

ADVENTURES IN
HUMAN
BEING

GAVIN FRANCIS

P
PROFILE BOOKS

wellcome
collection

First published in Great Britain in 2015 by
PROFILE BOOKS LTD
3 Holford Yard
Bevin Way
London
WC1X 9HD
www.profilebooks.com

Published in association with Wellcome Collection

**wellcome
collection**

Wellcome Collection
183 Euston Road
London NW1 2BE
www.wellcomecollection.org

Copyright © Gavin Francis, 2015

1 3 5 7 9 10 8 6 4 2

Typeset in Sabon by MacGuru Ltd
info@macguru.org.uk
Printed and bound in Great Britain by
Clays, Bungay, Suffolk

The moral right of the author has been asserted.

All rights reserved. Without limiting the rights under copyright reserved above, no part of this publication may be reproduced, stored or introduced into a retrieval system, or transmitted, in any form or by any means (electronic, mechanical, photocopying, recording or otherwise), without the prior written permission of both the copyright owner and the publisher of this book.

A CIP catalogue record for this book is available from the
British Library.

ISBN 978 1 78125 341 0
eISBN 978 1 78283 104 4



Contents

<i>A note on confidentiality</i>	xi
<i>Prologue</i>	i
Brain	
1. Neurosurgery of the Soul	7
2. Seizures, Sanctity & Psychiatry	15
Head	
3. Eye: A Renaissance of Vision	31
4. Face: Beautiful Palsy	44
5. Inner Ear: Voodoo & Vertigo	60
Chest	
6. Lung: The Breath of Life	71
7. Heart: On Seagull Murmurs, Ebb & Flow	82
8. Breast: Two Views on Healing	92
Upper Limb	
9. Shoulder: Arms & Armour	103
10. Wrist & Hand: Punched, Cut & Crucified	115
Abdomen	
11. Kidney: The Ultimate Gift	131
12. Liver: A Fairy-Tale Ending	146
13. Large Bowel & Rectum: A Magnificent Work of Art	156

Pelvis	
14. Genitalia: Of Making Babies	165
15. Womb: Threshold of Life & Death	180
16. Afterbirth: Eat it, Burn it, Bury it under a Tree	186
Lower Limb	
17. Hip: Jacob & the Angel	199
18. Feet & Toes: Footsteps in the Basement	210
<i>Epilogue</i>	223
<i>Acknowledgements</i>	229
<i>Notes on Sources</i>	233
<i>List of Images</i>	241
<i>Index</i>	245

Prologue

If a man is made of earth, water, air and fire, so is this body of the earth; if man has in him a lake of blood ... the body of the earth has its ocean, which similarly rises and falls.

Leonardo da Vinci

AS A CHILD I didn't want to be a doctor, I wanted to be a geographer. Maps and atlases were a way of exploring the world through images that revealed what was hidden in the landscape, and were also of practical use. I didn't want to spend my working life in a lab or a library – I wanted to use maps to explore life and life's possibilities. I imagined that by understanding how the planet was put together I'd reach a greater appreciation of humanity's place in it, as well as a skill that might earn me a living.

As I grew older that impulse shifted from mapping the world around to the one we carry within; I traded my geographical atlas for an atlas of anatomy. The two didn't seem so different at first; branching diagrams of blue veins, red arteries and yellow nerves reminded me of the coloured rivers, A-roads and B-roads of my first atlas. There were other similarities: both books reduced the fabulous complexity of the natural world to something comprehensible – something that could be mastered.

The earliest anatomists saw a natural correlation between the human body and the planet that sustains us;

the body was even a *microcosm* – a miniature reflection of the cosmos. The structure of the body mirrored the structure of the earth; the four humours of the body mirrored the four elements of matter. There is sense to this: we are supported by a skeleton of calcium salts, chemically similar to chalk and limestone. Rivers of blood wash into the broad deltas of our hearts. The contours of the skin resemble the rolling surface of the land.

A love for geography never left me; as soon as the demands of medical training lessened I began to explore. Sometimes I found medical work as I travelled, but more often moved just to see each new place for myself – to experience variety in landscapes and peoples, and become acquainted with as much of the planet as I could. When writing about those travels in other books, I've tried to convey something of the insights those landscapes have given me, but my work has always brought me back to the body, as my means of making a living, and as the place from which all of us start and end. Learning about the human body is different to learning about anything else: you *are* the very object of attention, and working with the body has an immediacy and transformational power that is unique.

After medical school I intended to train in emergency medicine, but the brutality of the night shifts, and the fleeting contact with patients, began to erode my sense of satisfaction with the work. I've taken jobs as a paediatrician, an obstetrician, and a physician on a long-stay geriatric ward. I've been a trainee surgeon in orthopaedics and neurosurgery. In the Arctic and the Antarctic I've been an expedition medic, and in Africa and India I've worked in simple community clinics. These roles have all informed the way I understand the body: emergency situations are extreme and offer a heightened awareness of human lives at their most vulnerable, but over the years some of the deepest and most rewarding insights medicine has given me have been from quieter, everyday encounters.

Latterly, I've worked from a small, inner-city clinic as a family doctor.

Culture continually reshapes the ways we imagine and inhabit the body – even as doctors. Through my encounters with patients I'm often aware of how some of humanity's finest stories and greatest art have relevance to, and resonance with, modern medical practice. The chapters that follow look deeper into some of those connections.

Some examples: when assessing someone with paralysis of the face, I'm reminded not just of the frustration of being unable to express oneself, but of the age-old difficulty artists have had in accurately portraying expression. When thinking about recovery from breast cancer, I've been conscious that perspectives on what constitutes healing are different for each patient. Three-thousand-year-old texts like Homer's *Iliad* can give insights about shoulder injuries, both ancient and modern, and the fairy tales we learned in the nursery eloquently explore ideas of illness, coma and transformation. The customs we bring to bear on our bodies are wonderfully diverse, something that struck me when thinking about the ways in which we dispose of the placenta and umbilical cord. Myths of struggle and redemption echo the convalescence stories going on in orthopaedic wards all over the world.

The word 'essay' comes from a root meaning 'trial' or 'attempt', and each chapter in this book is an essay attempting to explore just one part of the body, from just one of many perspectives. It hasn't been possible to be comprehensive – we are composed of a multitude of parts, and scores of ailments afflict every one of them. I've ordered the chapters from head to toe, like certain anatomy texts, though they can be read in any order. Head to toe is probably the most appropriate way to approach them – journeying alongside me the length of the human body.

Medicine has been my livelihood, but working as a physician has also delivered me a lexicon of human experience

– I’m reminded every day of the frailties and strengths in each of us; the disappointments we carry as well as the celebrations. Beginning a clinic can be like setting out on a journey through the landscape of other people’s lives as well as their bodies. Often the terrain is well known to me, but there are always trails to be broken, and every day I glimpse a new panorama. The practice of medicine is not just a journey through the parts of the body and the stories of others, but an exploration of life’s possibilities: an adventure in human being.

IT’S A TYPICAL MORNING in the clinic, my coffee cooling as I look down a list of thirty or forty names on a screen – my patients for the day. Many of the names I know well, but the first on the list is new to me. With a click of the mouse his medical records pop up, and at the top-left corner I notice that his date of birth was just last week. He’s only a few days old; our encounter today will be the first entry into medical notes that, all being well, will follow him for the next eight or nine decades. The emptiness of the screen seems to shimmer with all the possibilities that lie ahead of him in life.

From the waiting-room doorway I call the baby’s name. His mother is cradling the boy to her breast; she hears me and gets gingerly to her feet. She smiles and makes eye contact, then, with the baby in her arms, follows me back to the office.

‘I’m Gavin Francis’, I say as I show her where to sit, ‘one of the doctors. How can I help?’

She glances down at her son, with a look of both pride and anxiety, and I watch her deciding how to begin.

Neurosurgery of the Soul

Thus strangely are our souls constructed, and by such slight ligaments are we bound to prosperity or ruin.

Mary Shelley, *Frankenstein*

I WAS NINETEEN YEARS OLD when I first held a human brain. It was heavier than I had anticipated; grey, firm and laboratory-cold. Its surface was slippery and smooth, like an algae-covered stone pulled from a riverbed. I had a terror of dropping it and seeing its tight contours burst open on the tiled floor.

It was the start of my second year at medical school. The first year had been a helter-skelter of lectures, libraries, parties and epiphanies. We'd been asked to learn dictionaries of Greek and Latin terminology, strip a corpse's anatomy to the bone and master the body's biochemistry, along with the mechanics and mathematics of each organ's physiology. Each organ, that is, except for the brain. The brain was for second year.

The Neuroanatomy Teaching Laboratory was on the second floor of the Victorian medical school building in central Edinburgh. Carved into the stone lintel over the entrance was:

SURGERY
ANATOMY
PRACTICE OF PHYSIC

The greater weighting given to the word ANATOMY was a declaration that the study of the body's structure was of primary importance, and the other skills we were engaged in learning – those of surgery and medicine ('physic') – were secondary.

To get to the Neuroanatomy lab we had to climb some stairs, pass under the jawbone of a blue whale and slip between the articulated skeletons of two Asian elephants. There was something reassuring in the dusty grandeur of these artefacts, their cabinet-of-curiosities oddity, as if we were being initiated into a fraternity of Victorian collectors, codifiers and classifiers. There was a second set of stairs, then some double doors, and there they were: forty brains in buckets.



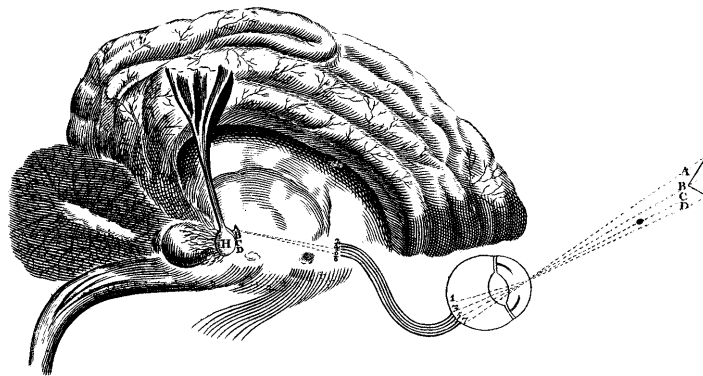
(Shake up before use)

Our lecturer, Fanney Kristmundsdottir, was Icelandic and doubled as a welfare officer, so she was also the person you were sent to see if you found yourself pregnant, or had failed an exam more than once. Standing at the front of the class she held up a half-brain, and began to point out its lobes and divisions. Seen in cross section, the brain's core was paler than the surface. Its outer surface was smooth but its interior was a complex series of chambers, nodules and fibrous bundles. The chambers, known as 'ventricles', were particularly intricate and mysterious.

I lifted a brain from its bucket, blinking at the fumes that rose from the preserving fluids. It was a beautiful object. As I cradled the brain in my hands I tried to think of the consciousness it had once supported, the emotions that had once crackled through its neurons and synapses. My dissection-mate had studied philosophy before switching to medicine. 'Hand me that,' she said, taking the brain in her hands. 'I want to find the pineal body.'

'What's the pineal body?'

'Have you never heard of Descartes? He said it's the seat of the soul.'



She put her thumbs between the two hemispheres, as if to open the pages of a book. At the seam that ran through the

middle she pointed out a little lump, a grey pea, towards the back. 'There it is,' she said. 'The seat of the soul.'

Some years later I became a trainee neurosurgeon, and began to work with living brains every day. Each time I walked into the neurosurgical theatre I felt an urge to slip off my plastic clogs out of respect. The acoustics played a part in it: the clatter of a trolley or the whisper of an orderly seemed to echo and reverberate around the space. The room itself was a hemisphere, an upturned bowl of geodesic panels built in the 1950s. It looked the way I imagine Cold War radar domes or Dounreay's spherical nuclear reactor would appear from the inside. Its design seemed to embody that decade's belief in technology's promise of a future – an imminent future – without want or disease.

But there was still a lot of disease. I worked long days and nights with injured brains, and soon came to treat them as bruised or bloodied organs like any other. There were the victims of strokes, 'struck' dumb and paralysed by blood clots. There were creeping invasive tumours, wearing away at skulls and squeezing out personality. There were the comatose and catatonic, the car-crashed and gun-shot, the aneurysmal and haemorrhagic. There was little opportunity to think about theories of the mind, or the soul, until one day the professor – my boss – asked me to help out on a special case.

By the time I had scrubbed in and put on my gown, he was already at work. 'Come in, come in,' he said, looking up from a heap of green cloth on a table. 'You're just in time for the fun part.' I was dressed as he was; draped in the same green cloth as lay on the table, a surgical mask over my face and nose. The theatre lights flashed in the professor's spectacles. 'We're just cutting the window in the skull.' He turned back to his work, and resumed his conversation with the nurse opposite; they were discussing an American war movie. He began to cut into the skull with a saw. Smoke rose from the bone, together with a smell reminiscent of

barbecued meat. The nurse sprayed water over the cutting surface, to catch the dust and keep the bone cool. She also held a suction tube to draw up the smoke, which threatened to cloud the professor's view.

Seated to one side was the anaesthetist, who wore blue pyjamas instead of a green gown; he was doing a crossword, and occasionally would reach under the pile of drapes. There were a couple of other nurses, standing back from the table, whispering to one another with their hands held behind their backs. 'Stand over there,' the professor said, and nodded to the space opposite. I jumped into position, and the nurse handed me the suction tube. I had already met the patient – let's call her Claire – and knew that she suffered from severe intractable epilepsy. Here, unusually, was someone affected not by tumour or trauma, but by a delicate shift in the electrical balance of her tissues. Her brain was structurally normal but functionally fragile, forever teetering on the edge of seizures. If normal cerebral activity – thought, speech, imagination, sensation – moves through the brain with the rhythms of music, seizures might be likened to a deafening blast of static. Claire had been so injured, frightened and handicapped by these seizures that she was prepared to risk her life with this surgery in order to be free of them.

'Suck,' the professor said. He changed the position of the tube in my hands so that it hovered over his saw blade, then began to cut through more bone. 'The neurophysiologists tell me her seizures originate just under here.' He tapped the exposed skull with a pair of forceps; the noise was like a coin dropped on porcelain. 'That's where the seizures are coming from.'

'So we'll cut out the source of the seizures?'

'Yes, but the source is very close to the area responsible for speech. She won't thank us if we make her mute in the process.'

Once he had sawn through the skull, the professor prised in little levers, similar to those used to take the tyre from a

bicycle wheel, and lifted up a medallion of bone. He handed it to the nurse. 'Don't lose that,' he said. The window was about five centimetres in diameter, and revealed the *dura mater*, the protective layer that lies beneath the skull, shiny and opalescent like the inside of a mussel shell. The professor removed that too, and I looked down on a disc of creamy pink matter, ribbed like sand at low tide, with blood vessels traced over its surface in filaments of purple and red. The brain itself was slowly pulsating, rising and falling with each beat of the patient's heart.

And so to the 'fun' part, as the professor put it. The dose of anaesthetic was slowly reduced, and Claire began to groan. Her eyes flickered and then opened. The drapes had been pulled back, and the steel pins fixed into her skull were now visible.

A speech therapist had arranged her chair next to the operating table so that she was able to bend forward, close to Claire's face. The therapist explained that Claire was in an operating theatre, that she couldn't move her head, and that she would be shown a series of cards and should name each object and what could be done with it. Claire grunted, unable to nod, and they began. Her voice was drawling and disembodied – an effect of the sedatives. The cards showed images like the ones you'd find in a child's storybook. 'Clock,' she said, 'you tell the time with it.' 'Key,' she said, 'you open doors with it.' The images of simple objects went on, drawing her back to her earliest linguistic memories. Her concentration was intense, eyebrows creased, forehead glistening with sweat.

Meanwhile, the professor had swapped his saw and scalpel for a nerve stimulator. He began to dab at the surface of the brain delicately, at first holding his breath. There were no hints of bravado now, no jokes or chat: his entire attention was concentrated on two steel points separated by a couple of millimetres. The electrical effect was minimal – would barely be felt if applied to the skin – but on the sensitive surface of the brain its effect was overwhelming.