marc Dugain

Paperback Edition

Phoenix House, 2001. ISBN: 0 75381 284 3



Marc Dugain's *The Officers' Ward* is the story of Adrien Fournier, a young French engineer and army officer, who suffers severe facial injury from a stray shell in the first days of the Great War. He is transferred from a First Aid Post to the military wing of the Val-de-Grâce Hospital in Paris where his surgeons discuss a hastily written form soaked in blood and saliva describing his injuries. It reads:

"Severe maxillofacial damage... Everything open from the top of the chin to halfway up the nose. Upper maxilla and plate both completely gone. Space between mouth and sinuses no longer compartmentalized. Tongue partially gone. Organs at the back of the throat unprotected and visible. General infection of the tissues because of all the pus."¹

Adrien had only escaped haemorrhaging to death in the field because the mud thrown up by the shell had plugged the lingual artery. Warily, he explores his lower jaw with the remainder of his tongue and pressing it against his gums, he feels that his teeth have been, 'pulverised'. He is confined to a maxillofacial ward for the next five years.

Dugain's spare, crystal clear prose never falters as the reader follows the succeeding

stages of Adrien's physical and psychological recovery. He forms life-long bonds of friendship and support with other wounded comrades including the charming Marguerite, a nurse who was injured serving on the Western Front. For Marguerite, a ravaged face invokes particular sorrows which are sensitively handled by the author.

Adrien's palate and jaw are gradually reconstructed by pioneering plastic surgeons. Admittedly, this is a work of fiction but the surgical procedures are well researched and Adrien's case is apparently based on the experiences of the author's grandfather who suffered similar facial injuries during the Great War. As a child, Dugain remembered happy visits with his grandfather, who never spoke about his trauma, to *La maison des Gueules cassées* – *The Castle of the Broken Faces*, a recuperative and social institution for disfigured veterans and their families.² Dugain's fictional surgeons take the same, robust, 'matter of fact' attitude. On one occasion, Adrien is advised:

"The truth is Lieutenant, I am waiting for material to reconstruct your upper jaw, and in particular, your palate...The only method we can possibly use is a bone graft. We need the bones of a child who has recently died. I've informed my colleagues in the civilian hospitals of the urgent nature of my request."³

The Castle of the Broken Faces

Although scenes in *The Officers' Ward* are disturbing, even harrowing, in their clear-eyed portrayal of war and its aftermath, it is a curiously rehabilitating read, which eschews a culture of death. It is an uplifting pro-life novel about the true nature of love, comradeship and the strength of the human spirit to overcome tragedy.

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- A film of *The Officers' Ward*, directed by François Dupeyron, is available on DVD. (French: English subtitles.)

Author: Jo Cummins

Web News

by

Carol Parry

Library and Heritage Manager, Royal College of Physicians and Surgeons of Glasgow

Having just had a tooth extracted, one of my colleagues gave me a printed image from the Wellcome Collection of St Apollonia to hand to my dentist next time I have an appointment.

Although not entirely sure whether I will present the image to him, it did make me wonder about the patron saint of dentists and what it was possible to find out about her from the internet. St Apollonia was the daughter of a magistrate in Alexandria who stood up for her Christian faith. Dionysius, Bishop of Antioch from 247 to 265 AD says, 'a mob seized her and by repeated blows broke all her teeth.' Then, outside the city gates, they erected a pile of fagots and threatened to burn her alive if she refused to repeat, after them, unpious words. Apollonia's response was to spring into the fire; she was burned to death.' As with many early saints, stories about her are mainly apocryphal and are summarised in an article by Ryan Donnelly on the Pierre Fauchard Academy website at: www.fauchard.org/history/articles/jdh/v53n3_nov05/pp97/_apollonia_v53n3_nov05_p97.html

Briefer descriptions of St Apollonia are available on the British Dental Association website at: www.bda.org/museum/the-story-of-dentistry/ancient-modern/ancient-dentistry.aspx and the National Science Museum website at: <http://www.sciencemuseum.org.uk/broughttolife/people/saintapollonia.aspx>

According to the BDA description, as St Apollonia was being consumed by fire she called out that those who suffered from toothache and invoked her name would be relieved of their suffering. She is traditionally depicted with pincers in which a tooth is held although there are more graphic depictions of the saint having her teeth extracted. Several beautiful images of St Apollonia are available for view on the BBC Your Paintings website at <http://www.bbc.co.uk/arts/yourpaintings/>

This is a website I thoroughly recommend for all who love art. 'Your Paintings' aims to show the entire UK national collection of oil paintings, the stories behind the paintings, and

where to see them. It is made up of paintings from thousands of museums and other public institutions around the country and is a joint initiative between the BBC, the Public Catalogue Foundation (a registered charity) and participating collections and museums from across the UK. The Royal College of Physicians and Surgeons of Glasgow has over 90 oil paintings in its art collection (one of the largest collections outside the major Glasgow museums). These have been photographed and recorded by the Public Catalogue Foundation ready for publication along with hundreds of other paintings from Glasgow museums and galleries on the BBC 'Your Paintings' website. The majority of the oil paintings depicting St Apollonia on the 'Your Paintings' website currently come from the Wellcome Collection but there will be more coming from Scottish collections in the course of this year. Apart from the 'Your Paintings' website, woodcuts, statues and prayers relating to the saint can all be found by searching the Wellcome Images website at <http://images.wellcome.ac.uk/>



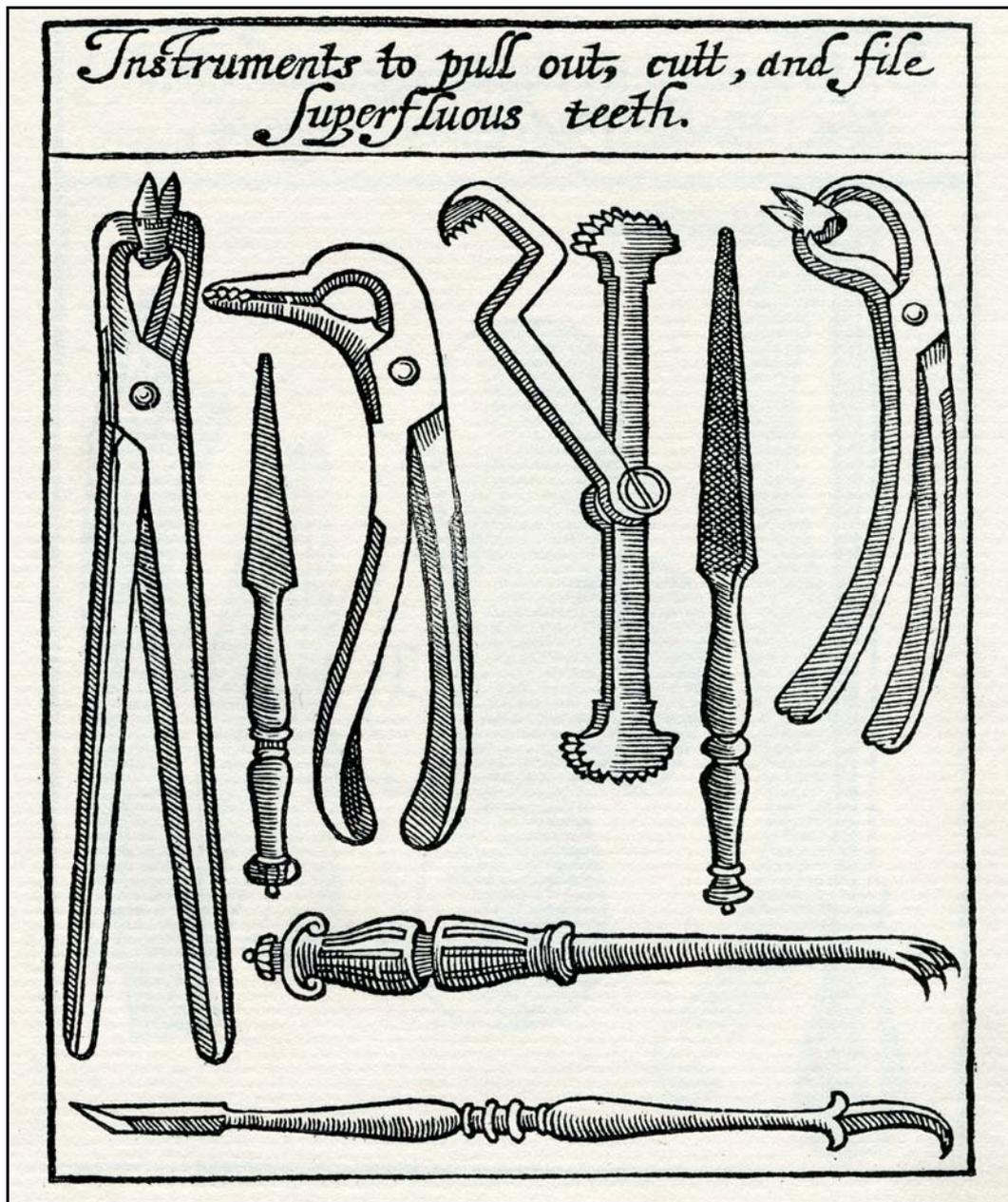
St Margaret and St Apollonia

Roger van der Weyden, 1445

WikiPaintings/Public Domain

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Lowe's Instruments for Pulling Teeth
in
Peter Lowe, *The Whole Course of Chirurgie*, Second Edition, 1612.

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