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## The art of medicine

### The age of youth

Just how recent is our fascination with anti-ageing products and procedures? In 2009 the Academy of Medical Sciences published a report on how ageing research might be reinvigorated. Whilst generally putting forward an optimistic vision for the future impact of this research they were also cautious to note that "it is important to emphasise the limitations of ageing research. Promises of substantial increases in lifespan, reversing ageing or even immortality are unlikely to be fulfilled in the foreseeable future, if at all". Although this point related to scientific research, outlandish and excessive claims about the potential for anti-ageing or rejuvenating products are well-known from outside the medical mainstream—companies fight for consumer attention by inflating the possibilities of their products. Yet just as it is right to be critical of such hyperbolic claims about rejuvenation, it is also worthwhile reflecting on their origins both within mainstream medicine and fringe practices often termed 'quack'.

We are not short of historical examples of attempts to revitalise the human body, and almost every conceivable substance and technique has at some point been claimed to have the power to slow, stop, or even reverse the ageing process. The period immediately after World War 1 saw the emergence of various strategies for rejuvenating bodies and minds deeply affected by the conflict. These included everything from surgical procedures which aimed to manipulate sex hormones and restore vitality in men, to everyday beauty products like skin foods and moisturising creams. All of these seemed to promise wildly different results. In the case of male hormone treatments, a patient might expect to regain lost fertility as well as recapture the vigour and energy of youth. By contrast, the more mundane and domestic cosmetic products, marketed almost exclusively to women, promised to bestow a youthful appearance. These different claims were rooted strongly in gendered understandings of what kind of rejuvenation was appropriate for men and women. In men renewed sexual function and economic productivity was the goal. For women, the restoration of youthful appearance was promoted yielding a return to the time of a woman's life when she was deemed to be of most social (ie, reproductive) value. Interestingly, the

prolongation of life, whilst a goal of eugenicists and medical practice more generally, was not a universal concern for would-be rejuvenators. Most instead concentrated on the extension of youthfulness.

Many of the products and procedures associated with these attempts at rejuvenation in the early 20th century, both orthodox and alternative, had their roots in older medical notions. At the turn of the 20th century one of the most popular forms of treatment that claimed to bring about rejuvenation in both men and women was electrotherapy. Electricity had long been a feature of mainstream and folk medicine. The use of electricity, for example, was advocated by John Wesley in the later editions of his text *Primitive Physick* (1792) as a treatment for a large range of conditions, from bruises and dropsy to palsy and the effects of old age. Wesley was not alone: the 18th century saw various experiments with electricity as distinct forms of electrotherapy, including shocks, electrification, and "drawing sparks", were tested on volunteers with mixed results. At the heart of these treatments was a belief, shared by many medical practitioners as well as those outside the profession, in the importance of electricity as a vital force, playing a key role in normal physiology. A loss of electricity, they argued, resulted in the appearance of disease and dysfunction: two hallmarks of ageing.

The idea that human physiology, disease and even ageing could be explained in terms of electricity and electrical energy was not limited to the therapies proposed by Wesley and others on the fringe of medical practice. Some decades later, developments in neurology and the science of electricity during the late 19th century led numerous prestigious hospitals, including Great Ormond Street, to build up large electrical departments. Gradually new forms of treatment, including radiography and light therapies saw patients with cutaneous and systemic diseases treated in this way. Meanwhile, electrical "therapies" which anyone could use in their homes also became increasingly popular.

In the domestic arena, one of the most widely used electrotherapy devices of the early 20th century was the Overbeck Rejuvenator, which claimed to restore lost vitality by restocking the body's supply of electrical energy. Depending on which ailment the user wanted to treat, electrodes were applied to the body on a daily basis. The inventor of the Rejuvenator was Otto Overbeck, not a medical man but an

enterprising chemist who worked in the brewing industry, and he claimed that his machine would have positive results in all conditions apart from infectious diseases and so-called deformities.

Electrotherapy was just one option available to a public increasingly concerned with rejuvenation in the aftermath of war. Indeed, by the start of the twentieth century strong evidence had been found for natural regenerative processes in the kidney, liver, lung, pancreas, thyroid, prostate and stomach. The Italian physician Giulio Bizzozero, most famous for discovering the function of platelets in clotting in the 1880s, claimed that the cellular processes of reproduction (essentially the ability of organs to repair) meant that 'when a gland in any morbid process loses a large number of its elements it can reproduce them and thus return to its normal state.' Whilst Bizzozero was interested in the potential mechanisms of regeneration in the natural world, several of his contemporaries used very different methods to try and achieve something more dramatic: rejuvenation in humans. In 1912, the Austrian physiologist Eugen Steinach devised a series of experiments designed to manipulate the levels of what he termed 'sex hormone' (testosterone) in guineapigs. After concluding that the secretions of the testes were responsible for governing sexuality and sexual activity and behaviour, Steinach began practising partial vasectomies on men in an effort to increase the production of testosterone and so rejuvenate and reinvigorate his patients. In 1923 *The Lancet* published an article expressing some degree of scepticism about his work, which had 'an apparently irresistible appeal to elderly persons whose waning virility renders them disconsolate and fretful.'

However, Steinach generated great public interest in his work and inspired a loyal group of supporters within the medical profession; he was nominated for the Nobel Prize in Physiology on six separate occasions between 1921 and 1938. However, he was also subject to fierce accusations of quackery and deception. Public audiences were fascinated by press reports of successful rejuvenations using his procedure and, irrespective of the success of the operation itself, Steinach's research into the action of hormones proved to be important foundational work in the emerging field of endocrinology.

The so-called 'Steinach operation' was a fairly expensive treatment, and it became fashionable among the higher levels of society as well as many artists, some of whom, such as the Irish poet W. B. Yeats,

claimed to reach new levels of creativity in their work after the procedure. The work of Steinach even prompted Sigmund Freud to undergo a complete vasectomy at the age of 67, in the hope of combatting his recurrent oral cancer. For those without the finances or social capital to aspire to a personal treatment by Steinach, a huge range of rejuvenating options were gradually becoming available. Outside of medicine new diets, exercise regimes, and cosmetic products were developed, reflecting cultural anxieties about ageing and a desire for rejuvenation. Many of these were advertised as essential parts, not just of a healthy life, but also of longevity and a youthful appearance. Writing in 1923, for example, the self-styled anti-ageing specialist Dr Jean Frumusan identified in his popular treatise on rejuvenation a series of domestic habits designed for 'attaining old age'. These included instructions to 'drink a large glass of water' on waking and 'jump out of bed immediately', 'eat slowly and moderately' and '[b]e carnivorous at one meal and vegetarian at the next.' Frumusan also advocated periodic fasting 'for twenty-four or forty-eight hours' to restore the vitality of the body. For men, the impetus was to preserve the security and economic productivity of the nation, whilst women were encouraged to engage in practices of rejuvenation to remain both attractive and fertile for as long as possible.

The forms of rejuvenation popular in the early twentieth century, promoted by individuals such as Steinach, Overbeck, and Frumusan, were remarkably different from one another and show the rich range of ideas in this period that revolved around ideas of rejuvenation ranging across the scientific spectrum from fringe rejuvenating procedures to pioneering experimental biology. The social and cultural context of the interwar period – a time of heightened fascination with anti-ageing – was crucial in shaping public perceptions of and attitudes towards rejuvenation. We must draw clear distinctions between mainstream procedures associated with health and wellbeing and the crowded commercial popular marketplace of everyday so-called rejuvenating products. Historically, for example, Steinach was a key figure in the development of endocrinology as a biomedical specialty, whereas the opportunistic Overbeck simply exploited a public fascination with anti-ageing. But a more nuanced understanding of the historical context in which strong desires for rejuvenation emerged casts light on contemporary debates about the role of anti-ageing medicine in modern society.

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