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Sir Harold Gillies: surgical pioneer

Andrew Bamji

Innumerable articles and eulogies have been written about Harold Delf Gillies (HDG) detailing his contributions to the field of plastic surgery. There is perhaps more to HDG than this alone. While his singular personality led him to think 'outside the box' in surgical terms, his innovations extended past mere technique and he was perhaps responsible for a more generally applicable philosophy – that of the multidisciplinary team. This article examines some of his achievements and looks behind the surgeon to the visionary.

Key words: facial injury; plastic surgery; war surgery

Harold Delf Gillies was born in Dunedin on 17 June 1882. Educated at a preparatory school near Rugby he returned to Wanganui College, where he captained the first cricket eleven. Proceeding to Gonville and Caius College, Cambridge in 1901 (Figure 1) he was awarded a chapel scholarship in his first year and qualified from St Bartholomew's Hospital in 1906, becoming a Fellow of the Royal College of Surgeons four years later. He overcame the handicap of a stiff elbow sustained in a childhood accident and managed not only to row for Cambridge in the 1904 Boat Race but also to play golf for England against Scotland, and win the Royal St George Grand Challenge Cup at Sandwich in 1913. Noted as the best house surgeon at St Bartholomew's Hospital in his time, he became an ear, nose and throat surgeon. Pound, in his biography of Gillies, records how he went to Harley Street to apply for Sir Milsom Rees' assistant post:

(He) went to see him at 18, Upper Wimpole Street, hiring the morning dress that his income did not permit him to buy. Sir Milsom disappointed him by showing indifference both to his appearance and qualifications. Gillies' golfing prowess interested him

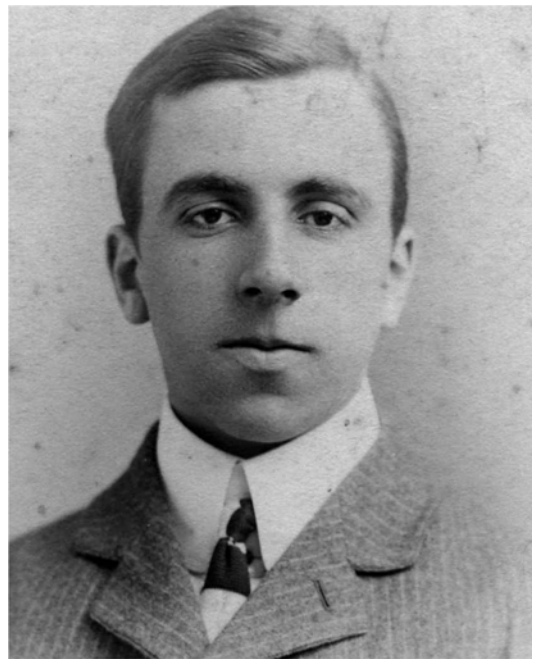


Figure 1 Harold Gillies as an undergraduate at Gonville & Caius College, Cambridge (courtesy: British Association of Plastic Surgeons)

Gillies Archives, Queen Mary's Hospital, Sidcup, Kent, UK.

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more, especially as Gillies had recently reached the fifth round in the English Amateur Championship. Afterwards Gillies recalled that during the interview he thought: 'This is ridiculous. When is he going to

talk about the job?’ Instead, Sir Milsom brought out his golf clubs for Gillies to inspect and demonstrated his use of them, posing this way and that in illustration of his stance for various shots. When he said, with a hurried glance at his watch: ‘I’ve got a consultation now’, Gillies’ face evidently showed dismay. ‘Oh, my dear fellow,’ Sir Milsom said briskly, ‘I’d forgotten! Well, how would five hundred a year suit you? Any private patients you pick up you can keep for yourself. All right?’ (Pound, 1964).

Had the war not intervened he would surely have become a successful ENT surgeon, not that he was reliable, even then; deputizing for his chief he forgot an appointment with Nellie Melba because he was playing in a golf championship match (which he won). But in 1915 he volunteered for service with the Red Cross, was posted to France and met Auguste Valadier, a French-American dentist who had succeeded in establishing a unit for jaw work at the 83rd General Hospital in Wimereux, near Boulogne. As he was not medically qualified, Valadier could only operate if a ‘real’ doctor was present and Gillies, seconded to this task, became fascinated by facial surgery. His interest was further stimulated by reading of some of the German achievements of facial repair, notably – according to his biography – of Lindemann, though there is anecdotal evidence that it may have been a book or books by L’Ombredanne that he first read (Nélaton and Ombredanne, 1904, 1907) as Lindemann’s contribution is buried in a multiauthored book (Bruhn, 1915–1917). He decided that facial surgery was what he would do as there was going to be a lot of it. He visited Paris to observe at first hand the work of Hippolyte Morestin in Paris. Returning to England, his personality enabled him to persuade the Army Surgeon-General, Alfred Keogh, that facial work should be concentrated in one place, acquiring wards at the Cambridge Military Hospital in Aldershot. He tried to persuade the War Office that they should distribute special facial injury casualty tags and, when the medical staff there seemed indifferent to the idea, he found a stationer’s shop in the Strand and spent £10 on labels addressed to himself at Aldershot, which he returned to the War Office with instructions for distribution. He was surprised when casualties began to appear with his labels attached.

After the carnage of the first day of the Somme on 1 July 1916 it was all too apparent that the facilities at Aldershot were inadequate. Gillies lobbied hard

and gained the support of Arbuthnot Lane, head of army surgery, persuading him that a much larger, purpose-built facility should be established which could deal with all facial injuries. Herein lay his vision – that by concentrating casualties in one place, with an army of surgeons to deal with them, it would be possible to make real technical advances simply because of the scale of the problem. A site was found in Sidcup, Kent, where Frogmal House, an old mansion, had been for sale with its estate for a year. The Queen’s Hospital, as it became known, opened in June 1917 and eventually over a thousand beds were available on site and in surrounding convalescent units, and dozens of surgeons from Great Britain, the Empire and Dominions were collected. (Figures 2 and 3)

From the surviving notes of the time – some repatriated to Sidcup from New Zealand after their near destruction in a departmental clear-out (Bamji, 1993) but with in addition about half of the British Section’s notes which Gillies had retained after writing his two books – it is possible to understand the virtues of concentration of effort. Gillies himself wrote that in an environment like Sidcup ‘it was more difficult to hide a bad case than to get a good one’ (Gillies and Millard, 1957). In France, where facial injury services were dispersed, and likewise in Germany and Austria, single surgeons such as Morestin and Esser emerged as pioneers but never developed the teaching base that Sidcup provided from its 5000 subjects. American surgeons in France such as Allbee, Ivy and Kazanjian did pioneering work, but would send difficult cases to Sidcup, as indeed would Valadier in due course. Gillies and his colleagues developed an array of new techniques including the tube pedicle, the temporalis transfer, arterial flaps and an adaptation of Esser’s epithelial inlay for the reconstruction of eyelids. Cartilage and bone auto- and allografts were developed. Gillies was particularly fond of nasal reconstruction; Pickerill, who came with a New Zealand contingent in 1918, was an expert at upper lip work; Kelsey Fry developed a number of jaw techniques. Importantly, both functional and cosmetic aspects were addressed, an important difference in philosophy from continental work, and there was emphasis on the rehabilitation of injured men with the provision of numerous activities and teaching classes (Figure 4). In France, certainly, this did not happen; it was left to a facially injured infantry colonel, Yves Picot, to create a self help group, popularly known as l’Association des



Figure 2 The plastic theatre, Queen's Hospital, Sidcup

'Gueules Cassées' (Roubaud and Brehamet, 1960; Delaporte, 1996) but no such group arose in Britain after the First World War, perhaps because Gillies' attitude, and the support offered by Sidcup to its

patients, rendered it unnecessary. Gillies became a friend to his patients. He would review them on request and many patients had copies of their photographs as a memento.



Figure 3 General view of the wards, Queen's Hospital



Figure 4 The toymaking class at Queen's Hospital, painted by Harold Lobley (courtesy: Imperial War Museum)

The reconstructions are for their time impressive. Many lessons were learned; the importance of treating infection, of lining flaps, of providing support using non-artificial materials, of restoring normal tissue to normal position and then grafting the gaps (Figures 5–8). But Gillies was not just a surgeon among surgeons. Other professionals played their part at his behest partly for the present and partly for the future. There were dentists, physicians, radiologists, dental technicians, artists, sculptors and photographers – the last three being used both to plan the reconstructions and to record the results. Gillies himself had tried to do some surgical drawings but despite a correspondence course was not very proficient, although he would annotate photographs (Figure 9). He was thus happy to enlist others, the most famous being Henry Tonks, himself a surgeon, but there are watercolours and drawings in several hands including Sidney Hornswick, Herbert Cole and Daryl Lindsay. John Edwards, a sculptor, oversaw the production of numerous plaster casts;

a photograph shows Lindsay completing a painting using the cast as a model.¹ Archie Lane, a dental technician, kept two albums as a record of the men he had seen and worked with and devised both splints and odd pieces of anaesthetic equipment.²

The difficulties of operating on the face if it was concealed by an anaesthetic mask were manifest. There was also the problem of position; Kelsey Fry, while a front line medical officer, had realized the danger of lying flat a man whose tongue would fall into the airway.³ Gillies had two anaesthetists

¹Album donated to the Royal Australasian College of Surgeons, Melbourne.

²Archie Lane's albums were donated by a family member to the British Association of Plastic Surgeons, in whose archives they reside. The illustrations include a number of dental models reproduced in the Official History and, interestingly, show that several of the plaster casts were painted.

³*Principles & Art*, p. 23.

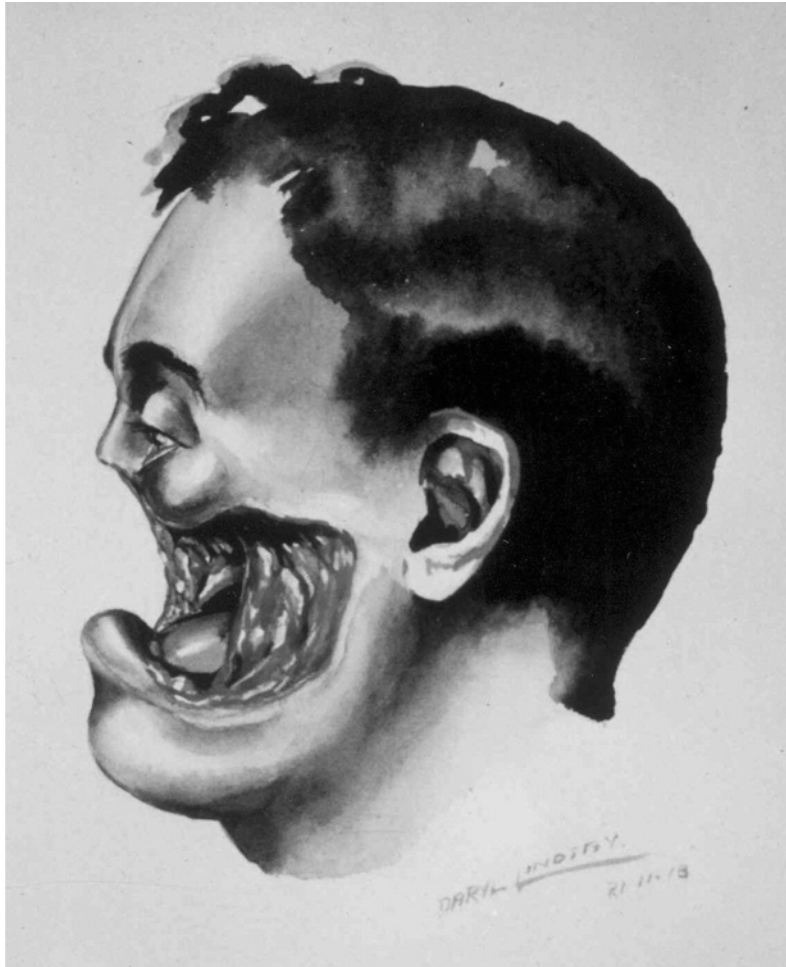


Figure 5 Pte Thomas: watercolour by Daryl Lindsay on admission (courtesy: Royal Australasian College of Surgeons)

seminal to his work; Rubens Wade, a Barts man, pioneered anaesthesia in the sitting position (Booth, 2000), and Ivan Magill, whose ‘invention’ of full endotracheal anaesthesia at Sidcup was an accident born from experiment.⁴ One wonders how surgery in general might have differed without this significant advance.

In all the Sidcup experience was a success – but it was a multidisciplinary success, and this itself was perhaps odd in an age where surgeons reigned supreme.

⁴*Principles & Art*, p. 60.

Gillies was a meticulous surgeon (Heneage Ogilvie ranked him with Jefferson and Russell Brock as one of the three finest surgeons he had known), was fiercely critical of others who were not, but was always prepared to admit his errors. He describes his embarrassment when, on a visit by Arbuthnot Lane to Aldershot, his prize patient had an infected wound from which Lane squeezed a drop of pus.⁵ The Sidcup casenotes frequently document why a procedure failed or how it could have been better done. He had seen too many procedures fail because surgery had

⁵*Principles & Art*, p. 11.

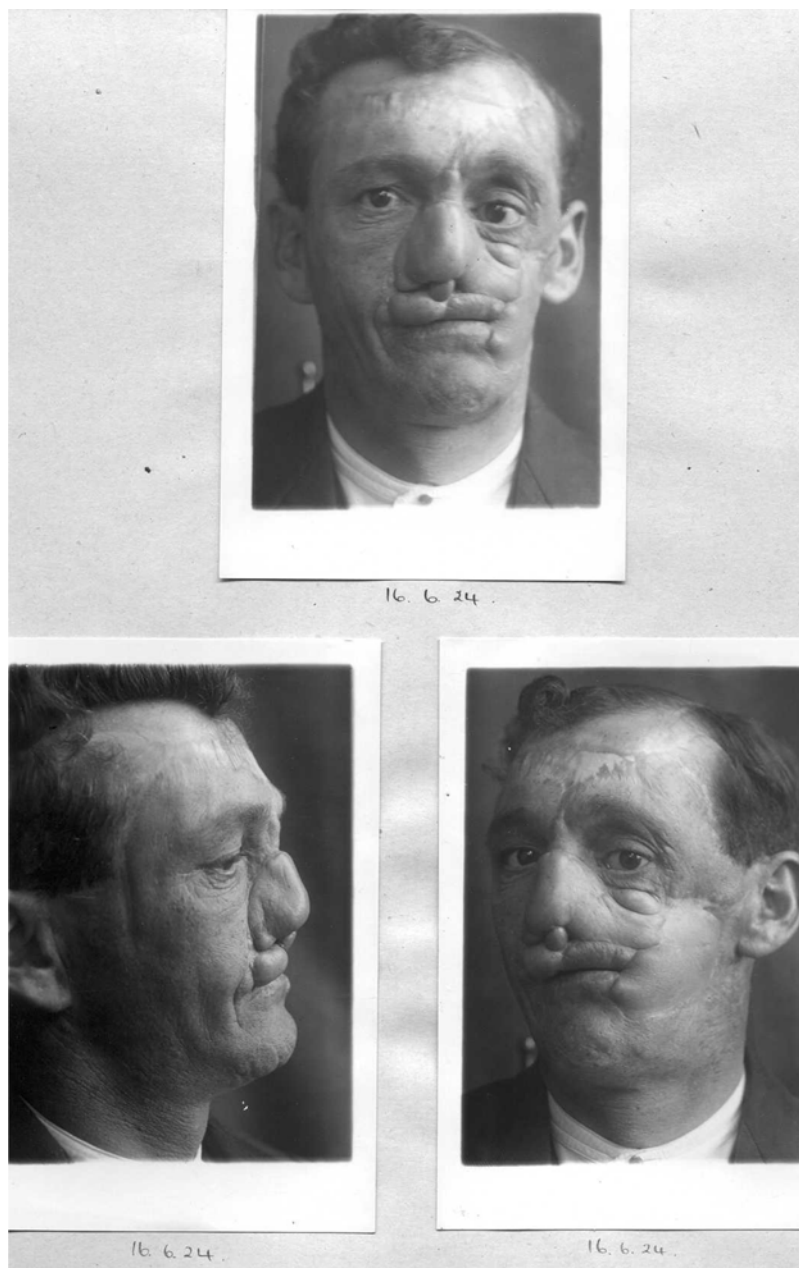


Figure 6 Pte Thomas: final photographs, 1924

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been hurried, frequently quoting as an example one of his fatalities, a burned airman called Lumley, on whom in his enthusiasm he operated before the man was fit for surgery (Gillies, 1920). In applying the principle to life in general, as well as surgery in particular, he would be late for lists and make escapist forays to fish or to the local golf club (The Queen's Hospital Challenge Cup is still played for) where his habit of teeing off from beer bottles on the practice green earned him a mild reprimand. His relationship with colleagues is intriguing. Set up as the head of the British section at Sidcup the powers-that-be were not entirely happy to leave such a large enterprise to a relatively junior man (Gillies began as a captain, and ended the war as a major) and it would appear that two attempts were made to deal with this. First, when the Australian section was set up, an experienced colonel, Henry Simpson Newland, who had had considerable experience at the front, was drafted in to command the section. Later, when the hospital invited a swarm of

American surgeons to observe (and the notes record that many of them operated, among them Ferris Smith) Wilray Blair was asked to report back to Lane and Keogh that all was well. In each case the senior men deferred to Gillies, noting that his vast experience outweighed their own and that the organization should be left undisturbed. Gillies was however not the easiest of colleagues; he fell out with the South African, Aymard, and later a bitter dispute over the origins of the tube pedicle ensued. For all that Gillies fulsomely acknowledged the contributions of the other surgeons it would appear that his fellow New Zealander Pickerill also had an axe to grind; his own book recording his work, and based on his MS thesis for the University of Birmingham (Pickerill, 1924) does not mention Gillies at all.

After the war the teams dispersed, the overseas members returning home to establish their own units. It might be imagined that Gillies and his English colleagues would have found an eager



Figure 7 Pte Bell: photograph on admission (Bell had been referred by Valadier)

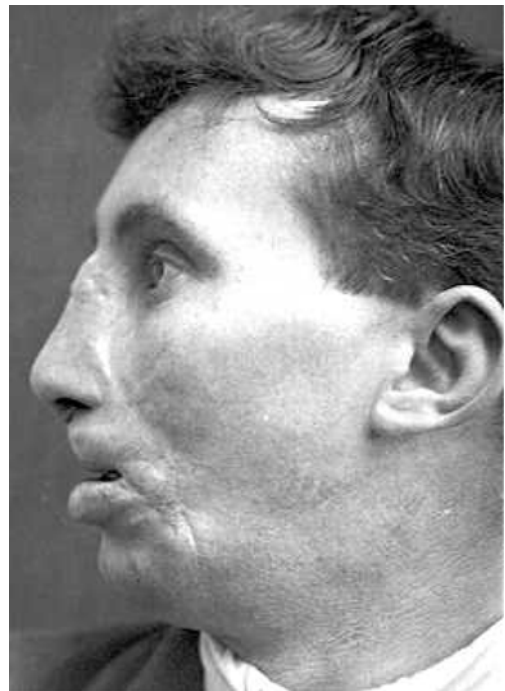


Figure 8 Pte Bell: final appearance. The initial primary closures have been undone and normal tissue returned to normal position – the first patient to exemplify Gillies' principle

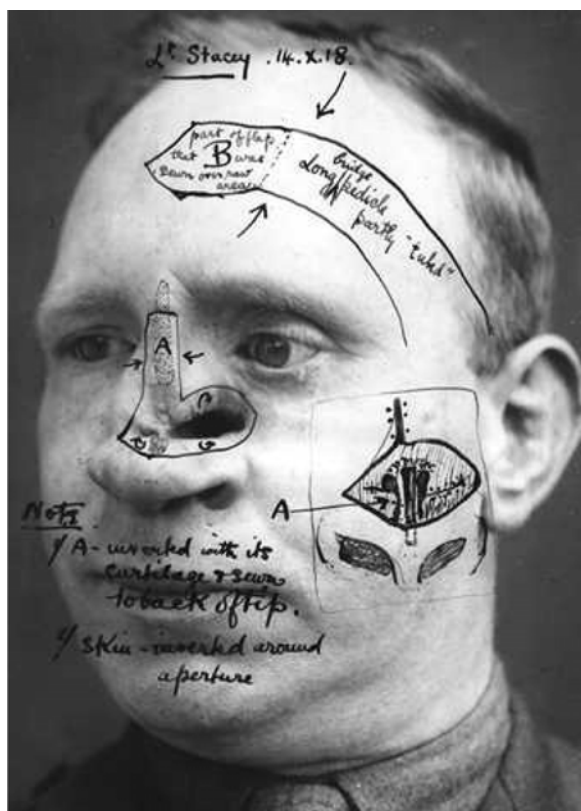


Figure 9 Photograph of Lt Stacey, RND, annotated by Gillies to show stages in the operative procedures

reception in the nation's teaching hospitals. It was not to be although it must be owned that Gillies does not appear to have been in a hurry to put himself about. He wrote 'There was a very enticing position waiting for me in my previous E.N.T. specialty, but in plastic surgery there was only a nebulous future'.⁶ He devoted some considerable time to writing with Mendelson the chapter on facial injury in the *Official History* (HMSO, 1922) and his first textbook *Plastic Surgery of the Face*, illustrated by cases from Sidcup, which is a masterpiece of clarity not least because of the profuse illustrations. When I recovered Sidcup's British Section notes from Queen Mary's Hospital Roehampton a small file of

page proofs were with them relating to the chapter on the nose (Figure 10). Gillies had been correcting these during a fishing trip; having realized that the daughter of the house in which he was staying (who had a nose that he thought could be improved) he left the proofs on his bedside table so she would see them when she cleaned his room. A referral followed a few weeks later. But there was clearly a view that plastic surgery was not a vital specialty, perhaps because cosmetic surgery was seen as an unnecessary vanity, and while Gillies did a considerable amount of facial reconstruction (cleft palates, burns) he also moved into the cosmetic side, embarking upon 'nose jobs' and breast reductions. Again he found it difficult on occasion to be serious, telling an improbable tale to an old patient of his from the war, Captain J.K. Wilson:

Sir Harold Gillies was a wonderful man, a genius and a success in everything to which he turned his hand: surgery, international golfer, music, inventor. It did not matter what. He was a law unto himself. Between the wars he was supposed to have taken up plastic beauty culture about which he told an amusing story. A young married woman had suffered facial disfigurement in a car accident. Sir H was called in to see what he could do in restoring her pristine beauty. After having had a look at her he turned to the husband, saying: 'Yes I think I can help, but it will need rather a large skin graft on her cheeks' for which purpose he took skin from the husband's bottom. The op was more than successful. Some time after the young husband bumped into Sir H embracing him in a most affectionate manner saying 'that he would never be able to thank him enough for what he had done', adding that he would never regret giving his wife the necessary skin and particularly from that part of his anatomy from which it was taken 'as whenever my mother-in-law spends the W/E with us and kisses my wife goodbye I always feel I'm getting my own back'.⁷

He received perhaps overdue recognition in 1930 with the award of a knighthood and was honoured by a cartoon in 'Punch', but he and his colleague from Sidcup, Tommy Kilner, remained the only two dedicated specialists in England until the 1930s, when Gillies was joined by Rainsford Mowlem and Archibald McIndoe. These four were the only plastic surgeons in the UK at the outbreak of the Second

⁶*Principles & Art*, p. 45.

⁷TWM PP/MCR/100; Capt JK Wilson.

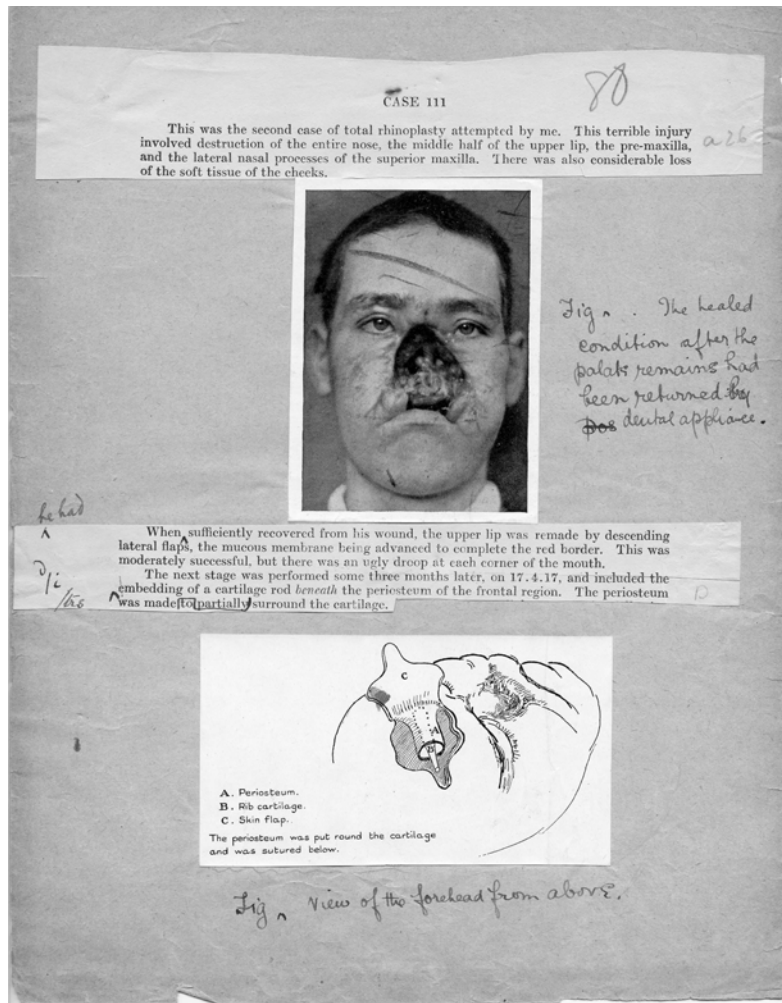


Figure 10 Page proof from *Plastic Surgery of the Face*; Pte Palmer is the subject

World War. Retained as an advisor to the armed forces and with Kelsey Fry, the dental surgeon with whom he had worked at Sidcup, he was instrumental in the organization of plastic surgery services. This time the idea of a single hospital was abandoned; Sidcup was well within range of enemy aircraft (indeed it was bombed twice) and it was decided to split the service. Gillies had already found a base at Rookdown House, at Park Prewett Hospital near Basingstoke and it was here that the main centre for the army was established. Mowlem went to St Albans, Kilner to Roehampton and McIndoe, whose

work on burned airmen was to help cast into oblivion Gillies's WWI work on burns, was appointed to the RAF designated hospital at East Grinstead.

After the war Gillies stayed on at Basingstoke and took on work at Roehampton. Always willing to embrace up-to-date recording of his operations he continued to use extensive black and white photography (sadly now disfigured by the extensive use of the new adhesive tape) but also experimented with colour, making use of a new (and very expensive) technique invented by Percy Hennell, which process produced prints that have not faded even today. His

best cases were made up into glass lantern slides of which many survive in the archives. He also embraced the moving image; we have copies of films made in the 1930s through to the 1960s and he was involved in a propaganda film during the war, shot in colour and with sound. His second book, *Principles and Art*, took shape with the help of a young American collaborator, Ralph Millard, who described how difficult life might be working for the irrepressible and often rude master (Millard, 1972). By this time plastic surgery was at last firmly established as a specialty in Britain, but Gillies continued to innovate and often offend people with his pranks. He would replace golf balls with ones of a different colour; he fooled his own butler by appearing at his front door in disguise. Denis Sugrue (1997) went to Rooksdown for an interview with echoes of Gillies's own first interview:

On inquiry at the porter's office, I was directed by an elderly gentleman to wait in the main hall along with the other candidates. Being last in line for interview I was left in glorious isolation until joined by the porter who proceeded to make conversation. His opening gambit was to inquire how much fishing I had done in Ireland, to which I replied in the negative. As to other sporting activities, I admitted there were none at that particular time. There followed a few desultory questions about my surgical activities, which I thought were none of his business. Returning to the question of sport, he expressed further curiosity regarding my sporting interests in the past. Feeling slightly irritated and intimidated by the old man's persistence I announced that I had been a member of the Irish Olympic rowing team which competed at Henley in 1948. He was most interested in this information and casually mentioned that he had rowed for Cambridge in the Boat Race. It emerged that he had also played golf for England and that painting and fishing were his main interests apart, of course, from plastic surgery.

Shortly afterwards I was called in to see the medical superintendent who, after a few perfunctory remarks, told me that Sir Harold Gillies had interviewed me in the hall and that my application was satisfactory. During the ensuing three years at Rooksdown House Sir Harold made no reference to our unconventional interview.

Technically he remained a brilliant and meticulous surgeon, instilling this virtue in others, but he

had not the speed of McIndoe and was frequently very late for his theatre lists. In his surgery as well as on the social scene he would push the boundaries of tolerance. Jacques Joseph had, between the wars, performed sex-change operations (male to female) but no-one had attempted the technically much more difficult operation the other way about until Gillies was persuaded to attempt this by Laura Dillon (who had had mastectomies and taken testosterone, turning into Michael before appearing at Harley Street). The story is stranger than fiction (Hodgekinson, 1989). The surgery, which began at Rooksdown in 1946, was protracted but eventually successful – after a fashion, as a photograph in the casenotes shows the new organ passing urine but being a rather odd shape. Certainly the procedure appears to have been done on an empirical basis. Doing the opposite from male to female for the first time was, however, preceded by a trial run 24 hours beforehand:

On the night before, the bust of Virchow and the Waterford glass in the consulting room had been moved out of the way to clear a place for three anatomists and three plastic surgeons to rehearse the steps of the operation on a dissected torso.⁸

Furthermore there was a legal issue to be overcome; castration without a medical indication was at the time illegal in the UK and Gillies glosses over how, and where, the operation was performed – although there is evidence that Dillon, then a male medical student in Dublin, may have done it.⁹ But the whole tale indicates, in more than one sense, Gillies's willingness to do the unthinkable. It seems likely that Gordon Ostlere had something to do with this, for writing as Richard Gordon (1967) he describes similar surgery in a novel.

Gillies was always kindness itself to his patients, for whom he would pen deprecating self-portraits. Pedicles would be given names, and if they failed would receive a funeral reading; one epitaph was to Horace 'to whom I was so attached'.¹⁰ A lifelong smoker (his official portrait on the occasion of his knighthood shows him seated in an awkward pose,

⁸*Principles & Art*, p. 387. The male-to female referred to is almost certainly Roberta Cowell, who wrote her autobiography (*Roberta Cowell's story*, Heinemann, 1954).

⁹Pagan Kennedy, personal communication.

¹⁰P. Lilley, personal communication.

with cigarette dangling, and photographs of clinics at Rooksdon of his outpatient clinic show his students smoking during a consultation), he had to give up his outside pursuits when he developed intermittent claudication and his sudden death in 1960, admittedly at the age of 78, was the result of arterial disease.

What would Gillies have made of surgery today? He would undoubtedly have been impressed by, and enthusiastically employed, microsurgical techniques and MRI modelling which have, with other developments, enabled plastic surgery to advance in a way that Gillies could scarcely have predicted 40 years ago, but as an outsider I remain impressed that his guiding principles still guide and that later surgeons who have operated on his old patients did so with a sense of awe (Pigott, 2000). The plethora of articles that continue to revisit his work, his instruments and his antics only reinforce his stature as one of the great surgeons of the 20th century. However I doubt he would have tolerated the finance- and management-driven culture of today's National Health Service – and as for practising evidence-based medicine, he epitomizes the absurdity of slavish devotion to this creed, as he and his colleagues had no evidence base until they created their own on the battlefield casualties of the Great War.

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Appendices: Sir Harold Gillies

Principles (as outlined in *Principles & Art of Plastic Surgery*)

- 1) **Observation is the basis of surgical diagnosis**
There is no better training for a surgeon than to be taught observation by a physician.
- 2) **Diagnose before you treat**
- 3) **Make a plan and a pattern for this plan**
Use paper, bandage or jaconet shaped to the defect and carry out a pretence operation in reverse. Do not rush in with a piece of skin hoping it will fit.

4) Make a record

Start with a diagram in the notes ... while you operate have special methods recorded by artists or Leica ... Follow up the case with the camera, for that is where most of us slip up.

5) The lifeboat

... It is well to have a reserve plan.

6) A good style will get you through

Surgical style is the expression of personality and training exhibited by the movements of the fingers; its hallmark – dexterity and gentleness.

7) Replace what is normal in a normal position and retain it there

If some of the bones of the face have got out of place ... it is incumbent on you to put them back in place and hold them there ... If the soft tissue defect is too large for primary closure without distortion, it is better to retain what is left in normal position and so define the defect to be filled.

8) Treat the primary defect first

Borrow from Peter to pay Paul only when Peter can afford it. When Mahomet is a long way from the mountain, try to move the mountain to Mahomet.

9) Losses must be replaced in kind

... thus the eyebrow is grafted from the hairy scalp, thin skin for an eyelid and thick for the palm.

10) Do something positive

When a lacerated lip is a jig-saw puzzle, look for landmarks and if you can find two bits that definitely fit, put them together – at least you will have made a vital *first move* ...

11) Never throw anything away

In plastic surgery never throw anything away until you are sure you do not want it.

12) Never let routine methods become your master

Routine methods must be mastered, but never let them master you. The answer to the question,

How do you make this or do that? should be, as in all surgery, 'Show me the case!'

13) Consult other specialists

The reaction of one man's mind to another's is increased by the stimulus of sharing mutual problems ...

14) Speed in surgery consists of not doing the same thing twice

It's the old story of the hare racing back and forth at terrific speed while the tortoise, without retracing one step, slowly crosses the finish line.

15) The after care is as important as the planning or the surgery itself

Or, for that matter, the surgery itself! ... How futile it is to lose flap or graft for the lack of a little postoperative care.

16) Never do today what can be honourably be put off till tomorrow

... *when in doubt, don't!* ... It is well to remember that *Time*, although the plastic surgeons most trenchant critic, is also his greatest ally.

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