

A few words about other astrological references in Shakespeare: we find some, e.g., in *Henry IV*, Act II, Scene 4 (where the poet's attitude towards astrology is actually rather ironical); and in *Julius Caesar* "... when beggars die, there are no comets seen, etc. ..." And here Pearce remarks "... no one has tackled Julius Caesar for possible astrological implications, such as those associated with the Ides of March ..."

In conclusion, it is worth recalling the particular value of the "reversed procedure", as outlined previously with reference to the Chigi-problem, where we were able to deduce from Peruzzi's painting quite unambiguously and with great accuracy the year, month, day and hour of Chigi's birthday which were new to the historians. It was very gratifying too to see that the correctness of the calculations and the deductions were strongly supported by the investigation of Prof. Gundel, who was then not told the subject's name. He deduced from the author's data that the astrologers of this period (around 1466 A.D.) would have predicted of a man born under these stars that an immensely rich and important life lay in store for him. The coincidence in detail with his actual life doubtless so pleased Chigi that he commissioned Raphael and his pupils to immortalize his horoscope on the ceiling of his villa—to remind him daily of his lucky stars.

Through the good offices of the Warburg Institute in London, I recently learned of the existence of an interesting portrait of Sir Christopher Hatton, a distinguished Elizabethan. It is now at the Central Museum and Art Gallery, Northampton, England. Some more details of the painting itself will be given below; I owe them to the kindness of the Curator of the Museum, Mr. W. N. Terry. It will be useful to consider the pictorial content of the portrait itself first, as it is clearly an astrological representation, i.e., a horoscope.

The painting—which is reproduced in Fig. 22—shows a head surrounded by 4 concentric rings which contain (starting from inside):

1. The subdivision into the 36 Decans (each of which, by definition, is assumed to be "governed" by one of the five planets or Sun or Moon).
2. The pictorial representation of Sun, Moon and planets.
3. The twelve Zodiacal Signs.
4. A graduation into 5° intervals.

In the top right corner there is a field with Sir Christopher's arms; at bottom left seems to be his picture as a painter, and bottom right he (?) seems to appear as an observing astronomer, complete with armillary sphere.

Dr. F. R. Maddison, Curator of the Museum of the History of Science, Oxford, who took an active interest in the photograph of the painting, kindly sent me the following note: "... One thing that does strike me about the painting is the inaccurate way in which the armillary sphere has been drawn. The two tropics are not parallel to the equator, with the result that the ecliptic circle is inclined at too great an angle; it also does not touch the tropics. It is curious that the painter who took so much trouble with the horoscope should not have been more meticulous with the armillary sphere. There is an interesting parallel to this artistic licence in the drawing of the armillary sphere, again in a context where one would have expected more accuracy. King João II of Portugal (1455–95) granted Prince Manuel the armillary sphere as a badge. The armillary sphere, therefore, appears in several carvings on Manueline architecture and on at least one coin struck for use in Portuguese India. In all cases the ecliptic circle *crosses* the tropics (which are usually parallel to the equator in these representations) and almost touches the polar circles. There is an inter-



FIG. 22. Portrait of Sir Christopher Hatton (1540–91): the figures in the outer ring represent the Zodiacal Signs; those in the inner one the planets, Sun and Moon.

esting note on this by Luciano Pereira da Silva in "A Esfera armilar nas moedas portuguesas", *Obras completas de Luciano Pereira da Silva*, vol. 3, pp. 367-71, Lisbon 1946.

Attempting an astronomical dating of the pictured event, we start from the clear correspondence of signs and planets. Alongside Capricorn we recognize the Sun, Mercury and Jupiter; Mars is in Sagittarius; Saturn and Venus in Aquarius; and the Moon is related to Cancer, although at this point the painting is seriously damaged.

Since it is known that Sir Christopher Hatton was born in 1540, we may begin to search for a date from then onwards. The year of birth is certainly not represented, since the longitude of Saturn on 1 January 1540 A.D. was 194° : Saturn was therefore in Virgo (150° to 180°), i.e. at least 105° from the "pictorial requirement" of 300° - 330° . At 10-yearly intervals we have for Saturn's longitude: $1550 = 229^\circ$, $1560 = 60^\circ$, $1570 = 201^\circ$, $1580 = 306^\circ$, and 1590 (the year before his death) $= 69^\circ$. We therefore see that the only period during his life-time which had Saturn in Aquarius was the time between 1579 and 1582.

This range is further narrowed by a consideration of Jupiter, which shows that we must go back to 1581 to get this planet into its pictured position in Capricorn (270° - 300°). Therefore Table 4 below was calculated with the help of the tables by Stahlman and Gingerich (see footnote 13).

TABLE 4

	Sun	Saturn	Jupiter	Mars	Venus	Mercury
1 November 1581	229	322	284	228	257	229
1 December 1581	259	324	290	250	294	275
1 January 1582	290	326	297	271	331	287
1 February 1582	321	329	305	296	7	298

In addition, the longitudes of the Moon for 1 December, 12 December, 1 January and 1 February were obtained, using Ahnert's Tables (footnote 14, p. 26, etc.). They are: 320° , 111° , 14° , and 64° , respectively. The relevant values are entered in Fig. 23, together with the planetary data.

This Fig. 23 shows clearly that there is a critical date around 12 December 1581, on which day we have:

$$\begin{aligned} \text{Sun} &= 270^\circ, \quad \text{Jupiter} = 292^\circ, \quad \text{Mars} = 255^\circ, \quad \text{Saturn} = 325^\circ, \quad \text{Venus} = 308^\circ, \\ \text{Mercury} &= 290^\circ, \quad \text{and Moon} = 111^\circ. \end{aligned}$$

As marked on the diagram there is a perfect coincidence for this date, and Fig. 23 thus demonstrates that this date satisfies all the requirements of the portrait—Sun, Moon and all the planets are indeed within the required 30° wide, conventional Zodiacal Signs.

This would certainly not happen if we were to replace the signs by the actual constellations (as was done in the case of the Chigi horoscope), i.e. if we were to take as the limiting longitudes of Cancer, Aquarius, Capricorn and Sagittarius the values used previously (see footnote 15, Tables 38a and 38b). While the planets and the Moon still satisfy our conditions, the Sun would not fit at all, and would only enter the constellation Capricorn at 290° about 18 days later.

Returning to our identification with the Zodiacal Signs, we note that another month later, when the Moon would again be in Cancer, that is on about 10 January 1582, we obtain a good fit with Sun and Moon and the planets—except for Mercury, which for the three weeks between 1 and 20 January is outside the constellation limits of Capricorn.

The question naturally arises: what was the special importance of this year 1581, and of 12 December particularly, in the life of Sir Christopher Hatton?

The *Dictionary of National Biography* tells us only that he was born in the year 1540 (day and month unknown); that he became Lord Chancellor on 25 April 1584, was decorated with the Order of the Garter on 24 April 1588, was installed as a Knight of this Order on 23 May 1589, became Chancellor of Oxford University in 1588, died on 20 November 1591 and was buried on 16 December 1591.

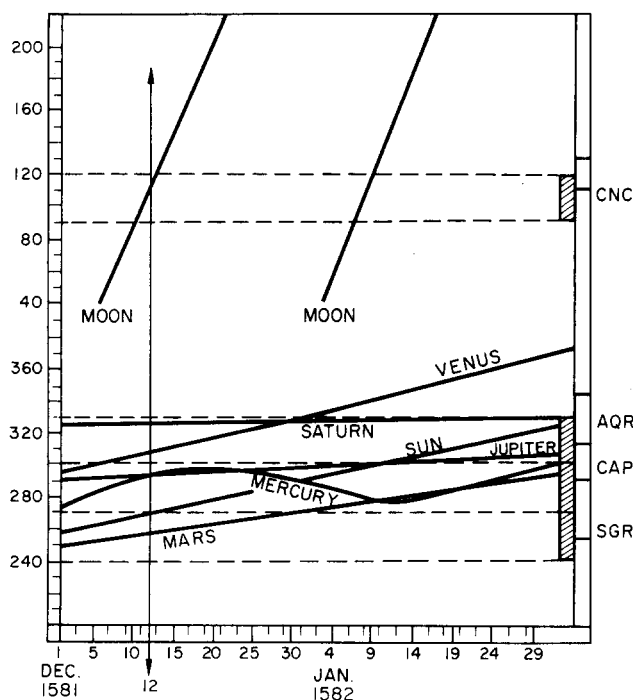


FIG. 23. Dating-diagram for the Hatton portrait (Fig. 22); the right-hand side shows the conventional Zodiacal Signs and, marked on the right of these, the corresponding constellation limits.

None of these dates points to any special significance of 12 December 1581. I have been told that in 1582 he became a kind of personal adviser to Queen Elizabeth I. Later still is another event: the year 1583 appears on the two surviving archways at Holdenby House, the great mansion built by Sir Christopher Hatton at Northampton; from this inscription it has always been presumed that the house was completed in that year.

My attention was drawn to this event by Mr. W. N. Terry, who also—thanks to the thorough examination he carried out at my request—was kind enough to tell more about the origin of the painting and its pictorial details and inscriptions.

First of all, it is an interesting fact that this picture is painted on both sides (rather like an inn-sign) and that it was recently lent to the Shakespeare Exhibition, before which it was specially cleaned and restored.

The origin of the portrait is not known. It was purchased by the Museum in 1929 from Sir Algernon Tudor-Craig, of London, a F.S.A., and librarian and curator of the United

Grand Lodge of England. The following heraldic details were kindly supplied by Mr. Terry who also inspected the files of the 1929 correspondence:

"... The achievement of arms in the corner is very much like that on the gateways of Holdenby—the 8th quarter shows Bostock with a crescent for difference. All the quarterings down to and including Bostock are Cheshire families. No. 9 is de Holdenby, Nos. 10 and 11 are brought in by de Holdenby. It is probable that this portrait was painted before 1588, in which year Hatton was elected a Knight of the Garter—and if he had been a K.G. when the portrait was painted, the garter would have been put round his shield..."

What now about the figures at the bottom of the portraits? First of all, the figure on the left is not identical with that on the right, but both seem obviously intended to represent the same person. In Mr. Terry's view it seems that both of them represent in miniature the sitter for the large portrait, Sir Christopher Hatton. It is not known whether Sir Christopher was specifically interested in either painting or astronomy, but it would agree with the trend of his times if he was.

Turning now to the inscriptions of the painting, these are:

ON THE FRONT:

Top left: Natus (born)

Exaratus (engraved)

Inhumatus (buried)

Strangely enough, in the space under the three words *Die. Mense. Anno*, on the right of this inscription, the actual dates were not filled in, although of course those for *Natus* and *Exaratus* were certainly available.

Top centre: Tandem. Si ("it will finally (be reached) if").

This *if* refers to the whole of the horoscope pictured below it.

Top right: Miles Creatus 15 ("Made (or elected) Officer in the year 15 ...").

Again, the actual year was left incomplete.

Bottom left: Aeternitati pingo ("I paint for eternity").

Bottom centre: Fides mea spes mea

This is only one of the possible readings; others are:

Simil(ite)r ac spes mea ("In the same way also my hope"), or perhaps:

Simil(itudo) spes mea ("It is my hope that the horoscope will come true").

Bottom right: Aeternitate finitum ("destined from eternity").

The sitting figure is pointing to the first degree of Virgo on the ecliptic belt of the armillary sphere.

ON THE BACK:

Top third: Tempus, on either side of a bearded winged figure, carrying a sickle to represent time.

Middle third: (L)achesis Trahit

The principal figure in this section of the painting is a spinster spinning by lamplight. Dr. F. R. Maddison has communicated to me some comments from Dr. C. H. Josten, the previous Curator of the Oxford Museum; for instance: *Lachesis*, the spinning spinster who pulls the thread was one of the *Parcae*. The long inscription "DIALOGUS DE TEMPORE"—see below—indicates that the picture of *Lachesis* was placed "in this vestibule as a warning"; the "*Sytionius hospes*" is an inhabitant of a region of Greece where the *Parcae* had a famous temple (see Pausanias, *De Graecia*, s. v. *Sytionia*).

Bottom third:

A long inscription as follows:

Dialogus de Tempore

CUIUS OPUS; QUONDAM LYSIPPI DIC MIHI QUIS TU; TEMPUS QUIDNAM OPERAE EST TIBI; CUNCTA DOMO, CUR TAM SUMMA TENES PROPERO SUPER OMNIA PERNIX, CUR CELERES PLANTA; ME LEVIS AURA VEKIT CUR TENUUM TUA DEXTRA TENET TONSORIA FALCEM; OMNIA NOSTRA SECANS REDIT ACUTA MANUS, CUR TIBI TAM LONGI PENDENT A FRONTE CAPILLI; FRONTE QUIDEM FACILIS SUM BENE POSSE CAPI, CUR TIBI POSTERIOR PARS EST A VERTICE CALVA; POSTERIOR NEMO PRENDERE ME POTERIT, TALEM ME FINXIT QUONDAM SYTIONIUS HOSPES, ET MONITOREM HOC ME VESTIBULO POSUIT, PULCHRUM OPUS ARTIFICEM LAUDAT PRO JUPPITER, O QUAM DEBUI HOC PIGROS SOLLICITAE VIROS.

In providing me with this text, Mr. Terry remarks that, in his view in accordance with the sense of the Latin, the semi-colons punctuating this passage may in fact be question marks. As to the general contents of this inscription, it is hardly possible to draw from it any essential inferences relevant for our purposes.

Mr. Terry adds some further points: firstly, he states that the four fields do not appear to be related in the same way that spring, summer, autumn and winter themes would be. He notes that the top left corner was designed to receive biographical details after Hatton's death. The top right bears his arms, while the left seems to indicate his interest in the arts, and the bottom right in what we now know as the sciences. The portrait is unfinished in the sense that it was designed to receive further details after death. Because it is painted on both sides of the panel, this painting has always been referred to as an inn-sign; obviously this was not its purpose, but it is difficult to suggest what it might be. Could it possibly, he speculates, be a funeral portrait for use rather as hatchments were used in later times?

Dr. F. R. Maddison, who amplified his own comments by those made by Dr. Josten, as mentioned above, also discussed various aspects of the Hatton portrait with Dr. J. D. North, Nuffield Research Fellow in the History and Philosophy of Science, Oxford, and searched Black's inventory of the Ashmole Manuscripts in the Bodleian Library for any relevant material connected with Hatton, as it would not have been unlikely that Ashmole collected such material relating to "astrological accidents"; nothing was found.

I am also much obliged to Dr. Roy Strong, of the National Portrait Gallery in London and an expert on Elizabethan portraiture. Dr. Strong was asked by Dr. Maddison to help by trying to set this portrait in the known iconography of Sir Christopher Hatton. It was very gratifying to learn that in his opinion the date arrived at above, i.e. the year 1581, is justified, in that the horoscope cannot refer to later dates, such as the date of his death. Confirmation is found in the costume and also in the absence of the Garter insignia. There will be an entry on portraits of Hatton in Dr. Strong's forthcoming book *Tudor and Jacobean Portraits* (1967).

In order to extend my preliminary analysis of this problem to a fuller discussion of the horoscope incorporated in this painting, again my old friend Willy Hartner most kindly responded to my request to re-examine the data afresh. Prof. Hartner (who also supplied some essential comments on the Latin text given above) was able to confirm the validity and correctness of the date derived above, that is, 12 December 1581. In addition, going beyond this, he was also able to refine my dating and to sketch the "horoscopic life" of Sir Christopher Hatton. Here follows, essentially in his own formulation, the full account of his interesting findings.

The portrait shows the longitudinal positions of the planets marked on the Decans to which they belong. The figures are given in degrees and minutes: the abbreviation Gr. for

degree precedes the actual figure, the abbreviation for minute of arc (*Scr.*, *scrupulum*) follows it. Some of the figures have to be restored for a correct reading, owing to the deterioration of parts of the painting; for instance, the one referring to the Sun, which can only be "(Gr.) 0.16. Scr". Only for Venus are the degrees illegible; but since the ephemerides of Venus are usually correct, there can be no doubt that it must read "Aqr. (6).50". It seems that the position of the Moon was not given, since the woman representing the Moon appears to have covered the whole third decan of Cancer.

We thus arrive at the following comparison:

TABLE 5

Planet	Portrait	Longitude	Table (12.12.81)	Decan: governing planet
Mars	Sgr 17° 35'	257° 35'	253° 00'	2nd of Sgr: Moon
Sun	Cap 0° 16'	270° 16'	270° 52'	1st of Cap: Jupiter
Mercury	Cap 18° -	288° -	291° 28'	2nd of Cap: Mars
Jupiter	Cap 22° 54'	292° 54'	292° 51'	3rd of Cap: Sun
Venus	Aqr 6° 50'	306° 50'	307° 00'	1st of Aqr: Venus
Saturn	Aqr 24° 50'	324° 50'	324° 44'	3rd of Aqr: Moon
Moon	Cnc 25° -	115° -	119° -	3rd of Cnc: Moon

The tables used are those of Tuckerman (see footnote 30), which are valid for 4 p.m. Greenwich Mean Time. The comparison of the positions given in columns 3 and 4 above shows immediately that the date 12 December 1581 (Tuesday), fulfills with great accuracy all our conditions discussed above. It has to be noted in this connection that the ephemerides of the 15th and early 16th centuries (due to Regiomontanus and Stöfler) show deviations from the true positions especially in the case of Mercury (up to 14°), as well as for Mars and Saturn (up to 2° or even more), while for the remaining planets the deviations are usually smaller than 1°. This is probably true also of the ephemerides of the late 16th century. The above difference of $3\frac{1}{2}^\circ$ for Mercury is therefore not surprising. As a whole, the close agreement is indeed remarkable, and the resulting date is beyond doubt.

Since the horoscope as such makes no specific reference to the ascendant, it seems very likely that the longitude (Virgo 0°) at which the sitting figure in the lower right corner is pointing, has to be regarded as being the ascendant.

If we were to assume that the ascendant were in 0° Aries the corresponding time would turn out to be about noon of 12 December 1581; we would then have Capricorn approximately coinciding with the 10th House ("Regnum") which, when occupied by Mercury and Jupiter, would make more sense to an ambitious statesman. But there exists no indication whatsoever for 0° Aries as ascendant.

Assuming Virgo 0°, the resulting horoscope—illustrated in Fig. 24—shows the following remarkable features:

The astrological houses coincide approximately with the 12 signs, counting from the beginning of Virgo. Only 4 houses (signs) are occupied. The axis of symmetry goes through Cancer and Capricorn, being the Moon's and Saturn's domicilia. Since the ascendant Virgo 0° at Winter Solstice 1581 (Sun = 270°) points to a time of about 9 p.m., the Moon is at night time in its night domicilium, occupying (two days after Full Moon) its own decan. It is, moreover, standing only one decan from Cnc 15°, being the exaltation of Jupiter. Close to a point 180° away the two lucky stars Jupiter and Venus, reinforced by Mercury, are found in the neighbourhood of the point of Mars's exaltation (Cap 28°), thus counterbalancing its evil portent. Jupiter stands in the Sun's decan, Venus in her own, Mercury

in Mars's decan (which fact is attenuated by its closeness to Jupiter). Mars stands in the benevolent Moon's decan, the Sun in Jupiter's, and Saturn again in the Moon's (which attenuates the circumstance that it is standing in its own night domicilium). Mars occupies Jupiter's day domicilium; the Sun, Mercury and Jupiter are in Saturn's day domicilium. It is quite obvious that this horoscope must have been regarded to have been an extremely lucky one. It cannot point to any war-like events to come. Nevertheless it appears very difficult, particularly since it is not a birth-horoscope, to indicate what kind of event it was supposed to predict.

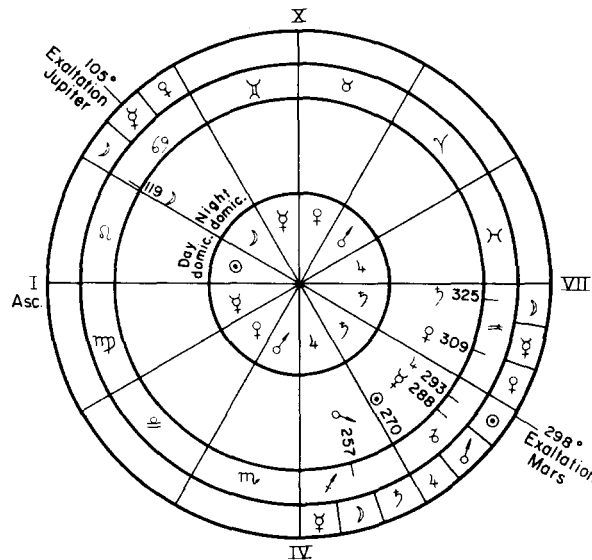


FIG. 24. The Hatton Horoscope: 1581 December 12 (Julian Calendar), 9 p.m. (Greenwich). The inner circle shows the traditional correspondence between the planets and the Zodiacal signs; the subsequent circles contain the portrait-positions of the planets, the Zodiac, the twelve relevant Decans and, finally, the governing planets of the latter. (After W. Hartner.)

It is at this point that we must leave the Hatton problem: we have arrived astronomically at a very conclusive date, but we are not able to fill in the background—as we could in the Chigi problem—as to the “Why?” of this particular date and horoscope.

Let us now supplement our survey of typical problems with some additional notes on the tools of historical-astronomical research.

From the bibliographical point of view, such research is now facilitated by the new edition of Houzeau-Lancaster's invaluable *Bibliographie*,³⁸ covering both published and manuscript literature of astronomical events from earliest times up to the 1880's.

New extensive tables of positions of Sun and planets (and forthcoming lunar tables) have supplemented and replaced existing ones. This field, too, has reaped the invaluable benefit of the advent of fast electronic computers. They alone have made it possible to calculate such tables to their present degree of accuracy, and in such great detail that

³⁸ J. C. Houzeau and A. Lancaster, *Bibliographie Générale de l'Astronomie*, re-arranged by D. W. Dewhirst, with preface by A. Beer; new edition in vol. I, part 1 (896 pp.), vol. I, part 2 (888 pp.), and vol. II (1298 pp.), The Holland Press, London 1964.