

Phantoms

(From *The man Who Mistook His Wife for a Hat*” by Oliver Sacks)

A ‘phantom’, in the sense that neurologists use, is a persistent image or memory of part of the body, usually a limb, for months or years after its loss. Known in antiquity, phantoms were described and explored in great detail by the great American neurologist Silas Weir Mitchell, during and following the Civil War.

Weir Mitchell described several sorts of phantom—some strangely ghost-like and unreal (these were the ones he called ‘sensory ghosts’); some compellingly, even dangerously, life-like and real; some intensely painful, others (most) quite painless; some photographically exact, like replicas or facsimiles of the lost limb, others grotesquely foreshortened or distorted ... as well as ‘negative phantoms’, or ‘phantoms of absence’. He also indicated, clearly, that such ‘body-image’ disorders— the term was only introduced (by Henry Head) fifty years later— might be influenced by either central factors (stimulation or damage to the sensory cortex, especially that of the parietal lobes), or peripheral ones (the condition of the nerve-stump, or neuromas; nerve-damage, nerve-block or nerve-stimulation; disturbances in the spinal nerve-roots or sensory tracts in the cord). I have been particularly interested, myself, in these peripheral determinants.

The following pieces, extremely short, almost anecdotal, come from the ‘Clinical Curio’ section of the *British Medical Journal*.

Phantom Finger

A sailor accidentally cut off his right index finger. For forty years afterwards he was plagued by an intrusive phantom of the finger rigidly extended, as it was when cut off. Whenever he moved his hand toward his face—for example, to eat or to scratch his nose — he was afraid that this phantom finger would poke his eye out. (He knew this to be impossible, but the feeling was irresistible.) He then developed severe sensory diabetic neuropathy and lost all sensation of even having any fingers. The phantom finger disappeared too.

It is well known that a central pathological disorder, such as a sensory stroke, can ‘cure’ a phantom. How often does a peripheral pathological disorder have the same effect?

Disappearing Phantom Limbs

All amputees, and all who work with them, know that a phantom limb is essential if an artificial limb is to be used. Dr Michael Kremer writes: ‘Its value to the amputee is enormous. I am quite certain that no amputee with an artificial lower limb can walk on it satisfactorily until the body-image, in other words the phantom, is incorporated into it.’

Thus the disappearance of a phantom may be disastrous, and its recovery, its reanimation, a matter of urgency. This may be effected in all sorts of ways: Weir Mitchell describes how, with faradizations of the brachial plexus, a phantom hand, missing for twenty-five years, was suddenly ‘resurrected’. One such patient, under my care, describes how he must ‘wake up’ his phantom in the mornings: first he flexes the thigh-stump towards him, and then he slaps it sharply — ‘like a baby’s bottom’ — several times. On the fifth or sixth slap the phantom suddenly shoots forth, rekindled, *fulgurated*, by the peripheral stimulus. Only then can he put on his prosthesis and walk. What other odd methods (one wonders) are used by amputees?

Positional Phantoms

A patient, Charles D., was referred to us for stumbling, falls and vertigo—there had been unfounded suspicions of labyrinthine disorder. It was evident on closer questioning that what he experienced was not vertigo at all, but a flutter of ever-changing positional illusions— suddenly the floor seemed further, then suddenly nearer, it pitched, it jerked, it tilted—in his own words ‘like a ship in heavy seas’. In consequence he found himself lurching and pitching, *unless he looked down at his feet*. Vision was necessary to show him the true position of his feet and the floor—feel had become grossly unstable and misleading—but sometimes even vision was overwhelmed by feel, so that the floor and his feet *looked* frightening and shifting.

We soon ascertained that he was suffering from the acute onset of *tabes* — and (in consequence of dorsal root involvement) from a sort of sensory delirium of rapidly fluctuating ‘proprioceptive illusions’. Everyone is familiar with the classical end-stage of *tabes*, in which there may be virtual proprioceptive ‘blindness’ of the legs. Have readers encountered this intermediate stage—of positional phantoms or illusions—due to an acute (and reversible) tabetic delirium?

The experience this patient recounts reminds me of a singular experience of my own, occurring with the recovery from a proprioceptive scotoma. This was described (in *A Leg to Stand On*) as follows:

I was infinitely unsteady, and had to gaze down. There and then I perceived the source of the commotion. The source was my leg—or, rather, that thing, that featureless cylinder of chalk which served as my leg—that chalky-white abstraction of a leg. Now the cylinder was a thousand feet long, not a matter of two millimeters; now it was fat, now it was thin; now it was tilted this way, now tilted that. It was constantly changing in size and shape, in position and angle, the changes occurring four or five times a second. The extent of transformation and change was immense—there could be a thousandfold switch between successive ‘frames’ ...

Phantoms — Dead or Alive?

There is often a certain confusion about phantoms—whether they should occur, or not; whether they are pathological, or not; whether they are ‘real’, or not. The literature is confusing, but patients are not— and they clarify matters by describing different sorts of phantoms. Thus a clear-headed man, with an above-the-knee amputation, described this to me: *There’s this thing, this ghost-foot, which sometimes hurts like hell—and the toes curl up, or go into spasm. This is worst at night, or with the prosthesis off, or when I’m not doing anything. It goes away, when I strap the prosthesis on and walk. I still feel the leg then, vividly, but it’s a good phantom, different—it animates the prosthesis, and allows me to walk.*

With this patient, with all patients, is not *use* all-important, in dispelling a ‘bad’ (or passive, or pathological) phantom, if it exists; and in keeping the ‘good’ phantom—that is, the persisting personal limb-memory or limb-image—alive, active, and well, as they need?

Postscript

Many (but not all) patients with phantoms suffer ‘phantom pain’, or pain in the phantom. Sometimes this has a bizarre quality, but often it is a rather ‘ordinary’ pain, the persistence of a pain previously present in the limb, or the onset of a pain that might be expected were the limb actually present. I have—since the original publication of this book - received many fascinating letters from patients about this: one such patient speaks of the discomfort of an ingrown toenail, which had not been ‘taken care of before amputation,

persisting for years after the amputation; but also of an entirely different pain—an excruciating root-pain or ‘sciatica’ in the phantom—following an acute ‘slipped disc’, and disappearing with removal of the disc and spinal fusion. Such problems, not at all uncommon, are in no sense ‘imaginary’, and may indeed be investigated by neurophysiological means.

Thus, Dr Jonathan Cole, a former student of mine and now a spinal neurophysiologist, describes how in a woman with persistent phantom leg pain, anesthesia of the spinous ligament with Lignocaine caused the phantom to be anaesthetized (indeed to disappear) briefly; but that electrical stimulation of the spinal roots produced a sharp tingling pain in the phantom quite different from the dull one which was usually present; whilst stimulation of the spinal cord higher up reduced the phantom pain (*personal communication*). Dr Cole has also presented detailed electrophysiological studies of a patient with a sensory polyneuropathy of fourteen years’ duration, very similar in many respects to Christina, the “Disembodied Lady” (see *Proceedings of the Physiological Society*, February 1986, p. 5IP).