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## THE WORLD'S MOST DILIGENT OBSERVER

Jørgen Jensen, Skodsborg

In her recent book Frances Wood asks the question: "Did Marco Polo go to China?" She answers her own question: "While I incline to the view that Marco Polo himself never travelled much further than the family's trading posts on the Black Sea and in Constantinople, this does not mean that the Description of the World does not remain a valuable source of information on China and the Near East, in particular."<sup>1</sup> This paper will raise two questions: Did Marco Polo go to Sumatra?, and: What was his point of departure? An attempt to answer both questions will be made.

It is well known that Marco Polo told of his travels to Rustichello,<sup>2</sup> when they were prisoners of war at Genoa, an account which Rustichello retold as *divisament dou monde*.<sup>3</sup> It is probably less known that Pietro d'Abano (1250-1316) in *Conciliator controversiarum quae inter philosophos et medicos versantur*,<sup>4</sup> included what Marco Polo had told him about Sumatra. Pietro d'Abano was also a travelled man, he had been to Constantinople, he had taught at the University of Paris, and he may have visited England, Scotland and Spain, before returning to Italy. He wrote works on medicine, philosophy and astronomy/astrology. Marco Polo probably met him some time during the period 1295-1303.<sup>5</sup> Pietro d'Abano refers to Marco Polo as Marcus the Venetian, the most travelled man in

1 Wood, Frances, *Did Marco Polo go to China?* London 1995, p. 150.

2 Cf. op. cit., pp 39-42 for what is known of Rustichello.

3 The version used is: Latham, Ronald, (transl. with introduction), *The Travels of Marco Polo*, Harmondsworth 1958. Bergeron, Crone, Moule & Pelliot and Ramusio have been used for cross reference.

4 Pietro Abano Patavino, *Conciliator controversiarum quae inter philosophos et medicos versantur*, Venice 1548, fol. 106r. In the explicit the title used is close to that normally used in bibliographies: *explicit: differentiarum philosophorum ac praecipue medicorum liber conciliator celeberrimi*. fol 284v. Hereafter cited as *Conciliator*.

5 Thorndike, Lynn 1923, *A History of Magic and Experimental Science During the First Thirteen Centuries of Our Era*, London 1923, Vol. II pp 877-879.

the world. He calls him neither a liar nor a braggard, but the most diligent observer.<sup>6</sup>

The Venice, 1548 edition of *the conciliator* has been chosen because the explicit tells that the book has been compared word for word to the text of the printed book or manuscript that formerly belonged to Johannes Aquilanus (before 1450-1510),<sup>7</sup> who was professor of medicine at Pisa (1473-1479) and at Padua (1479-1506).<sup>8</sup> It is also the first edition in which a figure accompanies the text. According to the text the figure was drawn by Marco Polo. The earlier editions refer to an illustration but do not reproduce it.<sup>9</sup> It must be assumed that the illustration in the Venice 1548 edition is a copy of a similar in Johannes Aquilanus' book/manuscript.

In the short paragraph dealing with the information about Sumatra which he received from Marco Polo, Pietro d'Abano first tells that a star, which had a sack-like form appeared in the regions of the Zinçi<sup>10</sup>, and he goes on to report that Marco Polo told him, that he had seen the same star under the antarctic pole,<sup>11</sup> it had the light of a piece of a cloud and a large tail. Marco Polo drew this picture of it (cf. Fig. 1a).

The country of the Zinçi is unknown. Ammianus Marcellinus mentions a Taurian tribe, the Sinchi, which at his time lived not far from the Maëotian Swamp.<sup>12</sup> Their name is quite close to that of the Zinçi; but they are likelier to be identified with the Sichi, who during the ninth and tenth centuries lived on the northeastern shore of the Black Sea.<sup>13</sup> According to

6 *Conciliator*, fol. 106r.

7 Op. cit., fol. 284v.

8 *Biographisches Lexicon der hervorragenden Ärzte aller Zeiten und Völker*, Berlin & Wien 1929, Vol.I, p. 163.

9 The following editions have been looked through: Mantua 1472, Venice 1476, Venice 1483, Pavia 1490, Venice 1521 and Venice 1526.

10 The Padua 1490 has *regionibus zinzorum*, Venice 1496 has *regionibus cincorum*.

11 Towards the south.

12 Ammianus Marcellinus, *Femogtyve År af Roms Historie i det fjerde Årh. e. Kr.*, translated with commentaries by: Ullmann, V., Arendal 1877, part III, pp 21-22. Cf. also: Ammianus Marcellinus, *Römische Geschichte*, translated with commentaries by Seyfarth, Wolfgang, Darmstadt 1970, part III pp. 28-29.

13 Obolensky, Dimitri, *The Byzantine Commonwealth, Eastern Europe 500-1453*, New York 1971, p. 219.

Olschki the Zinçi are certain to have lived in the tropical zone.<sup>14</sup> Olschki's view is supported by the subject of Pietro d'Abano's *differentia* 67: *is life possible below the equator?*

Olschki and Beaujouan<sup>15</sup> translates *stella* as constellation. *Stella* can be translated as constellation, but the usual meaning is a single star or planet: *stella (errantes)* or a comet: *stella (comans)*<sup>16</sup>. A constellation would normally be called *signum*<sup>17</sup> or *sidus*<sup>18</sup>. Olschki and Beaujouan gives a name to the supposed constellation: *the Main Maggellanic Cloud*, because they interprets the object having a diffuse light as a nebula (*habet lumen modicum sicut petia nubis*). However, the heavenly body the Zinçi and Marco Polo saw, was not a constellation, but a comet (*magna habens caudam*). D'Abano's use of *apparet* shows that it was not a familiar object the Zinçi saw, but something that suddenly appeared. Whoever copied, what claims to be a drawing made by Marco Polo, seems to have had the same view, he did neither draw a nebula nor a constellation, but a single object. The text, and this drawing, must describe a comet (cf. Fig. 1b).

European sources do not list any comets between 1264 and 1299,<sup>19</sup> but Chinese annals tell that a comet appeared at a time, when Marco Polo, according to the *divisament*, was in the Far East:

“On the 7th of November 1293 a comet entered *Tsze Wei Yuen* (the circle of perpetual apparition), its course was towards *Tow Kwei* (the square in the seven

14 Olschki, Leonardo, *Marco Polo's Asia*, Berkeley 1960, p. 34.

15 Beaujouan, Guy, 1966, “Science Livresque et Art Nautique au XVe Siècle”, in: *Les Aspects Internationaux de la Découverte Océanique aux XVIème et XVIIème Siècles, Actes du Cinquieme Colloque International d'histoire Maritime, Lisbonne 14-16 Septembre 1960*, Paris 1966, pp. 61-85.

16 See Bayeux Tapestry, sequence just after the coronation of Harold Goodwinson.

17 Poole, R. “A Monastic Star Table of the 11th Century”, in: *The Journal of Theological Studies*, Oxford 1914, Vol. XVI, pp. 99-104.

18 Jensen, J.Th. & Goldschmidt, M.J., *Latinsk-dansk Ordbog*, Copenhagen 1970, p. 679.

19 Cf. e.g. Baldo, F. & de Obalda, G, *Catalogue Générale des Orbites de Comètes à l'An -466 à +1952*, Paris 1952. Thorndike, Lynn 1950, *Latin Treatises on Comets Between 1238 and 1368 A.D.*, Chicago 1950. Kronk, Gary W., *Comets, a Descriptive Catalogue*, Hillside N. J. 1984.

stars of Ursa Major, or sometimes Polaris). Its luminous envelope was more than 1 cubit in length. It was visible for one moon and then disappeared.”<sup>20</sup>

It must have been the comet visible in China in 1293 Marco Polo drew a picture of and described. His place of observation must have been in Southern China, the South China Sea or on Sumatra.

As well Rustichello as d’Abano have the information about Polaris not being visible on Sumatra<sup>21</sup>, this is not true for the northern part of the island, where it is visible, but too low for accurate observation.<sup>22</sup> It should be noted, that Polaris is not mentioned when sailing towards Sumatra, whereas it is mentioned several times later. This could be interpreted as if a change of navigator had taken place before entering the Bay of Bengal and the Indian Ocean. Pietro d’Abano alone has the information that Marco Polo saw the antarctic pole elevated *a military lance* above the ground, and the arctic pole invisible. In the 12th century Polaris was often called Arcticus, and Antarcticus was used in the same way to describe a star in the vicinity of the actual antarctic celestial pole, or sometimes the whole southern hemisphere.<sup>23</sup> It was generally believed, that in this well ordered world, the southern hemisphere must have a star near the celestial pole, just as the northern hemisphere has Polaris. Precisely what star Marco Polo meant by Polus Antarcticus is unknown, but a star in or near the Southern Cross is the likeliest.<sup>24</sup> Marco Polo refers several times to observed altitudes of Polaris on the journey north and west from Sumatra.<sup>25</sup>

20 Williams, John, *Observation of Comets from b.c. 611 to a.d. 1640. Extracted from the Chinese Annals. Translated with introductory remarks*, London 1871, p. 67.

21 Pietro d’Abano mentions neither Sumatra nor Lesser Java (Marco Polo’s name for the island), but due to the similarity of the information with Rustichello’s description, it can be nowhere else.

22 For the difference between ‘to see’ and ‘to observe’, see: Taylor, E.G.R., *The Haven-Finding Art*, London 1971, p. 125. Cf. also Olschki, Leonardo, *op. cit.*, p. 36.

23 Taylor, E.G.R., *op. cit.*, pp., 124 - 125.

24 In 1455 Alvise da Ca’da Mosto anchored at the Gambia, where he saw the Southern Cross, see: Martins da Silva Marques, Joao, *Descobrimentos Portugueses*, Lisbon 1944, suplemento ao Vol. I, p. 230. See also: Parry, J.H., *The Age of Reconnaissance*, New York, 1964, p. 109.

25 Latham, R.E., *op. cit.*, pp. 262, 265, 267.

The description of a harbour's latitude by giving the altitude of Polaris, and the checking of the stars altitude when under way, in order to ascertain that the ship was on track, was the method the Arabian navigators used.<sup>26</sup> The navigator on Marco Polo's ship knew and used this method.

Marco Polo's statement, that he saw the antarctic pole elevated *a military lance* above ground, needs an explanation: *Lance*, Arabian: *rumh* was a unit used when describing angles measured by eye, Abd-al-Rahman al-Sufi (d. 986) used the unit for describing interstellar distances in his *Al Kawakib al-Tabitha* (Fixed Stars).<sup>27</sup> Al-Sufi gives the interstellar distance between  $\alpha$  Andromedae and  $\gamma$  Pegasi as *rumh*, the angular distance between the two stars is close to 14 degrees, and Schjellerup and later Beaujouan accept this as the value of *rumh*.<sup>28</sup> Al-Sufi gives the distance between  $\alpha$  and  $\beta$  Pegasi as *more than rumh*. The angular distance is 12.7 degrees. Just as good a case can be made for the value of *rumh* being less than 12.7 degrees, as for 14 degrees.<sup>29</sup> *Rumh/lance* was probably well known to seafarers in the Mediterranean as well as in the Red Sea and beyond.<sup>30</sup>

26 Cotter, Charles H., *A History of Nautical Astronomy*, London 1968, pp. 69-70, and: Penzer, N.M. (ed.), *The Most Noble and Famous Travels of Marco Polo together with the Travels of Nicolò de Conti. Edited from the Elizabethan Translation of John Frampton ...*, London 1929, p. 140.

27 Schjellerup, H.C.F.C., *Description des Étoiles fixes ... par l'astronome persan Abd-al-Rahman al-Sufi. Traduction littérale de deux manuscrits arabes de la Bibliothèque Royale de Copenhague et de la Bibliothèque Impériale de St. Pétersbourg avec de notes*, St. Petersburg 1874, pp. 26-27. Throughout his work al-Sufi repeatedly stresses that his interstellar distances are measured by eye.

28 Schjellerup, H.C.F.C, op. cit., p. 27, & Beaujouan, Guy, 1975, *Rapport entre Théorie et Pratique au Moyen Age*, in Murdoch, J.E., & Sylla, E.D., (ed.), *The Cultural Context of Medieval Learning, Boston Studies in Philosophy and Science*, No. 26, Dordrecht 1975, p. 467.

29 Tycho Brahe Planetarium, Copenhagen kindly supplied the angular distances. Mr Stig T. Rasmussen of the Royal Library has kindly retranslated the relevant text. The word al-Sufi uses for the distance between  $\alpha$  and  $\beta$  Pegasi is a derivative of weight meaning *weightier than rumh*. See also: Lane, E.W., *Arabic-English Lexicon*, London Vol. I, part 3, p. 153: "... in modern Arabic astronomy *rumh* equals 4½ degrees ... there is reason to believe, that ancient usage differed from modern and was not precise nor uniform.'

30 In 1455 Alvise Ca'da Mosto saw Polaris elevated a lance above the sea, at the mouth of the river Gambia. The unit has been known to many in the period

Joseph Needham suggests that Marco Polo's use of the unit *lance* might be an example of Chinese cultural influence on Europe.<sup>31</sup> Arabic influence, direct or indirect, is likelier. Marco Polo could have learnt of the unit *lance* at almost any point of his travels, Venice included. The first Eastern influence on Arabian astronomy was Indian. The *Surya Siddhanta* was translated into Arabic as *Sindhind* by Muhammad ibn-Ibrahim al-Farzi in a.d. 771; but al-Sufi's astronomy was firmly founded on Ptolemy's *Almagest* (Arab. *al-Majisti*) first reported to be translated in abt. a.d. 800. The translation closest to al-Sufi's time was made by Hunayn ibn-Ishaq al-Ibadi (Joannitius, 809 - 873) and revised by Thabit ibn-Qurrah (d. 901).<sup>32</sup> The Arabs had a large merchant marine, its navigators guided the ships not only in the Mediterranean and the Red Sea but also across the Indian Ocean and beyond. They reached Chinese ports in about 750. In the first half of the 9th century Chinese junks were using the river harbour of Bagdad.<sup>33</sup> Arabian and Chinese ships had sailed the same waters and used the same harbours for about 500 years before Marco Polo, but how much mutual influence there was on their navigation is unknown.<sup>34</sup>

As well Rustichello as d'Abano mention spices and aloe-wood as products of Sumatra, and these commodities are found on the island. Rustichello's list of products include more items than d'Abano's, i. e. sago flour, palm wine, brazil and ebony. Polo has told both of them of the Sumatran rhinoceros, but he has not given the animal a name. D'Abano describes it as an extraordinary large buck, with a thick and tough wool, like the bristles of our pigs. Rustichello calls it unicorn, and his detailed description of the animal comes to this conclusion:

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between the two Venetians, but only very few put their observations on paper. For Ca'da Mosto's text see: Martins da Silva Marques, Joao, op. cit. p. 230. Ca'da Mosto's text has been misinterpreted by several authors; but that is an other story.

31 Needham, Joseph, *Science and Civilization in China*, Cambridge 1971, Vol 4, part III, p. 570n.

32 Hitti, Philip K., *History of the Arabs*, (10th ed.), London 1970, pp. 307, 330-375.

33 Hitti, Philip K., op. cit., pp. 305, 343-344.

34 Needham, Joseph 1971, *Navigation in Medieval China*, Appendix to: Taylor, E.G.R., op. cit., p. 272.

“It is a very ugly brute to look at. It is not at all such as we describe it when we relate that it let itself be captured by virgins, but clean contrary to our notions.”<sup>35</sup>

The text is sometimes decorated with (Rustichello's?) embellishments. Examples of this are the rhinocerus' way of killing, and the tale that people in the kingdom of Lambri have tails a palm long. “Not the people in the towns” of course “but those living in the mountains.”<sup>36</sup> Pietro d'Abano's information is without doubt trustworthy, in the sense that it is exactly what Marco Polo told him. Rustichello gives more information that can be accepted as true, than he normally is credited for. The information on the comet, the altitude of Polaris, on the products of the island, and the description of the rhinoceros, which Marco Polo passed on to Pietro d'Abano and Rustichello agrees to such an extent, that I firmly believe it is things he himself has seen. It is easier to keep track of things observed than of lies.

The conclusion is, Marco Polo did go to Sumatra.

Pietro d'Abano tells that Sumatra is thinly populated due to the intense heat, and that it is only possible to come to it by sea. Marco Polo's routes to and from Sumatra are described in the *divisament*. The description of the inbound journey is certainly not the outbound in reverse. This leaves only an approach from the East as possible, and the description of it fits a crossing of the South China Sea. His point of departure can hardly have been anything but a Chinese harbour. The information on the journey from China to Sumatra is as accurate as one can expect when remembered five years after the voyage.<sup>37</sup> Rusticello tells that Marco Polo when sailing from China to Vietnam crossed the mouth of a big bay, which Latham calls “largely imaginary”<sup>38</sup>. The part of the South China Sea north of the Paracel Islands, including the Gulfs of Tongking and Siam, could very well

35 Quoted from Latham, Ronald, *op. cit.*, pp. 225-226.

36 *op. cit.* pp. 228-229. Rusticello's physical description of the rhinoceros is so correct, that one could believe he had seen the animal himself.

37 Taylor, E.G.R, *op. cit.*, p. 125.

38 Latham, R.E. *op. cit.*, p. 221n.

be described as a bay,<sup>39</sup> and the innumerable islands Marco Polo saw could be the Paracel Islands themselves.<sup>40</sup> Rumours of the many islands in the Philippines might have increased the number of islands reported.

Nowadays it would be easy to freshen up one's memory by looking at a map. The *divisament* reports that Marco Polo was shown charts and sailing-directions by the Eastern navigators.<sup>41</sup> Navigational charts were considered to be secret by the seafarers using them,<sup>42</sup> but even if Marco Polo should have succeeded in obtaining a chart or copying one, it was hardly available to him when a prisoner of war at Genoa. Ramusio mentions a map and a marine chart brought home from China by Marco Polo and kept at San Michele di Murano.<sup>43</sup> No other mention of these maps exist. Arabic geographical knowledge is summed up in al-Idrisi's (d. 1166) geography known as *Kitab Rujar* or *Nuzhat al-Mushtaq* ...<sup>44</sup>. The book contains al-Idrisi's *mappa mundi* and other maps. Even if Marco Polo should have known al-Idrisi's work, it would not have helped him remembering directions and distances in the Far East. He only had his formidable memory to rely on when talking to Rustichello.

Frances Wood inclines to the view that Marco Polo did not travel much beyond the Black Sea. I more than incline to the view that he went to Sumatra by way of the South China Sea. The conclusion is an answer to Frances Wood's question: *Yes, Marco Polo did go to China.*

39 Like e.g. the Bay of Bengal, the Gulf of Guinea or the Bay of Biscay.

40 'Innumerable' sounds better than 'many', just as Vasco da Gama's Indian pilot *Malima* described the Laccadives as consisting of more than 1000 islands; letter from Girolamo Sernigi in 1499. Cf. Sølvér, Carl, *Imago Mundi*, Copenhagen 1951, p. 238.

41 Latham, Ronald, op. cit. p. 277: "... in the Indian Ocean there are 12.700 islands ... as shown by the maps and writings of the practised seamen who ply these waters."

42 Brown, Lloyd A., *The Story of Maps*, New York 1949, p. 114.

43 Olschki, Leonardo, op. cit. pp 32-33.

44 Rydberg, Ingvar, transl. of ibn-Khaldun, *Prolegomena (al-Muqaddima)*, Lund 1989, pp. 61-90. al-Idrisi's *mappa mundi* is inserted between pp. 74-75. Ptolemy was one of al-Idrisi's sources. Ptolemy's *Geography* was not translated into Latin until abt. 1406. Cf.: Parry, J.H., op. cit., p. 27, and Penzer, N.M., op. cit., introduction, pp. lvi-lvii and map between the two pages.

signis: qm̄ Albumasar dialogor̄ ad Sadam libro ait. In regionibus zinçor̄ apparet stella magna ut sac̄: et noui hominem qui vidit ipsam: & dixit mihi q̄ habet lumen modicum sicut petia nubis, & est semper australis. De ipsa quoq̄ cum alijs mihi retulit Marcus Venetus omniũ quos vn̄q̄ scitum orbis maior circuitor & diligens indagator: q̄ eandem vidit stellam sub polo antarctico: & est magnã habens caudam: cuius pinxit talem fore figurã.

Retulit etiam q̄ vidit polũ antarcticum a terra eleuatũ cõpitate lancee militis lõgæ in apparentia & arctice occultatum. Inde est nobis camphoram: lignũ aloes, & verçinũ exportari nũtiavit. Testatur illic calorẽ intẽsum & habitaciones paucas. hæc quidem vidit in quadam insula ad quã per mare adiuuit.

Dicit etiam illic homines fore & arietes q̄ magnos valde, habentes lanas grossas & duras vt setæ sunt porcorum n̄rorum. Et q̄ ad hm̄oi loca nõ patet nisi per mare accessus. Adhuc Hai y. 2. quadripartiti. Et aliqui dicũt q̄ in



Figure 1a: *Conciliator*, diff. 67, fol. 106r, Venice 1548.

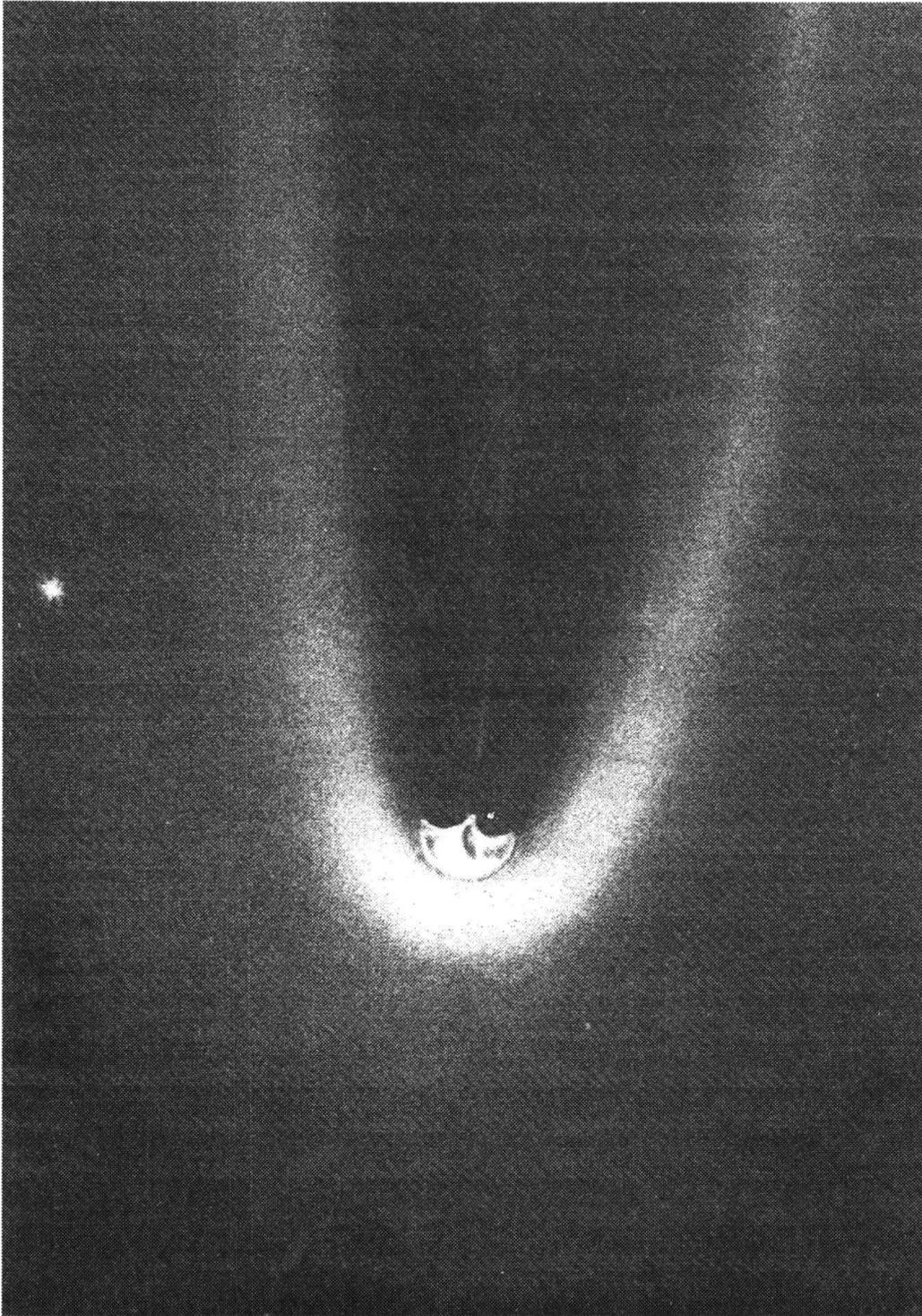


Figure 1b: A comet "ut sacco". The Great Comet of 1861 as seen by Warren de la Rue. The drawing reproduced by courtesy of: American Museum-Hayden Planetarium Library, New York.