



VATICAN OBSERVATORY FOUNDATION

Annual Report of Giving
{ 2011 }



Board member Paula D'Angelo with Fr. DiUlio at the VOF event at the Adler Planetarium

Our Mission

The Vatican Observatory has a double-edged mission: scientific research into the knowledge of the universe, including our place in it, and the education of the public based upon the knowledge derived from that research. These two driving forces of our mission are very much intertwined. In 1987, the Vatican Observatory Foundation was established as a tax-exempt corporation to support this mission.

RESEARCH. In the early 1990s the marvels of technology and the commitment of a few visionary philanthropists made possible the creation of the Vatican Advanced Technology Telescope (VATT), which empowered scientists to look with more acute “eyes” into the universe. Today, the VATT continues to provide stunning access to the heavens for researchers from around the globe. Combined with other technologies and the continued commitment of Vatican Observatory scientists, our work is literally pushing the boundaries of what we know and how we know it. Joining in this research are many students of astronomy from around the world.

EDUCATION. Each year members of the Observatory staff share their expertise by making educational presentations on the average to over 5,000 persons from 90 educational, religious, and academic groups. In recent times Vatican Observatory scientists have played an increasingly important role in the dialogue between science and religious faith.

President's Report

At the end of each year, non-profits assess performance and plan next steps. The fundamental questions asked are these: Have our actions and decisions helped fulfil our mission? Have we done so with integrity and good stewardship of the resources entrusted to us? How can we do better?

As a newcomer to the Vatican Observatory Foundation, I am delighted to be part of an organization that values its commitments to mission and benefactors and can answer “yes” to the first two questions. I have great respect for my Jesuit brethren whose research into our universe enlightens science and enlivens faith. I am excited to work with supporters who understand the importance of this work and have the vision and passion to help the VOF grow more effective in fulfilling its mission.

In 2011, over 325 benefactors, a dozen Jesuit astronomers and countless international colleagues and friends helped make possible the Vatican Observatory’s mission to embrace, encourage and promote scientific study of the universe and to provide a forum for the vital ongoing discussion of the relationship between religion, faith and science. I look forward to seeking stimulating new ways to ensure the VOF is best able to fulfil its mission in the year ahead. And I thank you for being a key part of the present and future success of the Vatican Observatory Foundation.

Albert J. DiUlio, S.J.
President



2011 Highlights

- ★ Visiting the inspirational students at Verbum Dei High School, a work study program in the Watts area of Los Angeles
- ★ Participating in the "Sunday Morning Conversations with the Jesuits" lecture series at St. Ignatius Parish in San Francisco
- ★ Listening to the heartfelt message of Bishop Kicanas who joined us as guest speaker at the VOF Annual Awards Dinner, especially after the tragic events in the city of Tucson
- ★ Presenting the annual spring lecture at St. John's Seminary in Camarillo to a standing-room-only crowd and speaking to very knowledgeable groups at both the California Club and Jonathan Club in Los Angeles
- ★ Fostering knowledge and understanding of faith and science among young people in attendance at gatherings in New York, Connecticut, New Jersey and Pennsylvania
- ★ Fr. Coyne attending the presentation of the Templeton Prize in the United Kingdom
- ★ Spreading the good work of the Observatory to several hundred who attended year-end lectures at Dominican University and the Adler Planetarium in Chicago
- ★ Exchanging ideas with the scientists at Hughes Research Labs in Malibu

Chairman's Report

Situated between immensity and eternity, we ponder the vastness of the universe and our place within it. Where did we come from? Where are we going? Why is there something rather than nothing?

Simple questions like these have profound implications on living an enlightened life. Both science and religion grapple with these questions, each shedding light on the answers and thus illuminating our lives.

The Vatican Observatory is one of the few institutions where science and religion come together. The study of the universe by men of faith is intriguing on multiple levels, and I am honored to help guide the non-profit Foundation created to support it.

At the end of 2011, we thanked Fr. George Coyne for his two decades of leadership as the President of the Vatican Observatory Foundation. We are grateful for his vision and passion in creating and shaping the VOF. We wish him the best in his new endeavors. At the same time we welcome Fr. Albert DiUlio as the new President of the VOF. We are fortunate to have someone with his experience and expertise at the helm.

The economy in 2011 remained challenging for all of us. But the need for nurturing the interactions between science and religion remains pressing. On behalf of the Board of Directors, I offer my profound gratitude to all who support the Vatican Observatory Foundation. Your support is paramount to the long term viability of this important endeavor. As you read these pages, I invite you to celebrate the successes of the Vatican Observatory this past year, and offer my sincere thanks for your role in shaping its future.



VOF Chairman Rich Friedrich and VO Director Fr. José Funes, S.J. at the computer systems for the VATT

Rich Friedrich
Board Member

ABOUT THE COVER: The Dumbbell Nebula is an irregular ball of thin, cold gas expanding out from a central star which provides the energy to make the gas glow. It lies 1,200 light years away from us, and extends more than two light years in diameter. Matt Nelson, currently at the University of Virginia, took the photo using VATT. He was responsible for writing much of the software for the VATT from 1994-2004, and was the first astronomer to explore the use of VATT imaging capabilities to make impressive color images of astronomical wonders.

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Blue names indicate 2011 benefactors who are **Guardians of the Vatican Observatory**. The Vatican Observatory Foundation offers a special word of thanks to these benefactors for becoming part of the life of the Vatican Observatory and its enduring impact in our world. Just as the Tower of the Winds was commissioned in 1576 to facilitate astronomical studies for the reform of the calendar, Guardians are commissioned in a special ceremony to help ensure the Church is actively engaged in scientific discovery and dialogue. Guardians are invited to participate in the Foundation's growth and development and asked to assist in promoting the Vatican Observatory to others. With lifetime gifts of \$100,000 or more to the Vatican Observatory Foundation, Guardians facilitate the ongoing commitment of the Church to scientific research and its role in the human experience.

Italicized names indicate benefactors in 2011 who are members of **Sacred Space Giving**. By giving through electronic monthly donations from a debit or credit card, members of Sacred Space Giving provide the VOF with low-cost, stable monthly support. Members receive quarterly updates from Jesuits of the Observatory, as well as a copy of "Sacred Space: The Prayer Book", a year-long prayer book with scripture readings and meditations in the Ignatian tradition.

† Deceased. May they rest in peace.



DONOR SPOTLIGHT

All in the Family

Dan Cracchiolo, Marianne Augustine
and Rose Collins



Besides a great love for Italian culture, siblings **Dan Cracchiolo, Marianne Augustine** and **Rose Collins** also share a great passion for giving, and strong belief in the importance of faith and science.

A prominent Phoenix attorney, Dan Cracchiolo has been extremely generous in his support of the VOF, both through his philanthropic work as Chairman of the Steele Foundation and by introducing the Foundation to many friends and associates in the Phoenix area. His commitment to Arizona is palpable, and his generosity far-reaching, as evidenced by the new University of Arizona law library named in his honor.

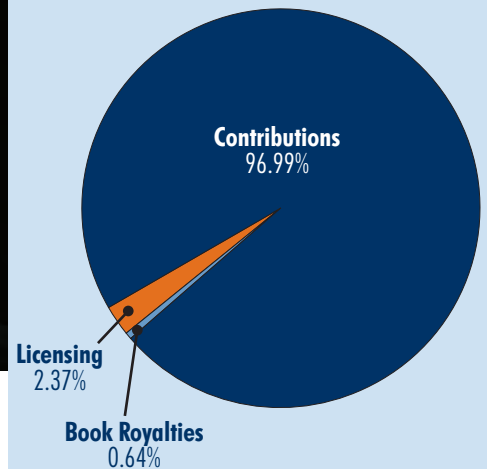
Marianne Augustine recently said that Fr. George Coyne, S.J. was the main influence in her interest in the VOF, citing how impressed she was to learn from him about the Observatory's research into the origins of the universe. Marianne's trip to Rome with the VOF allowed her to meet "the Jesuits associated with the VOF who were so engaging, informative and motivating in promoting the understanding of their mission." Being a teacher, she is especially thrilled that the Vatican furthers the knowledge of international students through the Vatican Observatory Summer School.

Rose Collins has become one of the VOF's most ardent supporters and frequent Rome Tour participant. She has the habit of introducing anyone anywhere to the Vatican Observatory! Her enthusiasm is contagious. One reason for her involvement, she says, is that "the deep space probes and other astronomical studies being conducted by the VOF are quite interesting because they help to explain how the universe was created. I had heard and read about the big bang creation theory but never really understood it until I attended the VOF tours and meetings."

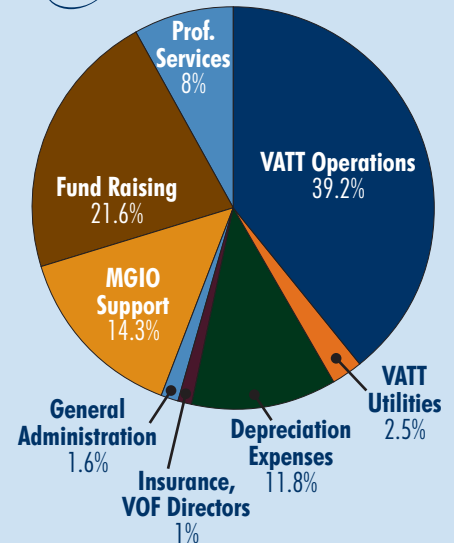
Along with her brother and sister, Rose has been a generous benefactor and believes that her contact with the Vatican Observatory has strengthened her religious beliefs. "I have provided financial support to the VOF over the years because I think that the more we know about our universe, the more we can appreciate the wonder of creation and our creator," she says.

THANK YOU Dan, Marianne and Rose, for your devotion, generosity and friendship. It is truly appreciated.

Income { \$474,928.68 }

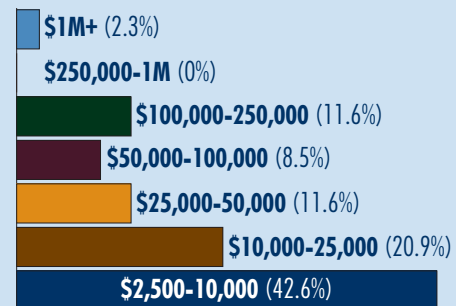


Expenses { \$761,838.83 }



The financial information above reflects pre-audit figures subject to adjustments.

Lifetime Giving of 2011 Benefactors { \$2,500 or more }



For more information about becoming a Guardian or member of Sacred Space Giving, contact Katie Steinke at Katie@vaticanobservatory.org.



A Year of Transitions: 2011

2011 marked a year of challenges and transitions for the Vatican Observatory Foundation. During the past year Fr. George Coyne, S.J. prepared to leave the observatory after 42 years and readied class lectures for his new faculty position at Le Moyne College in Syracuse, New York. Fr. Albert DiUlio, S.J. spent the fall months settling in Tucson and preparing to assume the office of President of the VOF in January 2012. Giovanni Cardinal Lajolo ended his tenure as President of the Governorate of Vatican City State. As overseer of the Vatican Observatory he attended our annual meeting events and made the trek to the VATT on Mt. Graham in February 2009. Archbishop Giuseppe Bertello, who receives his Cardinal's hat in February, now holds this position. Unfortunately, this trend of transition continued with the passing of two of our most loyal past board members. Thomas Golden and Peter Mullen passed away in the fall, after providing years of generous and thoughtful support for the VOF.

In 2011, we were able to connect with benefactors in cities throughout the U.S., discussing how philanthropic financial support is making a crucial difference in the Foundation's ability to fund astronomical research and educational programs to disseminate that research. Further, the VOF participated in the Collaboration at the Heart of Mission conference organized by the California Province of the Society of Jesus in February 2011. This exceptionally useful and enlightening gathering has helped build relationships and synergy among Jesuit entities.

At the same time, the lagging economy and disparate nature of the VOF constituency made it difficult to personally connect with as many supporters and potential supporters as we would have liked. It makes us all the more grateful for the sacrifices each of you make in support of this important work. We are off to a bright 2012!

Katie Bannan Steinke
Development Director

Scientific Report

2011 marked another memorable year for the Vatican Observatory's contributions to the field of astronomy. An important milestone was set on March 30, when Fr. Richard Boyle, S.J. observed in remote mode with the VATT for the first time from an office in Steward Observatory. This important event opened up a veritable treasure chest of new possibilities. Congratulations to the VATT team for an excellent job running the telescope efficiently and keeping it in good shape for the new challenges ahead.

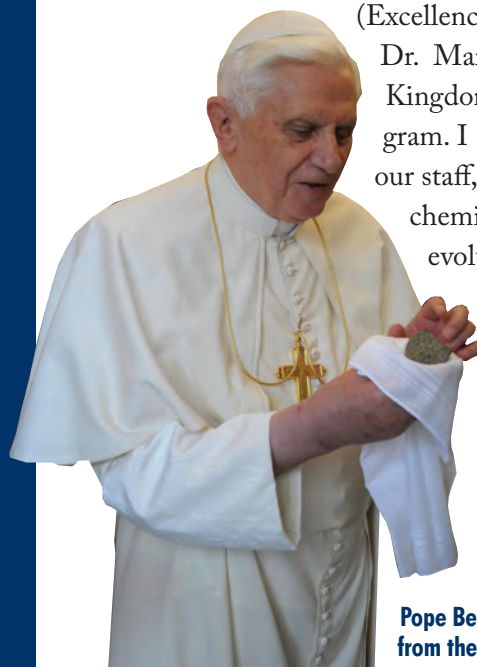
On the other side of the ocean, Br. Guy Consolmagno, S.J. and colleagues have pioneered the measurements of meteorite physical properties, including density, porosity, and magnetic susceptibility. Now a new technique has been developed in the Vatican Observatory's meteorite laboratory in Castel Gandolfo that promises to provide a quick, accurate, and non-destructive way to measure the average heat capacity of meteorites. These measurements are used to understand how planets warm up and cool off over their history. They also play an important role in understanding how the orbits of small bodies, like asteroids, can be shifted into resonant "Earth-crossing" orbits due to a complex process which depends on how a body re-radiates heat from the Sun.

This year also saw the continuation of strong collaboration with scientific colleagues around the world, and a common commitment to offering educational opportunities for the next generation of astronomers. Current planning for the 2012 Vatican Observatory Summer School (VOSS) on *The Formation and Evolution of Stellar Clusters: From Star Cluster Ecology to Tracers of Galaxy Evolution* is a concrete sign of that commitment. I am grateful to Prof. Douglas Heggie (Chair, University of Edinburgh, United Kingdom), and to the faculty: Dr. Francesca D'Antona (INAF-Osservatorio Astronomico di Roma, Italy), Dr. Nate Bastian

(Excellence Cluster Universe, Munich, Germany), and Dr. Mark Gieles (University of Cambridge, United Kingdom) for organizing an excellent academic program. I am also grateful to Fr. David Brown, S.J., from our staff, for serving as dean. The school will explore the chemical and dynamical aspects of the formation and evolution of stellar clusters in the Milky Way and beyond.

All these initiatives and activities are made possible thanks to the support of the Governorate of the Vatican City State, donors, and friends. To all of you goes our deepest gratitude!

José G. Funes, S.J.
Director, Vatican Observatory



Pope Benedict XVI holds a meteorite from the Vatican Observatory collection



{ cont. from back cover }

The newness in what John Paul II has said about the relationship between science and religion consists in his having taken a position compellingly different than the one he had inherited. In the Message he clearly states that science cannot be used in a simplistic way as a rational basis for religious belief, nor can it be judged to be by its nature atheistic, opposed to belief in God.

...Christianity possesses the source of its justification within itself and does not expect science to constitute its primary apologetic. Science must bear witness to its own worth. While each can and should support the other as distinct dimensions of a common human culture, neither ought to assume that it forms a necessary premise for the other. The unprecedented opportunity we have today is for a common interactive relationship in which each discipline retains its integrity and yet is radically open to the discoveries and insights of the other.

Furthermore, he expresses uncertainty as to where the dialogue between science and faith will lead. The Pope raises the question: "Can science also benefit from this interchange?" It takes a great deal of openness to ask that question and it does not have a clear answer. In fact, it is difficult to see what the benefits to science as such might be. In the Message it is intimated that the dialogue will help scientists to appreciate that scientific discoveries cannot be a substitute for knowledge of the truly ultimate. In what way, however, do scientific discoveries participate, together with philosophy and theology, in the quest for that ultimate? This is a serious and open question.

In the encyclical *Fides et Ratio* the dialogue continues and a serious attempt is made to lay the foundations for dialogue with the sciences. The principal thrust of the encyclical is a plea that we not lose the search for ultimate truth. He writes, for instance:

She [the Church] sees in philosophy the way to come to know fundamental truths about human life. ... I wish to reflect upon this special activity of human reason. I judge it necessary to do so because at the present time in particular the search for ultimate truth seems often to be neglected.

The Pope then contrasts philosophy with other ways of knowing and especially with the natural sciences:

It may help, then, to turn briefly to the different modes of truth. Most of them depend upon immediate evidence or are confirmed by experimentation. This is the mode of truth proper to everyday life and to scientific research. At another level we find philosophical truth, attained by means of the speculative powers of the human intellect (underlining by me).

It is clear that philosophy and the natural sciences must each have their autonomy:

St. Albert the Great and St. Thomas were the first to recognize the autonomy which philosophy and the sciences needed if they were to perform well in their respective fields of research.

While its principal focus is not upon the natural sciences, the encyclical makes a serious attempt to lay the foundations for dialogue with the sciences in the search for ultimate meaning. Scientific research, especially in our day, cannot be excluded from the search for ultimate meaning. Today scientists, within their own well determined methodology, are asking such questions as: why is there anything rather than nothing?; is the universe finite or infinite in time and in space?; is the universe fine-tuned to the existence of intelligent life?; did humans come to be through necessary processes, chance processes, or some combination of the two in a fertile universe that allows both processes to fructify? Such questions as these make ever more significant the role of the sciences in the search for ultimate meaning. John Paul II was a champion of that discourse and it was my privilege as Director of the Vatican Observatory to have shared in his courageous and epoch-making efforts.

THANK YOU FR. COYNE! May you bring light and wonder to all those you encounter in Syracuse.



VATICAN OBSERVATORY
FOUNDATION

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Searching for Ultimate Truth

As I bid farewell to the Vatican Observatory I have many fond recollections of my 28 years as Director and of guiding the Foundation which supports this unique institution. My fondest by far is of Pope John Paul II and especially of his profound and lasting interest in the relationship among science, philosophy and theology. I would like to share a bit of that with you from my personal experiences with John Paul II over the 28 years of his papacy which coincided with my years as Director.

From the beginning of his papacy one can discern a new view on the relationship of science and faith. One aspect of this relationship is the part that science plays in the search for “ultimate meaning”, a phrase found many times in the encyclical *Fides et Ratio*, which was issued in the twilight years of his papacy. However, his views on the search for ultimate meaning can be found throughout his papacy in his messages to university communities and to scientists. Two of these are of key importance: the message written on the occasion of the tricentennial of Newton's *Principia Mathematica* in 1987 (referred to hereafter as the Message) and the encyclical *Fides et Ratio*.

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George V. Coyne, S.J.
31 December 2011



Pope John Paul II
dedicates the VATT
in 1993