

MICHAEL SCOT: A THIRTEENTH-CENTURY SCIENTIST AND PHYSICIAN

By JOHN D. COMRIE, M.A., B.Sc., M.D., F.R.C.P.E., Lecturer on History of Medicine and on Clinical Medicine, University of Edinburgh.

MICHAEL SCOT, the subject of our sketch, was born, according to Wood Brown¹ who has left the most comprehensive record of his elusive personality, somewhere on the Scottish Borders about the year 1175. His death is fixed by the same authority for the year 1232, and took place in the countryside of his birth, which also claims his grave. The period of Scot's life was perhaps the most prosperous that the South of Scotland has ever seen. The Angles of Northumbria had been driven out and peace had reigned in Lothian for 200 years. The Norsemen had been expelled from the Scottish Mainland. On the east coast, Berwick, reputed the chief port in Britain before the fourteenth century, was at the height of its prosperity; and in the West, Glasgow Cathedral, to-day the finest ecclesiastical building in Scotland, was then rising under Bishop Jocelyn's hand. The beautiful abbeys of Jedburgh, Kelso, Melrose, Dryburgh, Newbattle, and Holyrood had been founded as centres of light and learning by David I. half a century before. Here amid the pleasant vales and woods of Tweedside and Lothian peaceful Norman settlers had introduced art and learning without the strife from which England then suffered under Richard, John, and Henry III.

In these surroundings Michael Scot spent his boyhood's days, passing at a later period through the schools of Oxford, Paris, and Bologna. Both on the Scottish Borders and in Italy popular tradition holds strong memories of him, sometimes of a rational, sometimes of a supernatural kind; and he forms one of a group of pre-Renaissance scholars, all of whom were viewed by their age in a somewhat similar light. Scot was a youth of 18 when Albertus Magnus, the *doctor universalis* of the Schoolmen was born, and Roger Bacon, the *doctor admirabilis*, was a young student of 18 when Scot's life ended. At Paris he earned the name of "Michael the Mathematician"; and for the practical application of this science, then much in demand for architectural enterprises, he was distinguished later at the Court of Frederick II. He must also have studied theology,



Portrait of Michael Scot from Bodleian MS., "De Physionomie" (14th cent.).



Fresco by Taddeo Gaddi in Spanish Chapel, Florence, "St Thomas Aquinas converting Unbelievers," showing Michael Scot, the central kneeling figure with skull-cap, in front row (ca. 1330).



Reputed effigy of Michael Scot in Melrose Abbey.

Michael Scot: Scientist and Physician

for towards the close of his life in 1223 the Pope Honorius III. desired Stephen Langton, the Primate of England, to prefer Scot to a suitable vacancy, recommending him as distinguished among learned men for his remarkable gift of knowledge, and himself nominated Scot for the Archbishopric of Cashel in Ireland. This post, however, Scot declined because of his ignorance of the Irish vernacular.² Greek and Arabic were known to Scot, and his greatest life's work consisted in translations from these languages, which were doubtless learned by him at the period when he lived among the Moors and Greeks of Sicily.³ With regard to his linguistic attainments, it is true that Roger Bacon speaks disparagingly:—"Though we have numerous translations," Bacon says, "of all the sciences, by Gerard of Cremona, Michael Scot, Alfred the Englishman, Hermann the German and William Fleming, there is such an utter falsity in all their writings that none can sufficiently wonder at it. For a translation to be true, it is necessary that a translator should know the language from which he is translating, the language into which he translates, and the science he wishes to translate. But who is he and I will praise him, for he has done marvellous things. Certainly none of the above named had any true knowledge of the tongues or the sciences, as is clear, not from their translations only, but their condition of life."⁴ This wholesale depreciation is overdone and is the diatribe of a jealous man. It must have been bitter for Bacon, possessed of brilliant gifts and yet neglected by scholars, misunderstood by the laity, and condemned by the church to a life of obscurity and periods of long imprisonment, to see others no more learned, like Scot, dipping as they would into forbidden sciences, in high popular repute, and favoured by courts and prelates.

Between the years 1200 and 1208 Frederick, King of Sicily and later Emperor of Germany, a prince deservedly famous for his talents and for his encouragement of learning, lived at Palermo as a boy of 6 to 14 years, under the tutelage of the Canons of the Cathedral. Here Michael Scot acted as his tutor. In Palermo, therefore, at the half-Moorish court, Scot spent the opening years of the thirteenth century, and here he acted as Astronomer and Astrologer to the Emperor, composing for him two astrological books, the *Liber Introductorius* and *Liber Particularis*, which were of a popular or explanatory nature. In the Oxford MS. of the latter⁵

John D. Comrie

from which I show an illuminated capital representing Scot himself, the colophon runs, "Here ends the book of Michael Scot, Astrologer to the Lord Frederick, Emperor of Rome, and ever august; which book he composed, in simple style, at the desire of the said Emperor. And this he did, not so much considering his own reputation as desiring to be serviceable and useful to young scholars, who of their great love for wisdom, desire to learn in the Quadrivium the Art of Astronomy."

A much more important book, judging it by its enormous vogue throughout the next four centuries, is the *Liber Physionomiæ*. At the age of 14 Frederick was married; and Scot dedicated this book as a guide in the knowledge of men, to the pupil about to pass from his charge into the stormy life of European politics. The work attained a great popularity in MS., and after the introduction of printing no less than eighteen editions appeared between 1477 and 1660. Part of the work is influenced by Aristotle's *History of Animals*; part is taken from the *Liber ad Mansorem* of Rhazes; but the greater portion is apparently from Scot's own observation. Of the three books into which it is divided, the first deals with the mysteries of generation and birth; the second expounds the signs of the different complexions, as revealed in various parts of the body or by dreams; and the third explains what signs of the inward character can be read in each of the bodily members. The specimen on opposite page will show its nature.

Scot's tutorship at an end with Frederick's marriage, he next set forth on a literary mission to Spain, where a regular school of translation existed at Toledo. Probably when Scot left Palermo he did so at the instigation of the Emperor Frederick and to him he dedicated the translations which he produced from the Arabic MSS. available in Spain. Two translations of Aristotle's Natural History of Animals, called respectively the *De Animalibus ad Caesarem* and the *Abbreviatio Avicennæ*, were the first-fruits of his labours. That he also set up a chemical laboratory in Toledo must appear from the fact that two books on Alchemy also issued from his pen, the *Liber Luminis*⁶ and *De Alchimia*.⁷ In the latter he gives a formula by which he states he had succeeded often in changing lead into the finest gold. Gold that is which would stand the tests then in common use. Another important astronomical work was

Michael Scot: Scientist and Physician

his translation in 1217 of the *Sphere* of Alpetrongi, which as witnessed by Vincent of Beauvais and by Albertus Magnus

ter fortem superbum. cito presumptuosus. stultus. cupidus
pudbrorum. et cito credentem. *L.º* brachia sunt pingua et
mulculosa significant homines vanagulosi. cupidus quod
delectabile. et plº insipiens quod sapiens in agendis. *L.º* brachia
sunt valde pilosa siue sunt macra siue crassa et mollis carnis.
significant hominem luxuriosum. tenere capacitaris. oebi-
lem. multe suspitionis. et sagaciter maliciosum. *L.º* cuius bra-
chia sunt valde nuda pilis. significant hominem tenere sa-
pacitatis. magne ire. cito credentem. panu lassiuu. mēdace
facile fallace. sagacē in malo et debile.

¶ De manibus.

L.º. lxxii.

Manus mollis carnis macra et longe significant ho-
minem boni intellectus tenere capacitaris. et facili ti-
midum. libenter pacificum. satis legalem. discretum. seruitu-
alem. domesticę econuersatōis. et doctrinalem. *L.º* cuius man-
sunt valde grosse ac breues. significant hominem grossi in-
genii. simplicem. vanum. mendacem. fortem laboriosu. si-
delem. cito credentem et breuis ire. *L.º* cuius manus sunt pi-
lose et grossorum pilorum ac digitorum et curuorum. sig-
nificant hominem luxuriosum. vanum mendacem. grossi
ingenii. et plus simplicem quod sapientem. *L.º* cuius manus in
digitis curuantur sursum significant hominem liberalem.
et seruilem. capacitaris bone. sagacem parū inuidu. lōge
ire. intellectus boni. et mediocrem inter secretum et non se-
cretum. *L.º* cuius manus sunt implicabiles versus extremam
partem digitorum significant hominem tenacem. cupidus
et aminosus. laboriosu sagacē. outi ppositi. nō cito cōuertē-
bilem ad credendum audis.

¶ De pectore.

L.º. lxxiii.

pectus grossum et amplum significat hominem fet-

Page from *Liber Physionomie* (early printed edition of 1497).

“Chapter 82, On the Hands.—Hands of soft flesh, slender and long, show a man of good intellect but little strength, easily frightened, gladly peaceful, pretty formal, discreetly obliging, of domestic habits and erudite. Hands that are very thick and short show a man of slow intelligence, simple, vain, lying, strong, hardworking, faithful, credulous, and good tempered. Hairy hands with strong hair and curved fingers show a man wanton, vain, lying, of slow intelligence, and more simple than wise. Hands with fingers curved backwards show a man liberal and obliging, of good strength, sagacious, little envious, wrathful, of good intellect, and moderately secretive. Hands with fingers stiff towards the ends show a man persistent, viciously acquisitive, hardworking, sagacious, of set purpose, not quickly persuaded to believe what he hears.”

influenced profoundly the astronomical beliefs of the time; and which probably was prepared for the Astronomical Congress assembled in 1218 by the King of Castile at Toledo.⁸

John D. Comrie

Numerous minor writings and fragments are attributed also to Scot, e.g., *De Secretis Naturæ*,⁹ on Geography, etc.

But the most renowned of all Scot's works was his translation from the Commentaries of Averroes of Cordova. Averroes (1126-98) was the great rationalist and arch-heretic of his time, banned alike from the paradise of Mohammedans and the heaven of the Christians; so that to translate and publish his works was a sin which probably lost for Scot any important ecclesiastical preferment, and which was one of the causes of embroilment between Frederick II. and the Papacy. Ten years after Scot's return from Toledo, Frederick decided to publish the translations of Averroes, which he had commissioned Scot and others to make, and this he did by sending copies to the various Universities. Roger Bacon speaks of Scot appearing with these translations in England in the year 1230, and of the impetus which they gave to the Aristotelian philosophy in the schools.¹⁰ From this journey Scot appears never to have returned but to have died on a visit to his northern birthplace.

Scot's activities as a doctor naturally interest us particularly. Frederick returned in 1220, after a successful campaign against his rival Otho, to Palermo, where he was soon joined by Michael Scot fresh from his ten years of literary labour in Spain. The latter again took up the post of Court Astrologer in which he was busied casting horoscopes and forming predictions; and on these subjects he issued several minor works. He also became physician to Frederick. Sir Norman Moore describes the type of thirteenth-century physician in England as follows, a description which aptly fits Michael Scot: "It is clear," he says, "that considerable attainments were necessary before a man was styled medicus or physicus. His study chiefly consisted in reading books and hearing lectures on books in the University. Most learned men had read some medicine, or knew something about it; and some ecclesiastics had specially devoted themselves to a study the use of which was so suitable to their profession. Of this kind was the Abbot of Crokestone 'in arte medicina erudito,' who attended John in 1216 at Newark."¹¹

Two influences which came into being early in the thirteenth century had a great effect in raising the knowledge and the status of the medical profession. The first of these was the establishment by Pope Innocent III. of the Holy Spirit Hospitals beginning in the year 1204. Virchow¹² has told the story of

Michael Scot: Scientist and Physician

these hospital foundations, and makes it clear that probably every town of 5000 inhabitants, everywhere throughout Europe, before the close of the thirteenth century had a hospital. Those in the larger towns at least, according to Walsh,¹³ were model hospitals in many ways, and ever so much better than many hospital structures erected in post-medieval centuries. One of these thirteenth-century hospitals of the Holy Spirit is still standing at Lübeck in Germany. The other influence which had a profoundly steadying effect upon the medical profession, and with whose inception it is more than probable that Michael Scot was concerned, is found in the enactments of Frederick II. regarding the practice of medicine in Italy and Germany.¹⁴ These enactments, which fixed the period of medical study at Salerno and Naples, instituted a State examination for the licence to practise, prescribed a scale of medical fees, and nominated inspectors for maintaining the quality of drugs, were issued in the year 1240. By this time Michael Scot had been dead eight years; but he is mentioned by de Renzi as one of the early teachers at the medical school of Salerno,¹⁵ and on account of his intimacy with Frederick it is likely that he was consulted in any legislation likely to affect it. Since this formed the first attempt at a State organisation of medical studies, we shall be justified in feeling a measure of gratitude to old Michael Scot.

As a practising physician, Scot enjoyed a great reputation. Dempster, who was Professor at Bologna and Pisa from 1616 to 1625, speaks of Scot's "singular skill," calling him also "one of the first physicians for learning";¹⁶ and another writer tells that he was noted for the cures he effected in difficult cases, and that he excelled in the treatment of leprosy, gout, and dropsy. A work on the urine by Michael Scot exists now in an Italian translation only; but in a later collection, recipes are quoted taken from "the book of Master Michael Scot, Physician to the Emperor Frederick, and other Doctors."¹⁷ An interesting marginal note occurs on two early thirteenth century MSS. of Scot's *De Animalibus ad Caesarem*, recording apparently by his own hand a consultation at Bologna in the year 1221. One of these is preserved in the Library of Gonville and Caius College,¹⁸ the other is the property of Amtmann Hof, Harford, North Germany, and appears from its abbreviations to be a copy.

Michael Scot: Scientist and Physician

kidneys or bladder; and between the projections were signs of white skin, which you find to be due to its long duration. The said Mary consulted me on account of difficulty in urination."

It appears from this note that the stones were calcified fibroid tumours, and that Scot was familiar with the different appearance of stones from the bladder and kidneys. The consultation shows that he was recognised as a urinary specialist.

On a later folio of this Cambridge MS. is given a prescription similarly placed in the margin. Numbers of these prescriptions have been handed down associated with the name of Scot, notably certain "*Pilulæ Magistri Michaelis Scoti*,"¹⁹ in a thirteenth-century MS. collection, which are commended by one scribe for all sicknesses in terms that suggest the advertisement of a modern patent medicine. Their main constituents are aloes, rhubarb, and nine fruits and flowers made into a confection. They might fairly be described as good after-dinner pills, but the thirteenth-century copyist recommends them to relieve headache, purge the humours wonderfully, produce joyfulness, brighten the intellect, improve the vision; sharpen hearing, preserve youth, and retard baldness.

A totally different aspect of Michael Scot is the reputation which he enjoyed, both during life and later, as a wizard. To the unlettered and unlearned of the thirteenth century, a man who had plunged deep into the knowledge of the mysterious East could not escape being regarded as a necromancer. The disapproval of the Church attaching to his translation of Averroes would tend to strengthen this idea; and the fama appears to have been further increased by Scot's deliberate actions. *Populus vult decipi*, and by many outstanding men, especially if they be inclined to politics, the wonder of the ignorant crowd is desired as much as the appreciation of the learned few. This fame, which lives to-day in Michael's own homeland of the Scottish Borders, is expressed by his illustrious namesake, Sir Walter Scott.*²⁰

Alas, however, for the fallibility of popular tradition, the camp at the base of the Eildon Hills was known to the Romans as *Trimontium*!

In Italy, Scot's reputation as a seer of the future and as a magician was so firmly established within the century follow-

* Sir Walter Scott's attempt to identify the tutor of Frederick II. with Sir Michael Scot of Balwearie, cannot now be accepted, since the great

John D. Comrie

ing his death that Dante places him in the *Inferno* with the Grecian soothsayers, Calchas and Eurypilus.²¹

“Quell' altro, che ne' fianchi è cosè poco,
Michele Scotto fù, che veramente
Delle magiche frode seppe il guico.

That other, round the loins
So slender of his shape, was Michael Scot,
Practised in every slight of magic wile.”

(*Cary's Translation.*)

One of Scot's predictions was the death of his patron Frederick in a City of Flowers, believed by Frederick to be Florence which he therefore avoided, only to die at Fiorentino. Another was Scot's own death from the blow of a stone on the head. To prevent this he constantly wore an iron cap, that proved useless in the end, because he was struck by a small piece of masonry from the roof of a church in which he was hearing the mass, bare-headed.

Boccaccio in the next century speaks of Scot's magical or conjuring tricks during his stay at Bologna,²² and a great number of such tales sprang up later round his name. Two of these later traditional tales give the impression that Scot relied for some of his effects upon hypnotic suggestion. At a feast held in January he caused vines with ripe clusters of grapes to appear on the table. The guests were bidden to choose each a bunch, and wait for a given word. At the word “cut” the grapes disappeared and the company found themselves each with a knife in one hand and his neighbour's sleeve

Michael is known to have died some sixty years before Sir Michael went on his embassy to Norway in 1290.

“In these far climes it was my lot
To meet the wondrous Michael Scott ;
A Wizard of such dreaded fame,
That when in Salamanca's cave
Him listed his magic wand to wave,
The bells would ring in Notre Dame !
Some of his skill he taught to me ;
And, Warrior, I could say to thee
The words that cleft Eildon Hills in three,
And bridled the Tweed with a curb of stone :
But to speak them were a deadly sin ;
And for having but thought them my heart within,
A treble penance must be done.”

Michael Scot: Scientist and Physician

in the other. Another tale records how at a banquet given in Palermo by Frederick to celebrate his coronation in 1220 Scot and a companion suddenly appeared dressed in Eastern robes and offered to perform a wonder. The weather being hot Frederick asked for a cooling shower of rain, which the magicians produced with a sudden storm. So far the entertainment had probably been carefully prepared and stage-managed; and as a reward Scot asked that a German baron Ulfo should be allowed to accompany them upon an expedition. This being granted, it seemed to Ulfo that they set forth in galleys passed out into the Atlantic to a strange land, where followed battles, marriage with a lovely princess, twenty years of wedded bliss, and a large family of sons and daughters. Finally the magicians reappeared and persuaded him to accompany them back to Palermo, and on their return what was Ulfo's astonishment and grief to find the banquet of twenty years before no further advanced, and all his hardships and joys only a dream never to be repeated.²³

As to Scot's personal appearance, Dante gives the impression of a spare man. There is a sculpture in Melrose Abbey which tradition reports to be the head of Michael Scot; and this shows thin cheeks, a sparse beard, and eager eyes. A similar appearance is shown by one of the figures in a picture on the wall of the Spanish Chapel in Florence. It represents a group of unbelievers receiving conversion from St Thomas Aquinas. In the front row two kneeling figures, one with a diadem and one wearing a metal head-piece represent probably the Emperor Frederick and Michael Scot; the hand of a figure which can be identified as Averroes points to the latter who also bears a strong resemblance to the Melrose effigy. The painting is attributed to Taddeo Gaddi,²⁴ a pupil of Giotto, and gives probably a faithful enough representation of Scot painted a century after his time. There are two other likenesses in illuminated MSS. of the *Liber Particularis* and *Liber Physionomie* dating from the early fourteenth century and preserved in the Bodleian Library.

I have referred to the manner of Scot's death as handed down by tradition. His grave is still shown in Melrose Abbey, but his resting place is also claimed by other places on the borders, such as Holme Coltram, Glenluce, and Burgh-under-Bowness. The *Book of Might* so dreaded in popular tradition may have been the Commentaries of Averroes, of which the

John D. Comrie

publication had been delayed for twenty years to avoid injuring the susceptibility of the Church, and which Scot was bringing to the Western Schools when he died.

REFERENCES.—¹ *Life and Legend of Michael Scot*, Wood Brown, Edinburgh, 1897. ² *Milman Church History*, iv., 17. ³ Wood Brown, *op. cit.*, p. 133. ⁴ *Compendium Studii*, cap. viii., Master of the Rolls Series. ⁵ Bodleian MS. Can. Misc. 555 Opera Astrolog. M. Scotti. ⁶ Riccardian Library, Florence, L. iii., 13, 119. See Wood Brown, *op. cit.*, p. 240. ⁷ Corpus Christi College MS., cxxv., pp. 116-119. ⁸ See Wood Brown, *op. cit.*, p. 104. ⁹ Querfeld, *Michael Scottus und Seine Schrift de Secretis Naturæ*, Leipzig, 1919. ¹⁰ *Opus Majus*, Jebb's Ed., pp. 36, 37. ¹¹ Moore, *Medicine in the British Isles*, 1908, p. 17. ¹² Virchow, *Gesammelte Abhandlungen aus dem Gebiete der Oeffentlichen Medizin*, vol. ii., Berlin, 1877. ¹³ Walsh, *Medieval Medicine*, 1920, p. 172. ¹⁴ Huillard-Brehollis, *Diplomatic History of Frederick II.*, Paris, 1851. ¹⁵ De Renzi, *Collect Salern*, i., p. 292. ¹⁶ Dempster, *Historia Ecclesiastica*, xii., 495. ¹⁷ Wood Brown, *op. cit.*, p. 154. ¹⁸ *Catalogue of Gonville and Caius College*, 109 (i., 3). ¹⁹ Brit. Mus. Add. MSS. 24068 (22), fol. 97. ²⁰ "Lay of the Last Minstrel," Canto II., Stanza 13. ²¹ Dante, *Inferno*, xx., 115-117. ²² Boccaccio, *Elinando*. ²³ Wesselofsky, *Paradiso degli Alberti*, Bologna, 1867, ii., pp. 180-217. ²⁴ Ruskin, *Mornings in Florence*, Nos. IV. and V.

The following is a list from Mrs Singer's Oxford Catalogue of Medical and Scientific MSS. in Britain, showing all the MSS. of Michael Scot preserved in this country:—

1. Oxford. All Souls College, LXXII. (vii.), 14th cent., *Avicenna*.
2. " Corpus Christi College, CXXV. (xxx.), 13th cent., *De Alkemia*.
3. " Bodleian Cann. Cod. Misc. 555, 14th cent., *De Physi-
onomia* and *Liber Particularis* (Astronomy).
4. " *Ibid.*, 266, 15th cent., *Liber Introductorius* (Astronomy).
5. " *Ibid.*, 378, 15th cent., *Geography*.
6. " *Ibid.*, 562, 14th cent., *Abbreviatio Avicennæ*.
7. " Merton College, 278, 14th cent., *Aristotle de Animalibus*.
8. Cambridge. Gonville and Caius College, 109, 13th cent., *Aristotle
de Animalibus*.
9. Cambridge University Library, Dd. iv., 30 I., 14th cent., *Aristotle
de Animalibus*.
10. *Ibid.*, li. III., 16, 13th cent., *Aristotle de Animalibus*.
11. British Museum, Add. 24068, 13th cent., *Prescriptions*.
12. British Museum, Royal, 7, C.I., 14th cent., *De Animalibus*.
13. *Ibid.*, 12, D. vi., 15th cent., *Astronomy*.
14. *Ibid.*, 12, C. xv., 13th cent., *De Animalibus*.
15. *Ibid.*, 12, F. xv., 13th cent., *De Animalibus*.
16. Durham Cathedral, C.I., 17 and 18, 14th cent., *Aristotle, with
Commentary of Averroes*.
17. Edinburgh University, 132 (Laing Coll. 168), 15th cent., *Astrology*.