of these accounts was prepared by Luther's colleagues Justus Jonas and Michael Coelius and included also the details of his burial (See WA 54.487-496). For the bibliographical details of these accounts see Mackinnon 4.210 note 20 and Schwiebert 876 note 20.

92 It was later alleged that the troops of the Holy Roman Emperor Charles V had desecrated Luther's grave and scattered its contents when they sacked Wittenberg in March 1547. However, when the Castle Church was restored in 1892 the grave was opened and the coffin found to be well-preserved with its contents intact (Schwiebert 752 & 878 note 66).

93 CR 11.726-734 (Melanchthon's eulogy at the funeral of Luther at Wittenberg on February 22nd 1546). Cp CR 6.80 (Melanchthon to Joachim Camerarius, March 21st 1546) and Brecht

3.378-380.

94 Grisar 6.380. The report from which Grisar quotes was written by Johann Landau, the town apothecary of Eisleben who, as we have seen, was called immediately after Luther had died to give him an enema. This report is not regarded as very trustworthy for it does not always agree with the testimony of the eye-witnesses of his death (Schwiebert 876 note 20). The significance of his observation that the whole of the right side of Luther's body was dusky and discoloured (infuscatus) is not clear. The physician who thought that Luther had died from apoplexy appears to have regarded this discoloration as supporting his diagnosis. If this were so, it would mean that Luther had sustained a left-sided cerebrovascular accident which could also have affected his speech. On the other hand, such discoloration is not recognised today as a manifestation of apoplexy or hemiplegia. Also, the observation was made only a very short time after death when it was unlikely that postmortem discoloration would have begun to appear. It appears that we must leave the significance of the observation unexplained clinically.

95 CR 6.58. (Melanchthon's announcement to Luther's students on February 19th of his death the

previous day).

96 WA Br 4.160 (Luther to Spalatin, January 13th 1527). Cp Brecht 2.205-207. The plant Carduus benedictus ('The blessed thistle') got its name because it was believed to possess extraordinary medicinal virtues in cases of plague, malignant fevers, poisoning and even cancer. This reputation was quite unjustified and extracts of the leaves or seeds of the plant eventually came to be used in pharmacy as a simple bitter. See Woodville W. Medical Botany. London: James Phillips, Printer 1790, 1.119-121.

97 WA Br 4.222=LW 49.169 (Luther to Nicholas Hausmann, July 13th 1527) note 10. Cp Köstlin

- $^{98}$  WA TR 1.74 no.157=LW 54.23 no.157. The reference to urinoscopy should be noted.
- 99 WA TR 2.119 no.1510. Cp Brecht 3.23. 100 WA TR 4.8 no.3916 = LW 54.294 no.3916.

101 WA Br 2.298=LW 48.198 (Luther to Spalatin, April 14th 1521) note 2. Cp Köstlin 198.

102 WA Br 11.291 (Luther to his wife, February 10th 1546) note 10.

- 103 WA Br 10.374 (Dorothy, Countess of Mansfeld to Luther, August 26th 1543) Cp LW 50.305 note 14 and Brecht 3.231.
- 104 WA Br 11.301 = LW 50.314 (Luther to Melanchthon, February 14th 1546). <sup>105</sup> This was also the diagnosis of the Chicago medical panel (See Panel 116).

### THALES TO GALEN: A BRIEF JOURNEY THROUGH RATIONAL MEDICAL PHILOSOPHY IN ANCIENT GREECE

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# Part I: Pre-Hippocratic Medicine

### PRE-RATIONAL GREEK MEDICINE

Ancient Egyptian and Sumero-Akkadian medicine played an important part in the development of rational medicine in ancient Greece. Scholars are apt to dismiss the importance of these periods. Hippocratic medicine rejected superstition and supernatural causation, but the ancient Egyptian physicians regarded evil spirits and the anger of the gods as causes of disease. Cults and magicoritualistic practices played an extended role in Egyptian medicine, but there was progress towards rationality; its surviving historical legacy is contained in a number of medical papyri (Table 1). From these, Sigerist found in ancient Egyptian medicine 'the beginning of medical science, a science... which endeavoured to explain the phenomena of life and death, rationally without having recourse to the gods', Sigerist also believed that, 'the Egyptians anticipated views and methods of the pre-Socratic philosophers in Greece'.2 The Greeks owed much of their pharmacopoeia, and some of their gynaecological and surgical practices to the Egyptians, to whom they seldom gave credit.<sup>3-5</sup>

From this ancient and venerable past pre-rational Greek medical thought first became identifiable in the Homeric epics, the Iliad<sup>6</sup> and the Odyssey.<sup>7</sup> Although many of Homer's medical references are based on deistic supremacy and the use of magic, rational medicine is described. For example Odysseus, wounded in a boar hunt, is bandaged with great medical skill,8 although in a previous description of a haemorrhaging arrow wound it was Apollo who applied treatment.9 The identification of the healing art with divine influence was to generate the Greek pantheon of medical gods. Paeon appears as the first physician god in the Homeric epics, 10 but is later superseded by Apollo. 11,12 In turn Apollo's status becomes eclipsed by that of his son, Asclepius. 13 Asclepius' role in stopping the plague of Rome in 292 BC was described by Ovid in his Metamorphoses. 14 There is little doubt that these deities originated from the Egyptian tutelary pantheon. In particular their origins may be identified within Imhotep, vizier, astronomer, and physician of the pharaoh Djoser (IIIrd Dynasty 2647-2628 BC), who was subsequently deified as the Egyptian god of medicine. 15,16 Of the Greek demigods, the seer Melampus is credited with the cure of the daughters of the King of Argos, who had gone mad. 17,18 As Melampus is associated with the beginnings of psychotherapy, so Chiron the centaur is credited with the discovery of the medicinal properties of herbs, 19 especially in the treatment of chronic ulcers; old ulcers that had become difficult to heal were termed chironiac.

These divine aspects of irrational medicine became identified with the medical school of Cos,<sup>20</sup> but its subsequent importance in the rise of rational medicine is

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doubtful. Some scholars believed that this school mirrored the intellectualisation of cult practice that was to be paralleled in the organisation of the open-air schools in Athens, the academy and the Lyceum, where philosophy was taught. (Plato's academy contained the shrine of Academus, a local hero; Aristotle's Lyceum was near the grove of the god Apollo, sometimes called Lyceus, perhaps because he protected flocks of sheep from wolves, *lukoi*). On this basis they justify the inclusion of Cos as an original centre for rational medical thought.<sup>21</sup> However, evidence from Pliny makes it far more likely that pre-Hippocratic Cos remained entrenched in the irrationality of divine medicine,<sup>22</sup> and it was not until the era of Hippocrates that rational medicine became apparent. The origins of rational medical thought must therefore be sought elsewhere.

TABLE 1
Egyptian medical papyri

Papyrus	Date (BC)	Content
Ebers	1555	Medicine, ophthalmology, gynaecology, surgery
Edwin Smith	1600	Surgery—trauma
Kahun	1900	Women, pregnancy
Berlin	1350–1200	Childbirth, paediatrics, physicians formulary
Chester Betty VI	1200	Anal disease
Hearst	1550	Physicians formulary
London	1350	Ibid
Brooklyn	Unknown	Snakebite,? toxicology
Carlesberg VIII	Unknown	Eye diseases, conception pregnancy
Ramesseum IV, V	Unknown	Medico-legal

The beginnings of rationality

The early history of Greek medical philosophy is shrouded in darkness. This is because no Greek medical literature written earlier than the treatise of the Hippocratic Corpus has survived. The descriptions of historians, such as Herodotus (III, 125), of physicians, for example Democedes of Croton, as far back as the 6th Century BC, are the closest surviving testimonies of this early period in rational development.<sup>23</sup>

Table 2
Pre-Hippocratic Philosophers

	1.1	
Philosopher	Date (BC)	Contemporary events
Thales of Miletus	639–544	Solon archon of Athens 594 BC
Anaximander of Miletus	610–c. 546	
Anaximenes of Miletus	flourished 535	
Pythagoras of Samos	flourished 525	Persian war began 499 BC
Heraclitus of Ephesus	c. 540–c. 480	Battle of Marathon 490 BC
Alcmaeon of Croton	flourished 450	
Anaxagoras	500-428	
Empedocles of Acragos	c. 490–430	
		Peloponnesian war began 431 BC
	. 170 100	Peloponnesian war began

The application of logic by the natural philosophers associated with the city of Miletus, in Asia Minor, shaped future medical thought (Table 2). Not only did they counter popular beliefs in the supernatural, but they also put forward some theories and explanations about natural phenomena. They called their search 'inquiry into nature', historia peri physeos. Although Thales of Miletus, 639–544 BC (Fig 1), is counted as the father of rational medical thought, it is for his work on physics that he is best remembered. It would seem that his greatest contribution was an ability to apply logic to the development of a universally active principle to account for the natural order. His particular logic that 'the connecting of something that looks disordered and complicated to something that seems simpler and more orderly' is anathema to clinical practice today.

Thales' successors, Anaximander<sup>27</sup> and Anaximenes,<sup>28</sup> although associated with fundamental assertions concerning the nature of phenomena, also developed



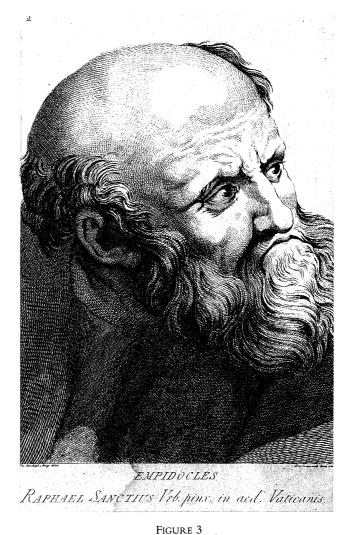
FIGURE 1
Thales of Miletus. Line Engraving by Blanchard.
(Wellcome Institute Library, London).



FIGURE 2
Pythagoras.
(Wellcome Institute Library, London).

a form of rational medical logic. Anaximenes combined a theory of the origin of things with a suggestion about how they came about.<sup>29</sup> Together they developed a logic, for the most part free of superstition, that would form the basis of later pre-Hippocratic rational medical thought. These early natural philosophers echoed not only the secular thought, but also the religious cosmogonies of their time.

The Pythagorean Brotherhood, contemporaries of the Milesians, differed from the latter by finding the principles of all things in numbers.<sup>30</sup> Little is known about Pythagoras (Fig 2). He was born in Samos some time before the middle of the sixth century and later moved to Croton in Southern Italy (Magna Graecia) to escape the tyranny of Polycrates of Samos.<sup>31,32</sup> The Pythagoreans were the first theorists to attempt to give the knowledge of nature a quantitative, mathematical foundation. Their great contribution to later rational medical thought was the development of empirical investigations and deductive methodology.<sup>33</sup>



Empedocles. Line engraving by D. Cunego, 1785, after Raphael. (Wellcome Institute Library, London).

Of their number Alcmaeon, son of Peirithous, has been described as the 'Father of Medicine'. 34,35 There is controversy among scholars as to whether he actually belonged to the Pythagorean Brotherhood or was merely learned in their teachings. Theory of Opposites laid the foundations for the bridge between the Milesian natural philosophers and the future pre-Hippocratic contributors to rational medicine. His work on sensation also paved the way for a treatise on this subject in Theophrastus' Fragment on Sensation [Ch 25 & 26, D.K. 24A5]. Galen records that Alcmaeon was also the author of a book entitled On Nature, probably his original work on sensation, but it has not survived.

Empedocles (Fig 3) born in Sicily in c. 490 BC took up each and every one of the physiological inquiries put forward by the Pythagoreans. He went on to postulate his theory of the four elements, earth, air, fire and water, as the basic components of life. He also raised to significance the forces of Strife (neikos) and

Affection (storge), proposing their influence on the mixing of the four elements in health and illness. Whether or not Empedocles was a Pythagorean, the moral views that he vociferously advocated plainly rested upon elements in his philosophy which were mostly Pythagorean in nature.<sup>42</sup> In particular his abstinence from 'harsh-sounding bloodshed' and meat eating has often been cited in support for a nutritionally driven mode of health. It is unlikely that this modified vegetarianism was related to health concerns but rather that it reflected part of Empedocles' ethical and moral code.

Empedocles was followed by Diogenes and Hippon who employed physiological arguments to support their hypotheses. 43 However, they subordinated medical theory to a general philosophical standpoint, 44 a trend characteristic of earlier pre-Hippocratic medical philosophers. This position was reversed by the arrival of the Atomists. Little is known of the Atomist's founder, Leucippus of Miletus. Most of the knowledge of this group is derived from his successor, Democritus of Abdera, 45 to whom several medical treatises have been variously attributed, namely *Prognosis On Regime* and *Medical Opinion*, though neither has survived. However, the lack of historical evidence has left many doubting their existence at all. 46

The Atomic system was the last great construction of pre-Hippocratic medical philosophy. It clearly underlies Democritus' medical views. Like many others he attached great importance to a sound regime, prevention rather than cure, and believed that ill health was a result of wanton disregard for one's own body. His views on respiration, reproduction and embryology were clearly influenced by Atomic theory. Atomic theory. Atomic vision as the interaction of atomic particles given off by the object, eidolon, with the atomic efflux of the observer's eye. These remarkable, and fanciful, explanations of medical phenomena, although rational, were nevertheless wrong. Often one is treated to descriptions of medical systems that possess no logic. Empedocles' description of respiration maintained that air was drawn through the chest wall to replace that breathed out through the mouth.

Although there is no question that medical thought had finally begun to overcome superstition and that rational questions were being asked, the accuracy of some of the conclusions reached is now questionable. Plato, although regarded by modern scholars as hopelessly unscientific, made a semi-truthful assertion about pre-Hippocratic philosophy, when he said that their pontifications could be no more than 'plausible tales'.

Perhaps the most influential of the pre-Hippocratic philosophers on future rational medical development was Empedocles. His belief in blood as the agent of nutrition has been seen as 'one of the fundamental discoveries of ancient physiology'. <sup>50</sup> His work on the theory of innate heat acting upon the body, breaking it down by the process of putrefaction (*sepsis*), was to be widely adopted by Hippocratic writers. <sup>51</sup>

The paradox of pre-Hippocratic rational medical thought was to lead to an uneasy progression (Table 3). The dogma of this period tends, occasionally, to overshadow its tremendous achievements. The main preoccupation of the later pre-Hippocratic philosophers was with the problem of change. They were chiefly engaged not in programmes of research, but in discussions of rational medical philosophy of a highly abstract nature. Their achievement was to be as 'stage setters' for the Hippocratic writers.

TABLE 3

Some physiological views held by ancient philosophers

Philosopher	Nature of semen	Reproduction	
Alcmaeon	Brain substance	Sex embryo determined by whom gives most seed	
Empedocles	Form of blood	Sex determined by quality of semen	
Anaxagoras	All parts of the body in seed	Males from right testicle, females from left testicle	
Diogenes Atomists	Foam of blood Portion of soul	Only males produce seed Sex determined in womb	
Seat of the intellect	Cause o	of .	
Head	Withdoweins	rawal blood into	
Blood of heart	Coolin	Cooling blood in veins	
Brain	Activit	Activity reduced	
Air around bra		Blood filling veins and pushing air into chest	
		cion of finer particles exceeding of psychic heat	

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## **Book of the Quarter**

### SEARCHING FOR THE CAUSES OF SCHIZOPHRENIA

Eve C. Johnstone, Oxford University Press, 1994, pp 134, £27.50

F. J. ROBERTS, 'HILLTOP', 2 WEST ROAD, BIRKENHEAD, MERSEYSIDE L43 9RP

'Tell us a story Grandad' The bunny rabbits implored 'About the block of concrete Out of which you clawed.'

Trance-formed now by memory His voice was close to tears But the story he was telling Was falling on deaf ears.

There was giggling and nudging And lots of 'ssh-he'll hear' For it was a trick, a game they played Grown crueller with each year

'Poor old Grandad' they tittered' As they one by none withdrew 'he's told it all so often He now believes it's true.'

Young rabbits need fresh carrots And his had long grown stale So they left the old campaigner Imprisoned in his tale

Petrified by memories Haunting ever strong Encased in a block of time Eighteen inches long.

Roger McGough<sup>1</sup>

After reading Professor Johnstone's book I feel like that rabbit as I recall the to's and fro's of the schizophrenia story during my professional life time. My own personal block of psychiatric time commenced in 1958 at St Luke's Hospital, Middlesbrough. My welcome there was warm and genuine, but my initiation was brief. I was given a list of wards in which I was expected to work and a big key. Changes were occurring everywhere, the new Mental Health Act was round the corner. At the end of this first appointment, some two and a half years later, the key was almost redundant. Rauwolfia, which had been introduced to western medicine in 1955, was being supplanted by chlorpromazine as a the treatment for schizophrenia.

During my early days in psychiatry insulin induced coma therapy for schizophrenia virtually disappeared from the British psychiatric scene. Its disappearance was used as a subject for instruction and debate on the diploma course I was attending. The lesson we were intended to learn was of the value of a proper clinical trial.

The story we considered started in 1953 with the publication in the Lancet of a paper, The Insulin Myth2 by Harold Bourne. He argued that there was no scientific evidence that insulin treatment affected the course of schizophrenia. It is to the credit of the Lancet that Bourne's article was published because at that time he was a junior hospital medical officer (JHMO) working in a mental subnormality hospital. In 1953 a JHMO was barely allowed to see the ladder to becoming a consultant, let alone set his foot on the bottom rung.

Over the next few weeks the correspondence columns festered with resentment as many of the Who's Who (whom you needed to know) in 1953 psychiatry pointed out to Dr Bourne his lack of experience, his junior status and the error of his ways. Soon afterwards he emigrated. In 1957 and 1962 not only was insulin coma therapy demonstrated to be different to barbiturate coma therapy in the short term, but that in the long term those treated with insulin had a worse outcome than those treated with barbiturates.3,4 We learnt the official lesson and pondered the behaviour of our betters.