

the time'²²—mainly the second half of the fourteenth century.

Why these two 'medical' saints were so little regarded in England is a mystery, especially when one considers their widespread cult almost throughout Europe and Asia Minor, particularly during the Middle Ages. The Surgeons of Paris, for example, dedicated their College to St. Côme on its foundation in the twelfth century but no similar dedication associated with the healing arts is heard of in England even when medicine began to be taught at Oxford, with the exception of the Barbers' Company and the Surgeons' Company in London.

The few dedications of churches may be connected with a returned crusader or with the abbeys or monasteries possessing relics, e.g. Canterbury, where two of the churches, Blean and Challock, are within a few miles of the city and were possibly served originally by monks from Canterbury. There may have been other churches with an original dedication to the two saints, in addition to those listed, but their rededication may have soon taken place, due perhaps to the unfamiliar names and the lack of knowledge of the lives of these two devoted physicians and surgeons.

²² W. L. Hildburgh, 'Representation of the saints in medieval English alabaster carvings', *Folklore*, 1950, 61, 68–87; and 'Iconographical peculiarities in English medieval alabaster carvings', *Folklore*, 1933, 44, 32–150.

BLACK BILE. A REVIEW OF RECENT ATTEMPTS TO TRACE THE ORIGIN OF THE TEACHINGS ON MELANCHOLIA TO MEDICAL OBSERVATIONS

MELANCHOLIA, the black bile, was first discussed by the Hippocratics nearly 2,400 years ago. For more than 2,000 years the majority of the learned world accepted without question the existence of a black bile as well as of the three other humours, blood, yellow bile and phlegm. Melancholia became a key word not only of the humoral theory, but of philosophy, psychology, astrology, art and poetry. It survived the findings of a more advanced, empirical physiology and at an early stage acquired the significance of a psychological state or a mental illness, as well as the property inducing such a state of mind. Its role in the literature of relatively modern times, of the Elizabethan and Jacobean ages up to that of German Romanticism, remained important; the works of Shakespeare and Robert Burton would be severely mutilated if a puristical, scientific censor were to eliminate the words melancholy and melancholic. Nevertheless, until recently no one has sought to indicate which physiological phenomena may have led the ancient Greek physiologists to hypothecate the existence of a black bile.

Since this evasive fluid is closely connected with the doctrine of the four humours, it may be permitted to recapitulate briefly the genesis of this doctrine as traced in the scholarly and illuminating work of Raymond Klibansky, Erwin Panofsky and Fritz Saxl, *Saturn and Melancholy*.¹ There the origin of the theory is traced from the Pythagoreans' veneration of numbers, particularly of the number four 'which holds

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the root and source of eternal nature', to the Pythagorean definition of health as the equilibrium of different qualities, and of sickness as the predominance of one; to Empedocles' theory of the unity of the macrocosm, and his attempt to demonstrate a systematic connection between physical and mental factors; to the ensuing search for specific substances (and faculties) in man which would somehow correspond to the primary elements; to Philiston's medical theories of illness as superfluities or deficiencies, and his extension of qualities beyond the Empedoclean primary elements to the tetrad of warm-moist, warm-dry, cold-moist and cold-dry; and finally to the treatise *The Nature of Man*, written before 400 B.C. and attributed erroneously by the ancients to Hippocrates, but very probably written by Polybos, the son-in-law of Hippocrates. This work attempts to combine humoral pathology and general cosmological speculation into one system. The schema established in it became the prevailing one for the doctrine of the four humours:

<i>Humour</i>	<i>Season</i>	<i>Qualities</i>
Blood	Spring	Warm and moist
Yellow Bile	Summer	Warm and dry
Black Bile	Autumn	Cold and dry
Phlegm	Winter	Cold and moist

Although *The Nature of Man*, less devoted to empirical medicine than to natural philosophy, established the schema of the four humours, the parallelism of the humours to the elements and the temperaments was a later development, as was the hypothesis that the spleen was the source of black bile.

It should be noted that many ancient writers were not rigidly dominated by the doctrine of the four humours. Schoener demonstrates many convincing examples of the counter-action of empiricism and a strong tendency towards binding theories as well as the consequent fact that ancient writings still left room for a flexible and open approach. Only after the time of Galen, and under the influence of oriental philosophy and astrology, did the speculative approach become dominant, and in the Middle Ages the medical theories used by the ancients as working hypotheses were developed into a rigid schematism far removed from reality.²

Whatever the merits or demerits of the doctrine of the four humours, all factors enumerated in the original schema were realistic and supported by actual observation, excepting those related to the black bile. The question arises whether the assumption of a black bile was only an arbitrary postulate for the sake of isonomy or whether any empirical findings misled the Hippocratics to the hypothesis of a black bile. The Hippocratic writings prior to *The Nature of Man* show that empirical methods and keen observation were used in spite of the restrictions imposed by the prohibition of post-mortem dissections and little or no knowledge of chemistry. At first reading the emphasis on colour and consistency of faeces, urine, vomit and mucus may appear strange, but within the limits of permissible or possible medical observations this method was justified.

In consideration of the empirical approach of Hippocrates the practising physician it is very unlikely that he wrote of the melancholic type without basing the hypothesis of a black bile on actual observations. It is strange that for more than 2,300 years there were no known writings which tried to establish a connection between

physiological phenomena and black bile, and Schoener quotes a number of modern writers who have been at loss to explain the origin of this doctrine.³ In 1899 Ribbert called black bile a 'theoretical product';⁴ Ebstein declares that 'it is inconceivable what the ancients meant by black bile';⁵ according to Gruber black bile is a 'mysterious excrement';⁶ and Mani calls black bile a 'hypothetical fluid'.⁷

Schoener quotes only four authors who tried to trace the theory of a black bile to empirical observations. We may neglect the rather unconvincing attempts of Neuburger⁸ and Vogel⁹ to connect the doctrine of the four humours with observations of the process of blood coagulation. Sigerist referred to observations of vomit in cases of cancer of the stomach and of stool of patients suffering from a bleeding ulcer of the stomach.¹⁰ Sticker referred to black bile in the excrements and in 'burned blood'.¹¹

Sigerist later returned to the problem and offered a number of possible explanations.

What is black bile, that humor which, for over two thousand years, was to play an extremely important part in people's thinking, and not only in medicine? We know of no such substance today, but I am inclined to believe that in this as in other cases the Greeks based their theories on observations. We know that the stool of patients suffering from bleeding gastric ulcers is black, as are sometimes the substances vomited by patients with carcinoma of the stomach. A form of malaria is still known as the 'blackwater fever' because the urine as a result of acute intravascular hemolysis suddenly becomes very dark, if not black at least mahogany coloured. Similar observations may have led to the assumption that ordinary yellow bile through corruption could become black and that this black bile caused diseases, notably the 'black bile disease', namely melancholy. In the writings of the fifth century B.C. black bile is not a cardinal humor, but a pathogenic agent. Mûri has collected the pre-Aristotelian passages in which black bile occurs and found that it is mentioned not only in medical writings but in the works of Aristophanes, Plato, and Menander. It was held responsible for a great variety of diseases ranging from headache, vertigo, paralysis, spasms, epilepsy, and other mental disturbances, to quartan fever and diseases of the kidneys, liver and spleen.¹²

Schoener offers the tentative suggestion that the connection of blackwater fever with a swelling of the spleen may have led to the later theory that the spleen was the source of black bile.

To test the probability of the hypotheses offered by Sigerist and Schoener a review of the Hippocratic writings preceding *The Nature of Man* may be helpful. These are *Airs, Waters and Places*, *The Sacred Disease* and the first and third books of the *Epidemics*. The major portions of them are ascribed with great certainty to Hippocrates. Their origin in the final third of the fifth century B.C. also appears well ascertained since ascription of the first book of the *Epidemics* to 410 B.C. has been established by datings found on inscriptions on Thassos commemorating the deaths of patients reported in these books.

Flashar appears to be correct in his conclusion that in these writings black bile was considered a diseased condition of ordinary bile and not a humour *sui generis*, and that black bile was an assumption based on the colour of excretions.¹³ In these works the phlegmatic and bilious types were dominant in the classification of patients, though a phthisic and a splenic type were also mentioned in *The Sacred Disease*. Melancholy was attributed to the illnesses of some bilious types. The adjective 'melancholic' was used for the first time in the *Epidemics* where psychological disturbances were also called melancholic. But according to Flashar these observations

do not establish black bile as an independent humour though they prepare for the doctrine of the four humours.

Flashar's investigation of the early Hippocratic works may be amplified by the following findings: a perusal of the first and third books of the *Epidemics* appears to favour blackwater fever as the primary source for the assumption of a black bile and for the later connection of black bile with the spleen. Of the forty-two cases reported in these two books fifteen patients were described as having black urine and three, red urine. The first and third histories in Book I report the symptoms of black urine and a swollen spleen; the third case of the third book, bluish sediment in the urine and a swollen spleen; in a number of other cases the coincidence of black urine and a swelling of the upper right abdomen or of the upper abdomen is described; case two of the second series in Book III concerns a woman with black urine and a melancholic state of mind.

The general report on illnesses on Thassos reads in part: 'With reference to the melancholic and the more sanguine types these are attacked by burning fevers, phrenitis and dysentery'. Burning fevers were often accompanied by dark urine in the case histories in the *Epidemics*. It may be added that quartan fever was closely connected to black bile in *The Nature of Man*.

The connection of black bile to black vomit also gains support from the *Epidemics*. The twelfth case history of Book I refers to black, bilious vomit, pain in the upper right abdomen and red urine. A number of patients with black urine are reported to have ranted, to have been possessed by anguish and depressions; early Greek writings attribute these states of mind to melancholia. The high percentage of cases reported showing black urine and the coincidental relationship of most of these cases with other symptoms referring to melancholia support the assumption that blackwater fever was the principal cause for postulation of a black bile.

Why did not writers of ancient times refer to this relationship? We may look for an answer to the astonishing fact that blackwater fever as reported by Hippocrates may have disappeared for a very long period shortly after 400 B.C. Scott writes: 'after Hippocrates we find no reference to blackwater fever or anything which can be so interpreted for 1,150 years. Then there is mention of it by Theophilus Protospatharios and five centuries later Actuarius, the last of the known Byzantine writers, refers to black urine with fever and jaundice. Then follows another interval, this time of seven centuries, to Antoniades (1858) who called it *haematuria*.'¹⁴

We need not be concerned here with the dispute between those who ascribe blackwater fever of today to quinine—first imported into Europe in the seventeenth century—and therefore consider the modern blackwater fever as an illness *sui generis*, and those modern Greek writers who claim that blackwater fever as observed today in Greece is identical to the blackwater fever on Thassos reported by Hippocrates.

Even after the presumed supported evidence of blackwater fever had vanished for many centuries, the fallacious theory of the black bile survived for more than 2,000 years. Aided by astrology that related melancholy to Saturn, it reached its climax in the Renaissance when melancholy became the attribute of the creative genius.

Fortified by the erroneous attribution of *The Nature of Man* to Hippocrates, confirmed and extended through the teachings of Aristotle and Galen, the longevity of

this hypothesis is one of the historical examples of enduring adherence to fallacy based on great authorities. Few other misconceptions, however, can match Melancholia's fertile influence on philosophy, psychology, psychopathology, literature and art.

REFERENCES

1. London, 1964. Two recent German works elaborate on some aspects of this theme: SCHOENER, ERICH, *Das Viererschema in der antiken Humoralpathologie*, Wiesbaden, 1964 (Supplement 4, *Sudhoffs Arch. Gesch. Med. Naturw.*), and FLASHAR, HELLMUT, *Melancholie und Melancholiker in den medizinischen Theorien der Antike*, Berlin, 1966.
2. SCHOENER, op. cit., p. 102.
3. Ibid., p. 56.
4. RIBBERT, MORITZ, *Die Lehre von Wesen der Krankheiten in ihrer geschichtlichen Entwicklung*, Bonn, 1899, p. 92.
5. EBSTEIN, WILHELM, 'Zur Geschichte der Entwicklung des Krankheitsbegriffes', *Rivista di Scienza*, 1908, 2, 3, 68.
6. GRUBER, GEORG, *Einführung in Geschichte und Geist der Medizin*, 4th ed., Stuttgart, 1952, p. 22.
7. MANI, NIKOLAUS, *Die Vorstellungen über Anatomie, Physiologie und Pathologie der Leber in der Antike*, Basel, 1959, p. 34.
8. NEUBURGER, MAX, *Geschichte der Medizin*, vol. 1, Stuttgart, 1906, p. 162 ff.
9. VOGEL, CLAUS, *Zur Entstehung der hippokratischen Viersäftelehre*, Marburg, 1956, pp. 27-39, 44-57.
10. SIGERIST, HENRY E., *Antike Heilkunde*, München, 1927, p. 25.
11. STICKER, GEORG, 'Fieber und Entzündung bei den Hippokratikern', *Sudhoffs Arch. Gesch. Med. Naturw.*, 1929, 22, 337.
12. SIGERIST, HENRY E., *A History of Medicine*, vol. 2, New York, 1961, p. 320.
13. FLASHAR, op. cit., p. 36.
14. SCOTT, H. HAROLD, *A History of Tropical Medicine*, vol. 1, London, 1939, p. 253.

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THE TESSERAE OF EPHEOS IN THE HISTORY OF MEDICINE

MANY cultural historical monuments testify that antique thought on medicine, health and illness in general was influenced by mythology. Antique Greek and Roman coins help to prove this, as they often represent deities influencing health and their symbols. On Greek coins are represented mostly Asklepios and the members of his family, Hygieia, Telesphoros, and Coronis, or only Asklepios' serpent. On Roman coins Salus with Asklepios' serpent is most common. These symbolic signs on antique coins were repeatedly scientifically studied from the viewpoint of the history of medicine, especially recently in Hart's outstanding treatise.¹

Besides the cult of Asklepios, the cult of many other great and minor deities, among them that of the Goddess Artemis, had developed. Artemis was worshipped mainly as the goddess of nature, moon and hunting. She was represented by a deer, a bow eventually with a bunch of arrows, but in Ephesos in Asia Minor she was also worshipped as the goddess of fertility and represented as a polymastic female. Although