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The Manila Observatory

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The Manila Observatory

JAMES J. HENNESSEY

IT is the prerogative of a child to share in the joy of its parent's anniversary celebration. The Manila Observatory, as the first-born of the Ateneo de Manila, rejoices at this time when a century of uninterrupted educational service to the Philippines is the worthy cause of this centenary celebration. The Ateneo Municipal in Intramuros was but six years old when the Observatory saw the light of day. It has now grown into a ninety-four year old offspring whose history should have a place among the records of its parent.

I ORIGINS

In 1865, the flock of pigeons on the roof of the Ateneo was much disturbed by the intrusion of Francisco Colina, a Jesuit scholastic. After his mathematics classes, he would climb into that pigeon coop with a few simple instruments for determining the weather elements. It soon became evident that the birds had lost a roost and that these instruments had found a permanent home in a makeshift weather observatory. These heartless evictors of squatter pigeons were mere apologies for scientific instruments, claiming dignity more from their function than from their structure, for who would not smile at a household thermometer, a hair hygrometer, an oil barometer and an anemometer of such coarseness as theirs claiming recognition as dependable meteorological equipment. Anyone could see that the anemometer or wind gauge was only "a piece of cloth hung

by a piece of string from the top of a pole.”¹ Aware of the crudeness and limitations of his instruments, Colina nevertheless did not hesitate to use them for his observations, probably not realizing that he was initiating the first enduring meteorological observatory in the Far East.²

He kept hourly weather observations before and during a severe September typhoon which passed a little north of Manila in 1865. Impressed by the data, another scholastic, Jaime Nonell, plotted their graphs as an additional part of the record. When the editor of the *DIARIO DE MANILA* published these typhoon curves, merchants and sailors showed great interest. This led to a formal request being sent to the Jesuit Superior that observations be made and kept regularly by the Jesuits with a view to predicting the shifts of nature's moods. When it was pointed out that a Secchi Universal Meteorograph would give better observations, a collection was taken up from among the sailors and prominent citizens of the city for the purchase of this most modern scientific aid. Thus began the technical advance in equipment that was to signalize the Observatory for years to come and keep it in the forefront of the modern Observatories of the Far East.

II DIRECTORS

The history of the Manila Observatory falls naturally into divisions marked by its four outstanding directors. From the

¹ W. C. Repetti, S. J. *THE MANILA OBSERVATORY* (Washington, D. C., 1948), p. 1. This accurate account of the Observatory's history is the most complete in English. *THE CATHOLIC ENCYCLOPEDIA* IX, 601, in the article "Manila Observatory", gives a short report on the early Observatory. Horacio de la Costa, S. J., *LIGHT CAVALRY, passim*.

² El R. P. Miguel Saderra Masó, S. J., *HISTORIA DEL OBSERVATORIO DE MANILA* (Manila: E. C. McCullough & Co. 1915). This book by Father Saderra Masó is the authoritative history of the first fifty years of the Observatory. On page 23 we read: "The Observatory of Batavia was founded in 1866; that of Zi-ka-wei in 1872; that of Tokyo in 1875; and that of Hongkong in 1884." Espasa-Calpe, *ENCICLOPEDIA UNIVERSAL ILLUSTRADA*, has various articles on the Observatory or its members: "Observatorio—Manila" (v. 39, p. 444); "Manila-Observatorio" (v. 32, p. 890); "Algué, José María" (v. 4, p. 656); "Faura, Federico" (v. 23, p. 393); "Saderra y Mata, Miguel" (v. 52, p. 1194); "Saderra y Masó, Miguel" (apéndice v. 9, p. 604).

Observatory's start in 1865 to its complete destruction at the end of World War II the names of these successive Jesuit Directors were familiar to all who knew the history of science in the Philippines. The Directors who helped to make the record outstanding are Padre Federico Faura, S.J., Padre José Algué, S.J., Father Miguel Selga, S.J., and Father Charles Deppermann, S.J. Each of them left thirty to thirty-one years of distinguished service behind him. This brief account is of necessity largely an account of them and their immediate helpers, for it is concerned chiefly with the Jesuits of the Observatory. The many lay assistants and observers spread through the Islands, without whose contributions the Observatory could never have attained its successes, must here be unsung beyond this meed of grateful acknowledgment.

III FOUNDER

Father Francisco Colina may well be called the initiator of the Observatory for he started the scientific work and was the first to be given the title of Director. However, his term in this office was so brief that one must look elsewhere for the real founder. The actual originators of the Observatory, as Father Saderra Masó explains, were Father Juan Vidal, not only Superior of the Mission of the Society of Jesus in the Philippines but also Rector of the Ateneo, and the science professors of that school, who lent their help. The Superior made available both the location and the first finances, while the science professors gave enthusiastically and generously of their time and skill to take the requisite observations.

Despite all this Padre Faura, who did not arrive in the Philippines until June 20, 1866, is correctly honored as founder. Father Saderra Masó gives four reasons why: (1) the lasting influence of his energetic activity in promoting the work of the Observatory; (2) his being the first to predict typhoons in the Philippines and Far East; (3) his effecting the general recognition, years later, of the institution as a public utility; (4) his taking the steps that led to the Observatory's becoming the official government weather service for the Philippines.³

³ Saderra Masó, *op. cit.*, p. 24.

IV MOTIVES

When the Jesuits returned to the Philippines in 1859, they were asked to take charge of the Escuela Municipal and it was here that the Observatory work began. With so much other work to be done, it is surprising that Superiors gave approval for initiating this specialized kind of scientific investigation. Two motives had special force. The first and primary motive was the desire for the advancement of science in general and the progress of meteorological science in particular. Meteorology in 1865 was a young and undeveloped, though active, science. In other countries Jesuit scientists, particularly Father Angelo Secchi in the United States and Italy, Father Stephen Perry in England, and Father Benito Viñes of Belen College, Havana, were making notable contributions in this new field.⁴ The Manila Jesuits felt that they too should contribute.

The second motive was more practical. Human lives and property were at the mercy of sudden and unprovided-for typhoons. No warnings were available for either rich merchants or poor fishermen, or for that matter for anybody. But scientific knowledge of the laws of typhoons, obtained from a careful system of observation of the weather elements, would permit notice to be given a few days in advance of a destructive cyclone. The predictions would, therefore, benefit everyone in the path of a typhoon.

The two motives, the one speculative and the other practical, are complementary. Scientists have always found that the search for speculative, general principles has paid off richly in practical results. That is why in the history of the Observatory basic research has never been neglected for the pursuit of applied research. Each has had its proper share and place.

V PADRE FAURA 1866-1897

Federico Faura, not yet ordained to the Priesthood, arrived in Manila in 1866 for a six-year stint of science teaching at the Ateneo Municipal. He soon found himself an interested assistant of Colina and the following year his successor in the Me-

⁴ Fathers Secchi and Perry are even more famous for their contributions to solar astronomy.

teorological Observatory. The appreciative response of the Manila community to the observations published by the Jesuit scholastics, Colina, Nonell and himself, encouraged him greatly and indicated to him the need of a man to dedicate his life to this work.

Colina, returning to Europe for theological studies in 1867, carried with him ₱6000 collected from Manila friends for the purchase of the Father Secchi Universal Meteorograph, at that time the latest and best weather instrument available for continuous recording. When it arrived from Paris in 1869, Father Faura showed his technical skill by assembling it, despite the careless omission of an instruction chart.

This instrument gave a new importance to the Observatory and its service, so much so that, though Padre Faura had gone to Europe for his studies in theology, the many friends of the Observatory collected ₱7,542.00 to erect a new structure for its work atop the Mission House at Anda and Arzobispo Streets. The history of the Observatory by Father Masó lists the donors and their contributions. It is interesting to note there many familiar names still connected with the work of the Ateneo and of the Observatory. Further contributions that came from friends in Manila and even in Hong Kong in 1880 — for they too benefited from the weather observations—amounted to ₱1,260.00, to be used for additional scientific instruments.

During Father Faura's absence from Manila (1871-1878) five Jesuits succeeded one another in the work of the Observatory. Their main task was gathering daily data for the records. This fine mass of information was to prove of great value to Father Faura when he returned as Director in August of 1878.

Father Faura got back to work with great enthusiasm, continuing the weather observations and publishing a monthly Weather Bulletin. Analysis of the data gathered during his long absence enabled him to predict the arrival on July 7, 1879 of a serious typhoon. This was the first official storm warning in the Far East and its value was immediately recognized; places which received the warning late suffered great damage, places which received the warning in time to take precautions

suffered little. From that time until curtailed by the Japanese occupation, this Manila Observatory typhoon-warning service was an important part of the Observatory's work.

Earthquakes too have long been familiar dangers in the Philippines, and very early the Observatory interested itself in them. When a series of severe quakes rocked Manila in 1880, Padre Faura released his observations to the public and to the municipal authorities. This pioneering effort happened to coincide with the beginning of the study of earthquakes in other countries and put the Manila Observatory in the front rank of geophysical research.

The service of the Observatory was appreciated to such an extent that in April 1884 a Royal Spanish Decree set it up as the Central Office of the Meteorological Observatory of Manila. Secondary stations were provided for and governmental regulations given for personnel, salaries and expansion. After three months a second Royal Decree designated Padre Faura as the Director of the Observatory.

The consequent expansion of the work soon showed the inadequacy of the Observatory building then in use. This led to the decision to move it to a new building in Ermita where, besides the two already operative divisions, there was added a Magnetic Division two years later, that is, in 1888.

The magnetic instruments for the new Division were brought in 1887 by Father Martín Juan and, thus equipped, he started off in his researches with great eagerness. He was soon occupied with a proposed national survey in the field of terrestrial magnetism. His Observatory work, however, had barely gotten under way when a deadly fever brought him down on July 9, at 38 years of age, just after his arrival in Agusan from southern Mindanao. He had nevertheless started the work well: in January of 1887 he had initiated in Manila the first series of absolute measurements and he had also begun the erection of a permanent Magnetic Observatory building. Completed, this building was perfectly effective until 1904 when the Meralco Electric Streetcar System invaded the Ermita area with its high-power lines. These interfered with the magne-

tometer readings and rendered observations unreliable and further work useless. It took another six years before a new Magnetic Observatory was finished at Antipolo, not far outside Manila. There the work continued without interruption until halted by the last war.

Astronomy also interested Padre Faura. Even as a scholastic, he had accompanied two other scholastics on a solar eclipse expedition to the Celebes in 1868. Despite his intense desire to see his telescopes in operation, it was his successor, Father Algué, who was destined to carry out his plans. Together they had worked long on the details of the project, visiting many European observatories and in 1890 placing an order with Merz in Germany for a nineteen-inch telescope.

By 1896 his failing health made it evident that Father Faura's career as the Director of the Manila Observatory was closing. He chose the Ateneo in Intramuros for these last weeks of his life, just at the time when the Filipino revolutionary movement was in progress. Within a month he came to the end, on January 23, 1897.⁵ The troublous times made his burial at San Ignacio church a very simple and quiet affair, for few friends had learned of his illness and death. Father Faura never knew how permanently Manila remembered him, for it was immediately after his death that the City Council, recalling that it had honored him in 1880 with the title of **ADOPTED SON OF MANILA**, now further honored him by attaching his name to the street on which his beloved Manila Observatory was located.

⁵ "The death of Padre Faura at the early age of fifty-six was not divorced from the circumstances of the times" (Manuel Peypoch, S. J., "Oración Funebre" in *CULTURA SOCIAL*, July 1931). D. Román Trinidad personally told Father Doucette the following incident. Though Padre Faura went on the eve of December 30 to visit Doctor José Rizal, because of his weakened condition he could not be at Bagumbayan when his friend was shot. But he asked D. Román Trinidad to assist him to the roof of the Central Tower. As the shots rang out in the still morning, Padre Faura wept bitter tears for his friend and for the great mistake that was made. In less than a month he followed José Rizal into eternal life.

VI PADRE ALGUE 1897-1925

One week after the death of Padra Faura, Father José Algué, the former assistant director, took office as the new Director. It was January 29, 1897, the eve of deep political upheavals in the Philippines. Through these dangers Father Algué expertly guided his charge. He made the transition from Spanish governmental control to American peacefully yet with honor, and kept the Observatory's position intact, even increasing its prestige during the twenty-seven long years of his active leadership.

When on a star-lit February evening in 1899 Father Algué stood at the eye-piece of his new telescope, the first to have such a view of the heavens over Luzon, nine years of planning, studying and building for that hour lay behind him. He remembered vividly, then, the years with Padre Faura in Europe, the profitable visits he had made to observatories in Rome and Spain, the pleasant time of his astronomical studies under Fathers Hagan, Fargis and Hedrick in Washington. As the Observatory's representative he had attended International Congresses for Meteorology and Astronomy in Paris and rubbed shoulders with the leaders in the fields, had been present too at the 1893 Columbian Exposition in Chicago. All this combined with study had prepared him well for the new work into which he was to lead the Observatory.

Nine months earlier, in May 1898, such a favorable issue could not have been foreseen. The Spanish-American war raged through Manila and dashed against the Observatory. The Spanish soldiers assigned to guard it defected; Filipino refugees streamed into the compound for safety. Father Algué found himself a lone protector at the gate, pleading first with Filipino revolutionary soldiers, shortly afterwards with khaki-clad Americans who had come ashore after Admiral Dewey's victory over the Spanish squadron at Cavite. For despite the cautions of the Jesuit Superior about the dangers inherent in the embattled position of the compound, Fathers Algué and Doyle and four lay-brothers stuck to their post.

The tide turned soon. From May to mid-August the Observatory was visited by nearly all the officers of the foreign

ships blockaded in Manila Bay. They all knew of the Observatory's weather work and had come to express their gratitude. The universal praise got to Admiral Dewey and resulted in a commendation from him of the Observatory and an order for its protection from bombardment.

In November Father Algué was invited to visit the Admiral aboard his flagship, the *Olympia*, then stationed off Cavite. Dewey promised to do all he could to protect the Jesuits in Mindanao and was in every way markedly courteous. In fact most of his time aboard, Father Algué reported, was spent listening to the Admiral's praise of the Observatory, while one of Padre Faura's barometers looked benignly down from the bulkhead of the commander's cabin.

Professor Becker, a friend of both Father Algué and Dewey, had arranged this triumphal visit. He now suggested to the Admiral the advisability of continued governmental support for such a valuable work as that of the Observatory and Dewey concurred. Later, at the instance of Major-General Otis, Father Algué submitted a report to Washington on Observatory costs. The report was looked on with favor and final approval of support by the American government came through on April 13, 1899. The Observatory was to carry on with all four of its divisions, the astronomical, the meteorological, the magnetic and the seismic.⁶ Not an hour's work was lost; Father Algué was able to write: "We were supported by the Spanish government till the end of February 1899; and we began the new arrangement in the beginning of March."⁷

⁶ W. C. Repetti, S. J., *op. cit.*, p. 17. In 1899 Father Algué wrote a report to the United States, in part as follows: "Eight Jesuits are engaged in the observatory work at present, five priests, two scholastics, one lay brother.... Perhaps it will interest you to know the arrangement in particular... General Director, José Algué, S. J.,...; Librarian, Marcial Solá, S. J.,...; Astronomical Department: José Clos, S. J., Director...; Meteorological Department: Baltasar Ferrer, S. J., Director...; First Observer, José Coronas, S. J.,...; Magnetic Section: John Doyle, S. J., Director, and Sub-Director of the Observatory,...; Seismic Department: Mariano Suárez, S. J., Director..."

⁷ W. C. Repetti, S. J. *op. cit.* p. 17.

Two members of the Schurman Commission appointed in January 1899 by President McKinley, Dean C. Worcester and Charles Denby, had worked hard for the new arrangement. They had recommended approval of the scheme of organization and had suggested that an independent Philippine Weather Service, patterned after that of the United States, be established with Father Algué as Director and the Manila Observatory as central office. This Philippine Meteorological Service began its official existence on May 22, 1901 "by authorization of the President of the United States".

Meanwhile, the Schurman Commission had discovered the immense deposit of scientific data collected since 1859 by Jesuits throughout the Philippines and now housed at the Observatory. The Commission, Dean Worcester especially, urged Father Algué and Father José Clós to go to Washington and help to edit the material. They did so and the result was the publication by the Government Printing Office of the two volumes entitled *EL ARCHIPIELAGO FILIPINO* together with the *ATLAS DE FILIPINAS*. These volumes were incorporated into the official report of the Schurman Commission. They still provide a wealth of scientific information about the Philippine Islands in the fields of geography, ethnology, culture and history and contain too the results (up to the year 1900) of the Manila Observatory's researches in climatology, seismology and terrestrial magnetism.

With the new era of American control more English-speaking Jesuits came to the Philippines and the Observatory got its share. Father John Doyle, the son of a British army officer, had of course been a member of the staff since 1890. Now, in 1901, the first American Jesuit came. He was Father William H. Stanton, a scholastic still engaged in his theological studies, and he was assigned to study in private while working at the Observatory. He became the first American Jesuit to be ordained in the Philippines. In 1902 Father Robert Brown came from England and Father George Zwack from Buffalo, N. Y. Most of these four remained only a few years and the mainstay of the Observatory continued to be the Spanish Fathers. These were Fathers Saderra Masó, Baltazar Ferrer, Saderra Mata, Juan Comellas, José Coronas and, of course, Father Algué.

After the war these Fathers found themselves in a difficult political situation; they were Spanish subjects who were in the employ of the victorious American government. In 1901 their own government informed them that they would automatically forfeit their Spanish citizenship if they continued in their Observatory posts. They all chose to continue, a sacrifice willingly made for science and for the Philippines.

Under the American regime one of the first improvements made by Father Algué was the creation of secondary weather stations. This involved long organizational labor and, since the new posts were spread widely through the islands, considerable travel. Shortly the new stations—giving almost complete coverage—began sending reports from Mindanao, Cebu, Leyte, Panay and many points on Luzon.

At the time of his golden jubilee in the Society of Jesus, on July 17, 1921, Father Algué could look back on an impressive list of achievements. He had won American support for his plan to expand the weather service and render it more useful; was the one who set the official time for Far East chronometers; had covered the islands with hundreds of secondary weather stations; had located seismic recorders in various earthquake and volcanic regions; had seen his own barocyclometer installed as regular equipment on all inter-island ships and many foreign ones. The barocyclometer was highly effective in providing storm warnings until the widespread use of radio made it less essential.

When the Jones Bill, designed to give greater autonomy to the Philippines, was passed in 1916 by the U.S. Congress, Father Algué cooperated wholeheartedly. Filipinos at this time filled all posts of the Observatory except the executive ones. Now, with complete Filipinization in view, Filipinos were sent to the States for the requisite advanced training.⁸

By the early nineteen-twenties every department of the Observatory had become sizable and important. Father Algué

⁸ In a letter to Governor General Burton Harrison, February 23, 1921, Father Algué reports on the Filipinos sent to the States for training. All of them returned before that training was completed, many because of sickness.

himself had a world-wide reputation and his meteorological work had long been known and valued in the corridor from Japan to Australia particularly. But he was getting old and his eyesight was failing. When he left Manila in 1924 for a visit to Spain, it was soon evident that he would not return.

In 1925, from Tortosa in Spain, Father Algué sent in his resignation. Governor General Leonard Wood's official acceptance of this resignation shows clearly the regard in which Father Algué was held both for his work and for himself. He died on May 27, 1930 at the age of seventy four. Governor Wood's letter follows.

OFFICE OF THE GOVERNOR GENERAL
of the Philippine Islands

November 16, 1925

Dear Father Algué:

I was deeply grieved and distressed to learn from your letter of August 21, 1925, that your condition of health is such that you will probably not be able to return to the Philippines. I am hoping that your condition will improve and that you will be able to come back to us. It will be difficult if not impossible to fill your position, a position which you occupied with such distinction for 5 years under the Spanish Government as Subdirector and Director of the Manila Observatory and as Director for 27 years under the American Government. Your services have brought fame and distinction to the Philippines Weather Bureau. You have rendered invaluable service to humanity on the seas, a service which has saved many a ship and a vast number of lives. You have won the respect and lasting affection of the people of the Philippine Islands and indeed of all who have come in contact with you.

I accept your resignation, to take effect January 1, 1926. I do so with the greatest reluctance and only because you request it for reasons of health.

I note what you say about Father Michael Selga, whom upon your recommendation I shall appoint as your successor, and shall do all I can to make his conduct of the Observatory a success.

Again, Father Algué, with expressions of the highest appreciation of your splendid work for humanity, and with deepest regret that ill

health will prevent your return to the Philippines, I am, with every best wish and kindest regards,

Sincerely yours
(Sgd) LEONARD WOOD
Governor General

Rev. Father José Algué, S.J.
Colegio Máximo de S. Ignacio
de la Compañía de Jesús
Barcelona, Spain
LW COPY FOR:

The Director of the Weather Bureau.

VII FATHER MIGUEL SELGA 1926-1945

Father Algué studied astronomy in the States, at Georgetown Observatory, but even during his stay there he was always preparing for work in a Manila that was Spain's. Father Selga, however, knew that his lifework would be in a new Manila, one in which English was spoken as readily as Spanish, one already accustomed to control by a different government and already assured of eventual national independence. So he went early to the States, spending five years there in completion of his Jesuit course of studies and in astronomical training in eastern and western observatories.⁹ He went far towards mastery of English and came to feel at home with his new friends and their way of life.

Further studies beyond his year at the Lick Observatory had been planned and American citizenship was only one year away when Father Selga was suddenly summoned to Manila in mid-August of 1915. Demands of World War I had called Father Robert Brown back to England and the new man was needed.

Four Jesuits of the Observatory met Father Selga aboard ship when it arrived in Manila Bay on October 7, 1915. These

⁹ After finishing his Jesuit studies in June 1913, Father Selga used his year until August 1915 to great advantage in the following Observatories: Georgetown Observatory, Washington, D. C.; Harvard University Observatory, Harvard, Massachusetts; Yerkes Observatory, Williams Bay, Wisconsin; Lowell Observatory, Flagstaff, Arizona; and Lick Observatory, Mount Hamilton, California. He spent a year and a half at the Lick Observatory before sailing for Manila.

were Father Algué and his veterans, all of whom were to be long and intimately associated with Miguel Selga. There was Father Saderra Masó, engaged in seismological work since 1890 and later in magnetic work also; Father José Coronas, the meticulous recorder and analyst of the weather observations gathered from all over the Philippines; and Father Juan Comellas who had studied at Georgetown in 1905 and had since 1906 been in charge of the important time service in the Astronomical Section. For eleven years, until his appointment as Director in 1926, Father Selga was to work with this team as the secretary and assistant director and it was their careful interest and their experience which prepared him for the directorship he was to hold for nearly twenty years.

Under Father Selga as director the Observatory continued to enjoy great prestige and to contribute service of great practicality. This was in large measure due to the efficiency of Father Selga's administration. He was efficient despite innumerable outside calls on his time. He was Professor of Meteorology at the University of the Philippines from 1924 to 1927 but had then to submit his resignation to President Rafael Palma because of his appointment as director. He was in constant demand for lectures and speeches and between 1917 and 1935 alone wrote some 183 articles on scientific matters.¹⁰

Such a dynamic personality found it hard to limit his work to pure research. He felt that his position demanded his very presence in times of catastrophe, when volcanic eruptions or earthquakes had caused panic. His presence, he believed, quieted fears and encouraged provincial officials in their work of salvage and reconstruction. This personal interest in everyone's safety made him a familiar and popular figure. Many will always think of Father Selga as they saw him on October 19, 1934, walking to the Post Office on Plaza Lawton through violent typhoon winds and rains, his trousers rolled to the knee, his feet in *bakys*—to make sure that the storm warnings were telegraphed through to provincial centers. Such personal involvement is not usual for a man with a payroll of two hundred and sixty-five employes in his immediate office. Yet despite

¹⁰ This list is found in PUBLICATIONS OF THE MANILA OBSERVATORY.

the heavy commitments of his professional life, his dedication to priestly ministry was equally total. Many called for him and him alone when they were dying and he always responded promptly and generously.

The Spaniards he had grown up with in the Observatory one by one died or retired. Their replacements were younger men and nearly all Americans. In September of 1926 Father Charles E. Deppermann came, after finishing a doctorate at Johns Hopkins and special training at the University of California.¹¹ He took over as chief of the Astronomical Division until the retirement of Father José Coronas in 1932, when he was transferred to weather work. Father Francis Heyden then was assigned to the Astronomical Division and the time service, early preparation for his present post as director of the Georgetown Observatory in Washington. Fresh from training at the same Observatory and also at the Naval Observatory, Father Edmund J. Nuttall arrived in 1934 to be a member of the time service staff for the next four years. Before his ordination Father Leo Welch had spent two years at the Observatory. He now returned after his priesthood and meteorological studies at the Massachusetts Institute of Technology to work in the Astronomical Division until the last war.

The last Spanish Jesuit in the pre-war Observatory (apart from Father Selga) was Father Miguel Saderra Masó. His thirty-seven years at the Observatory—six as a scholastic and thirty-one as a priest—made him the veteran among the Jesuits. But one of the lay workers, an observer in the Magnetic Division, outdid Father Masó's record. Mr. Cesáreo Dulueña made all the absolute measurements, the reduction of observations and calibrations, for the fifty years before 1941.¹²

Father William C. Repetti joined the Observatory staff in December of 1928 with a doctorate from St. Louis University. While there, his observations had led to the discovery of a special layer in the earth's interior which is now known as the "Repetti discontinuity." Until the Japanese interrupted his

¹¹ PHILIPPINE STUDIES V (1957), 311 ff.

¹² Repetti, *op. cit.*, p. 27.

work, Father Repetti continued as chief of the Seismic and Magnetic Sections.

The pre-war chief of the Meteorological Division was Father Bernard F. Doucette. After two years in the Observatory as a scholastic back in 1925-26, he returned as a priest in 1933, having studied weather at the Massachusetts Institute of Technology. He immediately took over the work of the Meteorological Division as its chief and continued the work until prevented by the war with Japan. Of all the American Jesuits, Father Doucette has been associated longest with the Observatory¹³ and is still a very active member of the staff of the post-war Observatory, although he has shifted his energies to seismic work since weather observations are no longer a part of the observatory research program.

The ten years before the war were very productive years for the Observatory. Father Selga continued his scientific and historical writings and Father Repetti's material for his publications about earthquakes was chiefly gathered and critically analyzed during this time. This was the period when Father Deppermann introduced frontology to tropical meteorology "to open up a new era in the sphere of typhoon researches."¹⁴

VIII WAR

December 8th, 1941 sounded the signal for the agony of war for the nation and for the Manila Observatory as well. The Spanish-American War had left the Observatory unscathed, but this war was not to be so kind. Before the liberating forces arrived at Padre Faura Street, the material part of the Observatory was a thing of the past; the destruction of her instruments, records and buildings was total. Father Selga, as if counting the days of a dying child, has told us that the period of her

¹³ However, Father Deppermann from 1926 until his death in 1957 was continuously assigned to the Observatory.

¹⁴ Dr. Kazuo Ogasahara said this. *PHILIPPINE STUDIES* V (1957), 328.

death agony was three years and sixty-three days, every day of which became his own pain.¹⁵

As the Japanese poured into Manila, a paralysis set in for the activities of the Observatory. The Central Office was cut off from contact with its more than 300 stations, both official and voluntary, throughout the archipelago and beyond. With its nervous system completely severed, the Observatory could not function, could not give its warnings of approaching typhoons, could not conduct its investigations. For a time the Fathers—on the proper plea that the Observatory was a private organization—were allowed by the Japanese officers to continue to occupy their offices. But even this cramped and restricted situation lasted only until July of 1943, when the building was taken over for a Japanese military hospital. The four American Fathers: Deppermann, Repetti, Doucette and Welch, were sent off to internment at Los Baños or Santo Tomas. Father Selga, being Spanish, sought shelter with the Augustinian Fathers in the Walled City.

The complete destruction, against which all had prayed and striven, followed. On the afternoon of Friday, February 9th, 1945, two employes of the Observatory were eyewitnesses to this criminal deed. Four Japanese soldiers ran through the rooms sprinkling gasoline on the precious telescope, on the seismographs, the time instruments, the weather recorders, the library, stocked with 20,000 volumes and files filled with irreplaceable records gathered during over 80 years of observation; they missed nothing that was scientifically precious. That evening neighbors saw the clouds of smoke rising from the general conflagration. In the east wing nothing was spared. The deliberate destruction was complete. Yet the shelling was still to come. On the following Wednesday, the adjoining building went up in flames. Then there was quiet; the agony was over.

Father Selga came on March 7th, to contemplate the ruins through eyes filled with tears welling up from a breaking heart.

¹⁵ Miguel Selga, S.J., *TRAGICO FIN DEL OBSERVATORIO DE MANILA*, Imprenta Revista "Iberica", Barcelona. This 32-page double-columned brochure with pictures vividly narrates the events of the war years.

How could he have felt otherwise? Amid the debris of stone and twisted iron, in the dust and ashes at his feet, were all that remained of his years of labor: original records of weather, seismic and astronomical observations gathered by more than 200 observers, his own published and unpublished material; now forever out of reach. This certainly appeared to him to be total death without hope of resurrection.

IX FATHER CHARLES E. DEPPERMAN 1945-1957

The Observatory ashes had scarcely cooled when Father Deppermann, released from his Los Baños concentration in March, was winging his way to Washington, on the order of General MacArthur. His position as an international authority on Far East weather had not been forgotten and he was needed at the Pentagon for his recognized experience, opinions and knowledge of the Philippines and its weather conditions. Despite those difficult days of war-time pressure, a dream of rebuilding the Manila Observatory was forming in his mind.

He knew that there was not anything material left in Manila for him to start to build on, but there was that same spiritual inspiration, that same scientific interest that had built the famous reputation for the Manila Observatory after a start in a tiny pigeon coop in Intramuros. The development of and research in basic geophysics was becoming more and more important, being needed to effect preservation of life and property as well as for its purely scientific value. For fourscore years the Observatory had played its role in the achievement of both these goals and could now do so just as much as it had in the past. Science is like that. No matter how much is learned and put to practical use, the more there is to learn and use.

Despite an utter lack of facilities, Father Deppermann, with the approval and encouragement of his Superiors, began at once to plan for a restored Observatory.¹⁶ The problems were many: the location, the selection of a program, the procuring of instruments, the preparation of a staff. Persistent

¹⁶ Charles E. Deppermann, "The Manila Observatory Rises Again", *PHILIPPINE STUDIES* I (1953), 31-41.

efforts, with much prayer, won the day. The Observatory was launched anew at Mirador, Baguio, with two divisions in operation, one old and one new. The old division, seismology, was put in charge of Father Bernard F. Doucette; the new, the ionosphere division, was assigned to Father James J. Hennessey. These two Fathers joined Father Deppermann in May 1951, even before the buildings and equipment for the two divisions were ready for operation. This long awaited day came in the following March, 1952. Meteorology, the principal work of the prewar Observatory, was not resumed since the Government Weather Bureau had by that time been established in Manila. Any efforts of the Observatory in this line would be needless duplication.

When the recorders, both seismic and ionospheric, were functioning properly, work on the main building in Baguio got under way. On the feast of St. Stanislaus, November 1952, the main Observatory building was blessed by Bishop W. Brasseur of Baguio. Now for the first time in its long history, the Observatory staff became a separate religious community with its own residence.

By this time, Father Deppermann had definite plans for a solar program with visual and photographic records. This was to be linked with the ionosphere studies because solar activity is principally responsible for variations in the electrical condition of the ionosphere. To study the sun required the use of a spectroheliometer as the most desired instrument. Modifications in design (making of it a vacuum solar spectrograph with a Lyot filter for visual examination of the sun) and other considerations have thus far delayed the operation of this part of the program.

The solar research program got under way, however, when Father Richard A. Miller arrived on January 29, 1957. Before becoming a welcome member of the growing staff, he had finished his doctorate work in physics at Fordham University and his post-doctoral studies at the world-famous McMath-Hulbert Observatory of the University of Michigan. He had been in close touch with Father Deppermann since 1955 about

the design of the solar spectrograph instrument and immediately after his arrival developed his solar program for Ba-guio and played his part in the Observatory's work of co-operation during the International Geophysical Year.

Daily photographs — with a few exceptions — were taken of the sun's surface to record the number, type and position of sunspots and other features of the sun. When the earth satellites were launched, Father Miller took over their visual tracking. This was rewarded with fairly frequent sightings which were highly appreciated by scientists interested in this work.

In 1952, Father Vicente Marasigan, after his scientific studies at Fordham University in New York City and at the Georgetown Observatory in Washington, began to assist in the Seismic Division while continuing his preparation for other Observatory work. Need for science teaching in the Jesuit Seminary called him away, after a short period of work with the staff. In 1957, with the approach of the International Geophysical Year, he resumed his Observatory work in the Ionosphere Division. His special interest was the theoretical discussion of characteristics in the upper portion (the F-region) of the ionosphere. Much of his published work has appeared in the *Journal of Atmospheric and Terrestrial Physics*, one of the leading international scientific journals in this field.

Towards the end of 1956, the worsening condition of Father Deppermann's health suggested that he be relieved of the burdens of directorship. His condition required long periods of hospitalization until, on May 8th, he went to his reward. His had been a full life, dedicated without reserve to his great love — the Manila Observatory.

X THE FUTURE

The success of any organization depends on the individual men in it. This has been true in the past history of the Observatory and will be true in its present history. Fortunately, there are capable and enthusiastic men getting ready

for the future research work. The first of those chosen for the Observatory staff are Father Francis Glover and Father Sergio Su. Soon, after many years of preparation abroad, they will give themselves to the many geophysical problems peculiar to the Philippines.

A trained and competent personnel is more important for scientific progress in both basic and applied research than any other factor, but physical details (funds, building, equipment, location) are important too. Present plans call for establishing expanded facilities in the Manila area. While Baguio as a location has admirable advantages for an observatory, the decision has been reached, after much deliberation and consultation, to move the principal part of the Observatory back to the Manila area. It is felt that there the Observatory can cooperate more effectively in the development of good science and good scientists in the Philippines. An active group of research scientists working conveniently near a university campus should have a stimulating influence on select science students. This educational advantage of the transfer to an academic environment has received the approval of many serious and competent scholars.

By moving the Observatory with its staff of doctors in physics and its other scientifically specialized personnel into the metropolitan area, the opportunity for scientific cooperation with other scientists at the University of the Philippines, the Ateneo de Manila, the Atomic Energy Commission and other scientific institutions is greatly increased. Top-level seminars among experienced and eager scientists are bound to result, provoking further scientific productivity. The Observatory does not come empty-handed to this potentially cooperative venture. It makes available to interested scholars all its new aids: its fast-growing scientific library, its specialized instruments, its learned and energetic staff.

The Observatory's scientific library has been increasing rapidly in the number of its books and periodicals, both those that are basic in physics and in mathematics and those that are more specialized. Many of these books and current per-

iodicals will supplement the literature found in other Philippine libraries. The Observatory library, though private, as the entire Observatory has always been, is expected to be of use to qualified students and scientists in their research studies.

Besides its complete equipment for carrying on its present program of seismic, solar and ionospheric research, the Observatory has many highly technical instruments in preparation for its new installation. This equipment will be in the hands of an experienced staff, but it will also be available to scholars and research persons who may choose to cooperate in scientific ventures for which the equipment may be adapted.

With these plans for the future there is every confidence that the Observatory will continue to fulfill, under God, its part in the scientific and technological development of the Philippines both for the universal unfolding of scientific truth and for the practical application of that truth to better and more secure living for the Filipino people.