



From the Curator C. H. JOSTEN

MUSEUM OF THE HISTORY OF SCIENCE
OLD ASHMOLEAN BUILDING, BROAD STREET . OXFORD

Telephone OXFORD 3997

November 9, 1954.

Dear Monsieur Michel,

I enclose photographs of a Persian astrolabe (diameter $11\frac{4}{5}$ inches), which has been offered to us. I also enclose the copy of a letter which I sent today to Professor L. A. Mayer of the Hebrew University, Jerusalem, which will inform you on the problems which confront us. As you have had your doubts as to the identity of 'Abd al-A'immah, I thought you would be interested, but I am also sending you this material because I shall be most grateful for your advice.

Perhaps I should also mention to you that the astrolabe is peculiar in that the plates have no stops to keep them in position, nor is there any evidence of there having been a hole in the inner rim of the mater. Is this, in your opinion, a ground for suspicion?

You will notice that the alidade has no sights and also that the floral design of the rete enclosed in the zodiac is purely ornamental and does not bear any star names.

Another problem is this: When fixed to the back of the instrument the scales near the edges of the alidade ^{do not} coincide with the radial divisions of the tables. Is it possible that this alidade was meant only for use on the rete? Even so, it would not be very practical.

The photographs of the Gaspart dial ^{*)} have also been taken. I hope to be able to send them to you in a few days.

Yours very sincerely,

Monsieur Henri Michel,
54, rue de Tenbosch,
BRUSSELS,
Belgium.

C. H. Josten

**) No. 295 of the Henssing catalogue may be of the same type. See pp. 40-41 and the illustration (plate 9).*

November 9, 1954.

Dear Professor Mayer,

I thought you might like to see the enclosed photographs of a Persian astrolabe² which we may decide to buy for our collection. The astrolabe, I was told, has only recently been brought to Europe from the east.

I should be most grateful if you let us have your advice, especially with regard to the inscriptions. You will notice that the instrument is signed by 'Abd al-A'immah. We are somewhat puzzled by the date which we read as 986 (or possibly [1]186 if the squiggle at the top of the '1' is considered as part of the background decoration). As 'Abd al-A'immah is supposed to have worked in the second decade of the eighteenth century neither of these readings seems possible. We thought you might know of some unusual chronology into which either of these dates would fit. Could it be an era peculiar to the Shiite sect? If not, we would probably have to assume that the astrolabe is prior to the eighteenth century, and that either there is more than one 'Abd al-A'immah or that 'Abd al-A'immah is not a maker's name, but a term by which several different Shiite makers signed their work. (Monsieur Michel of Brussels told us some time ago that he feels somewhat inclined to the latter assumption).

The riddle may be solved by the inscription on the bracket which, I understand, says that the astrolabe was made for Shah 'Abbas Safawi. You may be able to determine by the surrounding text or by the style of the writing which of the Shahs 'Abbas Safawi is meant.

I shall be extremely grateful for an early reply, because we shall have to make up our minds about the purchase in the near future.

diameter $11 \frac{4}{5}$ ins.

We also wanted to draw your attention to "a brass astrolabe from Persia, dated A.D. 1703..." which is mentioned in the 4th ed. (1936) of the Guide to the Horniman Museum. Unfortunately, the catalogue gives no further details about its date or maker, but I thought it might be worth your while to write to the Horniman Museum and Library, Forest Hill, London, S.E.23.

Yours sincerely,

Prof. L. A. Mayer,
P.O.B. 613,
Hebrew University,
JERUSALEM,
Israel.

PS. Could you also let us know whether you can read the inscriptions on the ecliptic circle of the rete, those on the outer circle of the rete and the inscription in the cartouche at the very bottom of the back?



From the Curator C. H. JOSTEN

MUSEUM OF THE HISTORY OF SCIENCE
OLD ASHMOLEAN BUILDING, BROAD STREET OXFORD

Telephone OXFORD 3997

November 11, 1954.

Dear Monsieur Michel,

I enclose the photographs of the Gaspart sundial, which I mentioned in my last letter. I have indicated in ink on one of the prints the numbers of the hour-lines, because they are not very clear in the photographs.

yours sincerely,

C. H. Josten

Monsieur Henri Michel,
54, rue de Tenbosch,
BRUSSELS,
Belgium.

November 16th, 5.

Dear Dr. Josten,

I must not delay my answer to your letters, although the riddles of the persian astrolabe and the Gaspart dial may require some further examination.

My paper (Endeavour or Discovery): Many thanks for your kind intervention. Please do not insist. That paper was written some time ago, when I contemplated a descriptive catalogue of my former collection. The idea was to make an introduction which might appeal to outsiders. Keep these few leaves if they can remind me to you, and use the arguments in your own writings if you think that some of them have interest.

The Gaspart sundial: As enigmatic as can be. A very fine dial of course, and I cannot imagine that its conception should be absurd. I have a faint idea of having seen something similar somewhere. Perhaps it is in Nancy. If you get informations from the Musée Lorrain, please let me know.

Certainly the most unintelligible thing is the inverted graduation of the dial. But I notice that the figures are upside down, and that the roman figures for the hours are on the lower face of the ring, being thus practically invisible. As this ring seems to be screwed to its foot, don't you think that it has been some time dismantled and replaced upside down? An other clew in the same sense is that the pivots for the diametral bar bearing the declination scale are screwed on the upper face of the ring. This is abnormal: such screws are generally hidden on the lower face.

As regards the movable circular base, I notice a figure XII on the pivot, in line with the index. One could perhaps see if the scale $+ 40 - 40$ does not correspond to the equation of time. This is only a suggestion, as I cannot make measurements on your photo.

The last enigma is the strange pillar behind the dial. If it is meant for a plumb-line, it is a very complicated device for such an accessory. And what is the purpose of the winged screw on it?

How can you explain that the dial has no compass? Probably, as for the universal ring, the light ray falls on the dial only when rightly orientated. This might be a clue. I think that the first thing to do is to use the first available sunny day for testing the dial (of course after having put the ring in its true position).

The persian astrolabe: It is a beauty, and exceptionally large. I have not yet been able to have all the inscriptions deciphered, but the signature of 'Abd al-A'immah is conspicuous. I do not quite agree with the date, and should like to know Mr. Mayer's interpretation.

That the plates have no stops is certainly awkward for such an astrolabe, but I have already seen the case. The same with the nice, but worthless design inside the ecliptic. But more important

the mistake in the radial rule. Even if one can imagine an index-rule without sights, for use on the rete, (and this exists only on european astrolabes, never on persian) this index must be radial, i.e. its alignment must coincide with the center of the astrolabe (see sketch). Besides, the pivot should then be long enough to retain an alidade on the back of the instrument, and this does not seem to be



the case.

What I notice is the singular form of the top of the kursî, which as far as I know, is never found on the better persian astrolabes. With the exception of the Abd ur-razzak's astrolabe (Gunther N° 19), this ornament is only seen on the Abd al-Ghafur's astrolabes (Gunther 55 and 56. Seeing that these astrolabes resemble very much yours, that N° 56 also has a radial index on the rete, and that the date looks similar, I would bring them all together. Now, perhaps you remind a small astrolabe in my former collection (N° 20 of your Billmeir Catalogue) which had the same ornament on the throne, and was also useless for astronomical purposes. I think that these late astrolabes were only used for astrology, and were used by very unskilled fate-tellers.



Professor Mayer may tell us who was Abd al-Ghafur. Is it possible that he also was an "abd al-A'imah", i.e. an engraver in some school and that several engravers signed in this way ?

Such problems are very rich in consequences, and if the astrolabe is not valued at an exaggerated price, I hope that you shall acquire it, although it is more decorative than scientific.

Ioannes Bos: I have a question too: I cannot remember if it was you, or Dr. Price, who asked for informations on this maker (Gunther N° 185, and Leiden Museum). Miss Rooseboom is not very clear about him. Since you are preparing a list of names, will you please note the name of Jacob Bos, probably Ioannes' father, in Archives Internationales d'Histoire des Sciences Janv-Mars 1954 page 48. That this Jacob Bos is mentioned there as a belgian engraver, while Miss Rooseboom makes him a Netherlander, is not a contradiction: in the XVIth and XVIIth cent., the word "belgian" meant everything between Brussels and the Meuse. See f. i. Galilee about the "tubus belgicus" a.s.o.

yours very truly

H.Michel



From the Curator C. H. JOSTEN

MUSEUM OF THE HISTORY OF SCIENCE
OLD ASHMOLEAN BUILDING, BROAD STREET OXFORD

Telephone OXFORD 3997

November 18, 1954.

Dear Monsieur Michel,

Very many thanks for your letter of the 16th. I very much appreciate your kindness in giving us the benefit of your learned advice.

Your paper. It occurred to me that I could send it to Dr. McKie, who is the Editor of Annals of Science, and who might also be able to recommend it to the Editor of the Bulletin of the British Society for the History of Science, who, I understand, is a member of Dr. McKie's staff. Please let me know if you would like me to write to McKie.

Gaspart sundial. I have not yet heard from the Musée Lorrain.

One problem has been solved by your suggestion. The oval hour-ring had indeed been reversed. The mistake has been corrected, so that the Roman numerals are now not only on the upper face of the hour-ring, but also in the correct sense of direction.

The figure XII on the circular base of the hour-ring is in line with the index ~~gliding~~ over the 40° to zero to 40° scale. What measurement would we have to make to find out whether this scale was meant to compensate variations caused by the equation of time?

The pillar was certainly meant for a plumb-line. I am at a loss to explain the winged screw on this pillar. It is in fact not exactly a screw, because it just rotates on a pivot. It might have served as a rest for the plummet when not in use, which would, however, not explain why its neck is pierced with a tiny hole.

The dial never had a compass. I suspect that it is self-orientating. When we tried it out, we got only approximately correct readings, -I presume because the dial is made for only one latitude (the morning and afternoon hours were then, of course, reversed).

Persian astrolabe. I was particularly grateful for your advice on this subject. We have not yet decided to buy the astrolabe because we are still waiting for Professor Mayer's reply.

I may tell you confidentially that the price of the instrument is c. £520. If we bought it, we would partly exchange it against the silver box by Schissler (containing an astrolabe and a sundial) which you saw here. The astrolabe comes from the same dealer from whom we bought this box for £350. You may have noticed in Bobinger's recent book Christoph Schissler der Ältere und der Jüngere, Basle, 1954, p.38, that he thinks that box is probably a fake. Personally I do not think that Bobinger ever saw the actual box, because the inscriptions are wrongly quoted, and because he failed to notice that the astrolabe is not fixed to the inner lid of the box, as he says. The box is certainly untypical of Schissler's work, but Bobinger's argument is not conclusive. I received today a photograph of a Schissler "nécessaire" in the Toledo Museum of Art, Toledo, Ohio. The bottom of its middle section shows a design very similar to that of the bottom of our box (which was perhaps inspired by Virgil Solis). That seems to speak in favour of the box's authenticity. Whatever the case may be, the reputation of this box has been ruined by Bobinger's publication, because it is not likely that anybody will write again on the same subject, at least not in the near future. Bobinger's book, by the way, is not very scholarly, but, for the time being, I am afraid it will be the last word on Schissler. I feel therefore inclined to dispose of this object, and the exchange against the astrolabe which the dealer suggested seems a very good occasion. We would return the box and pay c. £170 to obtain the astrolabe.

I should be most grateful to you if you let me know whether that appears to you to be a sensible proposition, bearing in mind that the astrolabe, as you agree, is beautifully designed but, from a scientific point of view, of a late and rather degenerate type.

Ioannes Bos. It must have been Dr. Price who asked you about this maker. I shall pass on your information to him and also to Mr. Adams of the Science Museum who is preparing the catalogue of makers. The information is also of some interest to me because I have myself an astrolabe by Bos, which is a twin of the one in the Whipple Museum at Cambridge.

Thanking you again,

I remain, With kindest regards,
Yours sincerely,

Monsieur Henri Michel,
54, rue de Tenbosch,
BRUSSELS.

Ch. Josten

Dear Dr. Josten,

My paper: Let it sleep ! I have now read your article in The Connoisseur. You have said almost everything in a shorter way. The Annals of Science or the Bulletin for the History of Science deserve something more important. Let us wait until I have something to say ! Thank you.

Gaspart sundial: The winged thing on the pillar having, as you write, a tiny hole in its neck is probably meant for attaching the extremity of the plumb-line. I suppose that the thread of this plumb-line goes from this "screw" upwards, over the head of the pillar and through the groove which is apparent on your photos, then downwards through the ring midway, and ends with the plumb over the button-formed mark on the plate. For transportation and adjustment, the winged "screw" is simply turned until the plumb is firmly lodged in the ring. The plumb itself must have had a diameter superior to that of the ring, and this is the reason why the ring is split, otherwise one could not pass the thread through it without taking it off the "screw".

This means that the perfect horizontal setting of the dial is very important. But there is something more perplexing in your photos: The construction of the pillar itself seems to be very complicated and unnecessarily fragile. Besides, the two curved attachments at its base do not seem to be identical. One, the eastward one, seems to have an almost semi-circular form, while the other is nearly straight. The two appendages of the pillar itself, through which the pillar is fixed to these attachments, are not symmetrical. I wonder if this piece has not once been broken and remounted haphazard in a wrong way, as was the oval hour-ring.

And this leads me to ask if the oval hour-ring was really originally mounted directly on the pivoting base. Could there have been an intermediary piece, the inclination of which should have been regulated by some device as in the Bergauer or Willebrand sundials, according to the latitude ? Have you completely dismantled the pivoting base ? How is it constructed ?

Persian astrolabe: I certainly agree with your intention. The Schissler dial itself may be true, but the box is more than doubtful, and L.350 for the dial is excessive. An exchange as you can do is advisable.

Can you occasionally let me know the name of the editor of Bobinger's book. I was not yet able to get it.

yours very truly

H.Michel



From the Curator C. H. JOSTEN

MUSEUM OF THE HISTORY OF SCIENCE
OLD ASHMOLEAN BUILDING, BROAD STREET OXFORD

Telephone OXFORD 3997

November 30, 1954.

Dear Monsieur Michel,

Many thanks for your letter of the 26th.

Bobinger's book Christoph Schissler der
Altere und der Jüngere was published by Verlag Die
Brigg, Augsburg & Basel.

Gaspart sundial. As there is only one aperture at the top of the pillar supporting the plummet, the thread went probably downwards from the winding screw, passed through the legs of the pillar and went up to its top to descend again through the ring. This is also suggested by a groove on the upper surface of the pillar's projecting top. It is, however, possible that the winged and threadless screw, to which the extremity of the thread is fastened, was originally at the back of the pillar. That would indeed be a much more practical arrangement, but the screw is rivetted and cannot easily be put on the other side. I am now trying to have a plummet made, the neck of which will fit into the ring. The construction of the pillar itself is very sound and solid. Its base is perfectly symmetrical.

I am convinced that there was never any kind of movable joint between the oval hour ring and its base. It fits perfectly into a groove which determines its angle of elevation.

The problem which remains to be solved is the purpose of the scale of 40° - zero - 40° on the base.

Thank you very much for your advice concerning the Persian astrolabe. We have now decided to buy this piece. We have not yet heard from Professor Mayer concerning the inscriptions. As you mentioned in a previous letter that you know someone who might be able to decipher them, I should be most grateful if you would ask your friend to do so.

E.G.R. Taylor's book, The Mathematical Practitioners of Tudor and Stuart England, has just come out at Cambridge. It contains a great amount of useful information, biographical and otherwise, on sixteenth and seventeenth English makers.

With kindest regards,
Yours sincerely,

C.A. Josten

Monsieur Henri Michel,
54, rue de Ten Bosch,
BRUSSELS,
Belgium.



From the Curator C. H. JOSTEN

MUSEUM OF THE HISTORY OF SCIENCE
OLD ASHMOLEAN BUILDING, BROAD STREET OXFORD

Telephone OXFORD 3997

December 7, 1954.

Dear Monsieur Michel,

I have at last received a reply from Professor Mayer, from which I quote the following paragraphs concerning the Persian astrolabe:

"The shah mentioned in the inscription on the bracket is obviously Shah 'Abbas I, the date 986 AH. is, therefore, correct, and 'Abd al-A'imma mentioned in the signature is the first astrolabist of this name. The name is very rare. Although the veneration of Shi'ites for the twelve Imams is very well known, names like this ("servant of the Imams") are found only exceptionally. Even 'Abd 'Ali is very rare; curiously enough we find more often Kelb 'Ali ("the dog of 'Ali"). In view of the rarity of this name, it is difficult for me to believe that this name is a generic term. It would be easier to assume that we are faced with a man and his greatgrandson. My own theory is that 'Abd al-A'imma of the year 986 is an astrolabist, whereas his namesake of the early 18th century is a decorator of astrolabes computed by others. For the moment it is merely a hunch; my file of photos of 'Abd al-A'imma's instruments is not complete yet, but I shall keep this problem in mind - it interests me very much anyway - and I shall write to you as soon as I can substantiate my views.

The inscription at the very bottom of the back says: "The purpose of this design is that it should remain a long time", a phrase found often (with many variants) on Persian objects. It's real meaning is: I shall pass away, but this work will last. Sometimes the texts say it in as many words.

The inscription on the inner circle of the rete contains the names of the figures of the zodiac; the one on the outer circle is not sharp enough to allow easy reading, it contains astronomical terms

~~astronomical terms~~ and numbers, nothing of historical value."

Professor Mayer thought probably that his advice would reassure me, but, on the contrary, it makes me hesitate more over the purchase of this piece.

The year 986 of the Hijira corresponds to 1578/9 A.D. Shah 'Abbas I began his reign in 1587. So far so good, but how do we reconcile these dates with the general appearance of the instrument which is rather suggestive of the 18th century, and with the name of 'Abd al-A'imma?

I am also worried by the crudeness of the alidade, by the fact that the plates have no stops and, even more, by the arrangement of the signs of the zodiac on the rete. As far as I can make out, this circle is divided into two halves of 180°, each of which is engraved with the 12 signs. This is even more meaningless than the purely ornamental design inside the zodiac circle.

I am afraid I shall not be able to keep the London dealer, who is offering this instrument, much longer in suspense. As I see things now, I am rather inclined not to buy this piece, but if you come to ^{make} definite conclusions ^{than I,} I should be most grateful to hear them. Please let me know if you still think the piece is worth its price. Is it possible that only the mater is authentic and that the other parts are later substitutions? The metal of the mater is, in fact, slightly different, more coppery and less brassy than the rest.

Yours very sincerely,

C. H. Josten

Monsieur Henri Michel,
54 rue de Tenbosch,
BRUSSELS,
Belgium.

*) That is to say, if he was, by some, recognised as the rightful shah at an earlier date; see new edition of Encyclopaedia of Islam.

*) perhaps

9 december 54

Dear Dr. Josten,

I am exactly as perplexed as you are, about the astrolabe. I just had the answer of my friends, Professor Abel of the Brussels University, and Professor Brunschwig of the Bordeaux University, both prominent orientologists. Their opinion is in perfect agreement with Professor Mayer's: The date is 986 AH (Abel reads 983 or 984) and the dedication can thus only be to Shah 'Abbas I. Professor Abel notes that the maker's name, under the square of shadows, means "sana'a hu" = "has fabricated it, and not," as very often: "finished by Abd ul A'immah".

Now, I find Abd ul A'immah's name on the following astrolabes

Gunther n° 11 with a wrong date.
Gunther n° 21 associated with Muhammad Taher who worked about 1670
Gunther n° 31 - - Muhammad Amir, son of Taher
Gunther n° 32 - - -
Gunther n° 34 dated 1715
Gunther n° 35 undated
Gunther n° 36 -
Gunther n° 37 -
Gunther n° 38 dated 1730
Gunther n° 39 undated
Gunther n° 40 -
Michel (Billmeir) n° 7 with Muhammad Djalile
Michel (Billmeir) n° 8 - dated 1699
Michel (Billmeir) n° 9 -

Even an interval between 1670 AD and 1730 would be long for a single man, not to speak of an astrolabe, as yours, made in 1575 ! There are thus but two solutions:

Either a family of astrolabists extending from the grandfather to the grandson or greatgrandson, which looks very improbable, because Chardin would certainly have mentioned them in 1665-1670 (see my paper on Méthodes de tracé et d'exécution des Astrolabes persans, Ciel & Terre, déc. 1941),

or 'Abd ul A'immah took old astrolabes and decorated them, which would explain the unity of this decoration; and eventually went so far as to consider himself as having "made" them.

This might explain why some of his astrolabes are ill-made, as yours is in the present case: the best engravers made heavy mistakes, and I remind you of Habermel's astrolabes, which are all wrongly graduated on the zodiac.

What you write about the mater being of a red metal might confirm this: My n° 2 by Muhammad Amin and dated 1588 was also of reddish bronze, and a later decorator could have been tempted to embellish it.

Anyhow, your astrolabe is not di primo cartello, and I can understand your hesitations to buy it, especially when one considers its price.

yours very truly

H.Michel