

SCIENCE (MAINLY MEDICAL) AND LITERATURE (MAINLY MEDIAEVAL)

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(This oration was delivered on St. Luke' Day 1966, under the auspices of the Malta Branch of the British Medical Association. The Branch has, since a number of years, invited an eminent layman to address it on this occasion.)

There are three things I should like to say before I begin my talk — "Science (mainly medical) and Literature — (mainly mediaeval)." First, how highly pleased and deeply honoured I am to have been invited to deliver the St. Luke's lecture to the Malta Branch of the British Medical Association. Secondly, how fitting it is to be able to dedicate a medico-literary lecture with such a title and such a content to St. Luke — himself the doctor-evangelist who is remembered more for his writing than for his doctoring. And thirdly I would ask you to bear with me if I seem to have a bee in my bonnet about this particular topic: for months I have been looking for an excuse — and a captive audience — so that I could deliver this particular lecture. And now that both the occasion and the audience have been given to me, I have some qualms that

those of you who anticipate an amusing talk of popular appeal are going to be sadly disappointed. But I had no hesitation in picking my subject. Contacts between medicals and literati are few in the present age; Brett Young and Cronin gave up practice when they became writers. Indeed, I had an experience, a couple of years ago, that will show how far apart medicine and literature have grown. I was meeting my External Examiner at the airport when one of my medical colleagues was meeting his. He introduced him to us as a scholar eminent in the field of Brucellosis, "What's that?" asked my external examiner, "Is it a disease of sprouts?"

What I have done, therefore, is to go straight back to the 14th century, when all forms of intellectual activity were much more closely integrated than they are today, over-specialisation had not yet reared its ugly head, and the complete man was not expected to be a scientific ignoramus just because he was a literary genius. And I have chosen for my starting-point Chaucer's portrait of the Doctor in the *General Prologue to the Canterbury Tales*. From

this portrait I shall develop my entire thesis, and I am going to read it to you twice — first in Chaucer's original pronunciation and then, more comprehensively, in Nevil Coghill's modernised version:

“With us ther was a DOCTOUR OF PHISIK;
 In al this world ne was ther noon hym lik,
 To speke of phisik and of surgerye,
 For he was grounded in astronomye.
 He kepte his pacient a ful greet deel
 In houres by his magyk natureel.
 Wel koude he fortunen the ascendent
 Of his ymages for his pacient.
 He knew the cause of everich maladye,
 Were it of hoot, or coold, or moyste, or drye
 And where they engendred, and of what humour.
 He was a verray, parfit praktisour;
 The cause yknowe, and of his harm the roote,
 Anon he yaf the sike man his boote.
 Ful redy hadde he his apothecaries
 To sende hym drogges and his letuaries,
 For ech of hem made cother for to wynne —
 Hir friendshippe nas nat newe to bigynne.
 Wel knew he the olde Esculapius,
 And Deyscorides, and eek Rufus,
 Olde Ypocras, Haly, and Galyen,
 Serapion, Razis, and Avycen,
 Averrois, Damascien, and Constantyn,
 Bernard, and Gatesden, and Gilbertyn.
 Of his diete mesurable was he,
 For it was of no superfluitee,
 But of greet norissyng and digestible.
 His studie was but litel on the Bible.
 In sangwyn and in pers he clad was al,
 Lyned with taffata and with sendal;
 And yet he was but esy of dispence;
 He kepte that he wan in pestilence.
 For gold in phisik is a cordial,
 Therefore he lovede gold in special.”

Coghill:

“A *Doctor* too emerged as we proceeded;
 No one alive could talk as well as he did
 On points of medicine and of surgery,
 For, being grounded in astronomy,
 He watched his patient's favourable star,
 And, by his Natural Magic knew what are
 The lucky hours and planetary degrees
 For making charms and magic effigies.
 The cause of every malady you'd got
 He knew, and whether dry, cold, moist or hot;
 He knew their seat, their humour and condition.
 He was a perfect practising physician.
 These causes being known for what they were,
 He gave the man his medicine then and there.
 All his apothecaries in a tribe
 Were ready with the drugs he would prescribe

And each made money from the other's guile;
 They had been friendly for a goodish while.
 He was well-versed in Aesculapius too
 And what Hippocrates and Rufus knew
 And Dioscorides, now dead and gone,
 Galen and Rhazes, Hali, Serapion,
 Averroes, Avicenna, Constantine,
 Scotch Bernard, John of Gaddesden, Gilbertine.
 In his own diet he observed some measure;
 There were no superfluities for pleasure,
 Only digestives, nutritives and such.
 He did not read the Bible very much.
 In blood-red garments, slashed with bluish-grey
 And lined with taffeta, he rode his way;
 Yet he was rather close as to expenses
 And kept the gold he won in pestilences.
 Gold stimulates the heart, or so we're told.
 He therefore had a special love for gold.”

There are enough points of interest here to last us many lectures: but most of them I must pass by with a mere mention, since they are incidental to my present purpose. A Maltese audience will naturally remark how Chaucer's Doctor had his own apothecaries, with whom he associated closely in business to their mutual advantage; how like Malta this is, where the doctor usually has consulting rooms inside a pharmacy. Or notice the dependence on AUTHORITY rather than experience or experimentation — typically mediaeval: and how the authorities themselves divide into three groups — classical, Arabic of the 10th and 11th centuries, and near-contemporary British medical writers. Or we could talk about the Black Death which decimated Europe in Chaucer's boyhood and recurred on frequent occasions during his lifetime: and how the physicians used to put drops of gold into their prescriptions to drive the prices up — how unlike present practice!

“Since gold in phisik is a cordial,
 Therefor he loved gold in special.”

But I must press on to the first of my main areas of discussion — the strange fact that a 14th century doctor had to be grounded in astronomy. I wonder how many of my medical colleagues in the University would welcome the inclusion of a paper in astronomy in the syllabus of the Faculty of Medicine and Surgery?

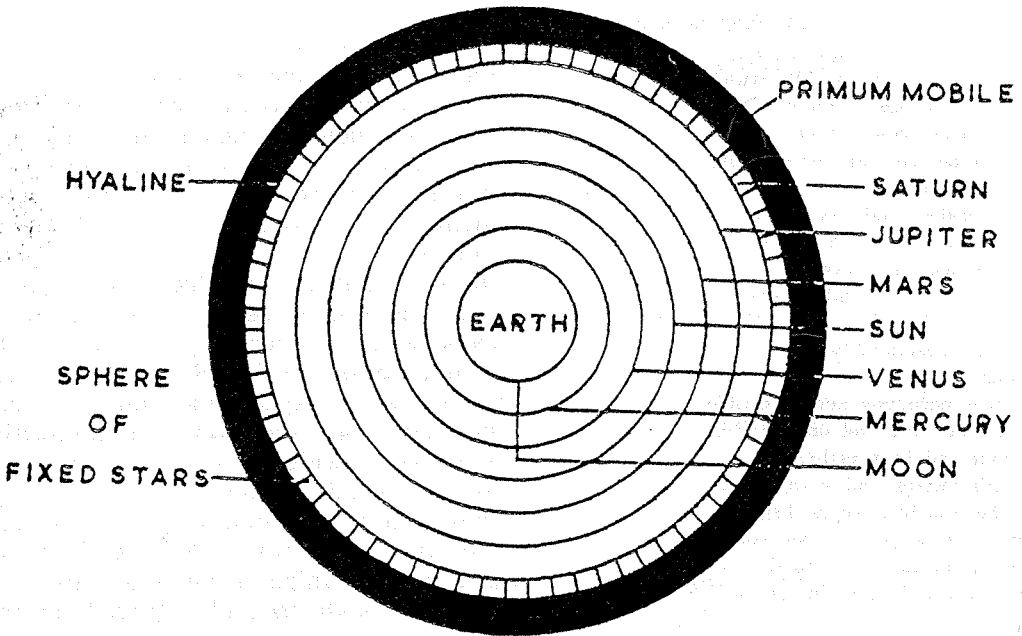
May I call your attention to the accompanying sketches:

The first sketch represents the Ptolemaic system of astronomy, universally accepted by the Christian world of the Middle Ages. The Earth was the centre of the Universe, and it was surrounded by the concentric orbits of the seven known planets — Saturn farthest away, then Jupiter, Mars, the Sun, Venus, Mercury and the Moon. Beyond Saturn was the sphere of the Fixed Stars, and the whole Universe was encased in a jacket

Activated by the Primum Mobile, each sphere — or rather the atmosphere of each sphere — impinged on the one next inside it and set it too in motion. The friction set up by this interaction resulted in a note of music, and the total result of the interaction of all the atmospheres was the celestial octave, the heavenly harmony, or the Music of the Spheres.

In the Middle Ages, two methods were used for measuring time: first, the day was divided into twenty-four equal hours, — the hours of the natural day; secondly,

THE EMPYREAN



of water — the hyaline or Waters of the Firmament, the water left over after God had put water on the earth and under the earth. This jacket insulated the universe from extremes of cold and heat. Far beyond, in the Empyrean, sat God on His throne, hidden by cloud and fire and supported by four Seraphim. His love for mankind flowed down into the universe, and was transformed into energy by the Primum Mobile, or First Mover; so that the Middle Ages literally believed that it was love that makes the world go round: for should God cease to love man, the world would grind to a fatal standstill.

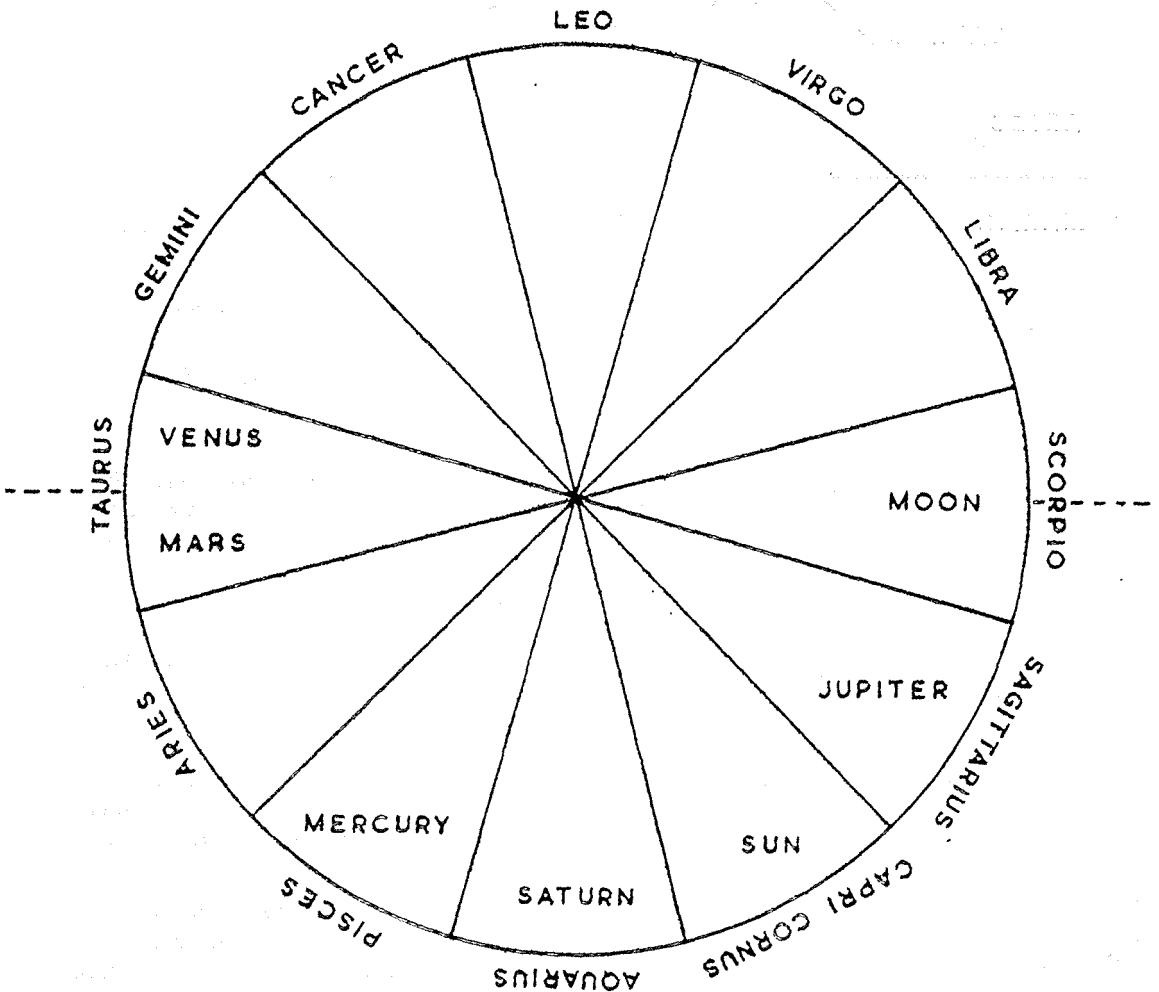
the period between dawn and sunset was divided into twelve equal parts, and the period between sunset and dawn likewise, — the hours of the artificial day, or Hours of the Planets. Each artificial hour, beginning with the first after dawn, was given to one of the planets, and the astrological influence of that planet ruled supreme in that hour. The theory was that God had finished making the world on the sixth day — on March 12th about four thousand years B.C.; the first hour of the day was therefore given to Saturn, and the day was named after him — *Saturni dies*. Saturn ruled the first hour, Jupiter the

second, and so on with Saturn controlling the eighth, fifteenth and twenty-second hours of the first day. The twenty-fifth hour belongs to the Sun, — but this is the first hour of the second day, which is therefore called *Sun-day*. Similarly with Moon-day, or Monday. In naming the remaining days, the English deserted the classical in favour of the Norse gods Tiu, Woden and Thor, and the goddess Freya, but French and Italian show the normal development — *Mardi, Martedì; Mercredi, Mercoledì; Jeudi, Giovedì; Vendredi, Venerdì*.

This process of the naming and ordering of the days of the weeks underlines two points: the importance of mediaeval

studies to a comprehension of some of the most basic and commonplace ideas of the present day: and the variety of the English cultural heritage — here are Egyptian astronomy, Classical and Norse mythology all mixed together.

The astrological influence exerted by the various planets was in keeping with their classical character — Venus was for love and Mars for war. Their influence on man varied, not merely according to the day and the hour, but to their positions in the heavens, relative to one another and also to the Zodiac through which they passed. The next sketch shows, in a simplified form, the inter-relationship of planetary influences:



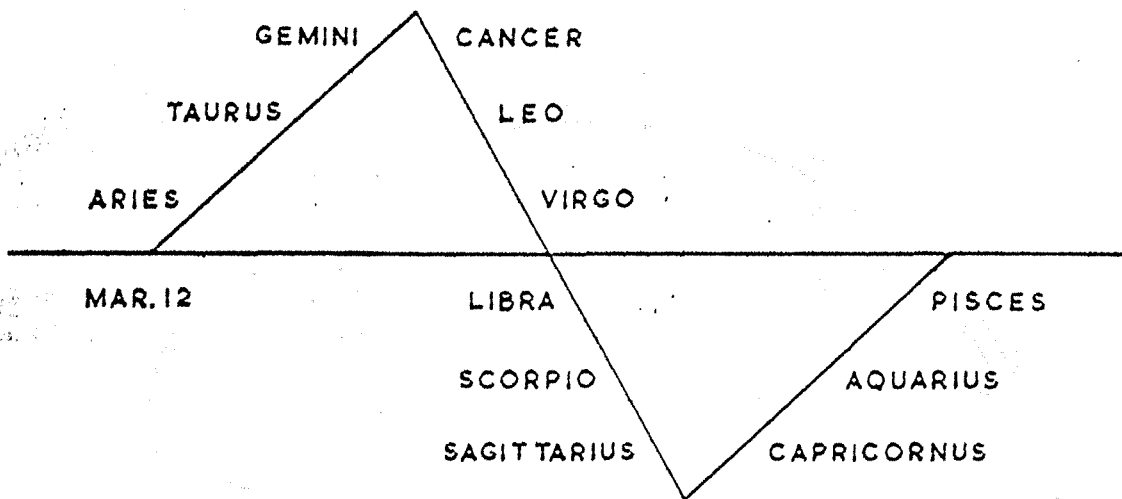
At the moment of birth, the sign of Taurus is rising over the horizon, and in it are Venus and Mars — in conjunction. The child will therefore be both amorous and aggressive: because Taurus is a sign in which Mars is more powerful than Venus, the child will be more aggressive than amorous, but the Moon, a chaste influence, is in opposition, a very bad relationship, so that the subject will be unchaste into the bargain. The horoscopic possibilities are manifold!

Let us look at the signs of the Zodiac in another sketch:

If we believe, as the Middle Ages did,

plest, he uses the heavens to tell the time of the day and of the year:

“Whan that the month in which the world bigan
That highte March, when God first makid man,
Was compleet, and passed were also,
Syn March bigan, thritty dayes and two,
Bifel that Chauntecleer in al his pryde,
His sevene wyves walkynge by his syde,
Caste up his eyen to the brighte sonne,
That in the signe of Taurus hadde yronne
Twenty degrees and oon, and somewhat moore,
And knew by kynde, and by noon oother loore,
That it was pryme, and crew wth blisful stevene.
‘The sonne,’ he seyde, ‘is clomben up on hevene
Fourty degrees and oon, and moore ywis’.”



that the Earth is stationary, the Sun crosses the Equator at the vernal equinox, moves northwards until mid-summer, and turns south again at the tropic of cancer, $23\frac{1}{2}^{\circ}$ N. of the Equator. The date of 12th instead of 21st March is because the Julian calendar, in use in Chaucer's day, was already 9 days wrong, and became 11 days in error before Parliament decreed a change-over to the Gregorian calendar in 1752. When the people of London heard that they were to go to bed on 1st September and wake up on the 13th, they broke the windows of the Houses of Parliament, shouting: "Give us back our eleven days!"

What literary use does Chaucer make of all this Scientific material? At its sim-

Chaucer tells us here that March is over, and that another 32 days have passed since then — i.e. the 30 of April and 2 more: so that the date is his favourite one of 3rd May. He also tells us that the sun had run just over 21° in the Zodiacal sign of Taurus. We know that, according to Chaucer's calculations, the Sun entered Aries on 12th March and moved at about 1° per day — 360° in 365 days: it would thus enter Taurus on 11th April, a further 21° would bring it to the 2nd of May, and the "somewhat moore" would again give us the same date of 3rd May.

But this is not the sum of Chauntecleer's preternatural brilliance. He may know by instinct that it is nine o'clock in the morning, but he can also establish the

fact scientifically: he claims that the angle of elevation of the Sun is just over 40° . It has actually been calculated, from nautical tables, that the angle of the Sun at 9 a.m. on 3rd May, 1387, in the latitude of Greenwich was 41° !

Secondly, Chaucer uses his knowledge of the stars for astrological purposes: astronomy is the Science of the stars, astrology is the connection of starlore to its influence on mankind. The three principals in *The Knight's Tale* go to beg for success in the hour most propitious to the relevant tutelary deity. First, Palamon:

“That Sunday night ere day began to spring
There was a lark which Palamon heard sing
(Although two hours before the day came on,
Yet the lark sang, and so did Palamon).
With holy heart and in a lofty mood
He rose on pilgrimage and he pursued
His path to Citherea, the benign
And blissful Venus, to her honoured shrine.
And in her hour, among the early mists,
He stepped towards her Temple in the lists
And down he knelt in humbleness and fear
With aching heart, and said as you shall hear.”

Next Emily:

“In the third hour after Palamon
Had sought out Venus for his orison,
Up rose the sun, and up rose Emily
And hastened to Diana's sanctuary.”

And finally, Arcite:

“Now in the hour of Mars next after this
Arcite rose up and sought the edifice
Of fiery Mars, to do beneath his banner
His sacrifice, as was the pagan manner.”

Palamon got up very early to visit the temple of Venus *in her hour*, because then she could have more power to grant his prayer. According to our previous calculations, the twenty-fourth hour of Sunday is governed by Mercury, and the twenty-third by Venus: it is exactly then, two artificial hours before dawn on the Monday, that Palamon importunes Venus for success in love. Emily, as we might expect, rises at dawn to pray for Diana, but enjoys less success than she deserves considering that it is not merely Diana's hour but her day as well. Alcite also is

careful to wait for an astrologically opportune moment to address his plea to Mars: and he enjoys the added advantage that the tournament has been fixed for a Tuesday.

If we look at these passages with any care at all, we cannot fail to be convinced that both Chaucer and his audience were thoroughly familiar with this business of planetary influence.

Thirdly, Chaucer dabbles in Horoscopy — the relationship between the behaviour, actions and destiny of a character in relation to what is the pattern of the stars at the moment of his birth. Constance in the *Man of Law's Tale* would never have been allowed to embark on her journey at such a time — Chaucer tells us — had there been a competent astrologer in her father's Court. Best of all is the Wife of Bath, who is amorous because Venus was in the ascendent when she was born, and has consequently had five husbands and is now looking for a sixth; but because Mars was in conjunction with Venus at the moment of the wife's birth, she is aggressive as well as amorous, preaches and practises the gospel of woman's sovereignty in marriage, and is looking for a sixth husband solely because she has driven the other five into their graves.

Fourthly, Chaucer uses his astronomy for medical purposes. His doctor, as we have seen, is well grounded in astronomy. When he is called in, he brings his charts, not a black bag, and his interest is in exactly when his patient was born and what the disposal of the heavenly forces then was, at what precise moment he was taken ill, and what his dreams are. Then he will make his calculations, find out when the planets which are particularly influential on his patient's destiny are in favourable aspects, and then administer the medicine in a spoon of a metal suitable to the dominant planetary influence. Needless to say, by the time a propitious moment to administer the medicine had arrived, the patient had frequently died! Or the doctor might decide to make images and indulge in a little sympathetic magic, or he might resort to bleeding his patient if he thought that his humorous condition warranted it.

We must now leave Astronomy for our second area of discussion, the doctrine of the Four Humours; so let us see how the portrait of the Doctor continues:

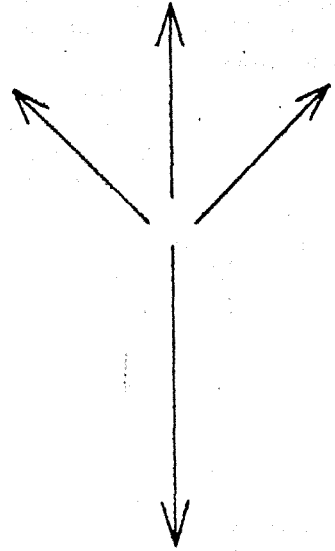
Pertelote diagnosing for her husband, Chaunticleer:

“For, being grounded in astronomy,
 He watched his patient’s favourable star
 And, by his Natural Magic, knew what are
 The lucky hours and planetary degrees
 For making charms and magic effigies.
 The cause of every malady you’d got
 He knew, and whether dry, cold, moist or hot;
 He knew their seat, their humour and condition.
 He was a perfect practising physician.”

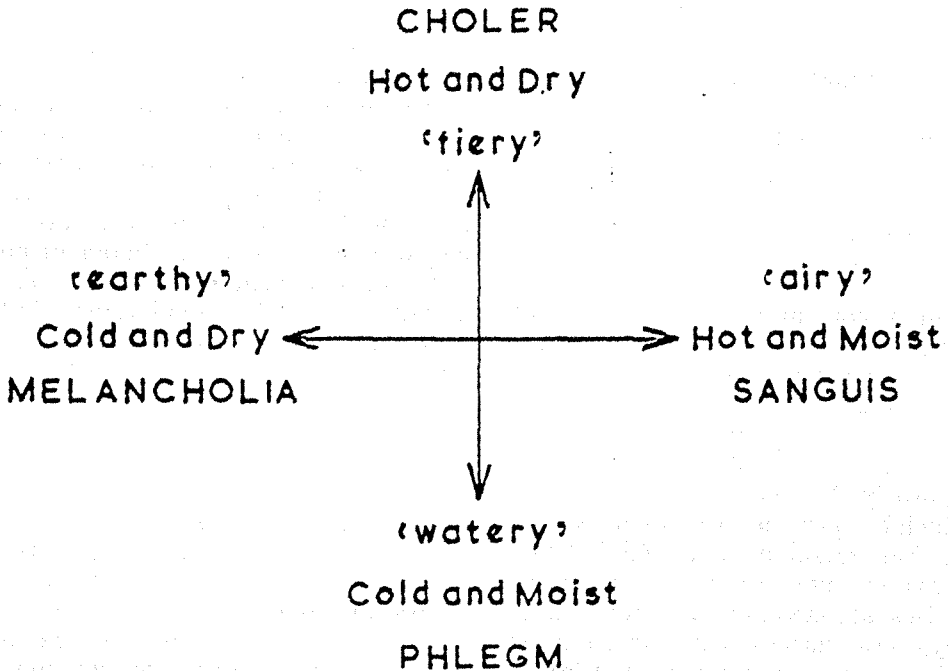
The doctrine of the four humours was central to mediaeval — and even Renaissance — medicine. It is a simple concept, which postulates that, in health, the human body maintains a perfect balance between two pairs of opposed forces, as below.

An excess of one of these humours upsets the balance; Chaunticleer, according to Pertelote, suffers from an excess of cholera, as at right.

The patient will feel hot and dry, and will dream in red technicolour. Here is



“No doubt the redness in your dream to-night
 Comes from the superfluity and force
 Of the red cholera in your blood. Of course.
 That is what puts the dreamer in the dread



Of crimsoned arrows, fires flaming red,
 Of great red monsters making as to fight him,
 And big red whelps and little ones to bite him;
 Just so the black and melancholy vapours
 Will set a sleeper shrieking, cutting capers
 And swearing that black bears, black bulls as well,
 Or blackest fiends are hailing him to Hell."

The physician's aim in a case of cholera is to reduce the patient's heat and dryness — at the most propitious astrological moment, of course. In this particular case the practical Pertelote recommends that Chauntecleer should reduce his temperature by eating laxative herbs growing in the garden:

"Pekke hem right up as they grow and ete
 hem yn."

But Chauntecleer scorns this sound practical advice, claims that his dream is a warning of the future sent from on high, and having blinded Pertelote by a multiplicity of similar cases proving his point, administers the coup-de-grâce by quoting at her in Latin with a superior smile on his back:

In principio,
 Mulier est hominis confusio.
 Madame, the sentence of this Latyn is,
 Woman is mannes joye, and al his blis!"

The third and last main point of interest I wish to make does not derive quite so clearly from the Physician's portrait — rather from Chaucer's method in all the portraits. Sometimes Chaucer describes a pilgrim's appearance — his physical characteristics, his dress, the sort of horse he is riding; at others his inward character. And the close relationship between the two, because it is often implied, is often overlooked.

In the Middle Ages, a type of medical treatise was current called the *Physiognomia*; in these *Physiognomies*, the detailed relationship between physical characteristics and inward character was discussed and established. For example, it made a big difference to your temperament whether the wart on your nose was on the tip, the bridge, or on one side or the other. The study of the positions of warts and moles even had a name of its own — METOPOSCOPY.

I have been doing a good deal of work recently on the physiognomical relationship between appearance and character in Chaucer's Pilgrims, and also the effect a way of life can have upon a man's appearance, but I have left myself time for only one example. I have chosen the case of the Summoner because the portrait itself contains some confirmation of my diagnoses. Here are the operative parts of Chaucer's description:

"A Somonour was ther with us in that place,
 That hadde a fyr-reed cherubynnes face,
 For saucefleem he was, with eyen narwe.
 As hoot he was and lecherous as a sparwe,
 With scalled browes blake and piled berd.
 Of his visage children were aferd.
 Ther nas quyk-silver, lytarge, ne brymstoon,
 Boras, ceruce, ne oille of tartre noon;
 Ne oynement that wolde clense and byte,
 That hym mighte helpen of his whelkes white,
 Nor of the knobbes sittynge on his chekes.
 We loved he garleek, oynons, and eek lekes,
 And for to drynken strong wyn, reed as blood;"

"With hym ther rood a gentil PARDONER
 Of Rouncivale, his freend and his compeer,
 That streight was comen fro the court of Rome
 Ful loude he soong 'Com hider, love, to me!
 This Somonour bar to hym a stif burdoun;"

The Summoner suffered originally from GUTTA ROSACEA, as quotations from contemporary medical authorities clearly prove. Andrew Boorde writes:

"*Gutta rosacea* are the Latin words that designate this malady; in English it is called "a sauce fleume face," and the symptoms of it are a redness about the nose and cheeks together with small pimples; it is a privy sign of leprosy... This infection comes of evil diet, and a hot liver, and the disordering of a man's complexion in his youth, of late drink and great surfeiting."

Says Bernardus de Gordon:

"The infallible signs are these: A falling out and scabbiness of the eyebrows, a roundness (rotunditas) of the eyes, and an enlargement of the nostrils externally and a contraction internally. Breathing becomes difficult, and the patient speaks as if through the nose; on the face there is a kind of pallor verging upon the deathly, and the appearance of the face is terrible with its fixed look... The secret signs in the beginning are these: the

color of the face is reddish inclining to blackness, the breathing begins to alter, and the voice becomes hoarse." Bartholomaeus de Glanvilla agrees: "In those afflicted with leprosy the flesh is perceptibly corrupted, the eyes and eyelids are corrugated or wrinkled (*corrugantur*) and have a certain glitter; the nostrils are constricted; and the voice becomes raucous."

Even the Summoner's hoarse-voiced singing is not omitted in Chaucer's careful catalogue of his symptoms; and even the apparent narrowness of his eyes is seen to be caused by the swelling of the eyelids.

There can be no doubt that the Summoner is suffering from alopecia. The small pimples which once indicated *gutta rosacea* have developed into the great matter-infested pustules — "knobbes" and "whekes whyte" — of true leprosy. His eyebrows have fallen out, and his beard is exceedingly thin. His eyes are red and swollen, the lashes have gone, and he can see only through slits. And his hoarse singing indicates the rough and husky voice of the confirmed leper. Small wonder that little children were afraid of him!

But Chaucer has gone farther than the mere symptoms of the disease: he has clearly told us three of the causes, all well-substantiated by contemporary medical authorities. First, association with unclean women: the Summoner is as lecherous as a sparrow. Secondly, strong red wine; the Summoner is frequently drunk. Thirdly, too great a fondness for onions — the Summoner loved onions, garlic and leeks. Finally, Chaucer has given us a list of the recognised treatments.

"Ther nas quy silver. lytarge, ne brymstoon,
Boras, ceruce, ne oille of tartre noon;
Ne oynement that wolde clense and byte."

Curry writes, in *Chaucer and the Mediaeval Sciences*:

"Lanfrank's prescription for the cure of *gutta rosacea* includes 'litargiri, aur:pigmenti, sulphuris viui, viridis eris, oleum tartarinum, argenty viui', and Guy de Chauliac would treat the same disease with 'aigre de citron, ceruse, argent vif, borax, soulfhre et alun, avec huil de tartre'. For the more violent cases of skin disorders and for leprosy, Guy recommends the careful and judicious use of 'le medicament corrosif' or perhaps of 'le medicament caustique', the chief ingredient of which is arsenic — and to which Chaucer clearly refers when he speaks of the 'oynement that wolde clense and bite'."

I have examined, all too briefly for my satisfaction, though doubtless much too tediously for yours, three aspects of the mediaeval medicine — the dependence on astronomy, the doctrine of the humours, and the physiognomia. There is one overriding consideration that I would like to leave with you. The man in whose works we have studied them, Chaucer, was not a doctor, nor even a scientist, but a poet. He knew a good deal of science, of course, rather more than the average educated man of his day. But he used this knowledge as a means to a literary end and not as a scientific end in itself. He did not in fact *find* the Wife of Bath under the joint influence of Venus and Mars; he put her there, so that her subsequent amorousness and aggressiveness would find increased credibility in the eyes of his audience. Scientific knowledge is thus employed to strengthen the credibility of literary characteristics. And this is why — because we have been dealing all evening with a medical science that was still primarily literature — this is why I am particularly happy to lay the small tribute of this lecture up on the altar of medico-literary co-operation.