

AN ASTRONOMER LOOKS AT FLORENCE

By M. W. BURKE-GAFFNEY, S. J.

THE Eighth International Congress of History of Science convened at Florence on September 3, 1956. The meetings, for the reading of papers and for discussions, were held in a university building at the corner of Via Curtatone and the Lugarno Amerigo Vespucci, a riverside drive.

One cannot live in Florence without knowing that Amerigo was a Florentine. He was born there, and spent the first twenty-seven years of his life there. On this side of the Atlantic, Amerigo is generally thought of as a navigator. In his home town, when he lived there, he was known as an astronomer, — most adept in calculating latitudes and longitudes. It was as an astronomer that he went on his first trans-Atlantic voyage. And we have records of an ingenious estimate he made of the longitude of the coast of Venezuela, in 1499, by observing the time of a conjunction of Mars with the moon.

From the Congress headquarters, one had to walk only two blocks eastward, along the north bank of the River Arno, to come to the Piazza on which stands the Church of Ognissanti. In a house near this church, Amerigo was born. He is reputed to be buried in the crypt of the church (although he died in Seville). In a beautiful fresco painted by Ghirlandaio about the year 1480, and known as "The Madonna of Mercy," the Madonna is shown raising her cape on either side, and sheltering beneath it the Vespucci family, including Amerigo, a young man, not yet grown to fame.

The ceremonial opening of the Congress was held in the Great Hall of the thirteenth and fourteenth century Palazzo Vecchio. In going to the Palazzo, we passed the two-hundred and seventy-six foot, graceful, Campanile, begun in the year 1334, by Giotto, to house the Cathedral's bells. The coloured marble tower is adorned with cut ornaments, statues and bas reliefs. Among the bas reliefs of interest to astronomers are those low on the western side, which depict Mercury as Instruction, Venus as Harmony, the Moon as Commerce, Mars as War, Jupiter as Religion, Saturn as Agriculture and the Sun as Good Government.

Outside the Palazzo Vecchio is the colonnade known as the Loggia dei Lanzi. In this colonnade is the magnificent, and terrible, bronze statue of Perseus, holding aloft, with his left

hand, the head of Medusa. It was cast by Cellini in 1553. One would think that Cellini had studied the constellation Perseus in the sky before he conceived the form of the statue. One could superimpose the outline of the constellation on the statue. The long hair of Medusa, hanging down from his severed head, ends in a blood-clotted knot, that could be Algol, the "Demon Star."

As an explanation of why Perseus should hold so prominent a place in Florence, we are told that the Medici used to boast that their family was very ancient, — that they could trace it back to Perseus, who, according to Vergil, had been cast ashore in Italy. So, Cellini put the figure of Perseus, standing on the headless body of Medusa, to represent the victory of the Medici over the Republicans.

In the Great Hall of the Palazzo, the three hundred and fifty Historians of Science from thirty-six nations were welcomed by the Prefect of the Province of Florence, and the Congress opened with a blare of trumpets. Four short papers were read, after which the participants were invited to ascend the great stairway to the ducal quarters on the second floor. Here, in one room, refreshments were served. In another room, the Room of the Elements, paintings on the walls and ceiling represent the four elements: Air is symbolised by Saturn mutilating Uranus; Fire, by Vulcan's Forge; Water by the Birth of Venus, and Earth, by Ceres on the Isle of Sicily.

Adjacent to the Palazzo Vecchio is the Uffizi Gallery, where hang the most striking, and often-reproduced, portrait of Leonardo da Vinci, by himself, and the most genuine portrait of Amerigo Vespucci, by an unknown contemporary Florentine.

About four hundred yards east of the Palazzo Vecchio is the Piazza and Church of Santa Croce, a spacious church, four hundred and sixty feet long and one hundred and thirty-four feet wide. So many great Italians are buried in it, that Englishmen call it the "Westminster" of Florence. Galileo was buried in this church, and his tomb is marked by a large and artistic sculptured piece, modelled after the style of the tomb of Michelangelo in the same church.

On the evening of the first day of the Congress, after an afternoon of papers and discussions, there was a reception by the Leonardo da Vinci Society, in its headquarters on the Lugarno Corsini. In the Palazzo Corsini, on the Lugarno, one could think of hardly anything else but the years of Renaissance. Outside, there were memories of 1944. The Lugarno Corsini

is a continuation of the Lugarno Amerigo Vespucci from the north end of the Ponte Alla Carraia to the north end of the Ponte Santa Trinita. These two bridges were destroyed by the Germans in their retreat. The Ponte Alla Carraia (built in 1218) has been rebuilt, and is now in use. The restoration of Santa Trinita (1252) is not quite complete, because it is being restored most meticulously. Being replaced are the statues of the Four Seasons, which were originally erected at the corners of the bridge, in 1608, for the Wedding of Cosimo II. They were recovered after the destruction of the bridge in 1944, — but the head of the most lovely Spring-like, statue of Spring was gone, and has not been found.

On the second day, we adjourned to Pisa. The two-hour run to Pisa, in six motor coaches, was through the beautiful cultivated hills of Tuscany. We knew we were at Pisa when the leaning tower came into view. No photograph does justice to this white marble edifice shining in the sun. Even if it did not lean, it would be a joy to see. We passed it by, to alight at the University (founded 1343), where, in the convocation hall, we were solemnly welcomed by the Prefect of the Province of Pisa, and listened to two papers by university professors, on *The Scientific Tradition of Pisa*, and *The Development of the Era of Discovery*.

After lunch, there was time to visit the sights to be seen, the baptistery, the cathedral, the campanile (or leaning tower), and the *Domus Galilaeana*, on the *Via Santa Maria*, which runs north from the River Arno to the Cathedral Place. It was here, in Pisa, that Galileo spent the first twenty-seven years of his life.

Entering the Cathedral of Pisa by a door in the south transept, the present writer walked to the back of the church, to look down the length of its arcade nave, lined with monolith columns, stretching for three-hundred-and-twenty feet. In the distance, in dead-centre, before the sanctuary, was hanging, about one-hundred feet below the ceiling, a lamp. It was not swinging, it was steady, but one could not help thinking how majestically it could swing, how easily one could time its periods of oscillation. Walking towards it, one observed that it was a beautiful work of art in bronze. Enquiry elicited the information that it dated from 1587, — it was not the very lamp which Galileo had seen swing isochronally in 1581.

Before returning to Florence, we drove westward through desmesnes that once were royal, and down to a bathing beach, on the shores of the Ligurian Sea, south of Viareggio, where the

body of Shelley had been washed ashore in 1822.

In Florence arrangements had been made for us to visit the Museum of History of Science, at the corner of Lungarno della Borso and Piazza dei Giudici. Astrolabes, gnomons, celestial globes and charts are common in this museum. Two exhibits, which it houses, are unique: the two telescopes made and used by Galileo. The larger one has an object lens of about one-and-a-half inches diameter, a magnifying power of about twenty, and a resolving power of about ten seconds of arc. Its tube is of wood, lined with leather. The cheapest mariner's telescope now on the market is a better instrument.

The following day, in the afternoon, we drove to Vinci, about twenty miles south-west of Florence. To give us welcome, the bell on top of the old castle of Vinci was tolled as we entered the village. When we alighted, we were shown to the castle, where, in a small museum, mementos of Leonardo are preserved, together with some ingenious constructions built from his plans. Then we drove a little west of the village to the house in Anchiano, where Leonardo was born. Perched in silent isolation on a hill, the location of this house affords a panoramic view of the beautiful hilly and cultivated country round about. Leonardo's old homestead now stands unfurnished, save for the bust of Leonardo da Vinci erected in the room where he was born. From this stone house of Leonardo it was not far to a vineyard, where, in the midst of fig-trees and vines, and in sight of Leonardo's home, we were given a delightful reception by the local authorities.

The following day, those who were free by noon, were invited to the unveiling of marble tablets at the home of Francesco Redi (1626-1698) and of Paolo Mascagni (1752-1815), distinguished Florentine doctor of medicine. Later on, there was a special address in celebration of the fourth centenary of the death of Luca Ghini, the first director of the botanical gardens at Pisa, which, with Padua, was one of the first two cities in Europe to have botanical gardens.

After this special session, an excursion was made to Arcetri, the site of the astronomical observatory of Florence, one mile south of the city. From the look-out platform on the top of the observatory, looking southwards one could see on the opposite hill, the turreted house which was the home and workplace of Galileo for the last thirty-three years of his life. Looking to the north, one could see Florence as a city of towers, and understand how the city was slow to feel the need of an astronomical observatory. Toscanelli, in the fifteenth century, had the campanile

as well as other vantage points, and therefrom observed the places and motions of six comets with scientific accuracy. A century and a half later, Galileo's unmounted telescopes needed no special building to house them. In 1774, the city fathers allotted a portion of the museum of science and natural history, in the city, for use as an observatory. From 1833 to 1863, the director of this observatory was G. B. Amici, who gained international reputation for the precision and accuracy of the reflecting telescopes which he built. His successor, G. B. Donati (of comet fame) found the site and quarters of the observatory not good enough for the instruments which he had inherited. He succeeded in obtaining the site at Arcetri so close to, and overlooking, Galileo's hill.

Having returned to Florence, we stood at the corner of Via Lorenzo il Magnifico and Via Paolo Toscanelli and saw, over the Arc of Triumph, standing in the night sky, Mars, the planet, under whose influence, said the astrologers of old, Florence was founded.

The concluding sessions of the Congress were held in Milan, in the elegant and commodious assembly hall of The National Museum of Science and Technology, a spacious and functional institution erected since World War II. Here, the centenary of the death of Agostino Bassi was celebrated by a paper on his discovery of living organisms in silkworm disease, and by the opening, in the museum, of a Bassian Exhibition.

Of more general interest was the Leonardo da Vinci Collection in the museum in which we were meeting. The collection is ideally displayed. On the walls, behind plate glass, are manuscripts by Leonardo, and, on glass tables, in front, are recently constructed samples, built according to the plans outlined in the manuscripts, of Leonardo's ingenious devices.

The exit from the museum is on to the Piazza San Vittore. Coming out, one sees on the left the church of San Vittore al Corpo. This Church, still in use, traces its history back to the year 102, when its present site was outside the walls of pagan Milan. Coming out of the Church one looks, to the right, at the modern museum erected on the ruins of a building which had been used as a barracks, and marvels at the delicate pinpoint bombing of our airmen in 1943. The barracks was destroyed, and the Church left unscathed. This is not an isolated example. It would seem that in 1943 not an object of military value was left standing in Milan, and scarcely a work of art or of historical value was damaged, — even when adjacent to military targets.

After the Congress was closed, those interested in astronomy were invited by the director of the Brera Observatory to visit the observatory.

The Brera Observatory is an annex to the Palazzo di Brera, which is in the city of Milan, about five minutes drive from the heart of the city. The tower of the observatory, at the south-east corner of the Palazzo, towers over the Palazzo. The Palazzo houses, since the days of Napoleon, the Pincoteca di Brera, a most complete collection of Italian paintings, in which each of the diverse schools is represented by masterpieces. The so-called Palazzo, was built in 1591, by the Jesuits, as a college, and functioned as such until 1773, when it passed into the hands of the State. The observatory was designed and erected in 1764-65 by Father R. J. Boscovic, who was then a Fellow of the Royal Society, and propounding a kinetic atomic theory of gases, a hundred years too soon.

The observatory was best known to the outside world during the nineteenth century under the directorship (1862-1900) of G. V. Schiapparelli. Schiapparelli kept, with great regularity, a diary of his astronomical observations. Of historical interest is the page in his diary dated August 29, 1877, on which he has a pencil drawing of the face of Mars as he saw it, with a network of dark lines, to which he gave the name "canals." In 1877, Mars was in favourable opposition on September 5, and Schiapparelli made fruitful observations that year and over the succeeding years.

One came away from Milan with the memory of those words of the out-going president of the International Union of History of Science, Louis de Broglie, who wrote many years ago: "However proud we may be of our successes of today, we should not forget those who, by their persistent work and ingenious intuitions, opened the ways on which we advance."