

Neuroscience

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A QUESTION FOR NEUROSCIENTISTS

Where does a memory sit, when it's at leisure?
Where does it cool its heels, await our pleasure?
For whenever we are shown the busy brain,
We see the thoughts and memories entertain
Us, but always like honey bees in a hive,
Entering and leaving, keeping themselves alive
In restless motion, either coming in and out,
Or from lobe to lobe, bustling round about.
In through the senses' portals in endless flow,
Or out through speech or action, what we *know*
Flickers from cell to cell like summer lightning,
The dendrite forests darkening and brightening
As something being stored, or being recalled,
Is passed round like a parcel: never stalled?
Never at rest? Or are there hours or days
When a memory's not moving? When it stays
Still, drowsing like a sleepy drone,
Not being thought on, just being left alone.
So where's its home? Its niche? Its nest?
The place it hangs out when it needs a rest?
In the nucleus at a neurone's heart?
In many neurones? In what part
Of cell or lobe or brain does it reside
While waiting for the call to come onside?
And in what shape or form is it recorded,
Until it comes forth, smiling and applauded,
Twinkling, a galaxy of stars, each spark

Peppering our consciousness through dark
Times and good: soothing, aiding or warning,
Awake or in dreams, to make us smile at morning.
If thought, like light, can be particle, or wave,
What is memory's photon, how is it saved?

To recall them is to move them, so which cell keeps
Each of my honeyed memories, while it sleeps?

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Diagnosis

The consultant's room
A gallery
Exhibiting the scans.
My head
An apple sliced,
My core on public view.

To launch the show
An invited few
Stand round, comment
On the pictures,
Discuss design,
Flaws in execution.

I have no trained eye
To appraise
The work of art.
My interest more visceral,
I await
Their verdict.

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PUMPING IONS

Inside my father's brain,
Like a stinging cell in a jellyfish
Each neurone is winding
Itself like a watch, tightening
Its spring, squeezing its skin, pumping
Sodium out, potassium in,

Defying the current in the fluid
It swims in, which would leach
Potassium out, leak sodium in.

High on sugar, prepared to lash out,
Crack its spark of a whip,
When a message arrives like a scent
In the wind, to fire! pass it on,
In a flash of relief, a flood of release,
Sodium in, potassium out.

On a chemical wave Nat King Cole,
apple tart, trigger one then another
In a firecracker chain, but always renewed
Like magic candles which keep on igniting
While the neurone's rewinding,
Plumping and tightening,
Sodium out,
Potassium in.

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Ward 23

(Leeds General Infirmary)

In a little while I learn I am residing
in the land of the *Space Occupying Lesion*.

Space Occupying Lesions have been hiding behind spine and skull
they have been picked out of nooks and crannies in bone
and cut from custardy brains with difficulty

The spaces they occupied are marked by sickle shaped scars
on shaven or semi shaven heads, deep wounds
fastened by staples, stitches and steri-strips.

They have terrible and marvellous names –
astrocytoma, acoustic neuroma, medulloblastoma
oligodendroglioma, ependymoma.

By night I walk the decks of this strange land
it is the air-conditioned sterilised space ship "*Neurosurgery*."
It has a feisty crew, the rest of us are passengers travelling in hope
back to ourselves or to some other place we have yet no knowledge of.

From the bridge I see city lights far below
I am watching our own Earth rotating in its orbit
I will be returned soon enough.

Mine's a neurilemmoma.
I peer into darkened rooms
observe dozing and comatose bodies
fastened to bleeping and flashing machines

read notice boards, check "procedures"
ponder the imponderable.
There are no neat formulas here.

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RAT BRAIN:

WAVING NOT DROWNING

Delta, theta, alpha, beta, gamma:
This sliver of rat brain, suspended
In a beaker of bubbling broth, still
Emits waves, its neurones firing,
Recharging, firing, for hours, even
Days. It's hard to believe I'm not
Watching it thinking; the oscillations
Printing out like ranges of crazy hills
Could be peaks of squeaks, twitches
Of chopped off tail or whisker, thoughts
Of sex or scraps, circling like rats
In a cage, with no way out. Even
Governments have their doubts, even
A lab rat might still think, worse, know
It's still thinking, with a whole brain:
Too horrible to allow, even to scientists
Who breed, euthanize, dissect. Hence
This mere shaving of hippocampus,
Firing away at nothing. How aware
Of itself would your brain be, alive
In a sensory deprivation tank? Thinking
About consciousness with our conscious
Mind is hard. Harder, to imagine
Its absence, using the same unvarying,
Inescapable equipment, chasing our
Mental tails round the cages of our skulls.

Delta, theta, alpha, beta, gamma: each
Tide of waves newly detected, wash us closer
To what we don't yet know, what other
Electrical storms crackle, waving
Bravely, unseen; may be waving now,
In this submerged slice of rat, signalling
Mayday, mayday, in rodent morse.

Hippocampus

seven times seven digits
whispered under breath
ethylcholine boating
between dendrites
zigzagging neurons
spark axons – the thread-fuses –
that blaze the ram's horns
of my seahorse
seven digits breathed
seven times I force my fingertip
tingling with a billion sensors
to trace the pushbutton pattern
of the phone
till you become implicit

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THE CIRCLE OF WILLIS

A Villanelle

A spring welling up to the mind's castle keep,
The arteries rise with their blessing of blood,
Through the Circle of Willis, a crown buried deep.

At the base of the brain, out of injury's reach,
The vessels are linked, an arterial loop,
Both a fence and a well for the mind's castle keep.

If one artery's dammed, a drought-dried creek,
Or bursts through its banks in a salt red flood,
The Circle of Willis, a crown buried deep

Can allow for another to make up for the leak,
To let the brain breathe, to quickly make good
The supply of hot life for the mind. It may keep

The brain thinking, alive and complete,
As the royal physician first understood,
Thomas Willis, unearthing the crown buried deep.

Willis had his own circle, Wren, Locke, the elite
In the mid-sixteen hundreds, great minds who would
Begin to draw maps of the brain's castle keep:

But nothing is failsafe, nothing can keep
Even a King's brain from dying: nor could
Charles' Circle of Willis, with the axe buried deep.

Both a well and a wall for the mind's castle keep,
Built by time, sex, and chance: a ring of bright blood,
Salvation or stopgap. At a stroke, staunch or breached,
The Circle of Willis, our crown buried deep.