

Chapter 1: Introduction

This thesis describes some of Wilkie Collins' ideas and attitudes in the context of an accumulating mass of scientific knowledge. It is concerned with sources of knowledge and the changing relationship between art and science.

For the majority of Victorians "science" meant something different from what we mean today.¹ Now "science" is specifically a branch of knowledge systematised to deal mainly (but not exclusively) with the material and functions of the physical world and "science" is conducted on objective principles. For most Victorians, however, "science" continued to be the term used to cover the explosion of knowledge that was occurring. True to its root meaning, it could refer to any specified type of knowledge pursued in an organised fashion so that, in its broadest sense, "science" included branches as diverse as astronomy and dye stuffs, statistics and sanitation, optics and life expectancy, acoustics and numismatics, geodesy and philology, physiognomy and criminology, geology and graphology--or a host of other "ologies."

To gain some chronological perspective on how Victorians viewed science I have looked at most issues of the conservative *Blackwood's, Edinburgh Magazine* from 1840 to 1873. It seems that, during the 1840s, "science" (with a small "s") was the word of the day and the label was being attached to any and all sorts of subjects. But articles on scientific subjects were comparatively rare. One article praising "Physical Science in England" appeared in October 1843 and stressed the importance and limitations of scientific theory. However, its focus was biassed: of the daguerreotype (523), instead of valuing the process, the writer jealously criticised the French fad and concluded that if there had to be photographs

¹ See, for example, Cannon's "Science as Norm of Truth" (2-3).

then the English ones would be superior (519-20). Philology was reported (Feb. 1840) and there were articles reporting chemistry as a valuable but insufficiently appreciated adjunct to farming (June 1842, Apr. 1843). I observed that science was often ridiculed. While there were detailed articles on, for example, sensory perception,² spiritualism and mesmerism (Sept. 1840), health spas (Oct. 1840, June 1841), and a connection was drawn between health and morality (Feb. 1840, Feb. 1845), the bulk of articles were non-scientific and concerned reviews, exhibitions, London, history and style.

By the early 1850s the emphasis was on free trade, politics and anti-papist sentiments but there were also articles featuring exploration (Aug. 1843), and gold, currency and emigration when, in May 1853, "Dr Chalmers as Political Economist" defined economics as "science." The Americas received attention (Dec. 1851). There were also signs of a shift in opinion: science was being taken more seriously. "Vegetable Kingdom" (Mar. 1853) ended with the suggestion that future numbers might address questions of natural science -- as if the editor was engaging in a little market research.

By the early 1860s articles suggest that Victorians were concerned about the relationship between technology and art and were seeking a tasteful blend of manufacture and aesthetics (Feb. 1860). By this time, too, articles were considering the matter of evidence: differentiating fact from inference (related to tricksters Oct. 1860), investigating judicial puzzles (May, Nov. 1860), and trying to reach conclusions about reputed traces of primeval man (Oct. 1860). G.H.Lewes, reporting "Theories of Food" (Dec. 1860), was concerned with methodology and the inter-relatedness of branches of science, insisting that to study food, heat and fat required the

² "The Crisis of Modern Speculation" featured in October 1841 and a discussion on "Berkeley and Idealism" in June 1842. I shall refer to these later.

combined efforts of chemist, physicist and physiologist. And he was emphatic that one could not deduce rules for the organic, vitalist world from studying inorganic phenomena. The danger of drawing moral generalisations from anthropological study was recognised in "Uncivilised Man" (Jan. 1861). Arguments regarding spontaneous generation (Feb. 1861) were aired. Attention was drawn to a new journal, *The Natural History Review* (Mar. 1861) dealing with perception and asking whether antennae hear or operate by touch by sensing the vibrations of sound. Maury's oceanic charts were praised (Mar. 1861) as interesting and useful science; spontaneous combustion (Apr. 1861) was dismissed from belief.

Within the span of forty years I observed the attitude of *Blackwood's* to shift from neglect, ridicule or suspicion to enquiry and challenge. See, for instance, reviews of new books (July 1871) supporting man's distinctiveness and superiority and opposing Tyndall's materialistic theory of the origin of man. In the same month "Mr Mill on Land" placed more credit on intellectual investigations than on end-products (in construction and technology) that were, in Mill's view, disproportionately esteemed.

To balance *Blackwood's* conservatism I looked at *All the Year Round* from April 1859 to September 1862. There was more and frequent coverage of science-related subjects. Also the tone was more light-hearted and chatty. Articles concerned the weather (Jan. 14, 1860), clean water (Sept. 8, Mar. 31, 1860), health products (Apr. 30, 1859), adulterated foods, baking (Mar. 3, 1860), exercise (May 7, 1859), coal supplies (Mar. 17, 1860), new machinery (Aug. 4, 1860), gems (May 18, 1861), etymology (Aug. 4, 1860), earthquakes (June 9, 1860), matches (June 9, 1860) and entries on many more "scientific" subjects were noted. Engineering projects and exhibitions (June 21, 1862) were reported from a personal perspective, the journalist, affecting ignorance to report naively (Aug. 23, 1862). Much was written

about the need for more education and educational reform (Jan. 28, Feb. 11, 1860). Styles of nursing featured (Mar. 31, 1860) and there was wide coverage (in articles and fiction) about the hard lot of doctors who were trying to establish a practice (Aug. 29, Oct. 29, 1859, Dec. 1, 1860).

In general I noticed a bias towards the practical. For instance, "Wise Saws and Modern Instances" (Feb. 18, 1860) looked for uses for sawdust (compressed into board) and new mechanical means for fabricating mouldings and veneers while "Easy Boots" (Aug. 24, 1861) praised Dr Meyer, a professor of anatomy, whose research on the mechanics of the foot and knees led to improved boot construction. Trains (Jan. 26, 1861), cables (May 18, 1861, Mar. 15, 1862) and dyes (Sept. 10, 1859), subjects familiar to general readers, attracted attention, positive and negative. There were articles also, for example on vaccination (June 30, 1860), heat theory (Aug. 5, 1865), and debates surrounding "vital force" and how this theory affected medical practice (Mar. 17, 1860). Reports on zoos and species (May 19, June 2, 1860, Aug. 3, 1861) were presented in a questioning fashion without taking the side of creationist or evolutionist (July 7, 1860, Mar. 9, 1861). On issues like mines and railway safety (May 12, 1860, Apr. 27, 1861) articles were aggressively critical of management practices.

Apart from the diverse matters reported in the periodicals more "serious" science was occupying the minds of thoughtful Victorians. Was nature continuous (as suggested by the wave theory of light and electromagnetic field theory) or discontinuous (consistent with the kinetic theory of gases and atomic theory in chemistry)? Early evolutionists were divided in their thinking (Singer 435). The Uniformitarians (e.g. Hutton and Lyell) taught that a self-adjusting power regulated change so that, for instance, the earth's geography, marked by sequences of uplift and subsidence over long time, ultimately was maintained in a process of

levelling (e.g. de Beer 9-14). More radical theorists saw evidence of continuous change during which the longer the time span, the greater was the divergence from the original protoplasmic matter. This, the more radical theory, put mankind back into nature alongside other organisms sharing a common origin. Others questioned the direction of change. Was it progressive as Couvier had argued and Tyndall maintained? How was progress to be measured? When Lord Kelvin calculated the dissipation of the sun's energy and the end of life (de Beer 174, Basalla et al 372-73), dire predictions of decay and degeneration were countered by boasts of colonial expansion and industrial progress. Such contradictions compromised any claims Science (capitalised) might make to have absolute "Truth." (Contradictory and obscure theories become the butt of Collins' humour in *Heart and Science*).

The complaint by theoretical scientists of poor pay for serious research is one indication that the general public was mostly concerned with science that had practical importance--like mining and mechanical engineering that produced an efficient Cornish pumping engine. Illustrative of this point is the record of Collins' visit to Cornwall. Although admitting no expert knowledge of mining (*Rambles* 170), Collins records his eye-witness account (175) of his visit underground at the Botallack copper mine. His tourist's account was published in 1851, the same year that the Royal School of Mines became the first *state* institution for scientific research. The coincidence illustrates the popular appeal that science continued to have and the political influence it was gaining.

Herbert Spencer, an engineer by training and with a strong belief in material progress, regarded all areas of knowledge (from linguistics to physics) as part of an evolutionary process of increasing specialisation of functions which required integration through a strict methodology that

would apply to all science (Guy 83). Law, history, politics and economics were drawn into “social science” and in some instances even religion was linked with science. In 1860 Edward Hitchcock, a university lecturer in Scotland, published *The Religion of Geology and its Connected Sciences* in which he recognised the interrelatedness of the sciences and of science with religion, urging that understanding requires science, hermeneutics and revelation. And John Seely, a professor of modern history, in 1865, released a view of Christ, *Ecce Homo*, based on sociological analysis, that regarded Christ’s work as political, teaching brotherhood--a point of view scathingly rejected by *Blackwood’s* reviewer of “New Books” (Jan. 1871).

Eminent scientists worked in many branches of learning. Sir William Grove, a judge, researched electrochemistry and published *The Correlation of Physical Forces* (1844). Sir Lyon Playfair (caricatured for his role in the vivisection controversy) mixed careers in chemistry and government. Whewell discussed dialects with Mrs Gaskell. John Brett, an astronomer, was also a painter. John Tyndall had a career as surveyor, railway engineer, chemist, physicist and mathematician. His lectures to laymen were indicative of the popularity of scientific exposition with Victorian audiences. Such versatility was not uncommon and indicates the overlap between science and culture.

“Scientist” was a new word, coined 1840 and attributed to Whewell (Beer 153), and “scientists” were struggling to promote their professionalism and economic value against the bias that “men of science” (the familiar term) were antiquarians and gentlemen who followed a scientific hobby. This point is convincingly established by Mary Boas Hall in her history of the Royal Society and especially in her description of the competition for executive positions by doctors (e.g. 47,48,79). But “Physical Science in England” questions the exclusiveness and stagnation of the

Royal Society and argues that money should reward merit.

A seminal date can be established for when the definition of “science” narrowed to come closer to its modern meaning. Prince Albert made a distinction of methodology when he addressed the British Association for the Advancement of Science in 1859, explaining that the Association “eliminated from its consideration and discussions those [sciences] which come under the description of moral and political sciences” and added:

This has not been done from undervaluing their importance and denying their sacred right to the special attention of mankind, but from a desire to deal with those subjects only which can be reduced to positive proof, and do not rest on opinion or faith... It is with facts only that the association deals. (Albert, 52)

That is, the method of acquiring knowledge was to distinguish “Science” from other kinds of knowledge. As Mark Pattison put it, “It is not matters known that make science, but the mode of knowing” (quoted Heyck 138). The emphasis on the hard objective character of scientific method that required certifiable knowledge led Huxley, as an expedient, to follow positivist method though he did not necessarily accept positivist values (Basalla et al. 230). In the life sciences, however, experimental methodology was more complex and lines of demarcation hazy. “Social Science” (1860) points out that social science faces more difficulties than abstract science (706) but that its research to promote the welfare of humankind should not therefore be undervalued. In his 1874 Belfast address Tyndall said, “Trace the line of life backwards, and see it approaching more and more to what we call the purely physical condition”(469). ³ Yet what justification could there be in isolating for study a living subject outside its environment? Collins’ fiction addresses such fundamental questions. And as a man of his times Collins reflected

³I shall rely heavily on the presidential addresses to BAAS collected by Basalla, Coleman and Kargon. Such lectures were a demonstration of the popularity of science and the public’s excitement that attended scientific discovery.

on his own methods and, as a systematic observer and recorder of human nature, considered himself to be among "those who follow literature as a study and respect it as a science." The claim was made in the original Bentley edition of *Basil* (1852). I have included a short chapter on "Magnetic Evenings at Home" to show, in Collins' early journalism, how keen he was to defend his methods of reporting even on a subject that was controversially "scientific."

Some critics have argued that when, rarely, Collins uses specialist scientific terms he is merely affecting an illusion of knowledge--for verisimilitude and presumably as part of the technique of realist fiction. For instance, Robinson (302) seems to have accepted that view, earlier expressed by the *Athenaeum's* critic (Unsigned review, 215). Their view is inconsistent with Collins' claims and practice and, in the novels I have chosen, typically, Collins devises scenes to show contempt for any affectation of language. He links objection to jargon with derision for clichés, as both distort the standard "plain" English that he claimed to approve and used--sensibly so, given that he was writing for a general audience. Unlike George Eliot, Collins rarely invokes the language of science or makes philosophical comment. It is not to be assumed that therefore he was incompetent to do so for, in the 1860s, he attended the Eliot-Lewes' Saturday evening discussions and presumably joined in the conversations. Rather than make philosophic comment in his novels, Collins uses stories to model issues and extends the range of debate into the socio-legal-political domain where "scientific" methodology was being applied.⁴ He uses an artificial plot construct for social critique as a scientist

⁴ An amusing report of the Dublin meeting of the National Association for the Promotion of Social Science (*Blackwood's* Oct. 1851) uses statistics of attendance etc in mock imitation of scientific method, admits sociology is sometimes seen as a pretended science, but goes on to describe social science (led by Lord Brougham) as a practical science fulfilling man's expectations.

uses modelling in a laboratory experiment to establish a scientific truth. And because Victorians saw science as public property, there was no need for Collins to make linguistic divisions between fact and fiction. Similarly, "The Sense of Touch, Measured Mechanically," reporting experiments to measure the discriminatory powers of the senses, in the introductory paragraph approved the accessibility of Weber's work "being free from scientific phraseology" (12). Collins uses "plain language" as the medium of communication common to both scientist and artist. Equally he avoids most of the manipulative devices of literary rhetoric. This way he includes his readership in his interrogations of the social and cultural scene.

Empirical and theoretical scientists were anxious to distinguish their narrowing expertise from the general superficial knowledge of a range of subjects among an increasingly educated public of scientific amateurs, disposed to trust common-sense explanations and, according to Lyell, any explanation not a "miracle" (Yeo 20). In *Hide and Seek* Collins parodies that controversy which had centred on *Vestiges* and represents an artist and a doctor in dispute. Both are experts in their fields but neither has the all-round knowledge to communicate adequately. When Blyth (the artist) claims "anatomical harmony" for his painting, the doctor, confident of his professional superiority, begins to lecture dogmatically on the need for strict methodology in anatomical description: "The origin of the muscle or where it arises, is the first thing to be described. The use comes afterwards" (242). On the defensive and arguing counterwise and outside his field, Blyth resorts to common sense explanation and urges the doctor to look and see that Columbus' early life "in handling ropes and pulling oars" (242) would determine his physical formation. For his part, the doctor has no understanding of Blyth's objective to represent emblematically the Spirit of Discovery and capture visually both the sense of the moment and

the future's potential.⁵ He sees only a detail of the arm's anatomy. Neither understands the other and each finds the other ignorant--signifying a cultural gap.

The same sequence, I suggest, is also a reaction to expectations expressed, for instance, by Herbert Spencer (reported Houghton 149) that an artist should know and use scientific laws of anatomy and perspective and that art conform to scientific principles. Since Blyth is exhibiting his "high art" (not the pictures that sell, those uncomplicated products, drafted for popular consumption) it seems that his artistic expertise is being challenged and the episode suggests that the authority of art in general is being subsumed by science. Furthermore, technology (dubbed "the useful arts"), was threatening the artist's livelihood by enabling cheap copies to be made of popular narrative paintings so that the artist's usefulness, too, was seemingly being usurped by science. This point is consolidated in the representation of Lavy's father, an engraver whose skills also technology was making obsolete.

Collins' particularly scathing criticism is directed against jargon that is made to pass for expression of expertise in the small talk of critics where "such words as 'sensuous', 'aesthetic', 'objective', and 'subjective' occupy prominent places, and out of which no man ever has succeeded or ever will succeed, in extracting an idea" (235). Grimble doesn't understand what he is saying and so can't be embarrassed by his own silliness. Such foolishness is duplicated in the unrelated remarks of Hemlock, the small critic, and Bullivant, the self-admiring sculptor and poet, who, between them, appear to agree that a "pedantic jackass" has a good "head for a bust" (242). Similarly Collins attacks the specialist jargon of the doctor when it is

⁵ Collins' friend, Millais, had painted "Pizzaro Seizing the Inca of Peru" in 1846, in the fashion of narrative painting (Mitchell 504). Making Blyth's painting in this tradition was probably a tribute to a friend.

used inappropriately in a social setting that requires “general talk” (243). In these ways Collins reflects a conviction that knowledge, scientific or artistic, should be accessible. It is a commodity to be shared. Collins’ “plain” speaking is designed to bridge gaps. However, the problem Collins also illustrates is how to identify a reliable authority amid a crowd of voices professing expertise. That was a common problem, experienced equally by artist and scientist.

Though an emphasis on individuality remained from the Romantic tradition, with the advent of evolutionary theories the notion of divergence assumed new importance. Collins’ depiction of the unconventional, disorganised and exceptional in society duplicates divergence in nature, what Darwin came to describe as “perpetual disequilibrium” (Paradis 104). Collins frequently depicts unorthodox characters whom he treats sympathetically. He abhors the practice of treating difference as freakishness or aligning it with questionable moral values. Characters different from conventional portraiture are not to be regarded as necessarily abnormal or sub-standard. They are shown as anomalies, within the range of individual differences, distinctly transformative, but not deviant or degenerate.⁶

From a sample it is possible to recognise the variety of Collins’ scientific interests. In *The Moonstone* he deals with the effect of drugs on the subconscious. *No Name* and *The Legacy of Cain* are representative of Collins’ interest in heredity and the nature/nurture debate. *Iolani* indicates an interest in anthropology. *No Name* is structured with a mathematical precision that counterbalances its many coincidences. Medical and psychological issues permeate *The Woman in White* where a continental with breadth of knowledge outguns a local doctor and a

⁶Similar views are expressed in *All the Year Round* (Sept. 8, 22, 1860) when deformity and individuality are also linked to questions of mind.

vulnerable female is “unsolved” by incarceration in an asylum under a false identity. The emerging science of psychology continued to fascinate Collins. Perplexities linking dreaming and waking experience feature in *Armadale* (and in *The Moonstone* and *The Legacy of Cain*). In *I Say No* Collins treats the taboo subject of suicide (and male suicide at that) and in *The Law and the Lady* a female’s motivation to suicide is explained in terms of a complex interplay between a culture-determined concept of beauty, entrapment in marriage and frustrated sexual desire. From these last examples it is possible to see that, like Charlotte Bronte, Collins is not afraid to describe passion -- though he risked the ire of critics (seeking to maintain moral standards) in doing so.

I have chosen to focus most of my attention on just three of Collins’ lesser known works that seem not yet to have received much critical attention: *Hide and Seek*, *Poor Miss Finch* and *Heart and Science*. These multi-faceted novels are selected from the early, middle and later stages of Collins’ career so as to indicate his continuing engagement with scientific debates. The practical matter of length has dictated that I make a choice between detailed analysis of a few texts and more generalised references from an accumulation of works. I present the narrow selection to demonstrate the extent of scientific influence in each novel which I analyse separately. Although at first glance these three novels seem separately concerned with just three subjects (deafness, blindness and vivisection) other key questions and observations recur, most of which are duplicated elsewhere in Collins’ fiction, so that I consider this selection useful evidence to support my claim that his alertness to issues regarded as scientific is deeper than has mostly been allowed. I agree with Taylor that:

while there is a growing interest in his work -- in its ideological ambiguity, particularly in his representation of women, in its narrative complexity,

and in his cultural position -- there has been no systematic attempt to analyse the range of his work in its historical and discursive context. This is partly because the 'intellectual butterfly' label has tended to stick. (23)

Taylor herself has partly remedied this appraisal in her study of the psychological understanding that underpins Collins' characterisation, particularly of women. For instance, writing of *The Woman in White*, she points to Hartright's physiognomic description of Laura as the "authority" for the Laura/ Anne doubling (e.g. 106, 112) and shows Laura's identity first stripped and then rebuilt "through the controlling interests and perception of others" (99). At the same time, unlike Hartright's naive physiognomic view, Taylor finds Marian's narrative after Limmeridge concerned for the relations of things and "see[ing] expressions and mannerisms symptomatically rather than through a fixed set of physiognomic codes" (118). For example, Marian's description of the Countess, Taylor writes, is typical of "social and psychic suppression" (122).

By contrast, more than one reputable critic has slighted *Poor Miss Finch* as an improbable story about a blind girl who gains sight and then becomes blind again and who suddenly falls in love with a man who turns blue (e.g. Lonoff 25). Yet that novel is deeply concerned with self-identity. Furthermore, the topic of new sight was a subject of immense interest to science in the 1870s when Collins' novel appeared and was not a loose extension of earlier discoveries in optics. It was an important subject for study because on it hinged the definition of "Matter," something that concerned both the physicist and the psychologist--as W. B. Carpenter explained in his presidential address to the British Association for the Advancement of Science, meeting at Brighton in 1872. Furthermore, as he pointed out, "it is through the medium of our Tactile Sense, without any aid from Vision, that we first gain the idea of *solid form*, or the Three Dimensions of Space" (429). This is one of the

propositions that Collins' novel illustrates. His discussion of a blind girl's idea of colour is another and opens the wider question about the nature of reality (not as perceived through the senses but as conceived by a mental faculty independent of the senses) and about whether assumptions held to be true ("Primary Beliefs" as Carpenter called them) are gained intuitively without any conscious preparation, or are acquired, by individual experience or learned from others. Through Collins' story of a blind girl who gains sight and becomes blind again, metaphysics, physics and psychology are shown to be interconnected. And the blind girl's sudden falling in love (a familiar theme) is given a psychological basis.

In analysing the novel my concentration is on the theme of sensory perception and the unconscious co-ordination of experience where the mind, apparently unaware of the process of comparison, deals with a present situation by drawing on a learned response from preceding similar experience. I make only passing reference to other matters of scientific interest raised in the novel--like attitudes towards epilepsy and twinning. Though Collins exploits what is a familiar literary device of swapped identities, he also explores the way physical likeness can conceal differences in personalities. And the reference to the "Blue Man," distinct from the hero's colour disfigurement, adds a further scientific curiosity, not unrelated to studies in heredity and medicine. Naming the "villainous" twin as "Bluebeard" and the disfigured twin as the "Blue Man" is a fitting indicator of the twin aspects of the novel: fictional entertainment and scientific fact.

Where and how Collins gained his knowledge of science is mainly speculative. I demonstrate only that Collins had the opportunity to research material as he claimed to do. And given the coverage scientific subjects had in the periodical literature, it is hard to see how any literate

person could avoid exposure to news of scientific developments.

In the absence of specific biographical evidence to the contrary, it has been considered probable that Beard, Collins' friend and doctor, supplied the medical information that Collins used. This is the suggestion, for instance, of Catherine Peters in an editorial note (820) to *Armadale's* appendix (829). But Collins (in the same appendix) distinguishes "friend" from "professional men" he has consulted. It would be unlikely that Collins did not know many doctors and scientists. For a time he rented from a doctor (probably c.1859-60). Later, in Portland Place, he lived near the Hoggans, both doctors. These days visitors to London tour "Doctor's Row" and are shown a Georgian house near Hampstead where Collins once lived. The area was a fashionable locale for artists and doctors by Collins' time. He acted with Robert Bell, co-proprietor of a private asylum, and wrote, for instance, to Dr Radford, a specialist in the electrical physiology of nerve and muscle function (*Letters* 255). The Collins family's long-term ill health required consultation with specialists. While such circumstances are not evidence of Collins' expertise--something I do not claim--they do evidence his opportunity to have researched and checked his material. For example, he claimed, "Wherever the story touches on questions connected with Law, Medicine, or Chemistry, it has been submitted, before publication, to the experience of professional men" (*Armadale* 817).

As he walked to his workplace at the offices of *Household Words* he would be bound to pass in the street scientists on their way to a meeting of the Royal Society just round the corner. Possibly he even joked with them about the "Palace," a projected home for the Arts and Sciences, as he returned from an exhibition at the Royal Academy in Trafalgar Square, also nearby. With the move to Burlington House, the Academy, the Royal

Society, the Royal Astronomical Society, the Chemical Society, the Society of Antiquaries, the Linnean Society and the British Association shared a common quadrangle (Mee 196). Lifelong Collins preserved his membership of the Athenaeum Club, founded to bring together professionals from the Arts and Sciences and where in the 1860s Huxley and members of the X-club dined before holding their meetings. It requires little imagination to envisage the networking that must have occurred among London professionals and especially among journalists with their range of contacts. Frances Power Cobbe, a woman outside the male club scene, but a journalist like Collins, had an enormous network of contacts on whom she could call to support her several campaigns--as her autobiography testifies. It would have been easy for Collins to research his material as he claimed.

Nor is science that relies heavily on popular sources necessarily superficial. From the eighteenth century popular demonstrations of scientific knowledge had toured the provinces and Benjamin Martin, from his base in Reading, had produced abridgments of scientific information for popular consumption. *Household Words* regularly included scientific subjects, prepared by experts and seen from a domestic perspective (Metz 122). The Chambers brothers' scientific interests were eclectic. Tyndall complained of the public's readiness to digest simplified sources of information accessible in the periodicals, arguing that "private judgment was little more than passive impression" (quote Houghton 104). But I have drawn also on "serious" publications like the *Westminster Review* and the *Quarterly Review* and I note the rise of specialist scientific magazines like *Nature* and *The Popular Science Monthly*, successors to publications like Cassell's *Popular Instructor* (1852). I have also made use of *Science For All*, collected into five volumes, each

volume containing over fifty entries. The publisher was Cassell, Petter, Galpin and Company of London, Paris and New York. The general editor was Robert Brown. No date is given but I have judged these volumes to have been assembled in the mid 1880s. While I am not suggesting that Collins was familiar with this publication specifically, I consider that, as a journalist, he would be familiar with the trend in scientific reporting that this series typifies and with the sort of material it contains. One (of many) contributors was Grant Allen, a co-contributor with Collins to *Belgravia*, *Cornhill* and *The Gentleman's Magazine* and a writer who specialised in scientific journalism. The many other contributors have scientific and/or academic qualifications and include Alfred Russell Wallace, who, like Darwin, proposed the theory of evolution by natural selection, W.C.Williamson (1816-1895), noted for his work in paleobotany, and Charles Lapworth who described the ordovician system in geology. However, the editor's note emphasises that *Science For All* is a work for popular consumption (as the name implies) and offers lucid explanations of scientific subjects:

We have tried to write in lines much the same as the reader's mind would take were he or she trying to puzzle out the subject for himself or herself, and, while seeking as far as possible to avoid needless minutiae to be as careful in regard to facts and conclusions as if we were addressing an audience of experts. (5.374)

Brown justified the broad range of subjects as avoiding speciality that "tends to narrowness and bigotry"--an observation contemporary with Collins' attack on specialisation in *Heart and Science*. *Science For All* was in circulation in Britain, U.S.A. and the Colonies and Brown claimed that many of the papers had been "reproduced in almost every European language, and in some of those of the farthest East, and that the only English serial that has ever been translated into any foreign tongue has been *Science For All*" (5. 374). Brown goes on to speak of the publication as

"a familiar friend." I take his words as evidence that in the Victorian cultural climate even popular work could be rigorous and informed.

Consistent with the tradition of science as public spectacle and entertainment, Collins included scientific issues in an entertaining fiction. But he resisted the specialisation that dissociated science from the public and was making it the preserve of an elite professional body. His opposition to specialisation was not confined to science. His many prefaces indicate that he rejected professional reviewers as middle men coming between an author and "Readers in General." And there is ample biographical evidence that Collins sought for his work the widest and most varied audience of readers. By 1883, in *Heart and Science*, he was opposing the narrowing specialisation occurring within science and the claims of scientists to have a monopoly on knowledge. This elitism, at the expense of artistic sources of understanding, I suggest, was the basis of Collins' opposition.

With the rapid expansion of information, and as branches of science closely defined their areas of enquiry, a growth of specialisation became inevitable. As Basalla, Coleman and Kargon in an editorial note comment, "the professionalization of science in Victorian Britain [was] a process which required the entire Victorian era to bring to completion" (131).

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This thesis describes Wilkie Collins' engagement with Victorian science as it filtered into popular culture. The complication is that, as Collins adjusts to new ideas in science, he also comes to oppose the growing demarcation between the arts and science. His recognition of that division anticipates the debate that became fashionable in the mid twentieth century as "The Two Cultures" -- the name of C.P. Snow's Rede Lecture of 1959. In Collins' day John Tyndall expressed the division in terms of rival

claims to truth. "Truth is often of a dual character, taking the form of a magnet with two poles ... partisan reasoners dwell upon one half of the duality in forgetfulness of the other half" (Tyndall, "Scope and Limit" 94). Collins is not partisan; he attracts polarities in a synthesis of story-telling and scientific information that acknowledges joint roles for "heart" and "science" in understanding the human condition.

Chapter 2: "Magnetic Evenings At Home"

The Royal Society had spent much effort in the study of magnetism for the earth's magnetic field and its influence, especially in observations, exploration and geodesy, and the connection between magnetism and meteorology, were seen to have political importance (Hall 155-57, Singer 359-66). Ampere (c.1820) had already established a connection between electricity and magnetism. Then Faraday, without resort to mathematics or mechanics, had introduced the unifying notion of a force field. In 1833 he established a definite relation between electrical and chemical action (Singer 358). For many Victorians however, magnetism was allied to spiritualism and that aspect was capturing popular attention.

Shortly before *Basil* appeared, Collins wrote "Magnetic Evenings at Home," a series of six letters, addressed to G.H. Lewes, who was sceptical about animal magnetism and clairvoyance. The series appeared in *The Leader* between January and April 1852. Collins' letters establish his interest in mesmerism and unexplained mental forces. But it is Collins' methodology--his struggle to link "experience" with "experiment" without surrendering "faith" in believing what is perhaps unprovable--that makes this journalism relevant to my argument.

From the outset Collins was careful to dissociate his "report" of privately witnessed "experiments" from shams got up for public amusement for mesmerism was already the subject of much discussion and division. In 1834 John Elliotson, a physician noted for his emphasis on clinical lecturing and his use of the stethoscope, became physician to the London University College Hospital, where his interest in hypnosis led to conflict with the hospital's medical committee. He resigned in 1838 but his enthusiasm for the use of hypnosis in therapy led to his founding

the mesmeric hospital in 1849. Elliotson was one of the authorities Jennings is shown referring to when, in *The Moonstone* (382), he undertakes the experiment to reconstruct the theft of the diamond. Jennings is made to describe Elliotson as one of the greatest of English physiologists and is shown to base his experiment with Blake on Elliotson's unconventional medicine. Elliotson's contemporary, James Baird, at first sceptical, became convinced that while hypnosis was not a cure-all, it was an intangible force that could be a valued treatment in a range of diseases, still to be identified (Veith 227). He has been identified as the source in *Armadale* for Hawbury's explanation of dreams (Nadel 242). Baird was especially concerned to disprove the charge that patients could be exploited under hypnosis (Veith 226)⁷ and this is an issue Collins raises in *The Legacy of Cain*.

While conservative medical opinion repudiated the psychological direction in which mesmeric and hypnotic treatments were leading, obvious cases of charlatany left members of the public unimpressed by even serious research. For instance, *Blackwood's "Mesmerism"* (1845) gave a balanced appraisal of Hare Townshend's practice and in 1851 questioned "What is Mesmerism?" while *All the Year Round* (1859) gave a satiric account that presented animal magnetism and phrenological sensitivity as merely "a watering place entertainment" (597) and as humbug likely to train young people in deceit (600). However, it is clear from Collins' letters that he took the subject of mesmerism seriously: he jokes about spiritualism (*Letters* 1.257) but considers, for treatment of gout, replacing opium with wormwood and mesmerism (1.215).

It seems that Collins' interest in mesmerism was shared by many of his literary colleagues. Dickens was a close friend of Elliotson and Diana

⁷ "Hypnosis" was Baird's term for the relationship between mesmerist and subject.

Postlethwaite lists among others attracted to the subject the Brownings, Arnold, Clough, Thackeray, Trollope, George Eliot, Harriet Martineau and Herbert Spencer (Mitchell 499). Collins' interest never disappeared and traces recur throughout the fiction: Dr Dawson saw Fosco as a quack dying to try mesmerism (*Woman in White* 386-87); somnambulism, that Mesmer himself had allied to mesmeric trance, features in *No Name*. In *The Moonstone* Mr Murthwaite dismisses clairvoyance as "a simple development of the romantic side of the Indian character" (280) but concedes that the London waif, travelling with the disguised Brahmans, "is unquestionably a sensitive subject to the mesmeric influence." Representing the practical man, Murthwaite looks to prior events to explain the boy's apparent clairvoyance and methodically states his aim, "to trace results back, by rational means, to natural causes" (281). By the 1880s in *Heart and Science* there is a suggestion that the "villain" has mesmeric power. (But more pertinent to indicating the extent of mental influences upon the body is the contrast of excessive sensibility in Carmina and the entire absence of it from her aunt. Their equally extreme but opposite reactions to nervous stimulus is a relationship Collins seems ever ready to explore.) Mesmerism is again prominent in Collins' fiction when, in *The Legacy of Cain*, Mrs Tenbruggen remarks:

‘I thought I might have got at what I wanted,’ she told me, ‘by mesmerising our reverend friend. He is as weak as a woman; I threw him into hysterics, and had to give it up, and quiet him, or he would have alarmed the house. You look as if you don’t believe in mesmerism.’

‘My looks, Mrs Tenbruggen, exactly express my opinion. Mesmerism is humbug.’

‘You amusing old Tory! Shall I throw you into a state of trance? No! I’ll give you a shock of another kind -- a shock of surprise.’ (255-56)

The passage balances the medical potential to treat a case of induced hysteria (in the manner of Elliotson and Baird) against a possible misuse by attempting to discover secrets the patient would not, when conscious,

willingly reveal. And Collins maintains the uncertainty surrounding the practice of mesmerism because, while Mrs Tenbruggen, using rational means, comes to the wrong conclusion (that Helena is the murderer's daughter), using her special sensitivity, she correctly identifies Helena as the wicked daughter.

In January 1852 Collins had attended a privately organised demonstration of mesmerism and clairvoyance, organised by long-standing friends whom he trusted. He was accompanied by two friends, a clergyman and a barrister (whom Paul Lewis suggests was probably Edward Pigott). The "experiments" were conducted at the home of the mesmerist, identified only as "Count P_" who was assisted by "Mademoiselle V_."

In the series of letters reporting his experience, Collins accepts that there are mysteries that defy logical analysis and probability. He needs proof to disbelieve what is mysterious and fascinating and his additional concluding letter of reply to Lewes' critique affirms "The Incredible is Not Always Impossible." Collins will entertain the possibility--until there is proof otherwise--that unseen sympathies operate. "Magnetic Evenings At Home" is an early indication of Collins' willingness to draw on dual sources of knowledge: the practical and scientific and the insightful and spiritual. Efforts to close the gap between metaphysics and science persist in the novels where reason and instinct, facts and forecasts, observations and dreams are used jointly to explore consciousness and the mind-body relationship.

From the first paragraph of the first letter of "Magnetic Evenings At Home" Collins makes it clear that his purpose is to reject dismissal of carefully recorded observations. Collins insists that his is a report, not a judgment, and is therefore to be considered as "evidence" of an "extraordinary experiment" he has witnessed. Importantly, in replying to

Lewes, Collins is more concerned to refute Lewes' criticism of the accuracy of the report than he is to assert belief or disbelief in the subjects under study. That is, Collins is concerned to defend his methodology which he considers sound. By the mid-nineteenth century the artist and the physicist, the historian and the chemist, the lawyer and the geologist are all concerned with "methodology" and the novelist, who is no exception, is anxious to defend his approach to a controversial subject. Collins' emphasis on observation and experiment links him to the old empiricism; his emphasis on possibilities moves him forward into theoretical calculation.

But the main point is that Collins neither embraces nor contemptuously rejects what he cannot explain. Yet he revels in mystery and is consistently seeking explanations and is drawn to improperly understood subjects like mesmerism and clairvoyance, or somnambulism, heredity, dreaming and the psychology of mind. His novels are characterised by mysterious secrets and uncertainties. As Dorothy Sayers writes (in chapter nine of *Gaudy Night* when she contrasts the work of Le Fanu and his reliance on the supernatural to fascinate his readers), Collins "was always handicapped in his treatment of the supernatural by the fatal itch... to explain everything." Recently, Patrick Brantlinger has observed:

The paradox is that sensation novels... conclude in ways that liquidate mystery: they are not finally mysterious at all. The insoluble is reduced to the soluble. (48)

Nevertheless, Collins recognises no place in science for First Cause.

In letter two (paras 8 -10) Collins again stresses the need to preserve an open mind and by letter three, despite increasingly dramatising his account, continues to oppose the easy dismissal of sceptics (para. 2) unwilling to entertain new ideas. In *The Law and the Lady* (1875) Collins delights in turning about old prejudice and inviting attention to "new

ideas." The conservative, elderly Benjamin first gibes at "new ideas." It is not possible to miss the satiric tone as he is made to rail against geological speculations and the theory of evolution (321). The irony, however, is that the same old man catches a "detective fever"--like Betteridge in *The Moonstone* (e.g. 103, 121). He admits to "trying experiments" (371) and finding forensic science "better than any Enigma" (370). In no time he is sifting a dust heap for evidence alongside a young scientist "who was employed in a laboratory under a professor of chemistry, and who distinguished himself by his skilful manipulation of paper in a recent case of forgery" (379).

Collins, too, is ready to explore new ideas. In letter three after considering circumstances (para. 3), and from witnessing two character-changing experiments in mesmerism, Collins tends to accept "the actual existence" of the phenomenon of magnetic influences. He takes this view in the absence of alternative explanations of the observations he has made (para. 14) and by choosing to go with probability (letter one, para. 8). At no stage does he confuse probability with certainty. However, the philosopher of science would be troubled that Collins attempts to apply theoretical methodology to what was by then considered mere pseudo-science. This type of application had been the specific concern of George Cornwall Lewis, whom Richard Yeo quotes:

No species of imposture is so captivating, so well suited to the present time, and consequently so likely to meet with temporary success, as that which assumes the garb, and mimics the phraseology, of science. (8)

In letter four, after considering the attempts to control the experiment in clairvoyance (para. 4) Collins finds "V'_s" actions "suggestive" and vouches for the accuracy of his record. He believes he has observed the "first palpable manifestation" of the unknown "mysterious instinct" (para. 12). The experience he reports of his own susceptibility (para. 13) is

remarkably like the reaction of Lucilla to Oscar's touch in the novel of 1871. Here, in 1852, an inexplicable reaction between persons is described with a scientific comparison to a galvanic battery as Collins tries to bridge the gap between the known and the unknown. His image specifically links Galvani's animal magnetism with Volta's development of the battery and is evidence of Collins' understanding of the unity of what, prior to the 1830s, had been regarded as separate forms of electricity: voltaic, atmospheric, animal et cetera.

Letter one (para. 13) raises the moral question of responsibility in science --what is legitimate experimentation and what is not--and this point is taken up again in letter two, just as it is much later in the novel *Heart and Science*. In each instance the urge to experiment endangers life.

Letter four also considers what constitutes proof. From the outset Collins accepts that even when a testimony may be unimpeachable and honest, it may still be wrong. Collins' letters (like the article, "What is Mesmerism") stress that the senses are merely witnesses, not judges, and admits that senses deceive so that "seeing" is not necessarily evidence of fact and needs corroboration. He lists personal experience (para. 2) judged by the senses of sound, sight, and touch (para. 4) and the corroborative evidence of witnesses elsewhere (para. 8). These are bolstered by the trust Collins puts in the written record over memory (para. 9). These "proofs" Collins regards as sound and they are consistently applied within his documentary narrative practices.

The personal equation (that a measure of discrepancy in observation from one individual to another is normal) had been known since the mid-seventeenth century. Work in the eighteenth century on the physics of optics helped explain reasons for discrepancies in observation leading philosophers to debate the reality of the external world. "The Crisis of

"Modern Speculation" (1841) described vying theories: Hypothetical Realism (defending reality), Idealism (denying reality), and Scepticism "which maintained, that if there were an external universe, it must be something very different from what it appears to be" (529).⁸

Our perceptions being the joint result of external nature and our own nature, they could not possibly be true and faithful representatives of the former alone ... Thus man's primary convictions, which taught him that the universe *was* what it appeared to be, were placed in direct opposition to the conclusions of his reason, which now informed him that it must be something different from what he took it for. (529)

The article goes on to argue the impossibility of separating absolutely the objective and subjective of human knowledge because they are linked in the mind. However, the writer admits human intelligence is constantly attempting to separate subject and object but argues that that effort achieves only "relative validity" (530). By giving different points of view, even democratically including the distorted views of biased characters, Collins enables readers to find a truth, like the scientist's average, by making adjustments once all the readings are considered. Judgment becomes a matter of relativity, one reading compared to another.

Mill and Morley, especially in the period 1850-70, saw relativism as an easy and convenient flexibility that resulted in insipid compromises that lacked conviction (Houghton 178-79). For Collins, however, relativism involved mediation and improved accuracy. Multiple points of view in Collins' narrative process dealt with the science that showed individual observation to be faulty and allowed Collins to claim truthfulness for his accounts, allowing "truth" to be relative and fluctuating, and partial because selective and prejudiced. In *Poor Miss Finch* Madam Pratolungo is

⁸ See also "Berkeley and Idealism" defending Berkeley's position and "A Speculation on the Senses" questioning whether the senses are real, independent objects and whether the sense is one of its own sensations (e.g. 654). Recently Jonathan Crary has traced the metaphor of the demise of the *camera obscura* to describe how, in the early nineteenth century, the physics of optics became linked with psychology to reveal the subjectivity of perception.

shown thinking of herself as an omniscient author, reporting objectively. But Collins' use of her persona demonstrates the limits of that method of narration. At the same time Collins shows how the mind controls vision by having sighted Lucilla make the identifications she expects to encounter. Innocent, honest mistakes occur in both cases, realistically demonstrating how naive is reliance on a single interpretation as true.