==========

UNCOMMON GENIUS

Giuseppe Campani, "Inventor Romae"

by

Silvio A. Bedini

-==========

Silvio A. Bedini 4303 47th Street N. W. Washington, D . C . 20016-2449

The success that attended the researches of the seventeenth century virtuoso was due not alone to his new approach to the problems of science, but also in no small part to the tools at his disposal, some of them greatly improved and many new or almost new at the time, the prosecution of his work inevitably leading to the discovery of still others and to various improvements in the arts.

Of the imposing list, which includes logarithms, the calculus, the slide rule, the pendulum clock, the barometer and the thermometer, only two, the telescope and the microscope, need be specially mentioned because they did perhaps more to enlarge the vision than any of the others. What they revealed left everyone, not only the "rude heads" but the scientist, the philosopher, and the poet, wonderstruck and perplexed at the beauty and the mystery of it, for these revelations raised questions, many new, and some of dangerous import. The telescope seemed to come perilously close to verify Bruno's claim that there are countless other worlds than ours, the microscope in demonstrating the very atoms of Democritus. What then would improved instruments do? No wonder that the imagination reeled and the poet feasted on the spoils.

Howard B. Adelmann, *Marcello Malpighi and the Evolution of Embryology* (Ithaca, N.Y .: Cornell University Press, 1966), vol. p.

DEDICATION

To the memories of the late Giovanni Cardinal Mercati, Prefect of the Biblioteca Apostolica Vaticana, and of his brother the late Monsignor Angelo Mercati, Prefect of the Archivio Segreto Vaticano, whose early encouragement and assistance over a period of many years added immeasurably to this work.

To my wife, Gale, to whom this work owes much as the results of her efforts over more than a half century. She has shared my research on the life and work of Giuseppe Campani, from the Umbrian hills where he was born, to Rome and Florence, seeking out details of his life, in archives and museums where his work supplied pontiffs in the Vatican, Medici princes in Florence, and the Sun King in Paris. Without her substantial contributions and infinite patience, this work could not have been completed.

To my daughter and son, Leandra and Peter, I owe immeasurable thanks for help in research and for constantly rescuing me from computer generated catastrophes that periodically threatened me along the way to completion.

TABLE OF CONTENTS

c. Lenses, Telescopes and Microscopes

d. Publications by the Campani Brothers

ILLUSTRATIONS

PREFACE

PREFACE

It required virtually a herculean leap in time and space to bridge a sleepy colonial New England town to " the very soil of silent Rome " of the seventeenth century. The event, had I but known, the apparently innocuous acquisition of a worm-eaten clock three centuries old, was to bring colossal disruption in my life, plunging me into decades of research to seek and recreate the life and times of that uncommon genius, the clock's maker, Giuseppe Campani of Rome.

This event, the aftermath of which has finally culminated with the completion of this biography, occurred in the summer of 1950. As noted, it began with my acquisition of a seventeenth century Italian silent night clock made by a clockmaker of Rome named Giuseppe Campani who was relatively unknown in modern times. It was a most unusual venture for me, for although as a novice collector interested primarily in old hand guns and metalwork, I had never owned a clock. During a periodic visit to a second hand furniture dealer who occasionally had old guns on hand, he attempted to interest me in some furniture he had recently acquired in a most unusual way.

The dealer had been summoned to a nearby farm to remove and dispose of a collection of old foreign furniture and furnishings that had been stored in the barn's hayloft for more than half a century. My friend the dealer had been paid a modest sum "to get rid of the furniture," which he then proceeded to remove and which he promptly sold. It proved to be a most rewarding arrangement, for among the pieces he found a fine seventeenth century Dutch marquetry desk, an eighteenth century Pennsylvania corner cupboard and several other equally valuable antique pieces. Having quickly disposed of the items at excellent prices to visiting New York dealers and interior

decorators, only one of them remained.

The timepiece had failed to arouse collector interest because of its unusual characteristics. In a partially opened wooden shipping crate was what appeared to be a monstrous clock, three feet tall, two feet wide and one foot in depth. The clock dial featured a copper disk having several openings and painted with a religious scene. Its walnut was extensively worm-eaten. It was apparent that in decades past the shipping crate in which the timepiece had been shipped from Rome in 1890 had been partially broken open, inadvertently provided residence for countless mice within the case while wasps adorned the exterior with multiple mud nests.

Not surprisingly, the clock failed to tempt clientele in the course of the passing weeks and the dealer continued to tempt me, because it had the name of an Italian maker and after all my name undoubtedly was of the same origins. Eventually returning to the dealer, I obtained the timepiece for a ridiculous sum, a fraction of the price of fifty dollars that he had originally asked. The signature on the clock's back plate, *Joseph Campanus Inventor Romae*, meant nothing to me, nor was it to be found in directories of clockmakers nor in the local library's reference books about clocks. Queries subsequently made to the Metropolitan Museum of Art and the New York Public Library were slightly more productive, however, identifying the maker but only briefly, as Giuseppe Campani, a seventeenth century clockmaker working in Rome.

Thus began the seemingly perpetual quest that eventually led from Connecticut to Rome and the Vatican's library and secret archives, to Campani's place of origin in a tiny hamlet high up in the rockbound Umbrian hills, and to museums, libraries and archives throughout Italy and elsewhere in Europe in search of documentation and examples of his work. Albeit progressing

slowly, it promised to be a successful undertaking from the very beginning, because that year, 1950, the Vatican was celebrating a Holy Year, described in publication featuring distinguished Vatican personalities. Included among them was an arresting portrait of Giovanni Cardinal Mercati, prefect of the Vatican library, acknowledged to be one of the world's foremost scholars, and accomplished in 32 languages. His kindly features and long white beard were most inviting, and despite my family's efforts to dissuade me – one did not write to the Vatican – I promptly wrote to him in English, explaining my interest in Campani because the clock appeared to have a religious theme.

This was the beginning of an association which was to last for more than a decade, until the Cardinal's death in 1963. Having become personally interested in the subject matter of my research, a constant exchange of mail ensued over the course of the next few years in which the cardinal responded to my countless inquiries with information-filled letters and photocopies of aged documents he had searched out for me in the household accounts of the Apostolic Palace. A particularly great prize he provided was a photostatic copy of an entire manuscript of several hundred pages. Written by the clockmaker's brother, Matteo Campani, It was an account of a great conflict critical of the Church, which had been censored by Vatican authorities, who had refused permission for its publication. The single surviving copy of the manuscript was filed away in the *Index Librorum Prohibitorum,* remaining unpublished and presumably unseen until the cardinal rescued it for use in my research.

Inevitably, the frequency of my requests eventually became a burden, and one day Cardinal Mercati wrote apologetically that being of advanced age (he was 86 at the time) in poor health, and having tremendous administrative responsibilities, he no longer could continue to assist me.

However, he had turned my project over to his younger brother, Monsignor Angelo Mercati, Prefect of the Archivio Segreto Vaticano. The Monsignor in fact was 82 years of age at the time!

Monsignor Mercati dutifully assumed the burden of my unremitting requests and provided reference materials with the same degree of interest as had his brother. Then one day he wrote apologizing because his vision, which had been impaired for some time, now rendered him almost totally blind. He no longer could deal personally with my requests, but assured me that his assistants would continue to do so, as indeed they did. Then, a year or two later, I received a letter edged in black from the Cardinal, informing me that his brother Angelo had passed away. "I have no recourse," he added, "but to resume once more the burden of your research," which he did for the next several years until his own death in 1963.

From the Vatican, the network of research spread to other repositories, centering primarily in the state archives of Rome, Florence and Spoleto. Then on to numerous museums, libraries and archives elsewhere in Europe, requiring travel for research that has occupied almost half a century before the biography of Campani could be completed. In addition to the Mercati brothers, a great debt is owed to the numerous museum curators, librarians, and archivists as well as translators who toiled so valiantly and fruitfully to bring to light additional bits and pieces of the history of seventeenth century horology and scientific optical instrumentation with which the lives and work of the Campani brothers had been involved.

There always is a substantial advantage in undertaking a biography of a popular individual who has been the subject of other published writings because the writer then has available a comprehensive bibliography and a corpus of material representing research by others. These are to

be studied, filtered and supplemented with new material to which these sources might lead, providing new interpretations of what is already known. It is much more difficult, however, to undertake the biography of an individual who has played a significant role in the several dimensions of the sciences of his time, but whose achievements although substantial, have escaped the attention of scholars, and about whom very little if any contemporary or later writings exist. Furthermore, to make the project even more difficult, none of the source material relating to the three Campani brothers is written in English, but exists only in foreign languages, primarily in Latin, Italian, and French, and chiefly in manuscript sources hitherto unexploited in dusty archives.

Until now Giuseppe Campani has not been accorded a deserved place among notable figures in the history of seventeenth century science. He had not made any of the major primary astronomical discoveries, such as those attributed to Galileo, Huygens and Cassini, for example, even though he was among the pioneering astronomical observers of the time. He was not the author of significant texts that changed men's thinking, nor did he invent major scientific instrumentation or apparatus of universal application such as are credited to Robert Boyle or Otto von Guericke. Why then, one might ask, does he merit a biography?

Giuseppe Campani was, after all, primarily a mechanician – a clockmaker and artisan – but he also produced astronomical lenses and telescopes and microscopes of unparalleled quality, which were matched by no other. He was, in fact, much more than merely one of "the little men of science," identified by the late Derek J. De Solla Price as mathematical practitioners, whom historians of science generally note only grudgingly as scarcely meriting a passing mention in history.

As a clockmaker, Campani not only was one of the inventors of a new type of timekeeper, the silent night clock that became so popular during the second half of the seventeenth century, but he also invented the innovative crank lever escapement, making possible the production of clocks with mechanical movements that were precisely accurate and remarkably silent in operation. Among other ingenious and innovative timepieces that he produced was the first projection night clock, ingenious rolling ball clocks, and a nautical clock for use on shipboard for determining longitude at sea. The latter, although submitted to the Netherlands and tested at sea, failed to achieve an award. His production of clocks surpassed in number as well as in diversity and ingenuity those of all his contemporaries. Today more clocks made by Giuseppe Campani survive than by any other Italian seventeenth century maker.

As a pioneer in the production of optical instruments, Giuseppe Campani surpassed all others throughout Europe until the beginning of the eighteenth century. It was by means of his astronomical lenses and telescopes that many of the greatest astronomical discoveries of the period were made, and some of which he personally made with his own instruments.

Despite the importance of his achievements, the production of an account of the life and work of this uncommon genius has proven to be far more difficult than would have been that some of the most notable of his contemporaries. For many of those, such as Huygens and Hooke, with whom he may be compared, a substantial corpus of papers and correspondence of each has survived, sought from a wide range of sources, brought together and organized, then carefully catalogued and filed and preserved in national libraries and archives and readily available in the English language to the historian, and resulting in published biographies,

For Giuseppe Campani, no such corpus exists, and his correspondence, and his papers although once existing, never became available. Information about his work must be sought item by item in the papers and correspondence of his clientele in a wide range of repositories. It is fortunate, nonetheless, that because his skill and fame were such that his work was eagerly sought by pontiffs, prelates, princes, and wealthy amateurs, record of his work and achievements survives in their papers and correspondence. Preserved in national libraries and state archives of Italy and France are to be found originals and file copies of letters to and from and about Campani relating to his work. Scientific journals of the periodicals also have been useful, often containing published reports of his work and reviews of his publications and occasionally those of his brothers.

Details of Giuseppe Campani's personal life have been scant and even more difficult to recover, but nonetheless, it has been possible to bring together data in parish church records preserved in the Vicariato di Roma of the Vatican. However, a substantial number of vital statistics relating to Giuseppe Campani and his brothers have been gleaned from notarial acts filed and preserved in the state archives of Spoleto and Rome. Therein, after diligent and inventive search, were to be found notices of the personal and business activities of Giuseppe and his brothers, buried in ponderous parchment-bound volumes of documents filed by the notaries of each community in which they lived. These were preserved in Italian state archives in Spoleto, which contained the records of notaries concerned with Castel San Felice and neighboring communities, and the state archives of Rome, containing records of the personal and business lives of the Campani brothers after settling in the Eternal City.

The search for related documents in these repositories in itself constitutes a major feat in

literary detection. It is first necessary to identify the notary who drew up such documents for each of the Campani brothers. This generally can be achieved only by guesswork, prayer, and trial and error. After the notary has been identified, it becomes necessary to establish the number assigned to his office. In the Rome of the second half of the seventeenth century, at least thirty such offices were in operation. Assuming that the notary and his office number have been identified, which is a most frustrating part of the task, it is possible to request the volumes containing the records of the actions in which that notary participated. Each notary maintained separate volumes for wills and testaments, for business actions including purchase and sale of real property, and for legal suits. For each of these categories, several such volumes may exist, maintained by date, the consequent volume of his work depending upon the success of the individual notary.

To seek a particular last will and testament, it is necessary first to determine the date of the subject's death, match it up with a notary who was active during that period, request his notarial volume of last wills and testaments for the years in question, and then the real search begins. Occasionally a will may have been arranged years prior to the subject’s death, which generally may be traced through his notary. These notary volumes may include a brief handwritten index of its contents, usually jotted on loose sheets of paper which may or may not have survived within the appropriate volume or may have been placed in another volume in error. The names therein were compiled alphabetically – but listed not by cognomen but by Christian or given name. Some concept of the difficulty of the search for records relating to Giuseppe Campani, for example, may be derived by estimating just how many men named "Giuseppe" (Joseph) were living in Rome at the same time! The problem is further compounded when the subject of the search had a double given

name such as his brother, Pier Tommaso Campani. It is not enough to search the records for "Pier" but one must search also for "Tommaso" because the document is just as likely to have been filed under the latter name.

An inherent difficulty consistently encountered is that Italian notarial documents are written in a special form of shorthand style commonly used by notaries, generally hastily recorded only for the notary's own future use, in handwriting that defies the talents of even accomplished paleographers.

The most rewarding research proved to be the recovery of records and correspondence of Giuseppe Campani's clients. Fortunately, due to the nature of his products, which he sold for considerably high prices, generally they were acquired only by the wealthy. Among them were many of the most distinguished figures of his time and included several pontiffs, a number of cardinals, princes and their court mathematicians, and astronomers, in addition to wealthy amateurs who purchased and used his instruments. Although no less difficult to penetrate, their files preserved in Italian state archives have proven to be the most rewarding. While the papers of many popes and cardinals are not readily available to the public, in this instance it was particularly productive to examine those of Pope Alexander VII and his nephews, for whom Campani produced many clocks and optical instruments. Their papers, although deposited in the Biblioteca Apostolica Vaticana, have remained the property of the Chigi family and are accessible only by personal written application to the member of the family who currently serves as family archivist. Most recently it was the late Marchese Giovanni Incisa della Rocchetta Chigi, who proved to be most cooperative in searching out records of commissions and payments made to Giuseppe Campani.

Also deposited in the Biblioteca Apostolica Vaticana, are the records and correspondence of Pope Clement XI and the Barberini princes, including those of Cardinals Francesco Barberini and Antonio Barberini, for whom Giuseppe Campani made clocks and instruments.

Numbered among Giuseppe's most frequent clients were the Medici princes of Tuscany, including Grand Duke Ferdinand II, his brothers the Princes Gian Carlo, Mattias and Leopold, his son Gian Gastone, and his uncle Cardinal Giovan Carlo de' Medici. For them Campani produced a substantial number of clocks, microscopes, telescopes, and lenses over a period of some forty-five years. Many of these records of purchase are filed in the *Fondo Principato Mediceo* in the State Archives of Florence, and others are to be found in the miscellaneous correspondence files of Prince Leopold preserved among the post-Galilean files of the *Codice Galileana* in the Biblioteca Nationale Centrale in Florence.

The present biography represents the culmination of research conducted off and on during more than forty-nine years, requiring a substantial amount of overseas travel for research personally undertaken in the archives, libraries and museums of Spoleto, Florence, Rome and the Vatican as well as in Paris. A major difficulty in the production of this biography is that virtually nothing about Giuseppe Campani and his accomplishments has been written in the English language either in manuscript or published form except for the several articles that I had published since first undertaking this research. Accounts of the uses made of his lenses, telescopes and microscopes, for example, were published in the Italian, French and German languages. The church records and notarial documents were written in either Latin or in a notarial form of Italian, and the correspondence invariably was in either Italian, French or Latin. Almost every written word has required translation from one of the several languages.

While engaged in this research, it then occurred to me to investigate also the former owner of the clock I had purchased. He proved to have been Chauncey B. Ives (1810-1894), a popular nineteenth century American sculptor. Born in Hamden, Connecticut, one of a farmer's seven children, he disliked farm work and furthermore had a tendency towards tuberculosis, from which four of his siblings had died. He eschewed the farm at the age of sixteen and apprenticed himself to a wood carver in New Haven. He moved on to Boston and taught himself to work in marble; a marble bust he produced won a gold medal and orders began to flow in. In about 1844, with borrowed funds, he traveled to Florence where he subsequently established himself as a sculptor, continuing to work there for seven years before moving to Rome in 1851. In 1860 he married and he and his wife had five children. He was awarded the Connecticut State orders for the statues of

Roger Sherman and John Trumbull, which were placed in Statuary Hall in the Capitol of the United States in Washington, DC.

During the first decade of his life in Rome, according to his daughter, Ives spent summer vacations with his young family, occasionally searching antiquarian shops in Rome and vicinity for furniture and artifacts with which to furnish his home. It was during this period that he acquired the Campani night clock. Years later, his daughter, who became Mother Superior Elizabeth Ives of the Manhattanville College of the Sacred Heart in New York, fondly recalled the tall clock that stood on a side board in their home in Rome. As a child she thought that the painting represented the martyred Saint Barbara.

In about 1890, Ives now a widower with the rest of his family in the United States, retired and arranged to return permanently to the United States and make his retirement home with the brother on his farm in North Salem, New York. Accordingly, he had his unsold sculptures, furniture and other contents of his apartment in Rome, crated and shipped to his brother's farm. Shortly before the date of his departure, however, Ives unexpectedly died in Rome, on August 2, 1894 at the age of 84. Following his demise, the numerous large crates kept arriving at the farm in North Salem, and having no other space available, his brother had no recourse but to store them unopened in the hay loft of his cow barn. There they remained, unopened for fifty-six years until July 1950. After the farmer's demise, the farm was inherited by the several children of Chauncey B. Ives, now grown and with families. They leased the fields and facilities year round to a local farmer, while taking turns returning every summer for vacationing in the farmhouse. It was when the farmer subsequently required additional space for storing his mown hay in the barn loft, that a neighboring

dealer had been contracted to remove the crated furniture.

The dealer profited comfortably from sale of the various items of furniture he had removed from the hayloft and all that remained unsold had been the Italian clock. In a period when English, French and American clocks were the favored of modern collectors, there was neither information nor interest in Italian night clocks, and a search of many reference works was required to find any mention of the style or of the maker's name inscribed on the clock, *Joseph Campanus Inventor Romae.* Eventually his identify was determined to be Giuseppe Campani, a clockmaker in seventeenth century Rome. The years of research that followed brought to light the careers of the three Campani brothers, born and grown in a flyspeck of a rocky hill town high up in remote Umbrian hills. Lacking formal primary or secondary education, except as provided by the local priest, they managed to descend upon Rome, where eventually they achieved considerable fame in their own lifetimes – particularly Giuseppe – by the application of individual inventive skills in the development of clockwork, telescopes, and microscopes.

ACKNOWLEDGMENTS

ACKNOWLEDGMENTS

The late Giovanni Cardinal Mercati and Monsignor Angelo Mercati, Right Reverend Monsignor Charles Burns, the late Prof. Giovanni Pietrangeli, Walter Persegati, Gerard L'E. Turner, Anthony J. Turner, Dott. Ing. Antonio Lenner, Dott. Giancarlo Del Vecchio, the late Prof. Guido Horn d'Arturo, the late Derek J. De Solla Price, the late Count Giuseppe Bartocci Fontana, Frau Inge Keil, Rolf Willach, Peter Louwman, the late John Millburn, Professor Marvin Bolt.

Translations of a number of the texts have been provided by the Reverend James Byrne, S.J., Professor Stefano U. Baldassarri, Dr. Harriet Morgan Wahl, Antonella Valorosa, Peter D. Bedini, Leandra A. Bedini.