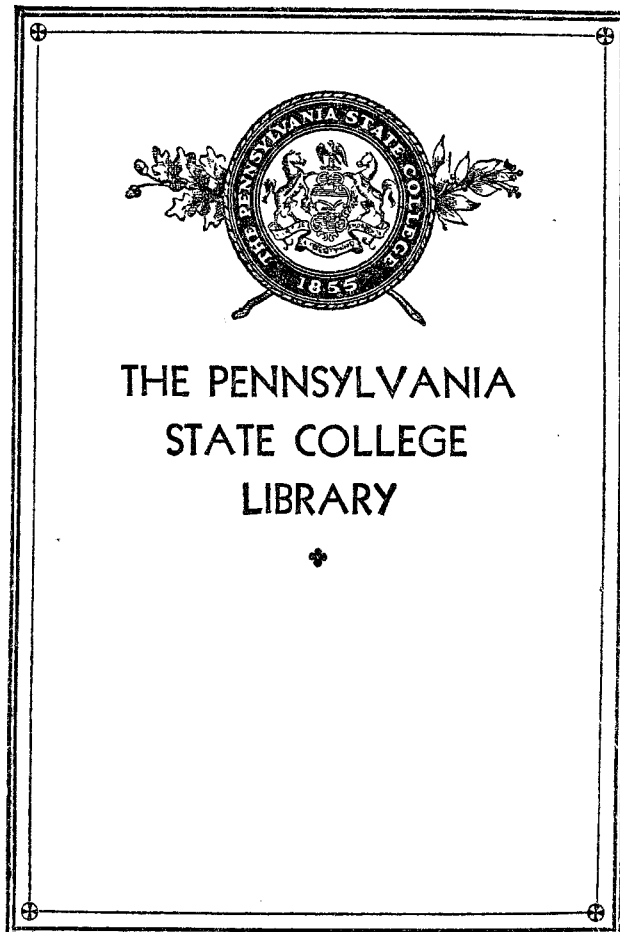


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Stephen Beach

March 5, 1955

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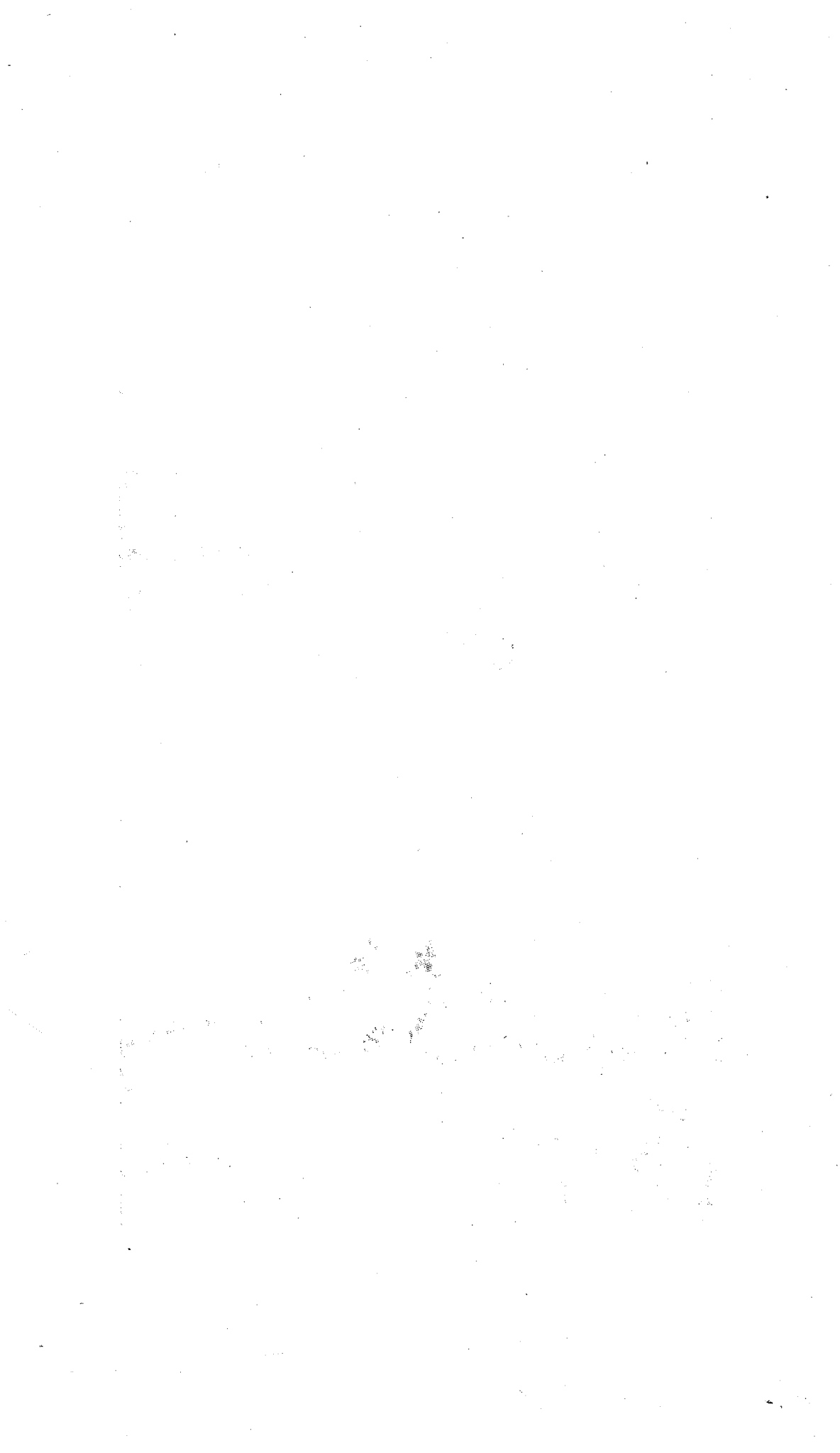


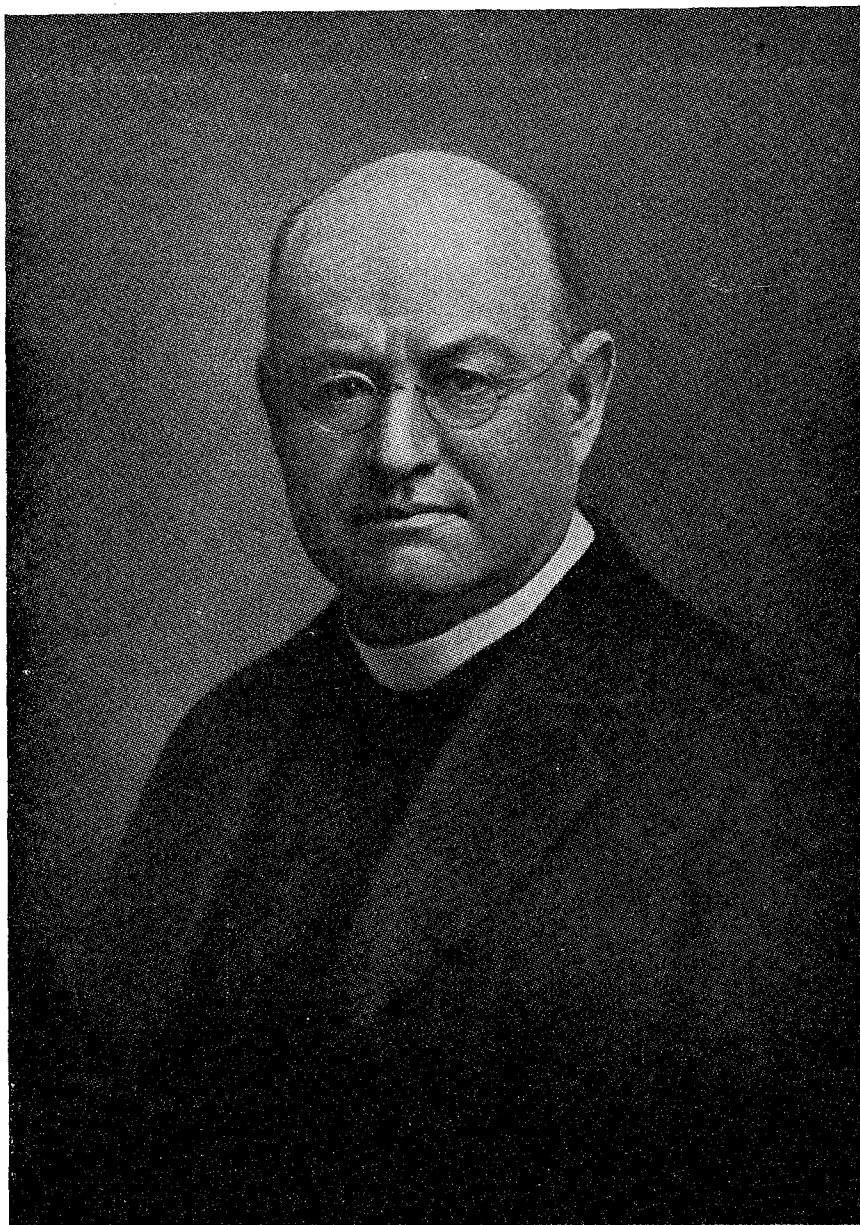
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REV. JOSEPH MURGAS

Priest-Scientist







Rev. Jos. Murgas.

REV.
JOSEPH MURGAS

PRIEST-SCIENTIST

His Musical Wireless Telegraphy
and The First Radio



A Biography
by
STEPHEN J. PALICKAR

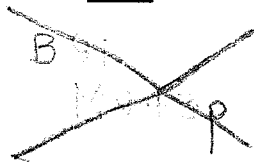
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Cecil L. Anderson
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Dedicated
TO THE
LOVING MEMORY OF MY PARENTS
THE THOUGHT OF WHOM CONTINUES
TO LIGHTEN MY BURDENS,
FILL ME WITH PRECIOUS RECOLLECTIONS,
AND
BRING ME NOBLE DESIRES.

—*Stephen J. Palickar*

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INTRODUCTION

I am inexpressibly delighted to introduce this biographical work on Rev. Joseph Murgas who, through the inscrutable will of fate was deprived of his proper place in the scientific annals of history. While he did not win world acclaim as pioneer inventor in the realm of electrical science equal to that enjoyed by Marconi, the success of his experiments in wireless telegraphy and radio nevertheless proved he possessed the ability to do so. It was only the lack of funds and proper support that deterred him.

Still, whatever Murgas did accomplish remains worthy of our esteem and admiration. In addition to his scientific and cultural accomplishments, Father Murgas proved himself an exemplary priest serving as a beacon of harmony which truly exists between Faith and Science.

It is indeed fortunate that Murgas did not remain in Slovakia, the oppressed land of his birth, where his talents would undoubtedly have been smothered or irretrievably lost to the credit of his people.

In the United States where every citizen of our largest as well as smallest racial group is privileged to acknowledge the source of his ancestry, I take pride in pointing toward Joseph Murgas' contribution to the cultural and scientific progress of this country. And in this respect the story of Murgas' life has been long overdue.

Mr. Stephen J. Palickar, author of this splendid biographical volume needs no praise since his writings and researches in the various fields of culture and science aptly demonstrates his ability to carry out the task this book required. There is no better praise for the author than a good book, and in this instance further comment would prove

quite superfluous. Nevertheless I am happy to commend this biography to the reader because it is objective and factual, and while the author makes no outlandish claims for his subject, we are grateful to Almighty God for deigning to bless us with a brilliant genius in the person of Rev. Joseph Murgas.

✠ THEODORE G. KOJIS, O. S. B.

Abbot

St. Andrew's Abbey,
Cleveland, Ohio.
July 4, 1950

BY THE SAME AUTHOR

* * *

SLOVAKIA OF TODAY
(A Lecture at the Philosophy Hall)
Columbia University

SLOVAKIA
FROM HUNGARIAN DESPOTISM
TO ATHEISTIC CZECH COMMUNISM

and other works

P R E F A C E

As a servant in the vineyard of Christ, a humanitarian, and a man of science, Rev. Joseph Murgas' immutable characteristic was his intense love of truth and accuracy. A conspicuous manifestation of this quality in his life is traced to the early days of his priesthood when, as an austere art critic in his native Slovakia, he pointed to the false interpretation of a painting in the Hungarian House of Parliament by a famous Magyar artist who attempted to portray a certain historical event in the life of two nations. The circumstances which followed the daring performance of Father Murgas brought him to America where, as a priest, he continued to spread the truth of the Gospel to his countrymen, a task he was aptly qualified to fulfill because of his sympathetic understanding of the human heart and a firm belief in the immortality of the soul.

His keen intellect and the blessing of his theological training helped in providing him with a sound scientific grounding which not only added to his lore, but also proved beneficial to civilization. In this category his fertile brain enabled him to emerge as a pioneer inventor in the field of wireless telegraphy and radio, and as a result of his work in this realm of science, he gained an aura of glamour which since has been denied him.

The purpose of this book is to re-ignite what smoldering embers remain of Father Murgas' once flaming success in the electrical sphere of human progress, and it is hoped that this well deserved tribute will not only find permanent repose in the annals of history, but will also serve as an enduring monument to his genius.

In addition to his religious, social, artistic, political and naturalistic accomplishments, Father Murgas' creative ability led him to invent a new and faster method of wireless communication known as the "Tone-system" by which,

instead of the "dot" and "dash" spark impulse used in the Morse method, a musical effect arranged in different tones representing each letter of the alphabet was used to dispatch messages by wireless telegraphy.

Rev. Joseph Murgas further delved, and was the first to succeed in transmitting voice sounds by means of wireless which contributed toward making his device the forerunner of present day radio.

In this connection, the whole duty of a biographer, I believe, is to give a faithful account of the facts about his subject and to interpret them as they represent the man himself. Every effort to render a complete record of the life of Rev. Joseph Murgas has been fastidiously carried out, but phases, relationships, and events which were certain to contribute nothing to the moulding of his life work have been omitted or merely outlined. Facts, not vituperations, truth, not flattery is the guiding principle of this biography, the production of which was a difficult task.

Years of fruitless research was spent due to the long interval since the height of Father Murgas' accomplishments, and considerable time was required to verify data of important events in his life.

His birth, for instance, was listed under six different dates, two different months, and two different years. His arrival to America was recorded under four different dates and other features of his career were found in a conglomerated state. Misrepresentations and distortions were frequent all of which necessitated a voluminous amount of correction.

Since Father Murgas left no record of his life, his letters, notes, correspondence, and papers were lost, strayed or stolen to the furthest extent, (an assurance of which was given to me by those near him at the time of his death) my research naturally led me into remote recesses and dark cor-

ners of private scientific libraries. The search through Court archives, patent records, musty and crumbling newspaper files reposing in old newspaper "morgues" for years required painstaking endurance. In addition to this, correspondence was carried on with one hundred individuals and interviews were held with twenty-five others.

Finally, I am deeply indebted to the late Col. Ernest G. Smith, former President and editor of the Wilkes-Barre Times-Leader for the privilege of delving through the back files of his newspaper; for the courtesy of his wise counsel during our interview; for the valuable aid gained through his "Parting Shots" column which he devoted on my behalf; and for his untiring zeal throughout it all.

I likewise owe a debt of esteemed gratitude to Mr. Robert W. Johnson, editor of Wilkes-Barre Record, who, through the means of his editorial column brought response of value from readers and helped in other ways.

Grateful thanks is also due to Mr. Thomas Murphy, editor of The Scranton Times who opened his "Personal and Pertinent" column to help in securing information about Father Murgas and enabled me to locate Mr. Gideon Shadle, Father Murgas' chief telegrapher.

I also wish to acknowledge the generous help rendered by Mr. Frank Brookhouser, Columnist of the Philadelphia Inquirer.

Profound gratitude is also due to Mr. Michael J. Vargovich, President of the First Catholic Slovak Union of the United States of America whose untiring zeal on behalf of culture and science helped admirably in the production of this biography.

September 1950
New York City, N. Y.

Stephen J. Palickar

A complete list of acknowledgments will be found at the end of this volume.

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CHAPTER I

THE SECRET OF "AETHER"

It was about one thousand years B. C., when philosophers first advanced the theory of a medium in the form of a substance commonly known as "Aether" which, from its very beginning, became a constant theme for discussion and heated debate as to whether or not it was essential to the transmission of energy from one body to another removed by distance. Since that time man applied himself vigorously to the problem of transmitting his ideas quickly through space — beginning with signal fires, flashing light, swift messengers, signal cannons and other methods used until comparatively recent times. It was not, however, until the dawn of the twentieth century that man was able to witness the introduction into the world of science of that most mystifying yet stupendously valuable discovery — wireless telegraphy, from which radio has evolved, and the succeeding years have been filled with progressive activities in the practical application of this marvel. Since that time the electron, X-ray, radioactivity, the quantum theory, the television, and other startling additions to our knowledge of Nature have in turn impressed their wonders upon us.

In this rapidly changing world, where new discoveries and inventions crowd in upon us with lively succession, we are apt to forget or lose sight of the early pioneering work in wireless transmission by means of telegraphy, the very foundation upon which the magnificent structure of radio art has been built.

In 1888 Henrich Hertz, a German, had experimentally proven that electric waves could be transmitted over considerable distance through free ether, and it was the utilization of these "Hertzian waves" which constituted an epoch in the scientific and commercial world and at the same time

opened the door in what seemed to the ordinary senses an impenetrable wall which limited further progress of human ingenuity in the discovery of the hidden lanes and alleys of the body of nature.

Franklin, Morse, and Bell, each in his own time and in his own way succeeded in breaking through that apparently impenetrable wall that hedged itself about the scientific mind and opened vast possibilities for world progress. Other investigators into the invisible realm of nature have unfolded secrets (so-called) and demonstrated the existence of latent capacities hidden behind the wall that separated what we have always styled the Known from the Unknown.

The flashlights of modern mechanical genius are now directed into the Unknown, and the world is being taught wonderful truths and lessons by practical demonstrations concerning the existence and action of mighty agencies which are housed in the bowels of the Universe.

Wireless telegraphy is the natural outgrowth of the electric spark. It is the root whose fibrillae reach into the innermost and uttermost recesses of the invisible. Its medium of travel is the etheric wave, just as in the material world the steel rails of the railroads are the means of transportation of persons, trains, and merchandise.

What Franklin was to electricity, Hertz was to wireless telegraphy. Franklin sought for force in the atmosphere. Hertz sought for force in the outer spaces of the universe. What Stephenson did for the steam engine, Morse did for modern telegraphy. But each were followed by scores and perhaps hundreds of improvers who added the products of their genius, skill, and insight to the general perfecting of facilities for the use of steam and the electric current.

Today, as in the past, new delvers into Nature's secrets are calling to the world to come and see the practical out-

HIS MUSICAL WIRELESS TELEGRAPHY AND THE FIRST RADIO

working of etheric or electric transmission be it wireless telegraphy, radio, or television, and all because of a hidden force which holds the universe together.

The original purpose of wireless telegraphy was to use the so-called Hertzian waves for the ostensible transmission of intelligence. In the past as in the present, the principal underlying wireless telegraphy is what is known as "oscillation." The method is to produce oscillatory electric or etheric waves. To this end, transmitting and receiving points - or stations - had to be established.

However, when Marconi startled the world with the first practical demonstration of his system of wireless in 1895, there were a number of other scientists before and during this event who made wireless the subject of profound study. Amongst them was Rev. Joseph Murgas, a native of Slovakia (a small but ancient country in the heart of Central Europe) who migrated to Wilkes-Barre, Pa., where he succeeded in inventing and perfecting his own method of wireless transmission known as the "Tone system" later established as "The Murgas System of Wireless Telegraphy."

JOSEPH MURGAS, HIS FORBEARS AND CHILDHOOD

The parents of Joseph Murgas were born and grew up together in the same Slovakian village, and while attending a spring festival, the focal point of social activity for all Slovak youngsters, they met and fell in love with each other. Thus were Mary Smida and Jozef Murgas endeared to one another as they set forth with the blessing of the marriage feast of Cana to guide and guard them throughout their course of marital life.

On the 17th day of February, 1864, almost to a day when Clark-Maxwell first demonstrated the electro-magnetic theory of light which proved an important factor in the discovery

and invention of wireless, Joseph Murgas first saw the light of day in the little village of Tajov (Jabrikova), a short distance from the city of Banska Bystrica, Zvolenska County, Slovakia. His parents, of poor peasant stock, realizing their own limited advantages in childhood, began to save while planning for his future.

The village of Tajov, snuggled in a thickly wooded valley had a small brook where little Joseph passed his early life trying for that ever elusive catch, and it was there that he acquired a fascination for the art of fishing to such an extent that in later life he invented a special "reel" to fully satisfy his whim as an angler. Joseph's mother, however, had no interest in her son's proclivities as a fisherman and cared less for them. Instead, she hauled him off to school. Home, church and school — these three institutions lapping and overlapping each other with their influence of parents, teacher and the Slovak parish priest of the village, took turns throughout the first twelve years in moulding a sound mind within a sound body while the boy eagerly applied himself to his studies. At this stage his mother began to chart his course in life and forthwith enrolled him at the Gymnasium, an equivalent to a pre-Academic institution in the city of Banska Bystrica. Though unknown to his mother, his natural impulses yielded to art. Drawing and painting held a fascination for him and made him happy. Tinkering with makeshift and electrical gadgets also grew to interesting proportions with him. Nevertheless, in the judgment of his pious mother, a quality inherent in most Catholic Slovak women, he was wasting his time and the hard-earned money of his father. Though young Joseph was destined for the priesthood, he did not as yet fully realize it. Meanwhile heredity endowed him with a deep religious nature which environment reinforced. However, he remained at the Aca-

HIS MUSICAL WIRELESS TELEGRAPHY AND THE FIRST RADIO

demy of Banska Bystrica until 1882 where he finished his classical course, and at the age of 18, after having decided to study for the priesthood, he entered the "Emericanum" at Bratislava the Capital of Slovakia, where he studied for two years and in the meanwhile continued in the pursuit of "private experiment" of electricity and furthered his study in fine arts. This was followed by a long span of terms spent within the walls of Catholic institutions of higher learning and one can understand how his supremely devoted parents had courage to surrender their beloved son to the care of others "so far away from Tajov."

In 1884 Joseph entered the famous institution of learning at Ostrihom, where, in addition to his theological studies he delved into the mystery of electricity and experimented with telegraphy. By special permission from his superior he set up an attic "laboratory" in the Seminary and divided his time between theology, science, and art.

He fully demonstrated his talent for painting when an immediate superior at the Seminary observed that his work contained artistic qualities and forthwith decided to acquaint the Bishop with them by sending one of Murgas' paintings to His Grace the Rt. Rev. Bishop Bende. The Bishop was so enthused and pleased with the work that he arranged for an art course at the celebrated Academy of Arts in Munich where, through industry and fidelity he gained high rank as an art student.

In 1887, after completing his course of instructions at the Seminary in Ostrihom, Murgas returned for further study to Banska Bystrica where he concluded his third and fourth grades of theology, and since his aims were high and his motives broad, he added to his study a knowledge of French, German, advanced physics and astronomy.

ORDINATION TO THE PRIESTHOOD

The greatest event in the young life of Joseph Murgas took place on November 10, 1888 when he was ordained to the priesthood in the diocese of Banska Bystrica in his native Slovakia where he became known as a promising cleric who some day would make a place for himself in the world of arts and science. Following his ordination he was assigned as curate at the parish of Dubova, and a short while thereafter was transferred to an assistant pastorate in Horehron, and from there to Klenovic.

During this time Father Murgas' artistic talent not only improved, but continued to manifest itself to wide proportions as indicated by his many beautiful paintings and drawings presented by him to various Slovak churches in the diocese. A mark of distinction was added to his ability as an artist when he presented his bishop in ordinary with a painting from his brush of "Christ before Pilate." This impressed His Grace to such extent that he immediately dispatched Father Murgas to Budapest where he furthered his study in landscape and portrait painting. With several awards to his credit, he was sent from there, in 1889, to the Academy of Art in Munich where he substantiated his talent under the best masters of that center. He became the first student to receive two certificates, one for sketching and one for painting, in the first year of his course. After four years at the German institution where he completed his full course with several awards and honors, he promptly presented His Grace, the Bishop, with a beautiful original of Saint Elizabeth of Hungary as a token of gratitude to his benefactor. After that, his paintings adorned many churches in the country and have elicited encomiums from many critics, among them Hungarians who, as a rule, seemed reluctant to credit Slovak talent with any degree of excellence.

HIS MUSICAL WIRELESS TELEGRAPHY AND THE FIRST RADIO

In the years that followed, Father Murgas continued in the faithful performance of his priestly duties, devoting meanwhile every moment he could spare to painting and electrical experiment. To intensify his study in the latter field, he enrolled as an advanced student at the Electrical College of Vienna. His enthusiasm for study did not stop here. Knowing that God is not only the author of life, of force, of beauty; and the glory of the universe, but also of the growth and progress of nature all around him. Thus the magnanimity and eloquence of God's creations led Father Murgas to a further appreciation of life by taking up the study of systematic biology and morphological botany which we will touch upon in a subsequent chapter.

At this period in Father Murgas' life the spirit of national consciousness also manifested itself to a degree where he could no longer discuss Slovak problems without becoming emotionally disturbed, and, as an ardent patriot it was but natural that he take an opposing stand to the cruel treatment of his people who, at that time, were helpless political victims of the once powerful Hungarian monarchy. Spurred by the imperishable spirit of Slovak patriotism, he acquainted himself, through the study of Slovak history, with the lives of great figures who fought for the national cause during the widely separated periods and with events hallowed by heroic deeds of Slovak martyrs.

ART CRITICISM AND ITS CONSEQUENCES

About this time also Father Murgas had proven himself to be an accomplished artist. He painted landscapes and Sacred Subjects, and the products of his brush, despite the envy of Magyar artists, received praise from foremost authorities as examples of his work found their way into many Catholic churches throughout Hungary. Eventually he was

sought out by the Hungarian Government with the request that he pass upon a recently completed painting by Mihaly Munkacsy (1844-1900) of Magyar fame. Probably the greatest impetus given to Father Murgas' qualifications as an art critic was the beauty of his work and the enthusiasm of his Bishop. Murgas was thereupon recommended by the Hungarian Art Academy to render his opinion of a famous painting, the majestic creation of which caused it to be hung in the Hungarian House of Parliament. Father Murgas accepted the invitation but not without some misgiving. The task required courage, stamina, and a reckless disregard for the opinion of those whom he well knew would make it "uncomfortable" for him should he prove unfavorable in his judgment of the Hungarian masterpiece. Ill or well, Murgas decided upon one important principle — that of honesty. An artist himself, he felt he was not only capable of fulfilling a task of honor without offending his fellow artist, but also that he could justify his interpretation of the canvas regardless whether the story it conveyed was true or false. The theme of the picture depicted a scene from the Battle of Bratislava which took place in A. D. 907 when the combined forces of Magyars, Germans, and Bohemians were required to defeat the mighty Slovak-Moravian Empire. Munkacsy however, chose to portray the Magyars in alluring grandeur as the sole conquerors of ancient Slovakia and posed them on their white steeds with the characteristic feather of the Hun cocked in the pelted headgear of ancient savage warriors while ostensibly frightened, though conquered Slovaks were pictured as "prostrating" themselves on the ground in "humble submission" to the Magyars. It was an untrue presentation of the incident to which a most rabid Magyar, if he were honest about it, would not agree.

However, Father Murgas fearlessly arrived at the Parliament Building in Budapest where the national canvas hung

HIS MUSICAL WIRELESS TELEGRAPHY AND THE FIRST RADIO

in all its glory. It was a great event in the life of old Hungary. Surrounded by powerful figures, foremost Hungarian Statesmen and Magyar nobility who awaited Murgas' opinion of the famous work, he took his place in their midst but felt very much like "Daniel in the Lion's Den." He did not pretend to know all about art, but he relied upon the predominant characteristic of his artistic honesty; his knowledge of true Slovak and Hungarian history; and upon the basic facts of the event which the artist tended to portray. Gauging the temperament of those standing about him, he retarded a few steps from the canvas to gain a better perspective of the work. Bracing himself, he squared his shoulders and said: "This painting represents a pathetic fallacy of history!" Calling attention to the title (Honfoglalás) given to the painting which, when translated from Magyar, means "Occupation of Country," Father Murgas interpreted the monstrous duplicity of Magyar heroism as represented by the artist. He further exposed the historical inaccuracy of the work and denounced it as unworthy of art. He knew that in doing so he played a losing game and Hungarian sentiment would be stacked against him from that day on, but his conscience was clear and his decision remained inexorable.

Within shorter time than he expected, Father Murgas was confronted with insurmountable obstacles when he sought to further his studies in science and religion. He was a "marked man" and there was little or nothing he could do about it. The Bishop who once befriended him and served as his kind benefactor had since passed to his eternal reward while his new superior looked upon him with disfavor. Threatened and intimidated, the strength of his convictions firm as they were, gave him no peace. He could not cope, single handed, with the tyranny of persecution and the powers behind it. Father Murgas wanted to continue in the ideals of his race but his efforts were hampered on every

side by those who hinged mighty consequences to trivial matters committed by Slovaks. He could bear it no longer.

By the Grace of God Father Murgas maintained constant communication with a young Slovak seminarian, Matthew John Jankola, a fellow countryman who was completing his studies for the priesthood on American soil. Matthew, the oldest of five children born to Rosalie (Medvecky) and Matthew Jankola on July 2, 1872 in Budapest although they maintained their home in Trestena, Orava County, Slovakia, came to America December 19, 1893 accompanied by his sister and two brothers. Upon completing his theological studies in this country, Matthew Jankola was ordained to the priesthood and immediately took up the duties as that of pastor among Catholic Slovaks in Wilkes-Barre, Pennsylvania, where the harvest was large and the workers few. Since the miraculous wonders of the Lord knows no bounds, Father Jankola succeeded in building the first Slovak Catholic church in Wilkes-Barre and vicinity within less than two years of his pastorate. The church was of frame construction but it served as a nucleus for the Slovaks of the anthracite coal region towards a greater expansion and at the same time encouraged Father Jankola to build more churches in the surrounding territory where the fertility of Slovak settlements awaited his leadership.

Meanwhile, Father Murgas' difficulties in the Slovakian portion of Hungary continued to grow more intolerable and his future was ominous. Upon learning of his predicament, Father Jankola suggested to Murgas that he could serve God to greater advantage by pioneering in America and at the same time gain benefit to himself from the standpoint of art and science. Father Murgas saw a vision of happiness before him for the first time in years. He was happy in the thought that he would be free to pursue the gift of his talents un-



Father Murgas' Old Wooden Church Dedicated by
Bishop O'Hara November 26, 1896.

hampered. He accepted the invitation and immediately set upon his journey to the United States but the thought of his departure from those he loved and particularly the land of his birth affected him deeply. The people of his parish respected and looked upon him as a native product of the finest calibre. They loved him and he returned their love with kindness and understanding. At last the day came, and with veiled feelings he bade farewell to his parents, to his parishioners, and to his friends leaving them in the profound hope that his life beyond the great Atlantic, free from persecution would be fruitful and blessed.

IN THE LAND OF FREEDOM

The journey from Slovakia to the United States was long and arduous but Father Murgas arrived, sound and satisfied exactly on Good Friday, April 6, 1896. He was temporarily assigned by Bishop O'Hara of the Scranton Diocese to a parish in Pittston, Pennsylvania, a suburb of Wilkes-Barre. A few months later he was appointed to a complete charge of the Sacred Heart Catholic Slovak church in Wilkes-Barre replacing as Pastor his dear friend Father Jankola who assumed greater responsibilities at the request of his Bishop. Meanwhile, Father Murgas accepted his new charge with renewed vigor and enthusiasm, devoting himself, to the complete exclusion of his art and scientific endeavors towards finishing the uncompleted wooden frame church originally begun by Father Jankola in September 1895 after organizing the parish. Six months after Father Murgas was given charge of the parish, construction of the church was completed and dedication was made by the Right Reverend Bishop O'Hara on November 26, 1896. Under the careful supervision of Father Murgas the parish prospered and funds were available to build a parochial residence for the pastor in the early part of 1897. In keeping with the practice of

REV. JOSEPH MURGAS, *Priest-Scientist*

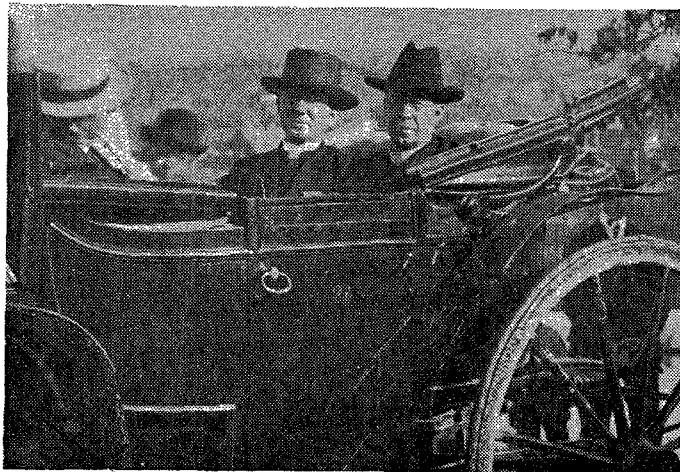
the Roman Catholic Church, Father Murgas undertook to build a parochial school for the youth of the parish. Funds for the project were meager, and although there were but 80 children of eligible age for attendance, the schoolhouse was completed in September 1897. Thus, children of the parishioners were able to receive instructions not only in the fundamentals of their religion, but also in the national, social, economic, and civic sphere of human endeavor.

The next important feature of necessity for the congregation was the need of a church organ and a teacher for the school children. In this stead, Mr. Andrew V. Kozak, perhaps the only talented young man of the immigrant Slovak group whose academic training at the time qualified him to meet the intellectual requirements not only of the parish itself, but of the church as well, was engaged as organist and school teacher on July 10, 1899. Mr. Kozak taught the children both in English and Slovak alternately and remained in this bilingual capacity till January 1, 1909 when the first three American born Sisters of Slovak parentage from the Order of Saints Cyril and Methodius took over the faculty of the school. Mr. Kozak continued as church organist until July 1915 after which he withdrew to become commercial and national leader among the Slovaks in America.

By this time the total debt of the parish grew to \$17,000 a staggering amount for any immigrant group of that period. However, with the conservative spirit of the parishioners and their willingness to make sacrifices for their spiritual well-being, Father Murgas was able to reduce that large sum to a small balance of \$1,600 by no later than September 1899. In less than one month, another \$800 was earmarked toward the remaining debt. Such was the enterprise and cooperation between the pastor and his people. The exigencies of the moment also required a suitable burial location for the needs



"The Priest Portrays His Bishop." The Painting Is That Of The Late Bishop T. C. O'Reilly, Scranton, Pa. Begun by Father Murgas In 1925, It Is Said To Have Been His Last And Far From Being Completed.



Bishop M. J. Hoban Accompanied By Rev. Stephen Furdek (Founder Of The First Catholic Slovak Union) Seated At Right, And Rev. Murgas, Seated At Left, As They Arrive To Attend The "Slovak Day" Inauguration In America.

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of the parish. Consequently ground for the purpose was purchased in the beautiful rural surroundings of Dallas, Pa., a nearby suburb.

At this stage of his progress in America Father Murgas paused to reflect on the manifold blessing conferred upon him and those of his countrymen in their newly adopted country. The boundless opportunities, democratic friendship, and American freedom available to immigrants from all nations served as an inspiration when he founded the now renowned Slovak League of America organized to safeguard the priceless heritage of human freedom denied to his brethren in the "Old Country." With the aid of a few countrymen gathered about him, he formulated the first memorandum of that organization which has since been prized as a Slovak "Magna Charta" of free expression in America and was promptly incorporated into its first resolution of record. Condemning the European government under which the Slovaks lived in thralldom and stressing their profound gratitude to the land they chose for their new home, the memorandum reads in part as follows:

First Memorandum of the Slovak League of America

"Enjoying the blessing of political and civil liberty under the beneficent provisions of the United States Constitution, a blessing freely bestowed upon us by the generosity of the United States of America who admitted us to this land and opened to us the doors of opportunity and allowed us to share the fruits of labor dearly bought by the forefathers of this land who spent their fortunes and gave their lives so that we may pursue our happiness, the inalienable right of every man, far better in this land of our adoption than in the land of our birth;

"We, the citizens and residents of these United States of Slovak birth, who at this moment feel more keenly the plight of our brethren across the Sea and hear the agonizing cries of those millions of our kin still groaning under the oppression of inhuman laws and the tyranny of a selfish, privileged class, and . . .

"Well knowing that the American heart always beats in sympathy with the oppressed nations of the earth and always has been willing to lend a hand to oppressed peoples;

"Be it therefore resolved that the Slovak League of America a federation of Slovak organizations and newspapers in this country, dedicates this, its first Memorandum, to the American People."

Encouraged by the spirit of enthusiasm as illustrated in the extract of the resolution published by the Slovak League of America organized at his suggestion, Father Murgas continued his valuable work amongst the people of his race settled in this country. His virgin parish likewise required constant care and the need for improvement was inevitable, but the frugality of his people helped to sustain every hope he had for their future. While he busied himself with the usual affairs of a parish priest, he was also anxious to resume his scientific experiments particularly in the field of wireless the subject of which is fully dealt with in subsequent chapters.

Meanwhile, Father Murgas devoted considerable time during the next four years (1900 to 1904) towards the general expansion of the First Catholic Slovak Union in the United States of America (Prvá Katolícka Slovenská Jednota v Spojených Státoch Amerických) an organization founded in 1890 by Rev. Stephen Furdek a Slovak pioneer of Catholic activity in America. Father Murgas not only took active



The Present Sacred Heart Catholic Slovak Church Erected During Father Murgas' Pastorate
in Wilkes-Barre.

part in the development of this organization, but also served in various capacities as one of its officers. He introduced the preliminary step towards the establishment of an orphanage conducted by the First Catholic Slovak Union for the care of Slovak children in this country, and continued to be active in the functions of the organization during his lifetime.

In due course Father Murgas became leader of North-eastern Pennsylvania Slovak Catholics, but his zeal for spiritual improvement of his countrymen did not stop there. It soon became nation-wide. The Church and the care of souls was his primary aim in life, and with this he was prompted to bring about the successful establishment of the Slovak Catholic Federation of America (*Sdruzenia Slovenských Katolikov*). On September 3, 1905 a group of Slovak priests visited Father Murgas to witness in amusement his wireless experiments and it was then that the visit culminated with the formation of the Slovak Catholic Federation. The organization, embracing clergy and laity alike, developed until it became the largest Catholic Slovak religious body in America. It serves the spiritual, and to a great extent the material needs of Slovaks not only in America, but in Europe and throughout parts of the world. Following World War II, it collected over \$150,000 for the people of devastated Slovakia, and a considerable part of this sum was allocated towards the rehabilitation of war-torn countries in Europe. As founder of the organization, Father Murgas became its first president and it was during his tenure in this capacity that the Slovak Catholic Federation published the "Catechetical Encyclopedia," (*Encyklopédia Katechismusova*) and the "Divine Roses," (*Duchovné Kvietky*) the first spiritual works of this nature authored by Father Murgas in the Slovak language, and mainly intended for use in Slovak schools. At this time also Father Murgas helped to organize Saint Anthony's Treasure Chest, (*Pokladnicá Sv. Antona*) a fund

to defray the expense of educating American girls of Slovak parentage who received a calling to Catholic Sisterhood, and in 1906 he took the initiative in launching an annual festival event in America known as "Slovak Day." The gathering symbolizes in spirit the manifestation of religious, racial, national, cultural, and patriotic good will, and its first opening was honored by the attendance of the Right Rev. Bishop M. J. Hoban, of the Scranton, Pa., diocese who profoundly praised the Slovak people for their accomplishments in this country, and it also received the blessing of the late Cardinal Gibbons who recognized the contributions made by Slovaks on behalf of the Catholic Church in America.

By this time Father Murgas' ability as an organizer in the Catholic field of America was sufficiently demonstrated to attract national attention, but the flexibility of his talents enabled him to assume other responsibilities especially those pertaining to Slovak nationalism abroad.

Between 1905 and 1908 when Slovakia, under Hungarian domination, was struggling for national existence, a young priest, Father Andrej Hlinka born in the same year with Father Murgas, rose as a stalwart champion for Slovak freedom. On October 27, 1907 several Catholic Slovaks in the Village of Černova were massacred by Magyar Gendarmes (Hungarian Military Police) when the parishioners refused to allow other than Father Hlinka to dedicate their new church. It was here that Father Murgas entered the fray on behalf of human rights when on May 26, 1907 he took a leading part in organizing the Slovak League of America (*Slovenska Liga v Amerike*) established to lessen the burden of his brethren in Europe and alleviate the pain of their struggle. As previously mentioned, he was instrumental in drafting the League's first Memorandum which to this day remains a monumental document in the sphere of Slovak nationalism.

HIS MUSICAL WIRELESS TELEGRAPHY AND THE FIRST RADIO

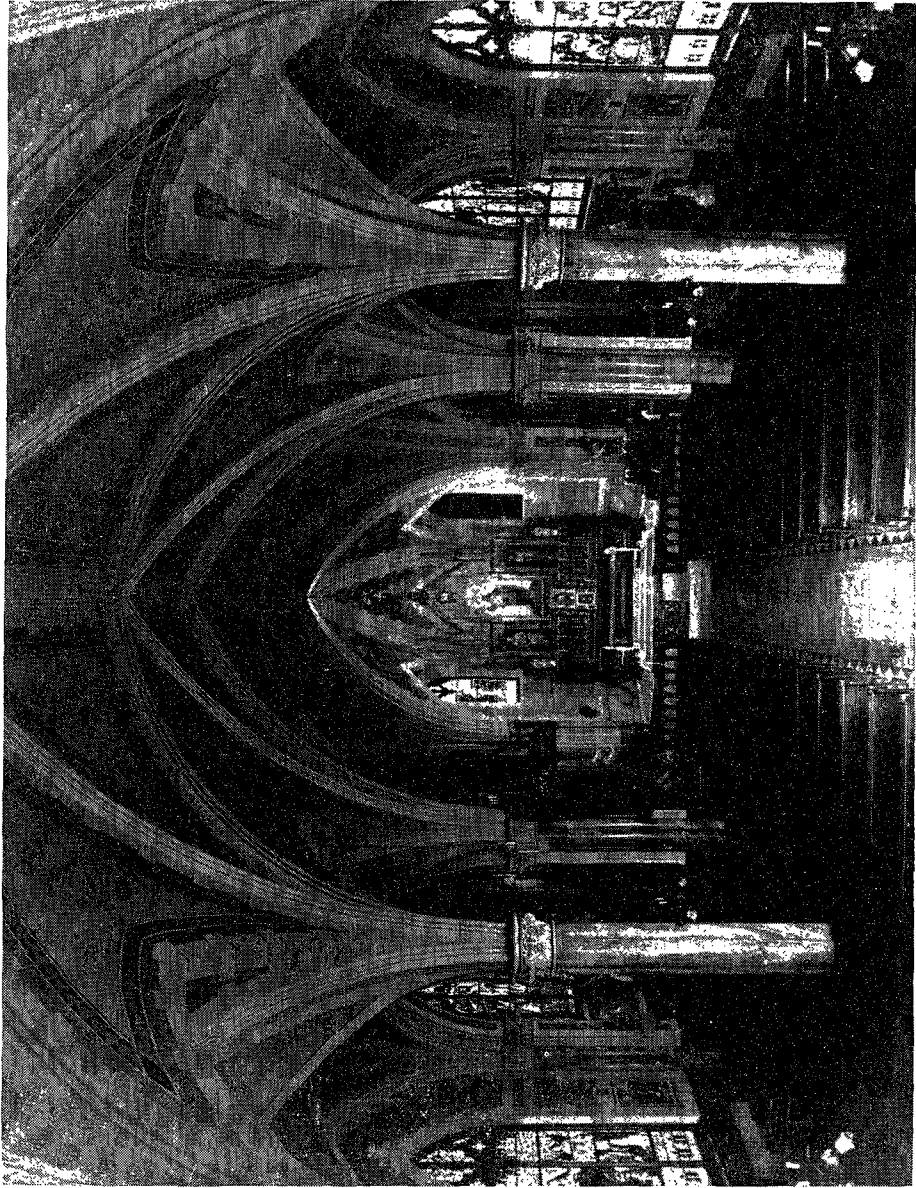
However, it would be vain to boast further of Father Murgas' successes in the realm of his calling had it not been for the constant prayer, untiring zeal, and material cooperation of his countrymen in America. Father Murgas admitted this himself and always bore it in mind.

THE HARVEST IN THE VINEYARD

Returning once more to the immediate concern of his parish, we find that Father Murgas knew the minds, the hearts, and the earning capacity of his parishioners. He was equally cognizant of the fact that a proposal for the construction of a new church would meet with unfavorable reaction on the part of some under his charge, but the small wooden church no longer served adequately the needs of the rapidly growing congregation. Fear of indebtedness was the principle reason with some who may have demurred, but force of conviction brought favorable response and a campaign for a new and larger edifice was launched with construction beginning in 1906 at a cost between \$97,000 and \$100,000. The corner-stone was laid October 14 of the same year, and when in 1908 the new church was completed, a magnificent brick and stone structure of Gothic architecture, patterned after the most beautiful churches in Central Europe was erected adjoining the old wooden church. The new church continues to be looked upon with pride by all Christians throughout Wyoming Valley, and as an object of beauty dedicated to God, its high steeple extending 125 feet above the street level points with majestic glory to heaven. The stained-glass windows of the church and its beautiful pulpit, works of art in themselves, were imported from Innsbruck, Austria. Its radiant interior of refined elegance, grace, and sanctity is a source of admiration to all who enter the church. The paintings over the altars are from Father Murgas' own brush done as a labor of love, and in addition he donated a

large stained-glass window as a gift to the church. It is also known of record that he personally contributed over \$5,000 towards the construction of the edifice and defrayed the cost of landscaping the grounds of the church and of the rectory. The garden in front of the rectory has a miniature arboretum setting developed by Father Murgas as the result of his naturalistic inclinations. Two enormous church bells weighing 3500 and 1050 pounds consecutively, manufactured by the Henry McShane Foundry of Baltimore, Md., at a substantial cost, were subsequently installed. They were especially cast to produce a musically harmonious effect with resonant qualities similar to those heard in the distant valleys of Slovakia. The bells were dedicated with appropriate ceremonies by the Right Rev. Bishop M. J. Hoban of Scranton, Pa., and finally a new church organ was likewise installed on May 3, 1908.

For the benefit of those not familiar with Catholic terminology, a "Novitiate" is an institution for the education of young girls to the various orders of Sisterhood. A religious vocation among Catholic girls of Slovak ancestry in America would have been smothered in the early days had it not been for Father Matthew John Jankola who established the first order of Slovak Sisterhood in America. Father Murgas subsequently shared this honor by founding the Congregation of "Sisters of Saints Cyril and Methodius" when it was officially organized in his parish after receiving permission from Rome in the early part of 1908. The outgrowth of the Congregation of Sisters of Saints Cyril and Methodius culminated in the founding of Slovak Catholic Girls' Academy at Villa Sacred Heart, Danville, Pa. The institution is under the capable supervision of Sisters of Saints Cyril and Methodius who built it into a flourishing religious community unsurpassed for teaching and training Catholic girls as well as preparing them for a religious life.



Interior Of The Present Sacred Heart Catholic Slovak Church Erected By Father Murgas.
His Painting Of The Sacred Heart Of Jesus Can Be Seen Over The Main Altar.

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The first three Sisters of the original Slovak Order of Saints Cyril and Methodius made their profession in the Chapel of Mount Saint Mary's in Scranton, Pa., on September 11, 1909, and at the time of this writing there are 300 professed Sisters, 14 novices and 10 postulants. Since the founding of the order, 28 Sisters have passed to their eternal reward. Needless to mention, of course, the first Sisters of the Order were engaged to teach in Father Murgas' Sacred Heart Parochial school where they arrived even before making their vows.

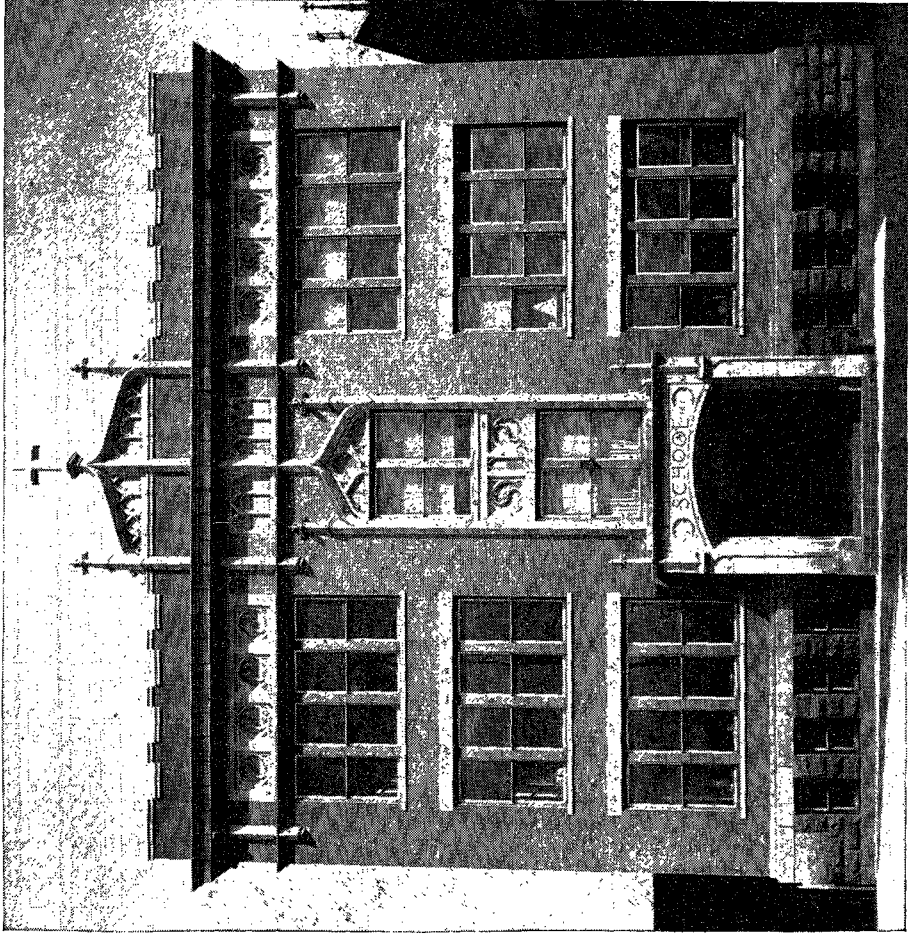
From here on, Father Murgas' activities as well as accomplishments in the religious field continued without interval. He further improved the new church; founded a number of religious, benevolent, and church societies in his parish; added an acre of land to the cemetery a part of which was converted into a Park; he enlarged the church site; transformed the old church building into a temporary school; arranged a hall for meetings; contributed religious and scientific writings for publication in America and Europe; and was an important figure in the "Pennsylvania Slovak Roman and Greek Catholic Union" with headquarters but a short distance from his church. In general, Father Murgas developed the congregation and added extensively to its enterprise. There is no doubt at this point that he paused briefly to look back with grateful satisfaction upon the fruits of his labor since becoming a servant in the vineyard of Christ. His generous and loyal parishioners were equally mindful of his tireless efforts on their behalf, and as a token of appreciation they fittingly honored him during his Silver Jubilee celebration which took place on November 10, 1913 marking the 25th anniversary of his ordination to the priesthood.

While no finer tribute could have been paid to Father Murgas than that bestowed upon him at this gathering, it

far from represented the pinnacle of his religious career. As soon as the church debt was paid off, he set out to build a new parochial school which became a serious need growing out of the traditional large families among Slovaks. After tireless efforts and many hardships, a modern stone and brick school building was added to the parish in 1925 at a cost of \$50,000. Fully equipped to meet all modern requirements, the school is large enough to accommodate 550 children and is under the able supervision of the Sisters of Saints Cyril and Methodius. The magnificent interior and the elegance of the school itself ranks as one of the best in the State of Pennsylvania. Thus, with the acquisition of the new school, the total wealth of the parish reached an estimated value of over \$650,000.

Finally, in appreciation for the splendid work performed as pastor of the Sacred Heart Slovak Catholic Church in Wilkes-Barre, Pa., Father Murgas was tendered with a testimonial dinner by his parishioners and friends. The event, taking place February 13, 1928 was a mark of special significance since it represented the 40th anniversary of his priesthood and the 33rd year of his pastorate in the congregation.

In concluding this chapter on the broad career of Father Murgas' life, we can firmly say that it constitutes a record of unusual attainment in the religious annals of pioneer work especially among Slovak Catholics in America. His brilliant achievement will, in itself form a lasting monument of his devotion to the cause of his countrymen and their faith. Father Joseph Murgas obtained these results through the hardest kind of hard work undertaken not for the approbation of man, but to win from the Lord of the Vineyard the well deserved plaudit of: "Well done, my good and faithful servant."



The Parish Parochial School of the Sacred Heart of Jesus Erected During Father Murgas' Pastorate at a Cost of \$50,000.00.



CHAPTER II

MURGAS, HIS INSPIRATIONS AND HIS PAINTINGS

When Father Murgas first set foot on American soil, he was determined to be worthy of his priestly calling. And while he continued to fulfill his spiritual ministrations successfully, a "full time" obligation with all parish priests, he never abandoned hope of returning to his art if only to do an occasional painting. His sensitive touch of the brush never deserted him despite a long interval, and though it was not until 1912 that circumstances again favored him with enough leisure to resume his work on the canvas, he performed remarkably well especially in the beautification of his new church where contributions from his brush will remain permanent memorials dedicated to the Glory of God.

His first painting in America was a beautiful reproduction of Murillo's Immaculate Conception which he admired so much, and for the want of an original, he decided to reproduce it for the adornment of the Blessed Virgins' altar in his church. Because of his esteemed admiration for the Mother of God, Father Murgas placed the painting over the main altar where it remained during his pastorate.

His second painting, intended for the adornment of the side altar was that of the Sacred Heart of Jesus. The picture, however, bears evidence of deterring influence and obviously lacks elements which Father Murgas hoped to put into it. Perhaps some interruption served as an obstacle towards a deeper inspiration for this work which has since been set onto the left forward wall of the church.

Father Murgas also tried his hand at a theme that required most careful manipulation. It was a decorative mural painted on the walls of the dining room in his rectory

where he portrayed the scene of his native village in Slovakia. The murals or "Wall-paintings" as some parishioners called them, conveyed a personal element, telling the observer that they were the work of a Slovak in touch and feeling. The work was done, of course, from memory, but it was nevertheless skillfully carried out and faithfully reproduced both in color and landscape. The work brought delightful comments from those who saw it, and though it was completely obliterated in the process of renovation shortly after Father Murgas' death, there are many who still marvel at the familiar aspects of native Slovak scenery which the murals conveyed.

TRADITIONAL ASPECTS OF MURGAS' WORK

While engaged in research for this biography I visited the church where Father Murgas ministered to personally study his art work. I also had the good fortune of inspecting some of his twenty paintings done in this country, many of which became prized possessions of individuals while others fell into obscure, and perhaps unappreciative hands. The paintings that were preserved, however, afforded me an opportunity to familiarize myself with Father Murgas' talent and to learn something of his style and method. It also enabled me to determine that no genuine art can ever flourish without a tradition, both, as applied to the work itself and to the artist. In the early stages of Slovak art, the influence of Slovak peasant artists was responsible for the development of famous Slovak painters. Slovakia had, of course, produced its share of masters as early as the 14th century, but without exception, circumstances compelled them to Magyarize, Germanize, and Italianize themselves in order to acquire national recognition in the world of art. Meanwhile, pure Slovak talent was compelled to struggle desperately to preserve the traditional aspects of the race. Father Murgas found

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himself in this category and his artistic efforts were rooted in the depths of the national soul. It was no doubt his genius of inheritance that served him in good stead when he criticized the work of Munkacsy, depicting Arpad, chief of the Magyars taking possession of Slovakian Great Moravia, as represented in the work at the Hungarian Parliament exhibited there in 1893.

To the American eye, Father Murgas' landscapes may not seem as convincing as his religious subjects, which, perhaps, may be due to the fact that his earliest works consisted mainly of religious presentations. Most, if not all, of his European work was subjective, and his interests were in the spiritual significance. His "Sacred Heart of Jesus" in the parish church at Wilkes-Barre, is confined to a very sensitive interpretation of facial expression with considerable physical evidence of individuality, and there is no doubt that in painting it he handled his brush with too much care, perhaps extremely so. Using medieval tones with definite strokes to indicate emphasis, his shadows were worked in, perhaps overmuch giving the appearance of a dry and pallid effect. He may have sought for a necessary balance, but it would be difficult to ascertain this without the aid of the artist himself. However, the longer one gazed at the picture, the deeper significance it seemed to convey of his subject.

Upon close analysis of Father Murgas' landscape work I discovered that he followed no master as a model. He knew that light and atmosphere were two capricious deities whose strife and reconciliation go to make up the fickle and elusive soul of landscape. He also knew how to avoid dull and lustreless tints so often seen in contemporary landscapes. Then, too, there is considerable evidence that he painstakingly sought the most suitable weather, light condition, and cloud formation to conform with the setting he visualized.

During his free moments, Father Murgas would journey to the wooded mountains of Luzerne County in quest of inspiring scenery only to return to his cottage at Lake Silkworth and another at Harvey's Lake, both in the vicinity of Wilkes-Barre. When the surrounding woods brought little hope for inspiration, he would gaze across Lake Silkworth from the door of his cottage with discerning eyes and capture its charming shore stretched in the shadow of a green mountain overlapped with clouds at sunset. His sphere in most instances was the open country, and he painted it in every phase of the different seasons and time of day. He faithfully reproduced local color, but there is evidence that his greatest ambition was to seize the color-scheme as a whole, in the subtle combination made up by light and atmosphere. He rigidly excluded the human form in his rural scenes except on one occasion which no doubt had a personal appeal with him because the subject was a fisherman. This was the scene Father Murgas transformed to his canvas at Lake Silkworth when he observed a fisherman standing in a boat with a boy manning the oars. One will observe in this picture the changed fragments of nature which convinces us that only an original genius could give the setting such expressiveness and permanent value. In the opinion of this writer, it is the best of Father Murgas' landscape works.

In his scene of "Bear Creek" in the Pocono Mountains, which no doubt served as one of his favored fishing "spots," Father Murgas aimed at portraying only what his eyes could see. There is, however, some variation of time and light in the bubbling "Bear Creek" painted sometime during 1915, and one can see the rocks in vivid and expressive lines while the surrounding trees indicate that this particular scene bears everything expected to be found in untrammelled nature. Most of Father Murgas' wooded scenes are veritable

poems and some of them have been rendered with an extraordinarily lyrical temperament.

Father Murgas would occasionally paint a setting of commonplace interest to prove that nobility of style and creative genius can draw beauty from the most ordinary subjects, and in one instance he portrayed a row of backyards in a winter setting as seen from the kitchen window of his rectory. The snow particularly on the roofs of houses and sheds in this painting, was not applied with imaginative fantasy, but was treated with stress and physical reality. Naturally the scene lacks beauty, as backyards always do especially during winter months, but Father Murgas succeeded in producing results seldom gained in work of this type.

THE PRIEST PORTRAYS HIS BISHOP

It is often said that Father Murgas took to his brush only when he felt assured that his effort would meet with the success he desired. After receiving this peculiar "assurance" one day in 1925 he arranged to paint a life size portrait of his immediate superior, the late Bishop T. C. O'Reilly of Scranton, Pa. The portrait of Bishop O'Reilly, last of Murgas' works, shows great purity of outline and indicates a profound sense of effort especially with regard to the lace of the Bishop's attire. The lines of the face are sweeping and fully expressive while the contours of the attire itself is supple and well modelled. The work Father Murgas achieved on this particular canvas is of great merit, and as one studies the picture he becomes convinced that Murgas' talent as an artist fully sustains his early promise. The pose of the Bishop, however, is somewhat too effected, and while it is entirely devoid of gesture, which, as in such cases conveys a stiff and undulated appearance, the figure itself looks strong and deeply furrowed which more than compensates it for

any other quality it may lack. However, while the portrait of Bishop O'Reilly has been the last of Murgas' works, it was never completed according to his fine standard.

There is hardly need to further ply the reader with the usual sesquipedalian language of art, suffice to say that Father Murgas' reputation as that of artist has been well established in Europe where he began his work and was looked upon as an authority in that realm. This qualification of him has been fully narrated in the early part of the first chapter.

As previously mentioned, Father Murgas received his early training as an artist in Germany where he aptly distinguished himself by receiving two awards, one for painting and one for drawing, in the Academy of Art in Munich. It was in that ancient European center of great masters where he learned the first rudiments of the brush, and after that his natural talent helped in guiding him through the intricate phases of his work.

It has been alleged though unsubstantiated, that Father Murgas received offers up to \$5,000 for some of his paintings. In any event, his work was of great merit, and it is an irreparable loss to America, to the Church, and to his countrymen that fruits of his talent have never been preserved.

Father Murgas was a Slovak pioneer artist in this country, and judging the quality of his work with others of his kin here and abroad, he stands as the unsurpassed master in the realm of brush and canvas. It is hoped, even in this late day, that his valuable works can still be collected so that proper homage may be given to a great artist and painter.

CHAPTER III

MURGAS, AS LEPIDOPTERIST AND PISCATORIAN

In years gone by one of the commonest pursuits of boyhood was the formation of a collection of bugs and insects, and Father Murgas' unfulfilled desire in this branch of science while a boy caught up with him some years later in Wilkes-Barre. The wish of his youth persisted until he became one of the leading lepidopterists in America and it is said that butterflies remained a profound study with him.

The limitations necessarily imposed by the space of this book precludes any lengthy description or discourse on the subject of Father Murgas' butterfly and moth collection since he possessed over 9,000 different specimens of these particular insects, all identified, carefully classified, catalogued, and conveniently mounted in Riker frames for biology students and those interested in moths and butterflies. The 9,000 in Murgas' collection may seem a large number, but scientists lay claim to have identified over 13,000 of these "bugs," and it is believed that twice or three times this number are in existence.

Father Murgas' collection of beautiful moths and butterflies, as this writer has observed, consisted of the most rare members many of which he caught himself. Incidentally, a lepidopterist never catches all the moths and butterflies in his collection. Aside from hunting them himself, he is always compelled to purchase others and in this way either increases or completes his collection.

Despite the large number of moths and butterflies known to be in existence however, "private" families or groups of them are few. The following distinct five families, beginning with the most primitive and ending with the most specialized, are recognized as individual families by American entomologists and lepidopterists:

1. *Hesperiidae*. 2. *Papilionidae*. 3. *Lycaenidae*.
4. *Lemoniidae*. 5. *Nymphalidae*.

Father Murgas' collection contained nearly all the species of these five groups some of which are commonly known in America as "jumpers," "skippers," "swallow tails," "nose-horns," "waist," "blues," "coppers," "hair streaks," "metal-marks," "four-footed," and other individual members of the above species. By this brief, and certainly inadequate resume of so worthy a collection of butterflies and moths which this writer strived to survey as carefully as possible, one can form an idea, if only vaguely, of Murgas' interest in the wonders of creative wisdom.

How Father Murgas managed to find time despite the multifarious demands upon him, not only to interest himself with so painstaking and arduous a hobby as collecting moths and butterflies, but also to pursue and capture them in their natural habitat, is difficult to understand. However, in his latter days when bogged down by illness and reduced strength, he was unable to cope with the necessity of enhancing his collection with new acquisitions, and instead he sought to interest the children of his parish by explaining the science of lepidoptery to them and finally donating the entire collection to the parochial school under his charge. In doing so, he hoped to encourage the study among the children of a rather neglected field of nature which, after all, is also the result of the wonderment of God's creation.

On September 10, 1943 while gathering material for this book, I visited Monsignor John Sobota, successor to Father Murgas' parish and was favored with a long and courteous interview during which many phases of Murgas' life was discussed including that of his butterfly collection. Monsignor Sobota, unlike Father Murgas saw no purpose in collecting insects, but he did admit often helping Father

Murgas in catching some of his most rare specimens. Upon asking permission to inspect Father Murgas' butterfly and moth collection, I was introduced to Mother M. Salomi, Sister Superior at the parochial school of the parish, where in a small and inauspicious room the collection of butterflies was stored. With utter regret — the fault cannot be ascribed to any source or a combination of sources — I found the collection in a sad state of neglect and disuse. The glass encasements and Riker frames were broken and countless fine specimens carried away by school children, a temptation perfectly natural with youngsters. Mother Salomi and Monsignor Sobota confided to me that the parish was in care of an administrator for an interval following Father Murgas' death and during that period matters were out of control. It was also brought to my attention that certain adults with no scientific interest in lepidoptery carried off several frames of moths and butterflies without legal right to do so. As this writer observed, Father Murgas in his Will bequeathed the entire collection of moths and butterflies to the parish school. Previous to this arrangement however, he donated, as a gift, a few hundred of the specimens to Villa Sacred Heart, Slovak Catholic Girls' Academy at Danville, Pa., where, I am assured, the donation is occasionally increased by the students.

KING'S COLLEGE ACCEPTS MURGAS' BUTTERFLIES

As the years passed by, an absence of interest in Father Murgas' butterfly and moth collection continued at the parish school, and besides, the scope of the subject was too broad for the children in attendance. Confronted with just such a problem Monsignor Sobota decided it best to present Father Murgas' Lepidoptera collection to King's College of Wilkes-Barre where it was accepted for the Biology Department and made available for students of the subject. The

gift is officially known as Father Joseph Murgas Memorial Collection donated by Monsignor John S. Sobota on behalf of the Blessed Virgin Sodality of Sacred Heart Parish. The collection acquired by King's College contained about 6,000 different specimens and included every species found in the Eastern region of the Keystone state. It is doubtful if the real value of the entire collection will ever be fully estimated. Grateful appreciation for this noteworthy gift has been appropriately indicated by King's College in its weekly publication, "The Crown" for April 17, and 28, 1948.

While Father Murgas delighted in his collection of moths and butterflies, it was not his only hobby. As a naturalist, he also made deep inroads in the field of arborescence.

In this part of the chapter, the author would like to recall an interesting epitome describing the beginning and end of life on this earth. In the epitome we are reminded that when all the cities of the world have long been dead and have become but heaps of dust; and when all vestige of life on this globe is extinct, the last survivor on earth, seated on a bit of lichen growing on some bald rocks in some part of this remaining world, preening its antenna in the final glow of the worn-out sun will be a small melancholy "bug".

MURGAS, A DISTINGUISHED FISHERMAN

Unlike butterfly and moth collecting with its ultra scientific aspects, fishing may become a science of intrigue for a priest as well as for a millionaire or a working man. Father Murgas must have been a scientific piscatorian for he knew all about different kind of fish and how to catch them.

The blessing of Saint Peter may have touched Father Murgas since he often found great delight in driving out

to Harvey's Lake, Lake Silkworth, or the Pocono Mountains for a fishing holiday and then returning home with his catch of crappie, carp, sucker, calico, and bass.

Many "fishermen's anecdotes" were related to me by Father Murgas' parishioners and fellow clergy who followed his discourses with delight as he sat in the parlor or on the front porch of his rectory smoking cigars some of which he made from tobacco weeds grown by him in his garden.

During some of his discourses Father Murgas would drift into scientific detail explaining how fish have the power of changing their color to match the surroundings in which they live, and that some fish possessed this faculty to a pre-eminent degree. He further maintained that fish possess an uncanny intelligence of being able to talk "fish language" sufficient to carry on a conversation "fish fashion" by making noises with their mouth. This fact has just been recently ascertained by Dr. Christopher Coates of the New York Zoological Society Aquarium who has been listening to and recording "fish talk."

Father Murgas was a fisherman of more than mediocre reputation, and whatever respect he gained from his piscatorian friends — priests, doctors, bankers, and coal miners, it was because he never exaggerated his experience or scientific discoveries. His talk always had a merit of honesty and virtue not always attributed to fishermen. Fly fishing, he would say, calls for the most precise and fastidious manipulation. A bamboo rod of the best selection, with a well balanced reel, a tapered casting line leader of the proper fineness, and a well tied fly, or flies, is one of the most perfectly designed and executed triumphs of human artisanship — as far as fishing was concerned. Father Murgas not only understood these factors, but he also went to the special extreme of inventing a reel and tackle of his own. The reel

invented by him possessed a “non-back-lash” or, as he called it, a “non-kick-back” device. It is generally accepted that Father Murgas possessed one of the most complete fishing equipments in the State of Pennsylvania, and the special reel he invented has since been the most important part of an apparatus upon which the success and enjoyment of the sport depends more than anything else.

In writing about Father Murgas’ hobbies, it may be well to state that they are here given merely as a cursory survey of his pastime delights which space in this work will not allow detailing in full.

Incidentally, the author is, at this point inestimably grateful for the readers’ patience while plodding through the first three chapters of this book even though they had no direct bearing on the principle theme of this work — namely, wireless telegraphy and radio. The prelude was necessary, however, and we now settle down to the main subject beginning with the next chapter without further interruption.

CHAPTER IV

MURGAS, IN THE REALM OF WIRELESS

(First Phase)

Whether or not we regard the accomplishments of Rev. Joseph Murgas indicated thus far as extraordinary marks of distinction, we must admit that any single branch of his performance would be sufficient to bring renown to most of us. Yet, a just estimate of his unique qualities would be short of its mark without a complete presentation of his success as pioneer inventor in the field of wireless and radio communication. Although, during the dim early period of wireless transmission the world acclaimed Father Murgas for his outstanding contribution to this branch of science, his work has since fallen into obscurity and the genius of his brain suffered the misfortune of being denied its proper place in the annals of scientific history. Viewed as a whole, his success as inventor of a valuable and perhaps a most important adjunct to present-day radio was brief but significant. The people of Wilkes-Barre; of the State of Pennsylvania; and particularly those of his own race continue to hold in profound recollection the scientific attainments of Father Murgas, and his merits in the discovery of wireless and radio is not less deserving than that of Marconi and De Forest to whom credit is almost exclusively given.

As originally alluded in the first chapter of this book, Murgas' interest in electricity followed that of his study of chemistry during his seminary days in his native Slovakia. His enthusiasm in electrical phenomenon which began in 1886 enabled him later to graduate from the Electrical College of Vienna and this served him in good stead upon his arrival in America where his trained imagination gave birth to a wealth of electrical theories which he fairly

utilized in the perfection of wireless telegraphy and the beginning of radio.

On April 6, 1896 when Father Murgas arrived in America, he brought a treatise for publication in a Slovak language periodical circulated in this country. The treatise carried details of his experiment with electricity and its relation to wireless telegraphy. In closing his remarks he said: "The field of electrical wonders has just opened and it is difficult to predict the great things it has in store for us."

These words constitute a sentence which, in those days, could be interpreted as a sound statement to make upon a newly-born branch of telegraphic science, and those of us now looking back upon the wonders which grew from it, can appreciate the frame of mind of the man who said it. It was an expression of the practical pioneer, an adventurer into the unseen and unguessed realms by a man who knew that miracles of science were yet to come. In this category he distinguished himself by not only evolving a new system of wireless telegraphy whereby transmission was made easily, clearly, and speedily, but also succeeded in perfecting an apparatus enabling him to project voice impulses at great distance thus becoming by a large margin the first to use "radio-telephone" transmission.

Sacrificing all endeavors of life except his religious duties, Father Murgas fitted up a small laboratory in the basement of his rectory during the early part of 1898 and began systematic experiments for the improvement of wireless which, at the time, was scarcely more than an idea.

Before we continue further with the subject it may be well to bear in mind at this point that Father Murgas' experiment with wireless was fairly advanced when Marconi discovered that messages could be telegraphed without wires. It should also be borne in mind that Marconi was not the

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discoverer of the principle of wireless telegraphy. When the "invention" of wireless telegraphy was first attributed to him, he neither understood electric waves nor invented a single portion of the apparatus which later made wireless possible. In 1838 K. A. Steinheil of Munich, on the basis of his experiments, suggested the possibility of wireless telegraphy in the future. In 1864 Clark-Maxwell demonstrated the electro-magnetic theory of light. In 1888 Henrich Hertz, another German, had experimentally proven that electric waves could be transmitted over considerable distance through free ether. In 1894, by combining the Branly Coherer with the Hertz oscillator, Professor Oliver Lodge of Birmingham actually formed what is historically the first real wireless set. In 1896, while Marconi was still trying out his earliest experiments in England, Professor Slabey, a German of early Slovakian ancestry as his name implies, was so far advanced in wireless that he was sent by the Kaiser to check on Marconi and find out what he had accomplished. Slabey returned to Germany and immediately set up a wireless system making considerable progress. So much was known about the subject of wireless when Marconi began his experiments that he expected almost anytime for several years, to hear the announcement that the problem confronting wireless telegraphy at the time, was solved. When the announcement was not forthcoming, Marconi speedily set himself to the task despite the fact that he was neither a mathematician nor a physicist. He was a practical experimenter who planned his work by rule of thumb or by actual test. He dealt with turns and diameters of wire rather than with equations. Without any attempt of disparagement, it is the personal opinion of those who knew both men that Murgas was superior to Marconi in the realm of science. Marconi of all experimenters was first to gain fame only because his work in wireless was strongly subsidized by International bankers who

sought and still have world control of the communication system.

Marconi's method at its best could only transmit messages on sea and over water space. Being thus limited, he concentrated to establish his system for ship to ship, shore to shore, and ship to shore operations of wireless freely admitting at the time that wireless communication on land and over mountains was an impossibility. Murgas' wireless system, as we shall subsequently prove, was the first to overcome and surmount this hazard and other difficulties by his inventions as demonstrated in several tests prior and up to 1905. Murgas also invented the "direct beam" wave in wireless communication which, in simple manner means that only the station for whom a message is intended will receive it.

With no "stock supply" of material to carry on his work, the instruments Father Murgas and other inventors had at their disposal in the early days of wireless experimentation were crude compared with those existing today. Without the vacuum tubes, amperemeters, sensitive super-heterodyne sets, directional transmitters and receivers or means of making continuous waves; and with only crude, clumsy, damped spark waves with no correct tuning possible at that time, it is no wonder that Murgas was compelled to make his own parts and instruments before he could develop his idea. In addition to this, wireless telegraphy — such as it was at that time — depended upon the principle of a single raw spark-gap, which, when put into operation emitted a nerve-racking noise much akin to present-day static at its worst. It was a crude, harsh sound, rendering impractical further developments of wireless. That was one of the principle reasons why Marconi maintained that wireless communication on land was an utter impossibility. Murgas decided to cope with this ostensibly insurmountable obstacle after others had pro-

nounced it unsolvable and eventually struck upon what he called the "rotary spark-gap" which we will later elaborate upon. But in so doing he raised the pitch of the spark to such an extent that it resulted in a succession of music-like spark notes, achieving thereby greater degree of clarity and adding the possibility of transmission to a considerable further distance, in fact the greatest distance known up to that time. Little did Murgas realize at the time that his new discovery in wireless was destined to bring great fortunes to those clever enough to seize the fruits of his labor.

MURGAS' EARLY EXPERIMENTS

As mentioned before, Father Murgas began his experiments in the basement of his rectory. At intervals between his religious and social duties he worked day and night hoping to develop his idea with the aim of replacing the impractical and unsatisfactory method of wireless transmission known at that time. He spent four arduous and painstaking years working out the mysteries of a better wireless, and finally in August 1902 he discovered his clue. With this new discovery, Murgas felt certain that he would surpass Marconi despite the fact that the latter preceded him by several years in the experiment of wireless telegraphy. Paradoxical as it may seem, a news report in the "Boston Herald" for September 18, 1902 appeared as follows:

"Wireless telegraphy experiments between Washington and Annapolis are over. They demonstrated that wireless telegraphy in its present stage of development is absolutely useless for land purposes. Whether it is worth adopting the Marconi system by the U. S. Navy remains to be seen"

—Boston Herald, September 18, 1902

When this amazing news was brought to the attention

of Murgas, he was firmly convinced that his system of wireless would prove far superior than that perfected by Marconi, and with this in mind, he re-doubled his effort. He moved his laboratory from the basement of his rectory to a room above his study and worked unceasingly in silent determination that his discovery would overcome static interference and other radiations due to atmospheric disturbance. He was also certain that his method would surmount distance and introduce an entirely new system of wireless transmission displacing other wireless methods in use at that time.

One day while experimenting on the basis of his clue, Murgas decided that the only way to overcome his difficulty was to oscillate a modulated electrical spark at a given frequency. His solution rested in the matter of making a "lot of sparks sound like one long spark," but in the process they would have to be made so fast, so strong, and so clear that impending static and other foreign or interrupting noises would have no chance of interfering. Studying the problem mathematically and physically he found that all the disturbing effects were due to crude transmission of electrical impulses and accordingly struck upon a novel system depending for its operation on a phenomenon hitherto not thought of by any wireless experimenter. The thought of a rapidly spinning wheel occurred to him and with it the idea of a rotary spark-gap scheme that would not only keep out ruinous static, but would also produce an entirely different effect in transmission, doing away with the "dot" and the "dash" of the Morse system.

After thirteen months of study and experiment Murgas succeeded in producing his new method of wireless transmission via the rotary spark-gap, and on September 14, 1903 applied for patents on the system as well as on the method of operating it. The vast difference between Murgas'

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system and the existing systems of wireless telegraphy at that time stirred a furor in the field of electrical science prompting the United States Patent Department to investigate it personally. The invention was at once accepted, and on May 10, 1904 Father Murgas was rewarded by having two patents granted to him, the first, No. 759,825 called "Wireless Telegraphy Apparatus" representing the system invented by him, and the second, No. 759,826 known as "Method of Communicating Intelligence by Wireless Telegraphy" which represented a new means of wireless communication.

The first patent is described as containing a revolving imperfect contact apparatus for wireless telegraphy in which a steel needle slowly rotated by clock-like works touching an arrangement of small carbons which in turn formed an imperfect contact, and then in connection with a one cell battery and other arrangements reproduced perfectly and faithfully the signals emitted from the wireless sending station.

Prior to the Murgas system, it was the practice of other systems to transmit messages by means of successive impulses or signal elements of the same character, a given signal being detected by the relation of impulses in a manner similar to that used in connection with the dot-and-dash system of Morse. The signals dispatched by Murgas' system were entirely independent of the time relation of the impulses, thereby acquiring greater results in much shorter time. Father Murgas accomplished this by providing a sending apparatus capable of sending impulses of different character, and a receiving apparatus by which such impulses were received and their difference in character made manifest. In the Murgas system the dispatching of messages depended upon the character of the impulses, frequencies, intensities, and other factors rather than on time relation. The word "impulse" in this instant is generally meant to express the flow of energy due

to a signal manipulation of the signal-controlling means — as for example, a circuit-closing key. These impulses, as produced by the Murgas method, when received in an ordinary telephone receiver, tones differing in pitch resulted, and while the tones varied, their number was almost without limit, thus making a variety of codes possible. Two tones, however, were considered sufficient to produce a system analogous to the Morse; one tone corresponding to the dot and the other to the dash.

To the uninitiated layman who has had the patience to follow the matter thus far, the subject is no doubt intricate and incomprehensible, but to those versed in the science of wireless it is understood that transmission according to the Murgas method was capable of great rapidity.

The second patent letter issued to Father Murgas represented by No. 759,826 and known as "Method of Communicating Intelligence by Wireless Telegraphy" described a new method of wireless transmission known as the "tone-system." The invention consisted in its construction the proper relation of the units of the oscillatory circuit apparatus in the sending station and was comprised of condensers, inductors, the spark-gap and other factors which by a given electrical energy emitted musical tones of a certain pitch. This in turn could be so adjusted as to represent every letter in the alphabet and thus transmit messages by means of musical tones instead of the "dot" and the "dash." Murgas' tone apparatus was so musical it could be used to play a tune if the operator wanted to manipulate the instrument to that effect. This, perhaps may justify in some sense the author's sub-title to the book using the broad term of "musical telegraphy."

However, the element of producing tones was not the only factor in establishing Murgas' system of wireless tele-

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graphy as superior to other systems at the time. Another advantage was in the perfect reception of signals from long distance, a fact which, incidentally bore itself out frequently when Father Murgas reported receiving SOS signals and usual messages from ships far at sea. This result was obtained years before any receiving stations including those of the United States government were able to do so. (*)

In receiving his first two patents Father Murgas' work in wireless merely began. His "Musical Tone" method was indeed an ingenious arrangement as it were, but he did not stop there. He constantly sought to improve his apparatus based on such standards and perfections as his creative mind visualized. He labored night and day even to the point of exhaustion and scarcely gave himself time for anything else with the sole exception of his religious duties. For weeks without end he would deny himself the benefit of a normal meal and his method of sleep was a sort of "catch as catch can" often spending whole nights in his "workshop" and endangering his health in the process. In addition to this he met with some financial reverses as most inventors frequently do while the cost of his experiments continued to mount exceedingly. His indomitable will however, enabled him to persevere, but he was forced by such circumstances to make his own parts and other "gadgets" with which to assemble his apparatus in its infancy. As he progressed he realized the need of more room and accordingly moved his laboratory to an old shack in the rear of his rectory. After that his parishioners were certain to find him there anytime they wished his counsel. Upon seeking him they would inquire: "Where is Father?" The answer would almost invariably be: "In his 'Budka'," meaning his "shack-like" laboratory in the Slovak

*) Since the writer of this biography does not wish to over-tax the non-technical reader's tension with excessive scientific expressions, it is thought best at this point to mention that detailed representations of Father Murgas' experiment in wireless will be found in the appendix of this book.

language. Outside of this laboratory-transmitting station was a pole 50 feet high. The pole had a "bar" or distributing arm at the top from which a single aerial wire was strung leading into the apparatus housed in the "Budka." This was the extent of Murgas' progress in wireless experiment up to 1902. In the early part of the following year the New York Herald published a special news dispatch as follows:

"Father Joseph Murgas, Pastor of the Sacred Heart Church, Wilkes-Barre, has just perfected a new wireless telegraph system which he believes is superior to that of Marconi's method. It is far more simple and messages can be sent twice as fast. In his exhaustive experiments Father Murgas found he can send messages 70 miles on land by earth circuit and 700 miles over sea."

—New York Herald, March 13, 1903

The above dispatch was picked up by other newspapers throughout the country and the world learned for the first time the outcome of four years of hard work on the part of Father Murgas, who when further questioned as to greater possibilities of his invention expressed the confidence that his system would transmit messages more than a thousand miles had he the means and opportunity of testing it.

Under the circumstances Father Murgas' invention could do everything he claimed, and certainly a great deal more as subsequent facts will reveal. His efforts to do so at the moment were limited only by the size of the apparatus he perfected.

IMPROVEMENTS OF "TONE METHOD" CONTINUED

Meanwhile Father Murgas continued to frequently transmit messages from his little laboratory in North Wilkes-Barre to the Polish Catholic Church on Park Avenue over two miles away despite the fact that he was seriously handicapped

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by lack of funds and a competent assistant. The equipment, as previously mentioned was all hand made by Murgas himself which brings to mind an incident related to this writer by Mr. Nicholas Bielik a former intimate friend of Father Murgas and one time editor of the "Bratstvo" (Brotherhood), Slovak language weekly published in Wilkes-Barre. Mr. Bielik was a frequent visitor to Father Murgas' laboratory where he watched him make his desired parts. During one of these visits Murgas just finished working on a piece of glass 12 inches long and 3 inches in diameter out of which he made a tube. After spending six months at intervals boring a hole through the glass, he wanted to show Mr. Bielik the pride of his accomplishment. While doing so the familiar sound of "ping" was heard. When this happened Father Murgas released a volley of irreverent expletives which so frightened and equally embarrassed his visitor that he was seized with a desire to flee from the laboratory. The glass tube, for some mysterious reason cracked in such a manner as to resemble a rose. After composing himself, Father Murgas turned radiantly towards his visitor and said: "Did you ever see a more beautiful flower than the cracks in this glass resemble?" These were some of the tribulations with which Father Murgas had to cope in building his apparatus and having it succeed. With such equipment, crude and primitive at its best, Father Murgas was, nevertheless, far ahead of others in sending out a sharply defined tone wave and succeeded in receiving only the signals desired. (**

During the latter part of 1903 Murgas temporarily influenced two local young men who displayed an interest in wireless to intercept his signals and messages at various dis-

***) Incidentally, when I allude to Father Murgas as surpassing others in the perfection of wireless transmission, I do not wish to construe this belief as an attempt to dislodge other scientists of the art. Neither is there an attempt to impugn on the incontestable success in wireless by other experimenters. I am merely attesting to facts as Father Murgas has proven them by simple demonstration and the results of his work.

tance and in this manner check back on his "broadcasts" by telephoning to his laboratory. One of the boys was John Stenger (Sr.) of whom we will have more to say later; and the other was Richard W. Bebb a native of Rohndda Valley, Wales, where he was born June 14, 1862 and came to America in 1883. Mr. Bebb, at that time a resident of Edwardsville a suburb of Wilkes-Barre, also assisted Father Murgas about the laboratory and continued to maintain an interest in wireless till he died April 16, 1948 at the age of 87. However, with this meager assistance, the best he could obtain in the early dawn of wireless and radio, Murgas accomplished what he set out to do.

It can be readily observed that Father Murgas was indeed a man of practical ingenuity. He was not a vain theorist or an ambitious amateur; nor was he a mere copyist of other men's ideas. He was a magnanimous thinker far ahead of his time. Besides his "musical tone" telegraphy and the first "voice-casting" method developed by him which will be elaborated upon in a special subsequent chapter under the aegis of the "first radio," Murgas invented the "Wave Meter," the "Magnetic Wave Detector" and other wireless features in broad use by the United States government and countries throughout the world. These are but a few of a total of sixteen inventions credited to Rev. Joseph Murgas, an humble Slovak Catholic priest who found his way to America while in quest of freedom and an opportunity to serve humanity.

At the outset of his experiments Father Murgas devoted himself wholeheartedly to his work with the profound hope that he would give the world a perfect wireless telegraph, a wireless telephone, and subsequently a perfect radio. As previously stated, he not only made the parts with which to construct his apparatus, but he also poured every cent of his own money into the enterprise intended for world-wide

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benefit. At the beginning of his experiments he neither sought nor desired outside financial assistance with which to further his scientific studies, and he was always faithful to the persuasion that he could best work without distractions by financial obligations to outsiders. He was so full of scientific ideas, so devoted to minute researches into wireless phenomenon, so keenly interested in physics that he had no difficulty inventing devices and immediately having patents granted to him by the patent office. He in turn sold some of his patent rights to the United States Navy and in this way managed to carry on with his experiments. Meanwhile, Murgas would be frequently called into consultation by the United States Government at the Brooklyn Navy Yard when wireless matters of great importance were under way. This fact was specially confirmed to the writer by Admiral Samuel S. Robison, USN, Superintendent of Admiral Farragut Academy, Toms River, Pine Beach, N. J., since retired but who was assigned by the United States Government to witness every major test of Murgas' wireless system between 1903 and 1905.

Up to and during 1904 when his first two patents were granted, Father Murgas continued to make use of the single 50 foot aerial pole for transmission purposes. Needless to say, tests were frequently made at greater distance and results always proved satisfactory. The electrical energy used in the early tests was delivered at first from large self-made induction coils made up of various interruptors. This was later replaced by another invention perfected by Murgas and so arranged that it fed the sending station with alternating current of a higher frequency than the usual lighting current.

Thus, with the appearance of the first two patents, Father Murgas' work was received with acclaim not only in the field of science, but by the outside world as well. A

REV. JOSEPH MURGAS, *Priest-Scientist*

comparative recent arrival to the land of freedom and progress, he was heralded as the priest from the obscure village of Tajov, Slovakia, who came to America and "made good."

CHAPTER V

MURGAS AND THE PROMOTERS OF HIS WIRELESS SYSTEM

As indicated in the closing words of the last chapter, it was the publicity given to Murgas' patents in newspapers and technical journals of the country that attracted the proverbial promoters, and like all new discoveries of importance and value, Murgas' inventions in the wireless field were scarcely announced when he began to receive offers of financial backing from various sources. Others were willing to underwrite his inventions for commercial and public use and he was virtually swarmed with flattering promises from professional speculators who envisaged "millions of dollars" in profits as a return for the development of his inventions. Tempting as they were, Father Murgas refused to sell or even permit his inventions to be placed on the market believing that they were inadequately perfected for conversion into commercial use. He continued improving his method of wireless, however, till he arrived at the point where he felt confident that his system was "fool-proof." When he made certain of this, he decided to consider matters of promotion. At any rate, his own financial resources became so exhausted that further experiment was threatened with curtailment.

Of the various promotional offers he received, the best came from Yonkers, N. Y., and Philadelphia. Of the two, the latter was more promising and acceptable. Consequently, on July 2, 1904 Father Murgas met Col. Joseph F. Stokes, President of the Electrical Signal Company of Philadelphia who represented a group of business men from that city and a contract was discussed. Col. Stokes was accompanied by Attorney Penrose A. McClain of Washington, D. C., and Mr. John Wills of Philadelphia. The three gentlemen were later referred to by newspapers as "Philadelphia Capitalists."

While doing research for this book, a subsequent discovery by this writer revealed the fact that the real financial barons behind the syndicate were three Washington (D. C.) lawyers who remained secreted in the background while serving higher interests, gaining in this manner the ownership and control of Murgas' patents for a well established rival wireless telegraphic concern. If Mr. W. L. Readers, Attorney for Father Murgas possessed knowledge of this fact at the time, he failed to reveal it. In any event, we will defer for the present a detailed expose of the matter and instead confine ourselves to the origin of the "Universal Aether Telegraph Company" and the promotion of Murgas' wireless inventions.

Father Murgas and the three named business men met for the second time on September 15, 1904 and a "Memorandum of Agreement" was drawn up leading to the establishment of a syndicate. The Agreement, transcribed in the appendix of this work, stated concurrently that Father Murgas as Party of the First Part agreed to sell outright the first two patents, namely, the "Wireless Telegraphy Apparatus" No. 759,825, and the "Method of Communicating Intelligence by Wireless Telegraphy" No. 759,826 patented May 10, 1904. The Agreement further stated that Father Murgas as "Party of the First Part being desirous of proving his wireless method as the best for commercial purposes by securing land upon which to build Antenna Towers; an experimental laboratory; and a transmitting station, *submits to the provisions* set forth in the Agreement." Whereupon, Col. Joseph F. Stokes, Mr. Penrose A. McClain, and Mr. John Wills, parties of the second part agree to furnish Rev. Joseph Murgas the money required by him "*under certain conditions*" and in amounts to be later stated. (*)

The contract further stated that the "Parties of the Sec-

*) All the italics in this chapter are by the author.

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ond Part agree to place in the hands of W. L. Readers, Attorney for Joseph Murgas the sum of Twelve Thousand Six Hundred and Forty-one (\$12,641.00) Dollars which sum is to be distributed and used for the following purpose:"

IN WILKES-BARRE, PA.

One lot under lease in Wilkes-Barre, (previously secured by Joseph Murgas) yearly	\$75.00
Building in Wilkes-Barre (Laboratory, Transmitting and Receiving Station)	1,485.00
Antenna Towers in Wilkes-Barre	4,219.00

IN SCRANTON, PA.

Six lots purchased from the Lackawanna Iron and Coal Company, No. 10, 12, 14, 18, and 20, in Block No. 332	\$800.00
Station Building in Scranton	500.00
Antenna Towers in Scranton	4,219.00
Architects fees (combined)	343.00
Incidentals, about	1,000.00

Total \$12,641.00

In addition to the above outlay of capital for the purpose indicated, it was further agreed that the Parties of the Second Part would fully equip Murgas' laboratory and provide him yearly with all material necessary to continue his experiments based on the needs of Murgas' own estimate the sum of which was not to exceed Fifteen Hundred (\$1,500.00) Dollars per year.

The Agreement also provided that upon the successful operation of Murgas' wireless system by a proven public test between the Cities of Wilkes-Barre and Scranton, more than twenty miles apart, after the equipment is set in order, Father Murgas would receive the sum of Six Thousand (\$6,000.00) Dollars and a block of 10,000 shares of Stock in the Universal Aether Telegraph Company after the establishment of said Company. An additional \$6,000.00 in cash and stock of the

Company was to be given to Murgas not later than 10 days after the final and successful public test of his wireless system.

Other provisions in the Agreement maintained that should the "Tone Method" of Murgas' wireless system be later converted into some other method, the patents of such subsequent methods would have to be assigned to the Syndicate in consideration of \$6,000.00 in cash and a block of Stock in the Corporation.

Finally, the Agreement closes with the distinct understanding that upon the death of Joseph Murgas, the entire apparatus, the complete equipment, and the Murgas System of Wireless Telegraphy and its connections will indefinitely remain the property of the Universal Aether Telegraph Company.

From the foregoing, it may be readily seen provisions of the "agreement" held strong odds against Father Murgas, and it is difficult to say at this late day whether the promoters had no other intention except to capitalize upon or completely deprive Father Murgas of the fruits of his labor. Promoters in the early day, as perhaps in this day, usually implied distrust. When the veracity of this matter was brought to the attention of Father Murgas by those who knew him intimately, he would reply that he was not interested in the business side of his scientific studies. He wanted to benefit humanity, and whatever else happened he would only say: "Let it be the Will of God."

Be that as it may, Father Murgas finally submitted his plans for a complete and most up-to-date apparatus, and on July 7, 1904 specifications were placed into the hands of Pettebone and Ireland, local Architects with offices in the Coal Exchange Building, Wilkes-Barre, who in turn released bids to various contractors for the construction of Antenna Towers, a laboratory building, and transmitting stations.

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MURGAS' ANTENNA TOWERS, FIRST IN AMERICA

A few weeks after arrangements were completed, construction of the Antenna towers began and with them the history of advanced wireless made its way into the annals of scientific endeavor.

The towers, a double (twin) design first of their kind in the United States were anchored to a concrete foundation 15 feet in the ground to secure a firm footing. Each tower measured 25 feet 6 inches square at the base where they were separated from each other by a distance of 40 feet, and a total of 91 x 50 feet covered the area of the foundations.

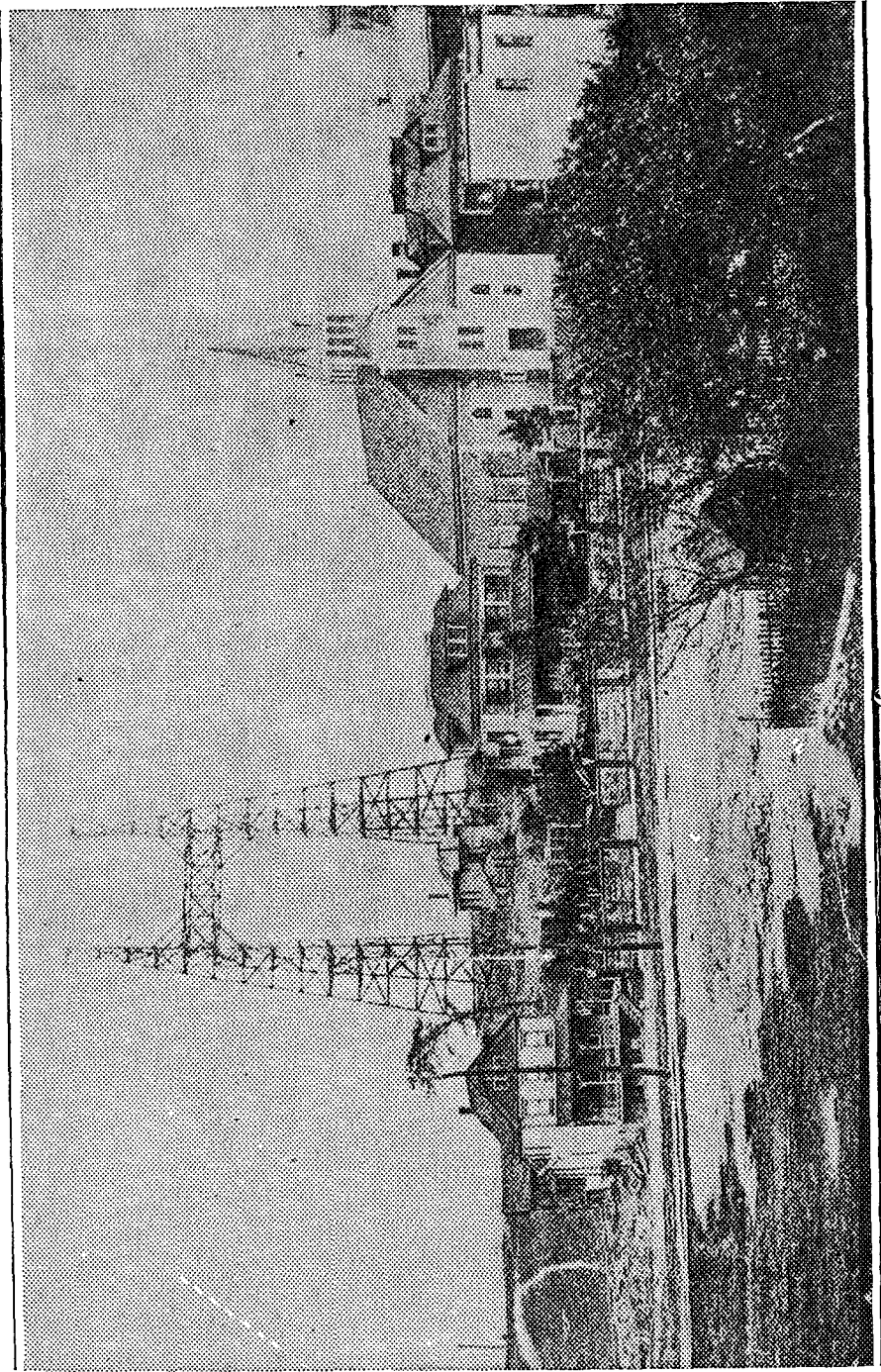
The twin towers, tapering upward, were joined by a cross bridge at a height of 100 feet, and at a height of 150 feet the towers were mounted with a small platform to serve as a footing base, and from here two spruce poles were added raising the towers 50 feet higher thus giving the towers a total height of 200 feet. The towers were constructed entirely of wood, and when first erected served substantially the purpose for which they were intended.

The Wilkes-Barre towers were set up almost directly to the rear of Father Murgas' church as pictures of them indicate, and a duplicate pair of towers was likewise built in Scranton 20 miles away occupying the highest point in that city. The towers in both cities were built simultaneously and attracted considerable attention since they were visible for miles around. They were also a source of mystery to the traveling public and none could guess their purpose at that early date. The antenna settings at the very top which served to release and capture signals, messages and musical tones racing through space, was as yet an innovation beyond the comprehension of the common public. In 1944 when this writer conducted a house-to-house search for material with which to do this book, Mrs. Anna L. Hermann, 25 N.

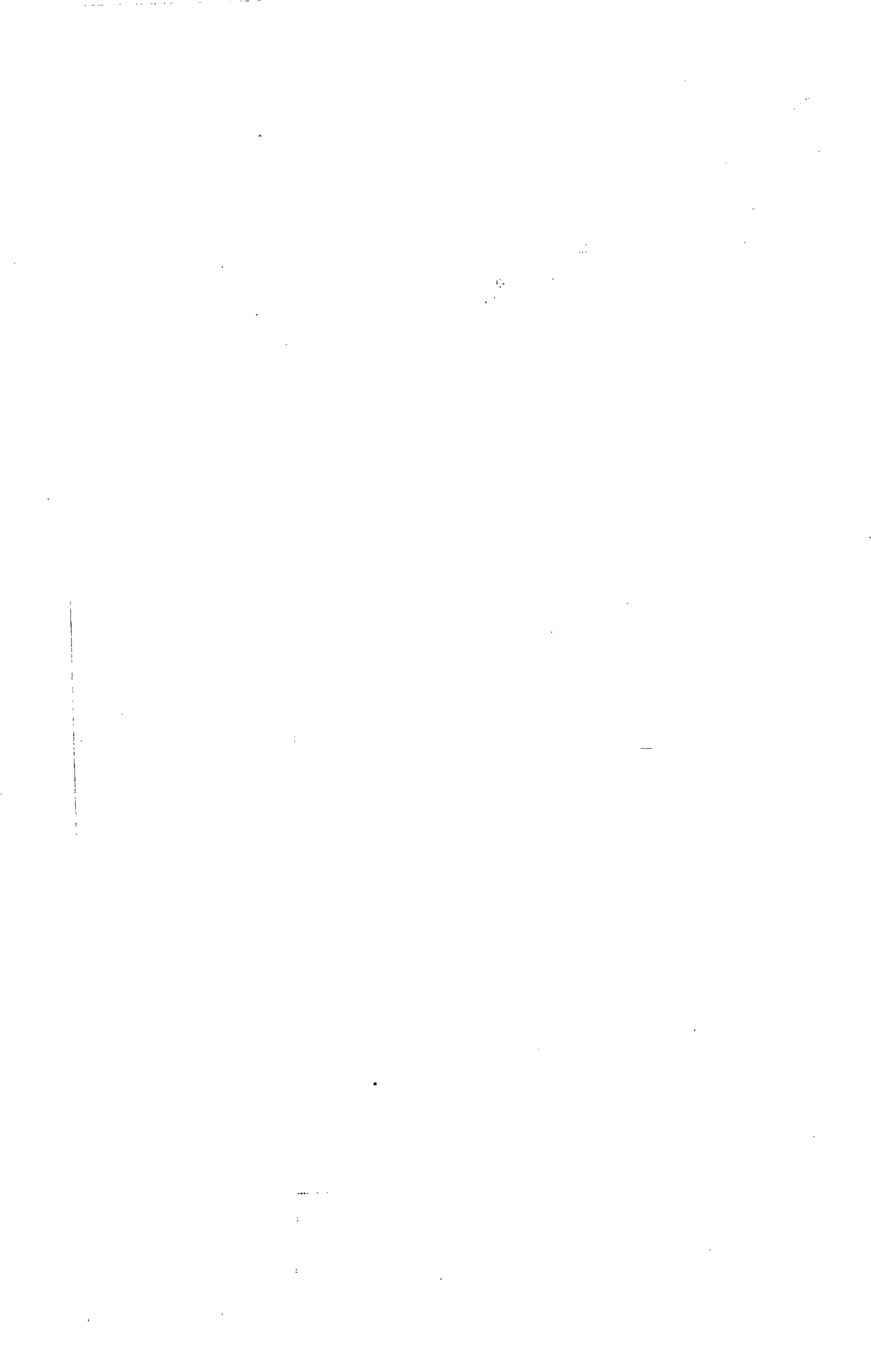
Landon Avenue, Kingston, Pa., a suburb of Wilkes-Barre, was the only person found who still bore a vivid but brief recollection of what took place 40 years earlier while a young woman residing on Alder Street and Crown Avenue adjoining the Scranton towers. Mrs. Hermann who witnessed the construction of the Scranton Antenna towers, still remembered the tall electrified fence around them with a warning sign reading "Danger" upon it to keep intruders away. Other interesting episodes related by Mrs. Hermann in connection with the Scranton towers will be found in a later chapter.

However, in constructing the antennas, Murgas' knowledge of wireless was put to its crucial test since fitting the towers was also a part of his experiment, the success of which depended on his skill alone. In the pioneering days of wireless with no criteria by which its success could be judged in advance, one of the difficulties which had to be overcome in building antenna towers was in securing the proper kind of insulators. Since none were on the market at that time, they had to be specially manufactured based on designs furnished by Murgas himself. The insulators required a capacity of 150,000 volts to provide a wet sparking distance of six inches. Each insulator measured fourteen inches in diameter and weighed twenty-five pounds. They were made of porcelain with a bronze glazed finish, and are said to have been the largest insulators of their kind manufactured in the United States at the time.

Thirty-two miles of wire was required to make a spark of the desired length, but in the meantime Murgas was studying means that would enable him to transmit messages between Wilkes-Barre and Scranton with a three inch spark, and by so doing, considerably less power would have been required.



Newly Constructed Antenna Towers, First In America, Located In The Rear Of Murgas' Old Wooden Church. They Represent An Integral Part Of The "Murgas System Of Wireless Telegraphy."



HIS MUSICAL WIRELESS TELEGRAPHY AND THE FIRST RADIO

As previously mentioned, the towers themselves were substantially built of good pine timber with elbow and connecting plates of iron, but they had no guy wires except those used between the top of the towers and the top of the mast arms. These were of galvanized iron broken in several places by strain insulators. The antenna itself (made up of loosely dangling or hanging wires attached to the cross-rope strung from the top of the antenna poles) were composed of 10 cables of No. 10 B. & S., stranded well-insulated copper wires. Each cable hung from a separate insulator of particularly well-insulated construction, and each insulator was a rubber rod 30 inches long and $\frac{1}{5}$ of an inch thick with outer petticoat tubes of polished hard rubber. The insulation of the antenna cables themselves were said to have been the most perfect of that day, hanging as they did from the cross rope connected at the top of the mast arms. At 30 feet from the ground all the cables were fastened to another cross rope attached at each end to a 150,000-volt insulator, and from that point they were gathered in a bunch and brought into the operating room through a hole in the center of a square plate glass window. The earth connection, measuring 4 feet at each side, went through a smaller window, and was made of a flat strip of copper attached to the water pipes of the regular water supply line in Wilkes-Barre.

Upon completion of the antenna towers, construction of a new laboratory, sending and receiving station buildings followed in Wilkes-Barre and Scranton each measuring 20 x 32 feet. The towers and station buildings were built under contract by Mr. W. J. Robbins of Harris Hill Road, Trucksville, Pa., who still enjoyed life in his 80th year when interviewed in 1944 by this writer. Mr. Robbins had difficulty recalling important incidents but his relations with Father Murgas were always cordial and most satisfactory.

THE UNIVERSAL AETHER TELEGRAPH COMPANY

With the Antenna Towers, the laboratory and transmitting station buildings completed, we return to the most important principle in the agreement between Father Murgas and the Syndicate wherein Murgas was required to demonstrate his wireless system to be in such working perfection as to make it suitable for commercial expansion. It may be well to state first, however, that the "Universal Aether Telegraph Company" was organized in Washington, D. C., on November 28, 1904 with a capital stock of \$10,000,000 and proposed to issue two hundred thousand shares at par value of \$10 each, full paid, non-assessable, to secure a working capital of two million dollars for the purpose of establishing communication by wireless between towns and cities, or wherever communication may have been desired. The Murgas system of wireless telegraphy was to have been adaptable for use on both land and sea.

The company was the absolute owner of all the patents taken out by Joseph Murgas, and it delayed offering to the public any opportunity of participating in the ownership of stock until every minute practical detail of construction and operation of the Murgas system of communication was worked out and tested. Of course, the possibilities of the new system was measured only by the necessities of the general public for commercial intercourse. What the telephone and telegraph systems were doing for the public at considerable cost especially for long distance service, the same could have been done faster and at much lesser cost by the Murgas system of wireless communication. The Universal Aether Telegraph Company planned to establish lines of communication throughout the country and abroad. Territorial rights to be sold to subsidiary companies was also considered.

HIS MUSICAL WIRELESS TELEGRAPHY AND THE FIRST RADIO

As a field of profitable investment at that time, the Murgas system no doubt offered a tempting opportunity as a supplementary agency to the then existing telephonic and telegraphic systems of communication in point of speed, accuracy, and efficiency.

The business office of the Universal Aether Telegraph Company was first located at 925 Chestnut Street, Philadelphia, Pa. Later the Company moved its offices to 303 Penn Mutual Building. After 1911 the address of the Universal Aether Telegraph Company seems to have been omitted from the Philadelphia City Directory. It was never made clear in the records uncovered by this writer whether stock in the company was solicited before or subsequent to the final public test of the Murgas system, and because of this, it is difficult to say to what extent stock sales have been made.

In 1905 the Universal Aether Telegraph Company published a stock-selling prospectus, a sort of business catalogue outlining its proposition to the general public. Its aim was to raise necessary capital with which to develop the enterprise.

On the roster page of the catalogue the names and business connections of Officers and Directors are given. They are reproduced as follows:

OFFICERS AND DIRECTORS
of
THE UNIVERSAL AETHER TELEGRAPH COMPANY

President:
J. F. STOKES

Vice-President:
W. P. M. BRAUN

Treasurer:
GEO. G. WILLS

Secretary:
CHAS. T. MEGEE

DIRECTORS

JOHN WILLS, *Miner and Shipper of Coal*

W. P. M. BRAUN, *John Braun and Sons*

MARK COSTELLO, *Costello, Cooney and Co.*

C. H. ROYAL, *President Royal Electrotype Co.*

CHAS T. MEGEE, *Ship Broker*

J. F. STOKES, *late President of the United States Electric
Signal Co.*

J. MORRISON DAVIS, LL. B., Ph. D., *Editor International
Railway Journal*

GEO. A. WOERTZ, *Merchant*

E. W. McCORMICK, *Attorney-at-Law, Washington, D. C.*

GEO. G. WILLS, *Miner and Shipper of Coal*

Prof. ARTHUR W. GOODSPEED, *University of Pennsyl-
vania, Consulting Engineer*

SOLICITORS

GIVAN W. HART)
) *Philadelphia, Pa.*
THOMAS A. GUMMEY)

REGISTRARS

MERCHANTS' TRUST CO., *Philadelphia*

HIS MUSICAL WIRELESS TELEGRAPHY AND THE FIRST RADIO

The Company was organized after a few trial tests of Murgas' system proved themselves satisfactory to the founders of the syndicate. However, since the tests were strictly private, though in each instant successful, Murgas was in no wise pleased to have so vast an undertaking rest merely on private decision. If the public was to be solicited for funds, then by the same token the public must be given a guarantee upon which it could place its confidence. As previously stated, Murgas was not a business man, but he made a firm stand against any thought of "slipshod" methods which might have served as a "promotion scheme." Consequently, it was decided to launch a preliminary test of major importance with limited public attendance. Although Murgas was scrupulously certain of a successful outcome, he naturally had some fears of such possible interference as earth currents on high mountain ranges rising 1,500 feet higher than the hill upon which the Wilkes-Barre Station was located. There were several such peaks to contend with between Wilkes-Barre and Scranton where the second station was located each running at an angle across the path of electrical waves discharged by Murgas' apparatus. Nevertheless, Murgas was sufficiently confident that this contour in the land would not have any effect in the transmission of signals with his system. Other troublesome elements were in the presence of inductive disturbance. The line of transmission - as we may call it for convenience sake - was situated in a particularly hazardous position as regards electric railways. There were three such electric railroads running half the distance of the transmission line, while a fourth, the famous "Cannon Ball" of the Laurel Line operated parallel with Murgas' transmission line all the way from Wilkes-Barre to Scranton. To make matters more difficult, this line completely encircled the Scranton wireless station. Measurements taken with a ballistic galvanometer on the antenna at all hours at Wilkes-

Barre showed inductive disturbance to be very great, and at times the spot of light from the mirror of the galvanometer traveling by a series of jerks were thrown entirely off scale.

Such a problem as this during the birth of wireless transmission was no easy matter to solve. There were no "experts" to follow and "guide books" concerning wireless were not as much as thought of. When Murgas was confronted with the matter, he simply got busy with more experiments and soon hit upon the proper syntonization and thus overcome the difficulty. But before he did so, he found it necessary to entirely reconstruct his transformers, readjust the condensers and choke coils several times as simple calculations could not often be depended upon and continuous experimentation had to be resorted to.

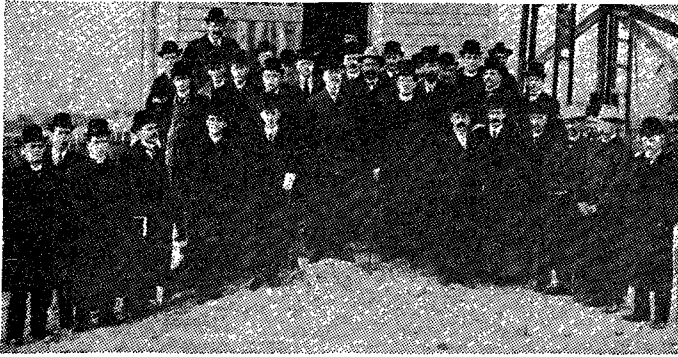
DEVELOPMENT OF THE MURGAS SYSTEM

While Father Murgas refused persistently to say anything for publication regarding the outcome of the test, preferring to see it through without much publicity, he realized that he was yet in serious need of expert telegraphers specially trained to handle fast transmission keys. The reader will recall that one of the special features of Murgas' apparatus was speed.

About that time, The Scranton Times had an Associated Press telegrapher on its staff. Gideon W. Shadle, a young man about 25 years of age was that telegrapher. He was reputed to be the most rapid operator in Northeastern Pennsylvania and Father Murgas borrowed him to assist in carrying out the tests. More will be said in a later chapter concerning the invaluable assistance rendered by Mr. Shadle to Father Murgas who frequently admitted that the success of the tests rested a great deal on Mr. Shadle's assistance as operator.



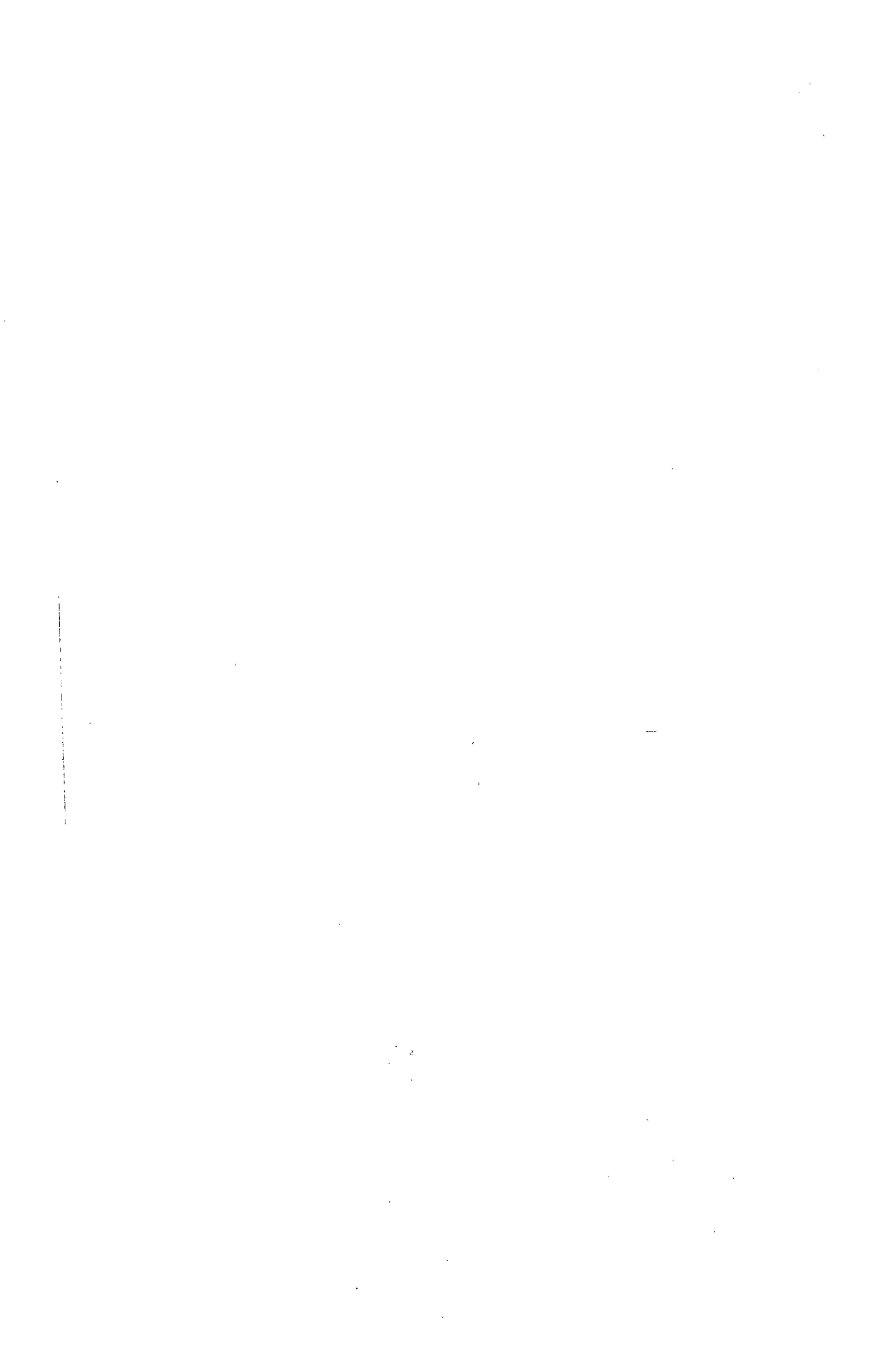
A Surviving Letterhead Of The Universal Aether Telegraph Company
Sponsor of "The Murgas System of Wireless Telegraphy."



Stockholders, Officers, And Directors of The Universal Aether Telegraph Company Gathered With Public Officials November 23, 1905 To Witness The Final Test And Demonstration Of The Murgas System. Bishop Hoban, With Top Hat, Is Standing Next To President Stokes.



Operator Thomas "Tommy" Murphy Receiving Messages At The Scranton Station During The Public Test And Demonstration.



HIS MUSICAL WIRELESS TELEGRAPHY AND THE FIRST RADIO

Finally on the afternoon of Thursday, April 27, 1905 everything was placed in readiness and a small number of men gathered to witness the experiment of what was then a "long range" transmission by wireless the first of its kind on land. Besides Rev. Murgas and several officials of the Syndicate, Professor Arthur W. Goodspeed, a noted engineer and physicist at the University of Pennsylvania was present on behalf of the Company. Lieutenant Robison of the United States Navy was assigned to witness the test and report its outcome to the Government. Mayor James Mair of Scranton, and Mayor Daniel S. Hart of Wilkes-Barre were also present. Others making up the group of witnesses were newspaper correspondents and representatives of various technical institutions including the famous International Correspondence School of Scranton, Pa. "Tommy" Murphy an old time press telegrapher on the staff of now forgotten "Scranton Truth," a once powerful daily, handled the apparatus at the Scranton end while Gideon Shadle transmitted signals and messages from Wilkes-Barre. When everything was in readiness, the Scranton party, after waiting a few moments, heard a faint sound in the receiver but after repeated efforts by Gideon Shadle a message came through saying: "Success to the inventor". A smile of gratification appeared on the face of the anxiously waiting priest-inventor and a similar effect was reflected on the faces of those witnessing the phenomenon. At the request of Father Murgas, Tom Murphy immediately flashed back to Wilkes-Barre saying: "Gloria in excelsis Deo." This marked the first successful culmination of long years of labor on the part of Father Murgas and, for the first time in wireless history, messages were sent and received at long distance over land which Marconi and other experimenters in wireless pronounced as an utter impossibility.

To perfect an inland system of wireless was infinitely more difficult than to perfect one to spiral over stretches of

rolling water, and that was the best Marconi's could do at the time. Every house, every tree, and all sorts of wires in general impeded the progress of the current and deflected its direct flow.

After completing the first major test, other experimental tests followed with the aim of improving the apparatus. Subsequent tests were conducted at the height of terrific storms to ascertain the force of Murgas' apparatus. It was during such periods, when the lightning played havoc with the antenna, that prompted Mrs. Hermann, mentioned in the early part of this chapter, to relate a "frightful" experience she had one stormy night. "I remember," Mrs. Hermann began in an interview with this writer, "when our home adjoined the Scranton antenna towers of Father Murgas' wireless we were often frightened out of bed by the awful behavior of the lightning while it played around the antenna towers during an electrical storm. We did not know whether it was the lightning or Father Murgas' wireless that caused the disturbance because they both 'operated' simultaneously. In the midst of one of these storms the lightning would circle our house and the lids on my stove would dance around."

It was during a storm of the above proportion accompanied by high winds shortly after midnight, Sunday, September 3, 1905 that Murgas' Wilkes-Barre wireless tower suffered considerable damage. The 50 foot mast poles supporting the antenna at the top broke, and in falling to the ground carried with them the screen of the tuned receiving wires ruining the apparatus to the extent of over one thousand dollars in repairs. Upon formal inspection, Murgas attributed the accident to defective work on the structure, saying, that if the mast poles had been properly anchored, the top of the towers would easily have withstood a stronger gale than that which caused the destruction. In any event, repairs were

made as soon as possible and the station resumed operations anticipating the final test and public demonstration scheduled for the following November.

MURGAS DEMONSTRATES FOR PRESIDENT
THEODORE ROOSEVELT

What began as a study in chemistry during Murgas' seminary days in Slovakia developed into proportions of widespread interest of the entire scientific world and aroused the curiosity of a famous President of the United States of America. During an annual rally made up of members of "Father Matthew Society," an organization in Scranton devoted, at that time, to strict sobriety prior to the very thought of prohibition in this country, President Theodore Roosevelt honored the gathering as its principle speaker. The celebration, usually held on October 10, for some reason was pre-dated for August 10, 1905. When more than 6,000 total abstainers passed in review, the first request by "Teddy" Roosevelt was that he be taken to the home of Father Murgas in order that he might see there what it was the priest was doing regarding a new system of wireless telegraphy. The parade and rally was under the supervision of Father John J. Curren an early crusader against excessive intoxicants, and as a close friend of Father Murgas, Rev. Curren accompanied President Roosevelt to Murgas' laboratory in Wilkes-Barre where a special demonstration of the new wireless telegraph system was given for the benefit of the honored guest. It was the first time President Roosevelt witnessed such a phenomenon. Father Murgas was highly complimented and encouraged with a promise of government support.

In the early part of the following November, Marconi himself paid a visit to Father Murgas. He was keenly interested in the operations of the "tone System" and other fea-

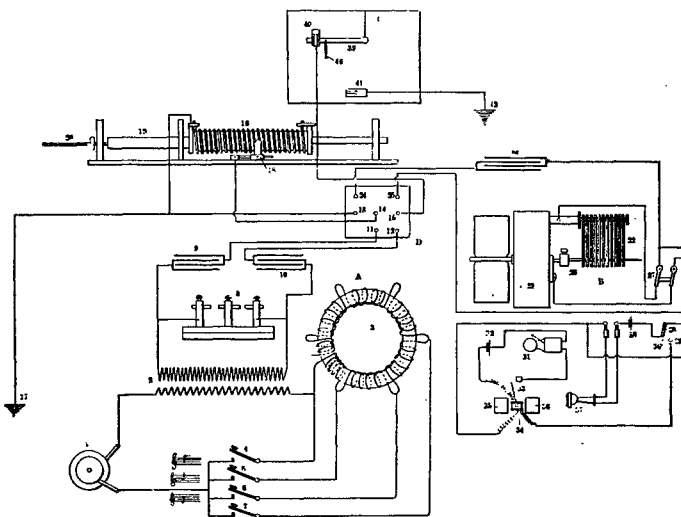
tures of Murgas' wireless method. Several people whom this writer interviewed attested to the fact that Marconi visited Father Murgas' laboratory a second time. The purpose of this visit will be discussed in another part of this book.

Father Murgas considered himself very fortunate and felt highly honored with Marconi's visits. Being an honest and simple man, Murgas no doubt explained with childish pride the details of his Tone system and other advanced discoveries in wireless, and it is here that he may have erred to his own detriment. It was later rumored, though without definite proof, that Marconi eventually introduced some of the principles of Murgas' method into his own new system and then called it the "Sonorous Method." Professor Fessenden, another experimenter in wireless at that time, was likewise found later to be using a similar Tone adoption and other features found in Murgas' method, but Fessenden was never known to have visited Murgas' laboratory. Of course, Murgas' patents were filed with the United States Patent Office where anyone could have gained knowledge concerning them.

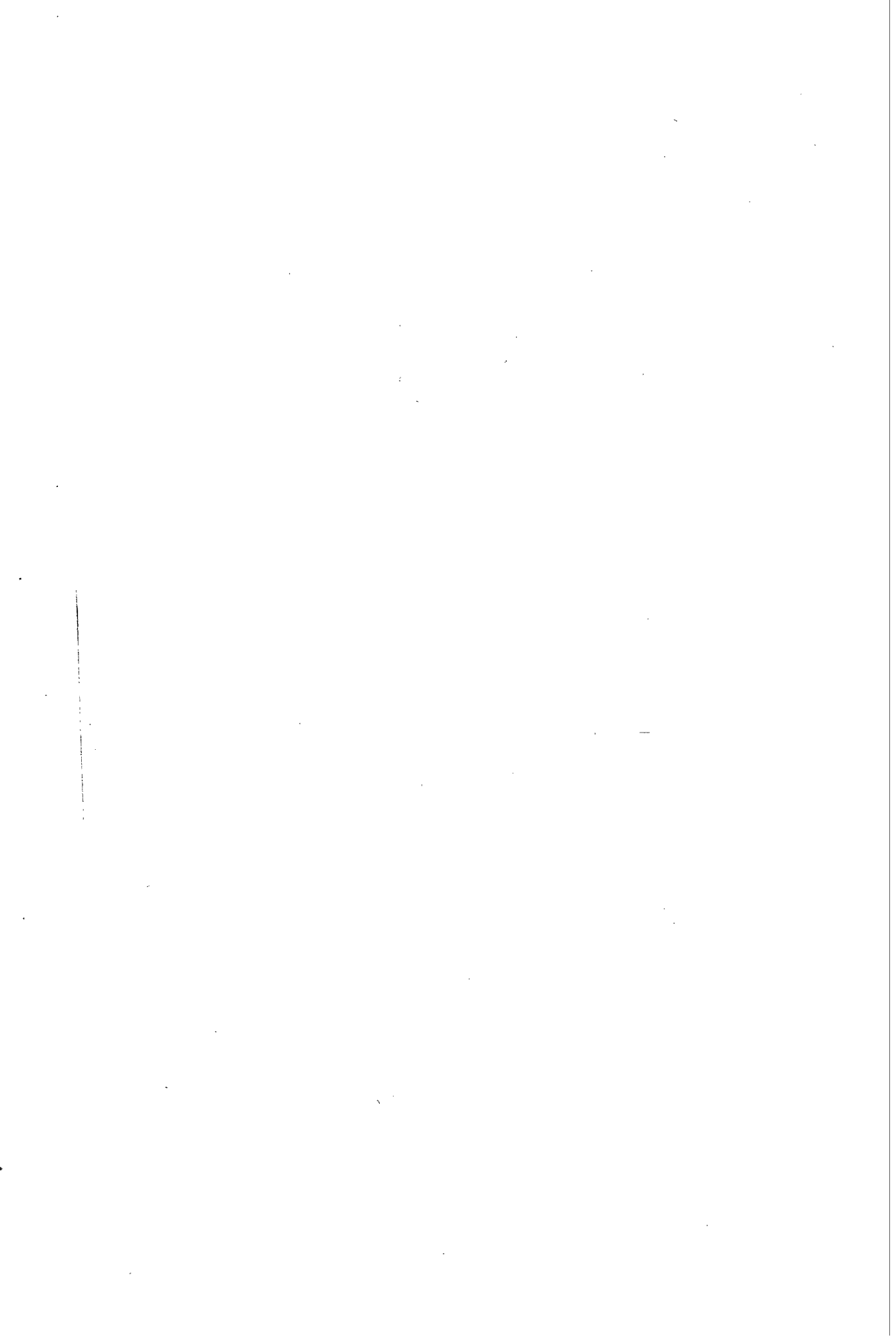
Occasionally rumors were current that Father Murgas was "giving his secrets away," and that science was borrowing his knowledge without benefit to the priest, but Murgas would smile away all mention of "martyrdom" to the commercial urge. However, we are now treading on a matter that will be fully dealt with as a special subject in a later chapter.



In The Above Picture, Taken January 1905, Mr. Gideon W. Shadle Is Seen As An Associated Press Telegrapher On The Staff Of The Scranton Times. A "Pin-up" Photograph Of Rev. Murgas Is Seen On The Switch Box Door In The Upper Left Corner.



A Patent Drawing Of The Principle Part Of Murgas' System Of Wireless Telegraphy Employing The Musical Tone Method As Indicated By Keys 4, 5, 6, and 7.



CHAPTER VI

THE CRUCIAL TEST OF MURGAS' WIRELESS SYSTEM

(Second Phase)

The tests of Murgas' wireless system performed thus far were merely perfunctory and experimental incidents to ascertain the working qualities of his invention and comply with the requirements of the Company.

When the final "tell-tale" test and public demonstration was decided upon, newspapers and technical journals picked up the announcement and the subject aroused widespread interest. The success or failure of the new system; and the material or financial reimbursement due Father Murgas for his painstaking labor and contribution to science, "hinged" on the outcome of this test. As might have been expected, Murgas was highly anticipative but not the least fearful of the outcome, barring unforeseen accidents.

However, on returning to his rectory late one night after ending a series of pre-experiments at the laboratory assisted by Mr. Shadle, his chief operator, who unstintingly devoted himself to the task of helping Father Murgas succeed, it was disclosed to Mr. Shadle that since the "Tone" impulses had not as yet been completely codified to conform with every letter in the alphabet, it was a question as to whether a public demonstration at this time would be feasible. Murgas thought of his position in the community. He was no man's pupil but his own. He fully bore in mind, of course, that the ugliest feature of it all was failure and its resulting consequences. Mr. Shadle assured him there was no doubt as to the success of the apparatus. They immediately set to work on the codification and in a few days this phase of the problem was solved.

Meantime, many people who knew of the coming event were rather incredulous since any number of unforeseen things could interfere with the proper function of the apparatus and thus disrupt the demonstration. However, Mr. Shadle pledged his utmost loyalty and best effort towards making the test a success for he realized that Father Murgas' reputation and life's work was at stake. But in addition to this, Mr. Shadle had a feeling, though without prejudice, that the promoters desired nothing more than a "publicity demonstration" to help them sell stock in the company which they formed. However, Mr. Shadle simply thought of the matter in that sense but did not inform Murgas about it.

When Mr. Shadle first met Father Murgas, he was taken into the laboratory where it was explained what was desired in the form of assistance. The receiver Murgas constructed as part of the apparatus proved satisfactory for the time. When he turned to the transmission key proper, it was observed that the key, constructed by Murgas himself, was much too slow, clumsy, cumbersome, and entirely impractical for the rapidity of the apparatus. With great patience, Mr. Shadle tried to improve results by suggesting to Murgas that he shorten the distance between the electrode, reduce the diameter of the electrode tips and try to reduce the power, but the spark gap continued to make terrible cracking noises every time the key was used. It was too much for tender ears. Finally, Mr. Shadle suggested the use of a "Martin-Duplex" sender, an early forerunner of the present Vibroplex key and on his next visit to the laboratory brought along a Martin-Duplex for Murgas to study. After experimenting at great length with the spark and the Martin-Duplex key, Murgas evolved a voltage on which the Duplex could be employed. Then, a few more refinements or adjustments, and the sending apparatus operated so perfectly

HIS MUSICAL WIRELESS TELEGRAPHY AND THE FIRST RADIO

that Mr. Shadle enjoyed himself talking with ships at sea while Father Murgas went back to his job of improving the receiver. After that, Tommy Murphy at the Scranton station and Mr. Shadle in Wilkes-Barre carried on several experiments while Father Murgas sat at Shadle's side. When the equipment "kicked up" for some reason, Murgas got busy, noted the defect and experimented until he evolved an improvement. Finally, the apparatus was made foolproof. The entire equipment now functioned perfectly and the hurdle was mounted. The speed of sending and receiving became unlimited.

On the night before the public demonstration however, Murgas became very nervous. Turning to Mr. Shadle he said: "My future is in your hands!" That expression had two different meanings, and Shadle understood them perfectly.

By this time Father Murgas was confident that the equipment was in excellent condition and accordingly informed Mr. Shadle and Tommy Murphy that he had implicit trust in them, consummating a successful test and demonstration. Mr. Shadle sought to reassure Father Murgas by suggesting that he leave everything to him and enjoy himself with his friends for the time being. More than that, Mr. Shadle told Father Murgas to take a fishing trip before the test, which Murgas readily did. This delighted him. After checking the equipment for the last time, he found everything satisfactory and in good shape for the grand test and public demonstration to be carried out on the following day.

THE OFFICIAL TEST AND PUBLIC DEMONSTRATION

Thursday, November 23, 1905 will remain forever as a day of universal note in the annals of Radio and Wireless Telegraphy, and the mental fertility of Rev. Joseph Murgas

will continue to draw laurels of glory for the twin cities of Wilkes-Barre and Scranton long after that anthracite coal community has ceased flourishing as an important segment of industrial enterprise in America. That memorable day, recorded in most newspapers and every scientific journal, formally inaugurated the Murgas System of Wireless Telegraphy.

On the morning of November 23, a large number of interested persons gathered around the small concrete building housing Father Murgas' laboratory located between the bases of the lofty towers in the rear of his rectory in North Wilkes-Barre to witness an official test and public demonstration of what later, and perhaps since, had proven to be the most advanced wireless telegraph system in the world.

Between the hours of 2 and 4 o'clock in the afternoon, nearly a hundred men and one woman gazed in wonderment at Gideon W. Shadle, telegraph operator, as he transmitted messages in English, Latin, and Slovak languages handed to him by witnesses for dispatch to Tommy Murphy at the Scranton end of the system over 20 miles away.

The interior of the laboratory presented an extremely curious appearance to the uninitiated. Glass jars surmounted by circular metal balls were seen on shelves and on the floor; all sorts of intricate machinery filled the place; a bunch of wire came in through a window; more wire came in through the floor, through the ceiling, through the walls and other places. But out of the "chaos" there evolved by the careful brain of Father Murgas a new system of wireless telegraphy that attracted world-wide attention and brought fame to its inventor.

On the operator's table were seen a somewhat different than ordinary set of telegraph instruments. They were

HIS MUSICAL WIRELESS TELEGRAPHY AND THE FIRST RADIO

strange, complicated gadgets and all sorts of mechanical contrivances.

Gathered about the operator were all the officials and directors of the Universal Aether Telegraph Company headed by its president Col. Joseph F. Stokes. Between Col. Stokes and Father Murgas stood Lieutenant-Commander Samuel S. Robison later Admiral, USN., representing Secretary of the Navy Bonapart at the suggestion of President "Teddy" Roosevelt. These were followed by Professor Arthur W. Goodspeed, Physicist and Chief Electrical Engineer at the University of Pennsylvania; Hon. Frederick G. Kirkendall, Mayor of Wilkes-Barre; Mr. E. W. Stevenson, Chief of Staff of the "Electrical World" magazine now the "incunabula" of electrical science journals in America; Col. Ernest G. Smith, late President of the Wilkes-Barre Publishing Company and Editor in Chief of "The Wilkes-Barre Times-Leader"; and a group of foreign and American newspaper correspondents. Among the many clergymen friends of Father Murgas were the late Rev. Dr. James J. Walsh, noted Catholic Scientist and Historian; the Rev. J. J. Curran, the noted temperance leader; Rev. Matthew J. Jankola; Rev. Frank Vlosak, and other religious leaders from different parts of the country.

At the Scranton Station located in the rear of 914 Alder Street, North-East Corner of McGinnis and Rosar Court, a large gathering also took its place to witness the test. In the little wooden station between the giant antenna towers was operator Thomas Murphy who sat at a small table adjoining the instruments with a typewriter in front of him and ear-phones on his head.

About him were gathered a distinguished company of witnesses who came to watch the test. Among them were the Most Rt. Rev. Bishop M. J. Hoban; Mayor Alexander T. Connell; Director of Public Safety, Mark K. Edgar; City

Solicitor, D. J. Davis; Superintendent of Buildings Inspection, F. L. Brown; City Engineer, David J. Davis; Rev. J. A. O'Rielly late Bishop of the Scranton Diocese; Rev. J. A. Moffitt; Rev. P. J. Gaffikin; Rev. N. J. McManus and many other leaders in their respective communities. There were several officers of the Universal Aether Telegraph Company and a group representing the Government including Dr. Cornelius van der Hoogt of the State Department, Washington, D. C., and Mr. Thomas Murphy, Editor of The Scranton Times, (not related to operator Murphy).

We now return to the Wilkes-Barre station where we find the hands of the clock pointing exactly five minutes of two. It was near the zero hour. Most of those gathered in the laboratory looked wise but said nothing. The room became tense with silence. Father Murgas furtively glanced out of the window to see if any noticeable change appeared in the atmospheric condition. He returned to the operator's table and fixed a pair of earphones to his head signifying readiness to the operator in charge of the instruments. Promptly at 2 o'clock Mr. Shadle threw a large switch immediately behind the keys and a sharp crackling noise filled the room. The operator then applied his own earphones and began to manipulate the instruments. Vivid flashes of electricity jumped with lightning rapidity producing a sound which startled the onlookers. That was all. The operator then waited a moment for the signal from Scranton and calmly announced to those looking on that the Scranton Station was ready.

MESSAGES EXCHANGED

The Hon. Frederick C. Kirkendall, Mayor of Wilkes-Barre then walked up to the operator and wrote out the first message as follows:

HIS MUSICAL WIRELESS TELEGRAPHY AND THE FIRST RADIO

"Hon. Alexander Connell, Scranton:

Wilkes-Barre and Father Murgas send their best wishes to you and to our healthy daughter, Miss Scranton. Since the last election, the wires of the machine have been cut and we are now sending you this message without them.

FRED C. KIRKENDALL,
Mayor of Wilkes-Barre"

To this message Mayor Connell of Scranton immediately dispatched the following reply:

"Hon. F. C. Kirkendall, Wilkes-Barre:

Scranton sends hearty congratulations to Father Murgas, our mother city's foremost inventor. May he live long enough to derive all the benefits he is rightly entitled to.

ALEX. T. CONNELL,
Mayor of Scranton"

Bishop Hoban, who, as a most interested spectator could hardly restrain his enthusiasm, and having been seated at the elbow of Operator Thomas Murphy, received the next message addressed to him from Wilkes-Barre.

"Most Rt. Rev. Bishop Hoban:

Please accept the heartfelt greetings from your Slovak priests through the wireless telegraph of Father Murgas.

REV. MATTHEW JANKOLA"

Bishop Hoban next picked up a sheet of paper and wrote out the following message which was immediately dispatched:

"Rev. Joseph Murgas:

Laudetere Jesus Christus. Accept the heartiest congratulations of myself and of all the priests of the diocese of Scranton on the success of your wonderful invention and on the honor you have brought upon us.

M. J. HOBAN, Bishop"

Acknowledging the good wishes of Bishop Hoban, Father Murgas replied in a bilingual message of Latin and Slovak which, for the first time in world's history, Latin as well as Slovak words were flown through the air. The message from Wilkes-Barre to Scranton was as follows:

"Most Rev. Bishop Hoban:

Congratulationem tuam magna appreciatione acceprimus omnia
fausta tibi precamur. Slovak)—Slava na vysosty Bohu.

JOSEPH MURGAS"

THE BISHOP'S LITTLE JOKE

The Bishop next laughingly remarked: "I wish I could say something in the Gaelic language!" Then, looking about he suggested to Father Zylchowicz, pastor of the Polish Catholic Church of the Sacred Heart in Scranton that he send a message in Polish. "There is a possibility however," the Bishop said, "That some of those consonants of the Polish language might drop out between here and Wilkes-Barre and disarrange the mechanism."

Father Zylchowicz, visibly nervous but undaunted sat down with pencil and paper for a moment and produced the following, which was sent with some difficulty by Operator Murphy:

"To Father Murgas:

Niech zyje Ks. Murgas na slowe kosciola i narodu Slowackiego.

S. ZYLCHOWICZ"

The message puzzled Operator Shadle at Wilkes-Barre because he was unprepared for it. He feared something may have gone wrong in mid-air. Handing the transcription to Murgas, it was translated to read as follows: "Long live Father Murgas in the glory of the Church and of the Slovak Nation."

Bishop Hoban once more sent a message addressed this time to Mayor Kirkendall of Wilkes-Barre:

"Fred. C. Kirkendall, Wilkes-Barre:

Wilkes-Barre may now be said to be hyphenated with Scranton by the system of Father Murgas. Congratulations on the additional hyphen.

M. J. HOBAN Bishop"

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Scores upon scores of messages were exchanged by priests, city officials, and members of the Universal Aether Telegraph Company between Wilkes-Barre and Scranton before evening set in, and by the time other felicitations and congratulatory expressions made their rounds, both Operators, Shadle and Murphy were very tired.

There was absolutely no hitch either in sending or receiving during the entire test and demonstration, and it was definitely proven that the Murgas system succeeded in overcoming every well known drawback incident to high tension lines, currents from street arc lamps, earth currents and the like. The speed attained in transmitting the messages is said to have reached between 45 and 50 words per minute. The Marconi system, at the time, reached its maximum speed at 15 words per minute. The rapidity of the Murgas system was due, of course, to the "tone method" evolved by Father Murgas. The current used with which to project the messages was 7 amp., on the low-tension side and this was afterwards reduced to 3 amp. A Peerless AC generator No. 7691, 2 KW 110V 400 revolutions, self excited field type, supplied the current throughout the test. It was located in the cellar of the laboratory.

The test was obviously a successful one, and while Father Murgas was extremely pleased with the outcome, he would only smile. That his efforts were crowned with glory was due to his faith in his idea. He succeeded in spite of jeering friends some of whom tried to discourage him. They changed their scoffing into compliments after the test and cheerfully praised him for his ability to accomplish what he set out to do.

Lieutenant-Commander Robison, after witnessing the test on behalf of the United States Government, admitted the outcome as a most satisfactory one. Aside from that, he

could not make a detailed statement concerning Murgas' invention because orders from Washington directed him to report first to Secretary of the Navy Bonaparte. The officers and directors of the Universal Aether Telegraph Company were thoroughly pleased and fully satisfied with the test. Col. Stokes, President of the Company, said Father Murgas' apparatus was "one of the most wonderful machines in existence." Mr. Thomas A. Gummey, and Mr. Gavin W. Hart, Solicitors for the Company, were equally quick to say that the Murgas system was by far "without a peer in mechanics and physics." Speaking further they added: "the enormous horsepower required to send a message by Marconi's system makes it very expensive. With one-hundredth part of that power, Murgas' system will circle the globe." Officials of the company carried away as souvenirs most of the messages regarding them as valuable trophies. Bishop Hoban and public officials participating in the demonstration likewise kept their messages as important mementoes later eagerly sought for examination by this writer, and it was only through persistent correspondence that most of them were obtained for transcription in this biographical work.

Incidentally, we should not conclude our account of the official test without casual reference to an important character who, on behalf of the Syndicate, intimately studied the working principles of Murgas' wireless inventions. We refer to Professor Arthur W. Goodspeed who joined the faculty of the University of Pennsylvania in 1884 and for many years preceding his retirement in 1930 was Professor of Physics and Director of the Physics Laboratory at that institution. In the capacity of adviser for the Universal Aether Telegraph Company, Professor Goodspeed was assigned to keep Murgas' apparatus under observation and make periodical

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reports to the officials of the syndicate. At the time of my research I was unable to ascertain the extent of Professor Goodspeed's knowledge of electrical science or that of Physics, but in my interviews with those who remembered Professor Goodspeed in frequent consultation with Father Murgas in the laboratory, I was assured that while Murgas' "tone system" baffled all experts, Professor Goodspeed was no exception. Since wireless transmission at that time was a strange new creation to scientists, Professor Goodspeed, with all due respect, could only gather such factors of it as were interpreted to him by Father Murgas.

MR. GIDEON W. SHADLE. A TRIBUTE

At this stage of the work on Father Murgas it is inestimably important that we pause to pay tribute to one whom faith enabled to render valuable aid when Father Murgas staked his claim in the frontiership of a new science.

By way of introduction, Gideon W. Shadle, chief operator in the official test and public demonstration of Murgas' wireless telegraph system as mentioned in previous paragraphs, was born October 28, 1880 of English and Dutch parentage near Harrisburgh, Pa. When nine years of age his father died. He was taken in by his grandparents both of whom passed away soon thereafter, and as a consequence he was left to the care of a kindly neighbor. What meager means his widowed mother had was needed for the support of two younger sisters.

The kindly neighbor, equally poor in earthly goods, found it difficult to maintain the support of young Shadle and consequently was forced to "farm" him out leaving the boy to drift for himself. Three years later young Shadle had the good fortune to gain the friendship of a Pennsyl-

vania Railway passenger conductor who not only rendered material assistance and instructed him in the reading of many good books, but secured for him a position as messenger boy at one of the railroad company's telegraph offices. Here he thought it so commendable an opportunity that he resolved to improve himself by learning telegraphy. As he mastered the art, he was given permission to "cut in" with a telegraph instrument of his own on the office switchboard during the night which enabled him to practice copying press dispatches on a typewriter as they dashed through the line. Accomplishing this, he next learned the Phillip's Code widely used in press work. When the newspaper train arrived at four o'clock the next morning, he would compare his copy with the news items in the paper which had been transmitted only a few hours before over the same wire to the newspaper office.

With this training in the art of telegraphy, he ventured on the career of an itinerant telegrapher, working for press associations throughout New England States, on newspapers, and at brokerage houses in eastern cities. He finally became Chief Associated Press Telegrapher on The Scranton Times, Scranton, Pa., and it was then that he became acquainted with Father Murgas whom he continued to assist at the laboratory after his day's work was done at the "Times" office.

Of his many letters to this biographer, the one dated June 1, 1944 will serve as a characteristic example of his enthusiasm and devotion to Father Murgas' work in the interest of wireless science. The letter follows:

"Dear Mr. Palickar:

I am extremely glad to learn that you have possession of the original messages I transmitted during the official test of Father Murgas' wireless system, and since

you mention that some of the messages between Wilkes-Barre and Scranton were in Latin and Slovak, it brings to mind the hectic time I had with messages of this nature on the day of the test. Really Mr. Palickar, I am still of the opinion that these messages were particularly framed to catch me and "Tommy" Murphy off our guard. Every moment of that day warned me that the slightest slip on my part would not only humiliate Father Murgas in the eyes of his friends, but would also prove fatal in his agreement with the Company. Nothing of the kind happened as subsequent facts amply demonstrate. Most fortunately the apparatus worked perfectly and a successful demonstration of his tone system amazed the doubtful public. Persons, high and low, who attended the demonstration, did not find one single flaw in his system. He had the goods, and he produced them.

It was a pity that the Universal Aether Telegraph Company did not extend the tests if only to ascertain how far the signals could be projected. The principles and the groundwork was there. The signal strength was exceedingly powerful, piercing, as well as penetrating. Murgas' system, to my mind, would have been a worthy competitor with the best communication systems of today.

After the test in 1905, I received a letter from President Stokes of Philadelphia asking me to come there and take charge of a public test at Wanamaker's store. I thought such a request extremely odd and instead wrote back to Stokes suggesting that a test be held between Wilkes-Barre and Philadelphia. Mr. Stokes demurred to my suggestion which led me to believe that all he wanted was to put on a public stunt to help sell stock in the company. Here my relation with Mr. Stokes ended.

REV. JOSEPH MURGAS, *Priest-Scientist*

I sincerely admired Father Murgas in what he did for his people in the parish who were poor, and for his vision and his kindness to me. The people of the valley were truly endeared to Father Murgas, and the success of his wireless career was with him a primary intention to bring happiness to the Slovak people.

Failure of the public test on November 23, 1905 would have crushed everything to earth right before his very eyes, and indeed prove tragic to him. I knew and deeply realized all this and therefore brooked no obstacle to make the test a grand success. As a result, Father Murgas was well compensated financially and otherwise, I am certain.

In July of 1918 I left the employ of the Associated Press on The Scranton Times for that of another and far different line of work. In closing, I wish you every success, Mr. Palickar, in your laudable work in writing a sorely needed biography of Father Murgas. —

Yours very truly,

Gideon W. Shadle”

Deprived of an education in his youth, Mr. Shadle was later privately schooled. He subsequently graduated from the University of Pennsylvania. After being married he continued living in Philadelphia where he passed away in his sleep on January 19, 1947, survived by his wife and son, Philip L. Shadle.

As for Thomas “Tommy” Murphy who handled the Scranton transmissions of Father Murgas’ wireless test and demonstration, an intensive search by this writer revealed that he alienated himself from his early career as telegrapher

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shortly after the test, and died somewhere in Newark, N. J., "unknown, unwept, and unsung." (*)

Thus, in summing up our story of the official test and public demonstration of Murgas' Tone System in wireless, it is needless to reiterate that the essential features of the system have been explained at great length. The chief advantages claimed for it over other systems however, was a higher possibility of speed because of the tone method employed, and an absolute assurance that the messages sent would be received only at the station for which they were designed to be received. This was made possible by a system of attuning by which the receiving and sending instruments were attuned to a certain musical pitch.

Each station had a given combination of musical sounds. If a message was sent from Wilkes-Barre to Scranton, for instance, the Wilkes-Barre instrument had to be attuned to the pitch of the Scranton instrument and could not be picked up by any other station or different system because of the tuning.

THE WORKING PRINCIPLES OF MURGAS' SYSTEM

(A Brief Sketch)

The extraordinary rapidity of the Murgas system was in dispensing with the comparatively slow and imperfect "coherer" substituted by what was termed "an imperfect

*) In the material gathered for this biography and despite many years of research no mention of Gideon W. Shadle was found anywhere. Yet, it occurred to me that the man who played so important a role in the drama of Father Murgas' wireless career was worthy of his laurels. With this in mind, I geared one of my interviews with Mr. Thomas Murphy, Associate Editor at The Scranton Times into a discussion about the operator who handled transmissions of messages for Father Murgas during the public test and demonstration nearly 45 years ago. Mr. Murphy who, as reporter for the Scranton Times "covered" the test at the time, recalled Gideon W. Shadle as the operator.

At Mr. Murphy's suggestion I called on Mr. Frank Gibbons, Investment Broker with offices at J. H. Brooks & Company, Scranton, Pa., who, as an old-time telegrapher and acquaintance of Mr. Shadle noticed, by coincidence about a year later, an article in the Wall Street Journal by Mr. Shadle. On the basis of this clue, I located Mr. Shadle as living in Philadelphia, and what followed was a long and intimate correspondence between Mr. Shadle and this writer.

contact" in the delicate transmitting and receiving mechanism. This "imperfect contact" was obtained by employing small carbon pieces, one end of which rested on a minute platinum block while the other end was pivoted to a steel needle which revolved at a very slow speed as illustrated in the patent drawings.

The contact between the carbon pieces and the steel needle offered resistance to a low voltage current passing through it from a dry cell. But at the instant an *oscillating* current passed this contact, the resistance of the contact was diminished allowing stronger current to pass through the points of contact.

Briefly, the sound effect worked on the following principle: A sound was produced in the spark-gap at each and every touch of the key at the transmitting station. This sound was then reproduced at the receiving station. Since the mechanism was adjustable in the Murgas apparatus, certain adjustments of the transmitting device produced different musical tones in the spark-gap of the transmitting station and would be accordingly received in like manner by the receiving station. The method of transmitting and receiving musical tones based on Murgas' system is fully indicated in Fig. 1 and 2, as shown in the patent drawings, and is the first incident in history proving that real musical tones, or "musical sound waves" were projected through the air, which, incidentally merits the credit of being the first "radio." But there will be more convincing details about this claim in the chapter following.

In the matter of transmitting tone messages as compared with the Morse alphabet however, an example may be given in the letter 'a' as represented by one "dot and one "dash" (.-) in the Morse alphabet. In the Murgas system

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the letter 'a' was represented with the 'high tone' for the dot, and a 'low tone' for the dash. In the letter 'b' (—...) on the Morse, was substituted by producing the 'lower tone' once, and the 'higher tone' three times. In transmitting the letter 'c' (—.—), the same was produced on Murgas' system as:

Lower Tone Higher Tone Lower Tone Higher Tone
 (—) (.) (—) (.)

In regards to the rapidity of transmission via the Murgas method, the entire matter rested with the speed of the operators since the apparatus was able to reproduce as much as 2000 impulses per second, which, on the other hand, means that this would produce a tone as high as a whistle. Furthermore, the Murgas operator did not have to contend with time intervals as in the Morse method.

For example, transmitting the word "Murgas" via the Morse method would be done as follows:

(— — ..— .— — — .— ...) The word "Murgas" in Morse.

In the diagram below a comparative difference is indicated between the Morse and Murgas methods, and it will be observed how the elimination of time intervals by the use of tone impulses in Murgas' method hastened the transmission of messages.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
—		—			·	·	—			·	—	·			—		—		·		·	—			·	·	·
·	·		·	·	·		·	·	·		·	·	·		·	·		·	·	·							
L	L		H	H	L		H	L	H		L	L	H		H	L		H	H	H							

In this diagram the letter "H" is used to indicate the higher tone, and the letter "L" the lower tone. The figures at the top of each interval show the number of intervals to

be indicated by delay on the part of the operator in transmitting a message as shown by the Morse method under the figures at the top. In the case of transmitting the name "Murgas," the operator has to indicate 28 intervals. This may have seemed a small saving, but when measured by thousands and millions of words the difference in time saving would have been tremendous. If seven intervals were eliminated in sending six letters via the Murgas method, it meant that from fifteen thousand to twenty thousand intervals were eliminated in transmitting one column of ordinary news in the average daily paper.

In transmitting the word "Murgas" in the above diagram via the tone method, two dots on the 'lower tone' indicated M; two dots on the 'higher tone' and one dot on the 'lower tone' U; one dot on the 'higher', and one dot on the 'lower' and again one on the 'higher' indicates R; two dots on the 'lower' and one dot on the 'higher' tone indicates G; one dot on the 'higher' and one dot on the 'lower' indicates A; and the three dots on the 'lower' tone indicates S.

It therefore has been proven and practically demonstrated that the average commercial speed by the Murgas System exceeded that of all other wireless transmissions, and would have still done so if it were in use today.

The United States Government at the time considered trying the Murgas System but it has been difficult to ascertain despite numerous inquiries by this writer why the proposed plan never materialized.

Following the official test and public demonstration of the Tone system, Father Murgas continued his experiments in wireless and evolved many improvements benefiting in general and is credited with 13 patents in that field. In addition to this, he received 2 patents on arc light improvements, and a patent for the perfection of a special fishing reel.

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OTHER MURGAS PATENTS IN WIRELESS TELEGRAPHY AND RADIO

In addition to Murgas' first two patents in wireless telegraphy granted to him under No. 759,825 and 759,826 amply dealt with in preceding pages of this work, a brief resume of his remaining patents is well worth the reader's attention.

In the order of their number, Father Murgas' next patent filed January 4, 1905 and granted January 14, 1908 under No. 876,383 known as "Means for Producing Electromagnetic Waves" was a means of doing just what the title implies and was further used in connection with X-ray and other processes depending for their operations on free ether and high voltage electricity.

Murgas' fourth patent, filed October 7, 1905 and granted April 6, 1909 under No. 917,103, while an improvement on his very first two patents, served in producing different spark frequencies from a source of current without the employment of interrupters and thereby producing a different tone characteristic in his system.

The fifth patent No. 848,675 filed by Murgas January 29, 1906 under the name of "Wave Meter" and granted to him April 2, 1907 represented an invention which enabled the measurement of waves in electric oscillations, as, for instance in wireless telegraphy where the determination of the wave length involved the determination of the frequency. It also enabled the measurement of frequencies in the system of the character involved.

The sixth invention by Father Murgas filed February 17, 1906 and granted July 16, 1907 under No. 860,051 was, without doubt, the most publicized wireless innovation during the pioneering period, and if carried to perfection would have completely revolutionized the entire communication system of the world.

The invention patented under the name of "Underground Wireless" or "Buried Antenna" was, what may be called an inversion of the usual antenna towers, namely, instead of an ordinary "aerial," the new antenna was extended into the earth by boring a hole deep in the ground, one at the sending and the other at the receiving end. Father Murgas' patent was granted on the basis of his workable model in the form of two 50 foot holes in the ground separated by about one hundred feet. Signals were really transmitted by this method but only with great difficulty, and as far as Murgas was concerned, it was but an idea which he promptly abandoned because he considered it unfeasible due to metallic absorption of electrical waves when projected into the earth. Newspapers and scientific journals of the world however, "played up" the idea in broad sensation as an item of human interest without consideration for Father Murgas' feelings.

The largest and most fantastic account of the experiment to appear in newspapers was that published by the "Chicago Sunday Record-Herald" for March 4, 1906. In the manner of a "special feature," it appeared as follows;

AN UNDERGROUND WIRELESS

(By Special Correspondent)

"In a few months, residents of New York City may be able to drop a message in a deep hole and have it arrive in London a few seconds later. They may receive a response by the same method just as quickly. Briefly, the underground wireless system has been invented by Father Joseph Murgas, Pastor of the Slovak Catholic Church of Wilkes-Barre who is a trained electrical expert, and it is considered that the underground wireless will be the cheapest and most productive system of telegraphy in existence.

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The Universal Aether Telegraph Company, backers of Father Murgas' work, promised to start work immediately by drilling a hole two miles deep in New York and London simultaneously. The holes will be concreted to prevent moisture effecting the copper wires which, of necessity, will be a very heavy type. The wires will connect the discharging and receiving apparatus at the bottom of the hole with a sending and receiving station on the surface.

An official of the company said that a hole 5,000 feet deep was recently drilled in Germany by a company prospecting for gold, and no difficulty was encountered. So confident is the Universal Aether Telegraph Company of the underground success that all other developments it has sponsored with Aerial telegraphy has been suspended . . . ”

The story, given here in condensed form, occupies two full columns of the newspaper without troubling to seek Murgas' confirmation or denial, and his patent papers for the invention in question do not claim what the news dispatch tended to indicate. The entire matter was no doubt exaggerated by members of the Syndicate for reasons of their own.

The seventh invention by Father Murgas filed for patent on March 17, 1906 and granted April 2, 1907 under No. 848, 676 was known as "Electric Transformer," and as the name implies, was used in the adjustment of wireless means and improving the general function of the apparatus over that of any other systems.

The eighth patent filed May 17, 1907 and granted March 23, 1909 under No. 915,993 was simply called "Wireless Telegraphy" in as much that it represented an improvement on a previous patent No. 860,051 and was a means by which

oscillatory impulses were more vigorously propagated and more distinctly received especially where earth currents and various electrical interferences had to be contended with.

The ninth invention patented under the name of "Magnetic Wave Detector" originally filed September 29, 1908 and granted April 6, 1909 as No. 917,104 was a device whereby Murgas succeeded in detecting the direction from which wireless and other electrical impulses came and at the same time enabled him to measure the distance from their point of origin. It was the first of its kind in wireless transmission including radio, and the United States government as well as others still employ it in military use.

The tenth invention, filed March 17, 1909 and patented August 10, 1909 under No. 930,780 was called "Magnetic Electric Detector" and was represented as an improvement on a previous patent No. 455,335.

The eleventh invention by Father Murgas was known as "Method of and Apparatus for Producing Electric Oscillations from Alternating Current" was filed April 23, 1909 and granted September 5, 1916 under No. 1,196,969. This was used for producing undamped electric oscillation of high frequency from alternating current, and was an improvement on a previous invention patented in England.

The twelfth patent was granted to Father Murgas in 1900 under a British registration No. 21629 and is represented as an improvement on a previous patent registered in the United States under No. 1,196,969. The same invention was again improved upon and filed in England on April 26, 1907 and granted October 3, 1907 under No. 9726.

In his thirteenth patent filed April 12, 1910 and granted August 29, 1911 under No. 1,001,975 Father Murgas perfected an "Apparatus for Producing Electric Oscillations"

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which has since been an important item in wireless telegraphy and radio. This invention likewise was an improvement on previous inventions patented under No. 876,383 and 917,103, and it sums up the extent of Murgas' inventions in the field of tone wireless telegraphy.

Father Murgas was also co-inventor of important features in connection with electric arc lamps patented under No. 923,127 and 945,960 granted May 25, 1909 and January 11, 1910 consecutively.

Finally, since fishing was Father Murgas' only source of relaxation, he sought to add more joy to this diversion by inventing a fishing reel to suit his purpose. The "Casting Reel" was patented on April 30, 1912 under the number of 1,024,739. The object of the invention was to provide a novel and effective means for retarding the spool as the line unwound and became accidentally looped around the handle.

CHAPTER VII

MURGAS AND THE FIRST RADIO

While the preceding three chapters embrace the invention of Murgas' Tone method in wireless telegraphy, no attempt was made to include his experiment and successful discovery of voice transmission by wireless better known as "radio." Hitherto unknown facts uncovered during my research will prove that while Father Murgas' "radio" was not the refined mechanism of today, it nevertheless possessed the basic elements of the now finished product. It is not my intention to deprive those — particularly Mr. Lee De Forest inventor of the Audion tube, and others — who contributed towards the perfection of present-day radio, but years before they gained a foothold in the development of the science, Father Murgas "broadcasted" his voice through the air by the use of his tone apparatus and some added improvement.

At one time during his scientific career, Thomas A. Edison experimented with rays. One ray in particular so mystified him that he asked Marconi to identify it. Marconi found in the Edison-discovered ray a particularly useful element towards the improvement of wireless telegraphy. Subsequently, Mr. Edison referred Marconi to Father Murgas, who, while experimenting with rays also, was reported to have used his ray along with electro-magnetic impulses thus producing the means of voice transmission. This gave birth to what later became known as "radio transmission." Prior to that, such transmissions were unknown. The transmission of speech by use of the "tone" apparatus required but a slight different arrangement in the mechanism. When this was accomplished, Father Murgas developed a method of modulating it by voice impulses. A similar principle has also been used in wireless telephony which, at that time, was but a mere idea.

Father Murgas' success in the transmission of voice by wireless was amply verified by personal testimony of several Wilkes-Barre and Scranton residents whom I interviewed in the course of my research, and it is further authenticated by documents in my possession which enables me to bolster that fact.

Using his rotary spark device and connecting it with an emitting needle to which a carbon element was fixed, plus other intricate features of his tone apparatus, Murgas mounted the arrangement on a telephone diaphragm against which the voice was impinged. This also served the purpose of a microphone which at the time was unheard of. Other elements connected with the scheme were also used, and since I have not been able to ascertain them due to the span of time and loss of material, basic principles are sufficiently proven, nevertheless.

Murgas' method of transmitting voice through air overrode static and other interfering noises even at that early date, enabling the voice to be heard clearly in stormy weather. This is particularly substantiated by Mr. John "Pop" Stenger of Wilkes-Barre who, as a young man at the time, experimented with electrical energy and later worked on the amplification of Father Murgas' invention. Mr. Stenger subsequently fabricated a sending and receiving radio station antedating that of KDKA owned by the Westinghouse company reputed to have been the first broadcasting station in America. Mr. Stenger later became owner of Station WBAX in Wilkes-Barre.

As mentioned in a previous chapter, Mr. Stenger, as a young man interested in wireless back in 1905, frequently aided Father Murgas by intercepting his wireless signals and voice transmissions as they came over the air.

Speaking reminiscently of Father Murgas' pioneering

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work in wireless telegraphy and radio transmission, Mr. Stenger said:

“It was during a blustering and stormy night when I first heard Father Murgas calling from his experimental laboratory back in 1905:

‘Do you hear me? Do you hear me? Does anyone hear me?’

“Thus Murgas’ voice came through the air” Mr. Stenger recalled. Continuing, he said: “I immediately called Father Murgas on the telephone to tell him that I was hearing him, and that his signal was coming in very well through the storm. After that, I kept in touch with him for a long time during his experiments. The last message to come from Father Murgas’ ancient apparatus was ‘Gloria Deo’ ”

In my correspondence with Hon. Alexander T. Connell, former Mayor of Scranton who retired from active life and was domiciled at the Elks Club in Scranton, it has been substantiated that a personal conversation between Mayor Connell and Mayor Kirkendall of Wilkes-Barre took place over Father Murgas’ radio system back in 1907. “While I have lost my copies of the original conversation I had with Mayor Kirkendall over Father Murgas’ radio,” writes Mr. Connell in 1944, “I will say that most of our time over the wireless was devoted to trivialities such as ‘Baseball,’ ‘Bowling,’ ‘Fishing,’ and ‘Boating’ at Harvey’s Lake. The essential theme, however, which I can recall to the best of my memory consisted of the following:

C. — Connell,

K. — Kirkendall.

C. “Hello, Mayor Kirkendall!

K. “Hello?!

C. “This is Mayor Connell speaking from Father Mur-

- gas' wireless station in Scranton. Do you hear me?
- K. "I could not hear you any better if you were here in this room with me.
- C. "That's splendid. I can also hear you very plainly. Don't you think Father Murgas deserves a lot of credit for his invention?
- K. "I do indeed. Is he going to market it? Has he enough financial backing?
- C. "I know nothing about his finances. Why do you ask?
- K. "I have a few thousand dollars idle in the bank and might be induced to invest in the enterprise.
- C. "After we are through with this demonstration today, I suggest that you consult with Father Murgas about the matter.
- K. "Thank you, very much Mayor, I will indeed do so. Goodby and good luck.
- C. "The same to you, Mayor Kirkendall."

Thus ended the first Radio test and demonstration of Father Murgas' wireless talking device. The unheralded and unpublicized verbally transmitted wireless conversation privately participated in by Mayor Connell of Scranton, and Mayor Kirkendall of Wilkes-Barre practically remained unknown to the world. With this, the greatest achievement in the field of electrical science, Father Murgas' endeavors in the realm of wireless telegraphy and radio came to an end. The end did not come as abruptly as the expression here would seem to indicate. Father Murgas continued to advance his experiments along essential lines, but the development of his work became impaired through unavoidable circumstances explained in the subsequent paragraph.

Two months after Murgas' radio test conducted under private auspices, a violent storm visited Scranton at 4 o'clock

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in the morning with the result that the antenna towers in that city collapsed and crashed to the ground after terrifying nearby residents for several hours. The towers in Wilkes-Barre were seriously damaged during the same night. Previous to this unfortunate occurrence, the Universal Aether Telegraph Company was deprived, by death, of Col. Stokes its president along with two of its most important directors. The original hope that the United States Navy would adopt Murgas' tone system and thus award the company large contracts anticipated by the syndicate, did not materialize despite the fact that Father Murgas succeeded in building a perfect system of wireless telegraphy. No other systems could compare with it. His transmitter, his receiver, and his "tone" method in wireless were the most advanced in the world.

To extend Father Murgas' experiment in radio and, of course, to reconstruct the wireless apparatus was a problem which the Universal Aether Telegraph Company could no longer meet. A tremendous amount of money was required and the remaining officers of the company were disinclined to advance it. Consequently, a general abandonment of the enterprise resulted and remained in that state indefinitely.

Meanwhile, the whole scene of the wireless field began to change. It was suddenly invaded by other experimenters and the door opened wide to a surge of new and more ideas. In a short time hundreds of improvements and refinements were added to the field of wireless, and new names began to line up besides Marconi, Fessenden, Murgas, and others. Ten new wireless companies were organized in the meantime and all of them were determined to fight to the last ditch in the attempt to gain something from their activities. This naturally became a competitive factor with which neither Father Murgas nor the Universal Aether Telegraph Company would have been able to cope.

Nevertheless, those who still pride in the genius of Father Murgas continue to place the blame of failure on the Universal Aether Telegraph Company. They hold that the company could have reorganized its position and thus preserve the creative work of Father Murgas. As a result, the good intentions of the syndicate has since been questioned and it is still accused of some sort of skulduggery. At least the company can never be accused of financial banditry, an almost respectable operation in the early days not suggesting that such practices have since discontinued. However, while most of the capital of the Universal Aether Telegraph Company was supplied by the president and directors of the syndicate, a large sum was secretly invested by three wealthy Washington, D. C., lawyers who preferred to remain unidentified for reasons unknown. Fortunately, Father Murgas dealt wisely with the syndicate and was well compensated for his work under the circumstances. It is intimated that the syndicate lost over \$350,000.00 in the venture even after disposing of the patent rights to the Marconi interests, a procedure which is very doubtful. In all fairness, it must be said, however, that the main body of the syndicate was composed of legitimate business men whose integrity, sincerity, honesty, and financial responsibility was above reproach, and Father Murgas would have been the last to accuse them of underhand or unscrupulous dealings. There are no records available indicating otherwise, neither is there proof that he uttered complaints against them.

Be that as it may, the Universal Aether Telegraph Company or whatever legal segment of it may have survived during intervening years, has never officially dissolved. Instead, it continues on record and represents itself as an existing concern. Its papers of incorporation filed in the District of Columbia November 28, 1904 indicated, during a search

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by this biographer at the Office of Recorder of Deeds, Washington, D. C., on November 24, 1948 that its term of existence was perpetual, and its directors were still listed as that of E. W. McCormick, P. B. Anderson, and S. A. Terry. The last Annual Report of the Syndicate, filed January 20, 1912 was signed by William P. M. Braun, George G. Wills, and John Wills, three of its original officers.

On December 21, 1916 William P. M. Braun and John Wills, both of Philadelphia, as Trustees of the Universal Aether Telegraph Company formulated an agreement between themselves and Father Murgas which provided in effect that—

“Joseph Murgas as party of the first part has, by an assignment dated the 21st day of December, 1916, sold, assigned, and transferred certain letters patent to Universal Aether Telegraph Company and to William P. M. Braun and John Wills as Trustees, the said assignment to be for the benefit of the Universal Aether Telegraph Company or a subsequent company to be organized on the same lines as the above Company; and,

“Whereas, the party of the first part, being the owner of 10,000 shares of capital stock of the Universal Aether Telegraph Company, and it being his desire to transfer the same to the parties of the second part as Trustees with the distinct understanding and agreement that upon the sale of letters patent above referred to or without the stock of the Universal Aether Telegraph Company, and upon receiving payment from said sale, the Trustees will deliver same to the party of the first part, or in case this does not materialize, the formation of a new Company shall take place based on the sale of letters patent, and thereupon the party of the first part shall receive the same pro-rata amount of the

disbursement to the stockholders under the new stock as he would have under the stock of the old company which is hereby transferred to the parties of the second part as Trustees with the same condition identically as in respect to the stock of the Universal Aether Telegraph Company in so far as it shall effect the party of the first part.” (*)

The agreement, here referred to, was accordingly signed, sealed, and delivered by Joseph Murgas, party of the first part, and William P. M. Braun, and John Wills, Trustees, parties of the second part. It was the last known transaction between Father Murgas and the Universal Aether Telegraph Company and its authorized representatives, and, with but one exception, the syndicate thereafter seems to have passed into oblivion. Based on the exhaustive source of my research, Father Murgas detached himself from further scientific endeavor and ceased experimenting with wireless telegraphy and radio after 1912.

The “one exception” to which I allude in the above paragraph lies in the fact that the three Washington lawyers, namely E. W. McCormick, P. A. Anderson, and S. A. Terry directors “*per se*” of the Universal Aether Telegraph Company, may have also represented Marconi or Fessenden interests to gain possession of Murgas’ patents as incidents in the subsequent chapter would aptly demonstrate. Reasons which may further sustain this belief are concluded in the following: 1). Father Murgas was not acquainted with the Washington group. 2). No change in ownership of the corporation was listed. 3). Records do not indicate transfer of stock of the Universal Aether Telegraph Company. 4.) There is no record of dissolution proceedings. 5). No disposition of assets (if any) is indicated.

*) Full text of the Agreement given here in excerpt is reproduced in the appendix.

CHAPTER VIII

STONE METHOD "PRIORITY" — LAW SUITS AND LITIGATIONS

Whenever admirers of Rev. Joseph Murgas discuss his achievements in wireless telegraphy and radio, they almost invariably point an accusing finger at other inventors in the same field, particularly against Fessenden and Marconi for "appropriating" his ideas and inventions in wireless transmission. While this may be true, there is no definite or conclusive evidence to justify the accusation. There is, however, documentary proof based on facts uncovered in the course of research by this biographer indicating that several years after Murgas perfected the Stone Method in wireless transmission through the use of High Spark Frequency, Fessenden and Marconi introduced an identical method into their system of wireless transmission. When Marconi employed the Stone method he named it the "Sonorous" system. When Fessenden adopted it he called it the "tuned" system. Others identified its use differently.

Incidentally, it will be recalled that Marconi visited Father Murgas' laboratory on several occasions with the object of inspecting the stone apparatus, and while Fessenden never made similar visits, an examination of Murgas' patents at the United States Patent Office in Washington, D. C., could have been a simple matter. Nevertheless, the "New York Herald" published a dispatch from its Washington (D. C.) Bureau in 1909 under the following large headline:

NAVY MAY ADOPT "TUNED" WIRELESS

(From The New York Herald Washington Bureau)

"The U. S. Navy has announced that it may adopt the Tuned system of wireless telegraphy *improved* by by Professor Fessenden and submitted in a low bid by

the Electric Signal Company of Pittsburgh to the Navy Department. Fessenden claims that this Tuned system is better than the ordinary wireless system as far as speed and keeping out all disturbance is concerned." (*

It will be readily seen in the accompanying news dispatch that every important element in Fessenden's "Tuned" system, such as "speed," elimination of "disturbance," and superiority over other methods of wireless transmission, follow the very essentials invented by Father Murgas in 1903; patented by him in 1904; and tested for practical commercial use in 1905. Neither Fessenden nor Marconi were familiar with High Spark Frequency in wireless transmission until after Murgas perfected the Tone system, and despite the fact that Fessenden claimed to have "improved" on Murgas' tone method, subsequent evidence will prove Fessenden's claim without basis of fact.

With this pertinent reminder before the reader, we now proceed with brief resumes of law suits and court litigations between Fessenden and Marconi interests involving the "priority" of high spark frequency which formed the basis of the Tone system in wireless transmission invented by Father Murgas.

Father Murgas was in no way identified with the litigations neither was he personally involved in any of the proceedings as it has hitherto been claimed by misinformed sources. Father Murgas did not even testify as a witness in any of the court proceedings which dragged through various courts from 1912 to 1916. Father Murgas' only concern with the law suits was the "appropriated" use of his invention and a request upon him for information regarding his invention

*) The italics in the news dispatch are those of the author. They are merely intended to emphasize that Professor Fessenden was careful to use the word "improved" instead of "invented," and we will subsequently see that even his claim for "improvement" is without foundation.

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to be used by the contending parties to bolster their claim of "priority" against each other.

The first suit appeared in the Courts of Philadelphia when, in 1912 as Plaintiffs, Samuel M. Kintner and Halsey M. Barrett, Receivers for the National Electric Signaling Company, assignees of the Fessenden interests brought suit against the Telefunken Wireless Telegraph Company of the United States for alleged infringement of the Fessenden patents involving High Spark Frequency in connection with the "Tuned" system of wireless transmission. The defendants denied the allegations contending that Fessenden's Tuned method was not new, pointing especially to patents No. 759, 825 and 759, 826 granted to Joseph Murgas on May 10, 1904. The Plaintiffs lost in a decision handed down by the Court, but carried the matter to the Circuit Court of Appeals where it was thrashed out in March of 1913. The Plaintiffs won in part and lost in part without gaining priority rights of the system claimed by them.

In July of 1914 the Fessenden interests represented by Samuel M. Kintner and Halsey M. Barrett as Receivers of the National Electric Signaling Company, brought suit against the Marconi Wireless Telegraph Company of America in the United States District Court, District of New Jersey. This suit also revolved around priority rights of High Group Frequencies in wireless transmission involving the tone system. Many expert witnesses testified for the contending factions. An outstanding witness in this case was Frank N. Waterman, who testified for the defendant in a sworn affidavit the essential parts of which are herewith transcribed only in-so-far as they refer to Murgas' work as a means of bolstering the defendants case. The testimony of Mr. Waterman follows:

Affidavit of Frank N. Waterman

(From page 109 of the Court Record)

STATE OF NEW YORK: }
County of New York: } SS.

Frank N. Waterman, being duly sworn, deposes and says as follows:

“My name is Frank N. Waterman. I am forty-eight years of age, I reside in Summit, N. J., and I am a consulting engineer for a well known concern. I graduated from Cornell University in 1889 after having completed a full course in electrical engineering, and immediately entered the employ of the Westinghouse Electric Company where I remained as an electrical engineer to the end of 1900. During that time I gained all sorts of experience with electrical apparatus manufactured and used by that company, and particularly alternating current apparatus. Since then I have been a Consulting Engineer.

“I would like to make it known that another inventor and practical worker in the art of wireless telegraphy used high group frequencies with untuned telephones long before Professor Fessenden. That inventor was Joseph Murgas. I refer to Murgas’ patents 759,825 and 759,826, and to publications found in the *Electrical World and Engineer* for July 15, 1905, as well the *Electrical Review* for December 2, 1905; also to the trade catalogue of 1905 entitled ‘The Murgas System of Wireless Telegraphy’ published by the Universal Aether Telegraph Company.

“The idea which Murgas set forth is based on the use of musical tones as a means of signaling, and he succeeded in substituting for the dot and dash code of Morse

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a new tuned code based upon the representation of dots by one pitch, and dashes by another pitch. He contemplated the use of different tones for the purpose of secret codes and the like. Since every letter would be made up of two or more pitches, it is evident, of course, that the receiver must have been the same sort of non-resonant receivers as are found by the Court to be contemplated by Fessenden — since the reading of the messages depends upon the ability to distinguish different sounds.

“It is evident that if the expression ‘resonantly unresponsive’ employed in the claims of the suit has any meaning given by the Court in its decision, especially when the term ‘non-resonant or untuned’ is used, *then the Fessenden invention was completely embodied in Murgas’ apparatus.*

*“Futhermore, there is nothing lacking in the completeness of the disclosure of the Murgas system, whereas there is very much lacking in the Fessenden patent. Fessenden shows no high tension transformer, whereas Murgas does show one. Fessenden shows no tuned oscillatory circuits, whereas Murgas does and fully describes such circuits in his patents. The Murgas disclosures, in short, are clear and to the point, while Fessenden’s are vague, indefinite and incomplete. (***

“The desirability of the production of musical tone was clearly set forth in the patents to Murgas No. 759,825 and 759,826 dated May 10, 1904, the first, which was applied for on October 2, 1903, and the second, February 24, 1904. The patents refer to Hertzian wave wireless telegraphy and the patentee proposed to reproduce mus-

**) The italic type is here used by the author only to emphasize importance as it relates to Murgas.

ical tones of different pitches which were to be received by telephone.

“Murgas accomplished high speed telegraphy by eliminating dash and dot usage which consume time. Murgas used the briefest possible closure of the key, and as shown in previous quotations, he produced a group frequency in such a manner that the spark will occur many times during a single closure of the key even when the key is operated with maximum rapidity.

“I call particular attention to the use of the word “TONE” by Murgas. This is the scientific term used to distinguish a noise, and Murgas says regarding the use of tones as distinguished from ragged sounds:

“‘Tones are well distinguished in physics from other sounds, and the range of frequencies of vibration within which tones are produced is sharply defined.’

*“Finally, the Murgas patents and publications are very much fuller and clearer disclosures than anything found in the Fessenden patents, and they disclose the use of high frequency; the use of definite wave frequency; definite group frequencies; and untuned or resonantly unresponsive telephone receivers. This fully establishes the fact that the whole supposed invention of Professor Fessenden is disclosed in Murgas’ patents and publications!” (***)*

Affidavit of *Frank N. Waterman*

(Testimony taken 31st day of July, 1914)

In the same suit Mr. Julius Martin testified as an earlier witness on behalf of the defendant. He was later recalled to identify certain documents with which the defendants (Marconi interests) desired to establish proof of no claim

***) The italic type is that of the author.

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against the plaintiffs (Fessenden interests). The testimony of Mr. Martin is herewith transcribed as it appeared in Court Records under file of "Defendant's Proofs" page 2197:

Julius Martin, Recalled – Direct Examination

"Q. 1. I show you catalogue entitled 'The Murgas System'. When and under what circumstances did you first see this particular catalogue?"

"A. This catalogue came into my possession during 1906 and to the best of my recollection was furnished to me by Reverend Dr. Murgas whose system is referred to in this pamphlet. He had visited the Brooklyn Navy Yard to familiarize himself with a certain wireless apparatus which was there at the time, and I was delegated to escort him around and explain matters to him. This occupied some little time during which we had considerable conversation. This catalogue was furnished me as a result of our interview.

"Q. 2. Have you any way of fixing the particular day in 1906 when this catalogue was given you?"

"A. I would place the date from the day stamped on the outside cover which is August 25th, 1906, it being my regular practice to stamp a date on receipt of items of interest on them.

"Mr. Peters, Attorney for the defendants: 'I offer in evidence the Murgas Catalogue identified by the witness, and the same is marked: Defendant's Exhibit No. 176, Murgas 1905 Catalogue'."

"Mr. Ogden, Attorney for the Plaintiffs: 'Objected to as immaterial, irrelevant, and not proven! (Objection overruled).'

"Murgas 1905 Catalogue is offered in evidence and marked 'Defendant's Exhibit No. D-176!'

"In addition to this, certain publications descriptive of the Murgas system of radio-telegraphy are offered

as Defendant's Proof as follows:

"(1) An article published in the *Electrical World and Engineer*, July 5, 1905, entitled: 'The Murgas System of Wireless Telegraphy!'

'(2) An article in the *Electrical Review*, December 2, 1905, entitled: 'The Murgas System of Wireless Telegraphy!'

"(3) A pamphlet entitled: 'The Murgas System of Rapid Wireless Telegraphy!'

Direct Examination Closed.

No Cross Examination
Deposition Closed."

It may be needless to say in this instance that the plaintiffs lost the case. It is of significance to add that in every case of "infringement" of the Tone System or, as Fessenden called it, the "Tuned" system, Father Murgas' patents were employed either as a criterion factor or a decisive instrument of the Court.

The litigations involving Marconi and Fessenden interests continued from Court to Court, and this time they were brought to the Courts of New York, N. Y.

After several years of painful research through legal files long since forgotten, buried in the dark, dusty, and musty recesses of New York City Courts, I succeeded in uncovering Court records of a most outstanding battle involving "priority rights" of the Tone system in wireless transmission, and as usual, the fight was staged between Fessenden and Marconi interests. A complete transcription of this particular litigation is too voluminous for reproduction in this book. However, a brief resume of the proceedings with special reference to High Group frequency and Murgas' Tone method in wireless telegraphy; the final decision of the Court con-

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cerning "priority" rights of the "Tuned" system and the proof of its original inventor will suffice for the reader to form his own conclusion.

Following is a certified transcription of Court Records relating to the litigation:

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK

Samuel M. Kintner and Halsey M. Barrett,
Receivers of the National Electric
Signaling Company. (Fessenden Interests)

PLAINTIFFS

Atlantic Communication Company,
August Merckens, P. C. Schnitzer, K. G.
Frank, and Alfred E. Seelig. (Marconi interests)

DEFENDANTS

} In Equity 10-24
On Fessenden Patents
No. 918,306 and No. 918,307.

TRANSCRIPT OF RECORD

Defendants' Proofs

(Third Suit)

VOLUME V

Page 2307

Lieutenant-Commander Samuel S. Robison — U.S.N., Direct

New York, April 28, 1915.

"SAMUEL S. ROBISON, called as witness in behalf of the Defendants, and having been duly sworn, testified as follows:

Direct Examination by Mr. Pumphrey, (Attorney for Defendants).

"Q. 1. Your name and rank, Mr. Robison? A. Captain of the Navy.

"Q. 2. Captain, United States Navy. What was

your rank and detail during the years of 1904, 1905, and 1906? A. I was part of the time lieutenant and part of the time lieutenant-commander in the Navy and was detailed to duty in the Naval Department in charge of the Division of Wireless Telegraphy as it was then called in the Bureau of Equipment.

“Q. 3. What period of time did you serve in this capacity? A. From September, 1904, to about the 1st of July, 1906.

“Q. 4. And serving in this capacity, did you or did you not have entire charge of the wireless work of the Navy? A. I practically had entire charge under the direction of the Chief of the Bureau.

From this point the testimony of Lieutenant-Commander Samuel S. Robison brought out by Mr. Pumphrey's examination deals with pertinent questions relating to High Spark frequency in wireless telegraphy; the nature and quality of various methods designed to produce different frequencies; and various apparatus' allegedly "invented" subsequent to Father Murgas' apparatus all of which have been witnessed by Commander Robison. Direct reference relating to Murgas' Tone method in wireless telegraphy begins on Page 2318 of the Court Record and is found in the testimony of Commander Robison as follows:

“Q. 61. I show you certified copy of correspondence referring to the examination and tests of the Murgas system of wireless telegraphy and ask you to state what you know about it, if anything? A. I recognize the report and the letter referring to it as being written by me. The enclosures were obtained either from Father Murgas or from someone representing him; I do not remember which.

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“Q. 62. And on what was the report based? A. The report was based on a test of his apparatus witnessed by me in Wilkes-Barre, Pennsylvania.

“Q. 63. Under what date, if you recall? (Witness examines documents). A. Under the date of December 15, 1905. That is, the test was made on November 23rd, 1905, and the report to the Navy Department by me was dated December 15th, 1905.

“Q. 64. And you personally witnessed the test at Wilkes-Barre, Pa.? A. I did.

“Q. 65. Did you handle the apparatus yourself, or merely see it? A. I witnessed the test; I did not handle any part of the apparatus but I was satisfied as to its working principles.

“Q. 66. Did you have occasion or opportunity to hear the spark note? A. I was particularly impressed by the spark note and outside of the sending demonstration which was given, the operator in charge showed me personally the variations that he could make on his reactance regulator, for really that was what it was, to get any note he desired, instantly. I considered it a very remarkable demonstration, and still consider it to be so.

“Q. 67. Did you listen in when he was working the set? A. It was not necessary to listen in. The spark note was very obvious to every person present.

“Q. 68. Without the use of phones? A. At the transmitting station, yes. I was at the transmitting station, not the receiving station.

“Q. 69. How would you describe the spark note of that set you heard? A. It occurred to me at the time it was so musical it could be used to play a tune.

“Q. 70. Was it so used? A. No.

“Q. 71. Did the operator demonstrate that the pitch could be varied? A. He demonstrated that the

pitch could be varied at will, I think, four or five octaves.

“Q. 72. Are you able to compare that note with the note of any musical instrument familiar to us? A. The note of a high pitch organ, I guess. It was necessary for him to start with a high frequency because he obtained his tone variations by decreased frequency instead of an increased; that is, from the primary.

“Q. 73. And why did he have to start with a high frequency and decrease rather than with a low frequency and increase, if you know? A. I think he did not vary the speed of his generator. He ran it at a constant speed because it would be impracticable to change the speed quickly enough and therefore the changes had all to be made electrically in the generator and there was no means of increasing it, but he could decrease it.

“Q. 74. Did you learn how many changes were made? A. By a variation of inductance in the primary circuit. He had to produce a condition of resonance so graduated that he would get a spark every alternation. That was his highest note; and every other alternation, and every fourth alternation and so on down, but it is impracticable to go up.

“Q. 75. Do you know whether telephone reception was used with the Murgas set? A. It was.

“Q. 76. In the Murgas system, the practice is to use two frequencies, is it not, one frequency for dashes and the other for dots? A. Yes.

“Q. 77. Are you able to state whether both frequencies were received on the same phone? A. Not of my knowledge.

“Q. 78. On this test which you reported are you able to state whether messages were both transmitted and

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received during the test? A. Do you mean - received - at the other end of the line?

“Q. 79. Yes? A. Since I could not have been at the sending and receiving end simultaneously, I could not say of my own knowledge, but I was convincingly and reliably informed that such was the case, and there is no reason it should not be, absolutely none.

“Q. 80. Since hearing the spark notes of the Murgas set, have you ever heard a spark note of equal musical quality? A. No.

Mr. Pumphrey: The certified copy of the report on the Murgas Wireless Telegraph system which the witness' attention has been called to is offered in evidence as Defendants' Exhibit No. 208, Murgas System.

Questions No. 81 to 86 successively endeavored to ascertain whether Professor Fessenden was advised as to what was being done in the Navy with reference to high spark frequency, and whether such information obtained by the Navy was kept secret from Fessenden. Assurance was given that Professor Fessenden was fully informed about the matter as were other experimenters in wireless telegraphy. When this phase of the matter was fully dealt with to the satisfaction of all concerned, Mr. Ogdon, Attorney for the Fessenden interests, took over the witness.

Cross-Examination by Mr. Ogdon:

“xQ. 87. Capt. Robison, do you know the alternating current frequency of the source of supply during the Murgas test to which you have just testified? A. I do not.

“xQ. 88. Did you see the apparatus? A. I did.

“xQ. 89. Do you know how many poles it had?

A. No, I do not. I was there only about two hours in all probability.

“xQ. 90. Do you know what make of apparatus it was? A. No. I might have known at the time, but if I did I have forgotten it now.

“xQ. 91. Could you describe the generator in any way, what it looked like? A. Oh, it was small, about three feet high.

“xQ. 92. What is your understanding of the purpose and object of the Murgas invention? A. I think he states all that in the description of his patent application.

“xQ. 93. Was speed of transmission the main object in the Murgas invention? A. That was one of the objects, but it was not the main one.

“xQ. 94. Who else was present at the tests you reported on. Give the names of them? A. Father Murgas himself was there. He is the only name I recollect, but I do recollect there was a professor from the University of Pennsylvania whose name I since have forgotten. I was introduced to a number of people. Father Murgas was the only man I was interested in besides his operator and the electrician, who, under Father Murgas' direction, got the apparatus in such shape that he could play a tune on it. Of course the promoters of the syndicate and a large group of newspaper correspondents were there also.

“xQ. 95. Do you know of any record anywhere of the alternating current frequency of that apparatus used by Father Murgas? A. I do not, but I should think that some inquiry would produce it.

“xQ. 96. Could you find out yourself what that frequency was? A. I think by writing to Father Murgas, if he is still alive, he will probably tell us. He was comparatively a young man at that time.

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At this juncture of the proceedings, the reference to Father Murgas' invention seemed to have served its purpose in the litigation. The cross examination of Commander Samuel S. Robison however, was continued along other phases of the case.

However, we pass to page No. 2685 of the Court Records and resume the proceedings with the testimony of another experimenter in wireless telegraphy, namely, John Stone Stone and begin with question No. 157 when Father Murgas' invention was brought into play concerning "priority" rights:

John Stone Stone — Direct

"Q. 157. I hand you copy of U. S. Patent No. 759, 825 of May 10, 1904, granted to J. Murgas and will ask you for the convenience of all concerned, to state briefly the nature of the disclosure of the invention of this patent and to quote such passages as may tend to bring out the bearing of this patent on the question of the use of group frequencies in wireless transmission and the production of musical tones whereby in ordinary telephone receivers which may result from such use of definite group of frequencies? A. This patent relates to the production of a system for high speed sending and receiving of messages in wireless telegraphy. The indicating mechanism used is a telephone receiver in addition to the invention by which different group frequencies were used for the production of different signal elements in the transmission of messages. In addition to this, the object of the invention was also the 'provision of an improved system whereby signals may be transmitted with great rapidity and accuracy.'

Mr. Stone's testimony continues at great length, but since his knowledge of the situation was confined to that

of Father Murgas' patent papers which he read verbatim while on the witness stand, it was thought unnecessary to reproduce the remainder of his testimony in as much as Murgas' patent papers will be found transcribed in the appendix of this work.

Thus, it will be seen by the testimony of different inventors and experts in the field of wireless telegraphy and radio, that the inventions of Father Murgas really did play an important role in the litigation involving Marconi and Fessenden interests. We will follow with the final summary of the Defendant's Brief to which will be added the decision of the Court wherein it is rendered that neither Fessenden nor Marconi were entitled to any claim of "priority" of the Tone system in wireless telegraphy. It being pointed out by the Court that the invention of the Tone or "Tuned" method in wireless transmission belonged to Father Murgas, and him alone.

Summary, — Defendant's Brief

"The Murgas system of wireless telegraphy was investigated in behalf of the United States Navy by Captain Samuel S. Robison on November 23, 1905, and formed the subject of a report by him to the Navy Department dated December 15, 1905, which appears on page 649 of Vol. IX. The operation of the system as actually witnessed by Captain Robison during the test is described by him in Vol. V, pp. 2318-2321. Captain Robison annexed to his report to the Navy Department a copy of Murgas' catalogue.

"Briefly stated, the Murgas system, as described in the patents and publications, is a system of wireless signaling which substitutes for the dots and dashes of the Morse code as used in other systems, signals sent in two different tones, one tone corresponding to the dots of

the Morse code and the other to the dashes; that is to say, where in previous systems an operator wishing to send the letter 'a', for example, might transmit a dash followed by two dots; in the Murgas system he would send a dot at one tone and then two dots at a different tone.

"The instrumentalities by which Murgas gets this result include an alternating current generator and circuit arrangements whereby more or less impedance may be put into the circuit according to the position of the sending key. As Captain Robison points out (Vol. IX. p. 651), the higher of the two notes is in all the cases that produced by one spark at each alternation of the generator, and the lower tone is that produced by one spark every two alternations, or one spark every three or four alternations. Therefore, necessarily, the interval between the tones will be in all cases an octave or several octaves.

"The patents themselves make it clear that both the higher and the lower frequencies must be such as to produce audible tones.

"Murgas explicitly says (p. w, lines 81-84), that if the interruptions are of sufficient rapidity, a musical tone will be produced, and different frequencies of the interruptions will produce tones of different pitch.

"It seems reasonable to expect that where there are two audible musical tones separated by an octave or octaves, one of the tones at least will be above the frequency of 250, which corresponds about to middle C. But we are not left to inference on this point, for the catalogue describing the system expressly says (Vol. IX, p. 821) that 'the receiver is able to reproduce even 2000 impulses per second, i. e., able to reproduce a tone as

high as a whistle.' Captain Robison moreover testified that as actually operated the note produced was at least as high as the note produced by a modern 500 Cycle machine giving 1,000 sparks a second. The note was so musical that it could be used to play a tune.

"Murgas therefore generates 'waves of a definite frequency in groups having a definite group frequency above 250 per second but within the limits of audibility,' and all is called for in the Fessenden claim.

"Plaintiffs criticize this Murgas system for the reason that, as they say, Murgas was not dealing with the problem of eliminating static disturbance. If this be true, it is utterly immaterial and unimportant, since, in fact, his system was such as necessarily to accomplish that result in the same way as Fessenden's. Surely, a man cannot have a patent merely because he points out that a system previously invented and fully patented by another has a particular advantage in use which the original inventor has not specifically pointed out, when that particular advantage is necessarily involved in the use to which the inventor applies his system. But, as a matter of fact, the Murgas patent does point out that the reason why he desires to use frequencies to produce tones is that 'tones are more readily distinguished than other sounds' (Vol. VIII, p. 213, lines 87, 88). Fessenden does not even speak of his note as a tone.

"Plaintiffs also say that the range to which the Murgas signals will carry is only that to which the lower of the two tones would carry. Such a criticism is simply hypercritical. If Murgas found that his lower note was not carrying so far as his higher note, the obvious thing to do would be to raise the pitch of both of

them, and there would certainly be not the least invention in the world.

“In the Murgas patents, therefore, we find a complete anticipation of the Fessenden claim, and insist that Fessenden is not the inventor of what is said he had invented.

While there are other Court records bearing the testimony of witnesses who referred to Father Murgas' patents and inventions in connection with Fessenden-Marconi litigation, the illustration here of Murgas' position in the chain of “infringement” suits will be deemed sufficient to convince the reader of the superiority of Murgas' work in the field of wireless and radio. Certainly, the importance of his contribution to science in that particular sphere can never be denied.

The final decision in the suit just cited, as handed down by the Court, should be of interest to us. The adjudication was made on January 7, 1916 by the late Judge Meyer of the United States District Court, Southern District of New York, and while a full account of the decision is found in “The Federal Reporter,” Vol. 230, April-May 1916, pp. 829-848, a brief extract of the final rendering will adequately serve the purpose for which it is here intended. Judge Meyer ended his motion by saying:

“Fortunately in this case, we have an extraordinary array of men of super-scientific attainment, some of whom have spoken through their writings and others in the flesh, and with the Court transformed into a university classroom, it has been a liberal education to listen to the noted scientists who appeared, either as experts or as witnesses . . .

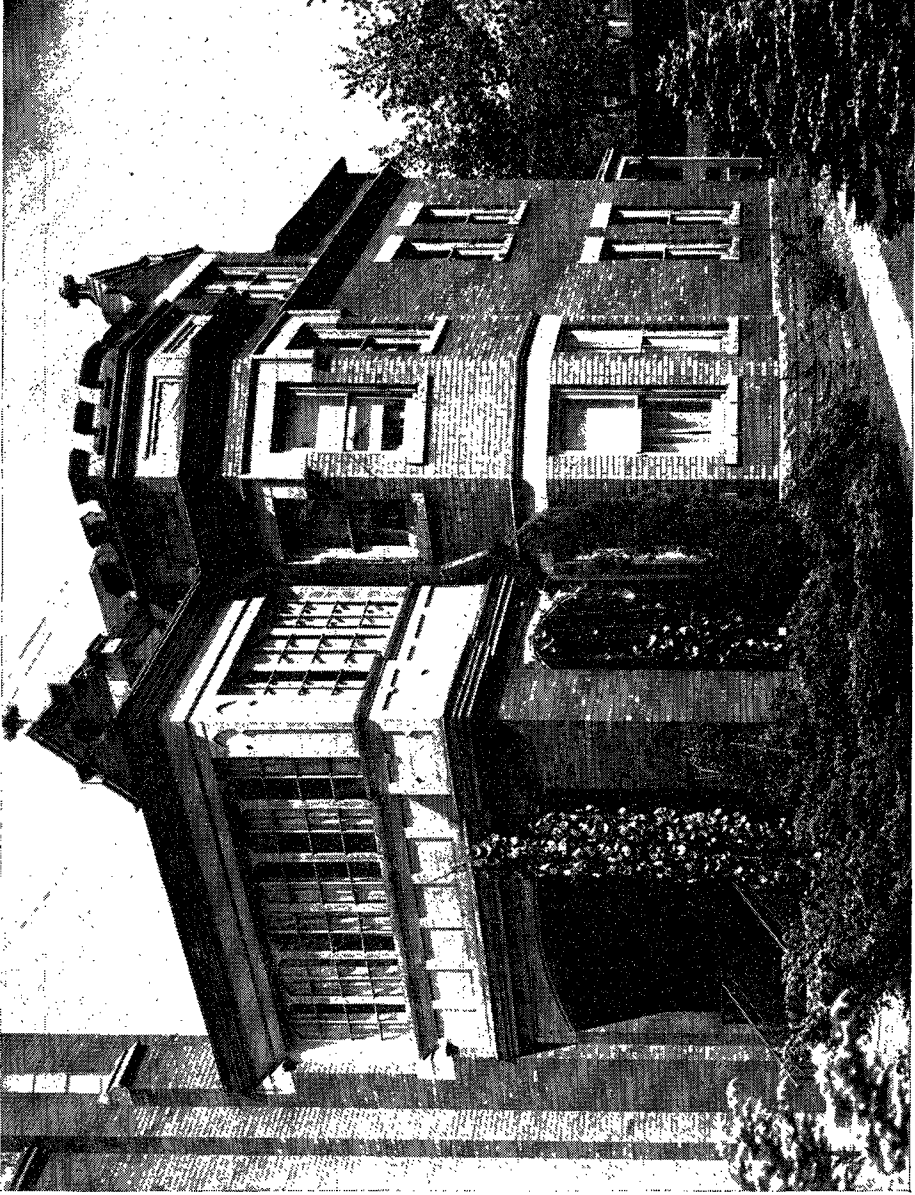
“Based on the Murgas inventions as testified in written

and oral manner by witnesses; and as explained in the 'Electrical Review' of October 25, 1902 and of December 2, 1905, it has been proven to me conclusively, that Fessenden was not the inventor of what is claimed to have been infringed upon in this notable contribution of the art.

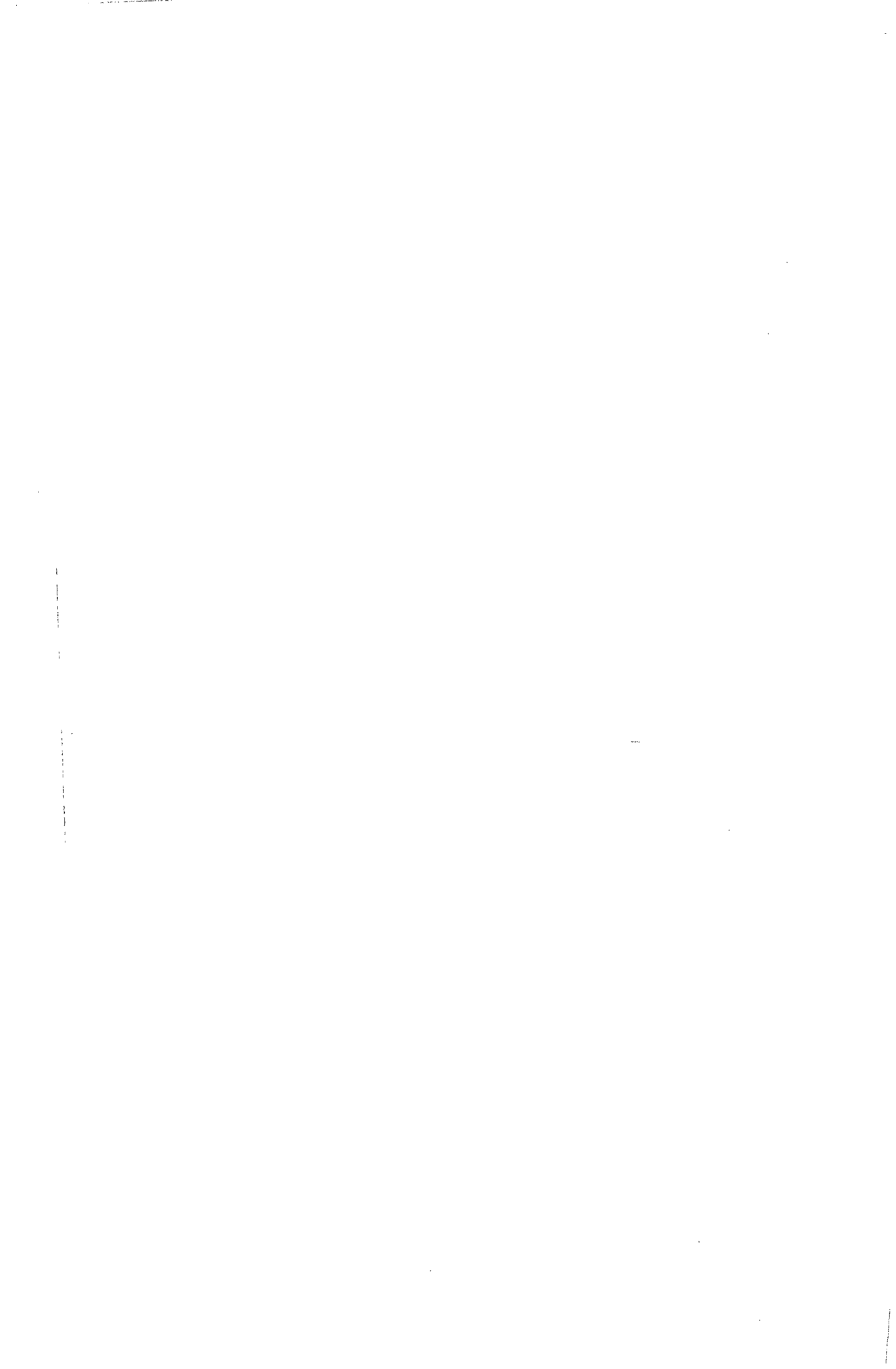
"It is therefore conceded that the defendants did not infringe on Fessenden's claim and there really is no proof of infringement in this case. The complaint must be dismissed and a decision to that affect is passed accordingly."

Just to keep the record straight, it will not be indecorous to reiterate at this time that neither Marconi nor Fessenden invented or "improved" what was claimed to have been infringed upon, and the sole credit for the invention in question belonged to none other than Rev. Joseph Murgas.

Finally, I may have added more details in this chapter than perhaps were necessary, but I did so because I had no desire to impose on the credulity of the reader especially when so serious a matter was involved. Futhermore, while I made no direct imputation that Murgas' patents were stolen, the decision of the Court and the testimony of the witnesses leaves no alternative except to believe that sinister implications played a large part in the claims of both, Fessenden and Marconi.



The Parish Rectory Built By Father Murgas As It Still Remains.



CHAPTER IX

FATHER MURGAS IN WORLD WAR I

The reader, perhaps, may have wondered why Father Murgas remained undisturbed throughout the Fessenden and Marconi litigation despite the fact that two of his most important patents and that of his name were used as imputable instruments of aid to the defense, and a decisive guide for the Court. The reasons were numerous, but the principle amongst them was World War I. Subsequent to the war itself, Murgas' personal interest was bound up in the establishment of the Czecho-Slovak republic.

As a native of Slovakia, Father Murgas took up the cudgel of leadership among his people in America who, at the height of the war were aiding the Allied Powers against the common enemy through the organized efforts of the Slovak League of America. In addition to this, Father Murgas, as president of the war time "Slovak National Council of America" became Chairman of the "Million Dollar Drive" inaugurated by the American Slovaks to help free their brethren from the yoke of Hungarian oppression and at the same time, in union with the Czechs, work towards the formation of a Czecho-Slovak state. During the fund raising campaign fully supported by American Slovaks 90 per cent of whom are Roman Catholics, it was said that Father Murgas donated \$5,000.00 of his own money. When the full amount of the drive was reached, Father Murgas, as Chairman, handed One Million Dollars to Thomas G. Masaryk who, without formal ceremony accepted the money and entered Prague in triumph as first president of the newly formed Czecho-Slovak Republic officially recognized in 1918.

Thus, from 1915 to 1918 Father Murgas devoted every moment his duties would allow towards the successful est-

abishment of the new State. His dreams of the independency of the Slovak and Czech people never ceased to fascinate his imagination. But unlike the majority of his countrymen, his enthusiasm for the Czechs so widened the lassitude of his judgment that he overlooked their shortcomings. While his dislike for the Magyars (Hungarians) continued without compunction, he preferred to look upon the Czechs with brotherly affection despite the fact that they have far outdone the Hungarians in persecuting the people of his own race and creed. As a scientist, Father Murgas gave ample proof that theories based on reason alone without testing them by experience would not hold well in physics. Yet, in his political calculations he became somewhat of a paradox. His people in Slovakia and in America, however, did not share with him his dream of a Czech and Slovak symbiosis for the simple reason that, by and large, the Czechs as confirmed atheists always lived in opposition to the Catholic Church. Furthermore, they continue in the obsessed belief that they are superior to the Slovaks. Nevertheless, Father Murgas remained steadfast in his adherence to Thomas G. Masaryk and fully supported the "Czech" republic with its faults and imperfections. From adolescence, Father Murgas was known to have insisted on settling controversial questions by himself, and endeavored, in most cases, to make rationalistic thought his only guide in their solution. Once a problem arose it stayed with him, and no matter how unpopular it was, he never compromised either with those opposing him or with his conscience. He never considered the possible loss of his popularity or reputation in upholding whatever he preferred to stand by. If his conscience dictated that he support a cause, no material consideration deterred him. Indeed, he seemed to have gone out of his way at times to become a heavy loser.

MURGAS AND THE CZECHO-SLOVAK REPUBLIC

Father Murgas continued to serve the "Czech" republic well, and it is said on good authority that he cherished a dream of rising high in some confines of the new republic as a token for his work to bring about its existence. Alas, his support of Thomas G. Masaryk and every figment of the Czech regime remained unappreciated and unrecognized. The disappointment did not cool his ardor, however, and he upheld every dictum, good or bad, released from Prague. More than that. He became a staunch "Czechophil" to the discomfort of his friends in and out of the priesthood who failed to deter him in his unpopular course.

When Czecho-Slovakia began to function as a new State, incidents of rank injustice against Catholic Slovakia took place in rapid succession. Naturally, this was brought to the attention of Father Murgas with the invariable axiom of "we told you so!"

By nature and disposition, Father Murgas was not a timid soul and it was this characteristic that prompted him to venture beyond the fringe of the forest where he could familiarize himself with unknown fields which lay ahead. He decided to confirm his sanguine dreams of Czech statesmanship, for, after all, the Czechs did owe him a debt of gratitude for his successful work in the million dollar drive. In 1920 he visited the Czecho-Slovak republic, with certain misgivings perhaps, but a heart full of love, confidence, and patriotic spirit. Alas again, for his effusive support of Masaryk and the Czechs he met with a sad and very disheartening reception. Upon his arrival to Bohemia (well known Czech portion of the Czecho-Slovak republic) where his presence should have been the occasion for a State affair, he was utterly disregarded both by President Masaryk and Edward Benes. When he expressed a desire to meet President Mas-

aryk, a subordinate official informed him that the President was too busy. This was a shock, indeed. But it was unequalled for horror when compared with the approbrious offer giving Father Murgas the American Bishopric of the new "Czechoslovak National Church" organized by the Czech government to counter the Roman Catholic Church within and without Czecho-Slovakia.

Certainly, it was not what Father Murgas expected in return for his loyalty to the Czech cause, and it so completely frustrated him that he returned immediately to his beloved parish in Wilkes-Barre. But fate, during his brief visit to Prague, merely foreshadowed the difficulties he encountered upon his return to his people in America.

Right or wrong, Father Murgas continued to manifest a definite preference for Czech leadership and he did not hesitate to advocate the fusion of Slovak destiny with that of Czech nationalism. The tragedy of the whole episode can only be found in the fact that Father Murgas was too proud to admit his error in his dealings with the Czechs. Consequently, he was looked upon as a "Czechoslovak," an odious name given to all Slovaks deserting the ideological aspects of Slovak nationalism. More than that. He was accused of a "divided loyalty" and, as a result, frequently became embroiled in serious disputes with his fellow Americans of Slovak extraction including the clergy. Vilifying attacks continued both ways as time passed on, and despite his keen intellect, Father Murgas preferred to remain obdurate, feeling that he must uphold his dignity, but it left a scar upon his life which time could never efface. After that, he retired into utter seclusion and literally pined away his life. His friends and parishioners, however, continued to be kind to him, and while many of his adversaries pleaded to let bygones be bygones, he chose to remain irreconcilable as well as inconsolable.

HIS MUSICAL WIRELESS TELEGRAPHY AND THE FIRST RADIO

MURGAS' DIFFICULTIES AND DASHED HOPES

By this time a most profound change entered the life of a world famous scientist, churchman, and statesman; and from his attitude of things in general there is no doubt that he much preferred to be forgotten. Father Murgas, however, continued to receive the visits of only those whom he considered his genuine friends, and at no time their number remained small. But as they passed one by one into the Valley of Shadows, he became more and more the lonesome man. He sought no more friends after that, and instead, he found solace in the quietude of his study, in his art, in his butterfly collection or in just plain fishing.

Though unknown to him, I admired the work of his prolific brain from my childhood, and during the early days of my life when my home was but a few miles from his parish, I attended Divine Services in his church while he officiated at the Altar. In September of 1926 as a journalist from New York City I called on Father Murgas at his rectory with the hope of gaining the story of his life. Upon being introduced to him by his intimate friend, Professor Richard C. Chladek, he immediately recognized me as his protagonist who fought in opposition to his political convictions regarding the Czecho-Slovak question. Without hesitation he expressed his displeasure with my visit saying further that since I have always written in support of Monsignor Andrej Hlinka the Slovak leader who campaigned the cause of Slovak independence and towards whom Rev. Murgas remained implacably hostile, he would not extend his courtesies to me. Nevertheless, I offered my hand in the spirit of friendship and brotherhood, but he refused it and turned away. Pained by his attitude towards me, I took my leave with injured feeling.

Be that as it may, I was proud to have been in the presence of a man who, while lacking in cordialities, was strong

enough to spurn the temptations for the material things of life. This was aptly demonstrated when Father Murgas refused the offer of a Bishopric in the "Czechoslovak National Church" established by the Czech government.

Not long after my visit to Father Murgas, I was told by his few remaining intimate friends that he continued, more and more, to lose interest in life. Meanwhile, he sought what little rest he could find in the secluded recesses of the surrounding woods where he spent the day fishing or painting. But in the secret depth of his heart he no doubt suffered the pangs of nostalgia known to all those children of the earth who have no home to go to when the day is done. It was at times such as this that the tide of his emotion came in with a surging rush that made an attempt at expression seem futile, but which may be found in the words of John L. Stoddard's poem, "Retirement:"

"Gladly I turn from the roar of the crowd,
Hand of the beggar, and purse of the proud,
Gladly go back to the humming of bees, —
Carols of birds, and the whisper of trees,
Gladly dispense with the voices of men,
Thankful to hear only nature again."

This bit of verse could not have conveyed the thoughts of Father Murgas any better during the declining years of his life had he written it himself, and as the shadows of his life grew deeper, he found he could no longer buffet the blows of the vicissitudes that brought him into the drama of human affairs. Deciding that he had about enough dealings with people outside of his religious duties, he confined the remainder of his life to God and nature. One day, while in a pensive mood, he struck upon a plan to establish an arboretum in the rural countryside with the hope of presenting to the people of his community and to all others a microcosm of all plant life in this climatic zone of the

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world. But his dream of this magnanimous plan never materialized as the sands of time were slipping rapidly through the glass of life and he was getting very, very tired. As ill health gained upon him, he felt that the full measure of life had at last made its approach, but he did not despair. Nevertheless, he gave up all social and political activities and brought all his studies to an end. On rare occasions he would visit old friends both in and out of the priesthood, and when he sought relaxation between religious performance and the reading of his breviary, he found all that his heart desired in his beautiful spacious garden, a miniature arboretum fronting his rectory by more than two hundred feet. The flowers bloomed there throughout the greater part of the year and their fragrance filled the air as he walked in the sunlight peering about to see the smallest flowers or studying his rare oddities of plant life. At other times he would sit within the protecting shelter of his wide veranda listening to the ceaseless pulsing of a small fountain; the rustling of trees; or the voices of parishioners gathered in front of his church before entering to attend Holy Mass.

As time passed, the vital energy of Father Murgas became perceptibly lower and he was obviously succumbing to a morbid sensitiveness that follows illness. However, the arrival of February 13, 1928 marked his sixty-fourth birthday and the same year ushered in the 40th anniversary of his priesthood. In recognition of the double event, a testimonial dinner was tendered in his honor by his parishioners and friends, many of them diplomats and city officials who gathered to pay tribute to a great man. In the wake of it all, and at the very last moment a petty attache of the "Czechoslovak" Legation in Washington, D. C., hastened to present Father Murgas with a "Medal of Honor" in recognition for the distinguished service he rendered on behalf of the Czechoslovak Republic. The "decoration" aggravated rather

than gratified the now ailing priest-scientist who, no doubt, looked upon the "Medal" in the light of a grim reminder.

THE LOSS OF A GENIUS

While the following year brought nothing of special importance into the life of Father Murgas, he contented himself with occasional fishing trips which served as the last mainstay of his hobbies. He enjoyed a last holiday of the sport on May 10, 1929 when he returned from Lake Silkworth with a fairly good "catch." On the morning of May 11, 1929, Father Murgas performed at an early Mass in his church, and after the services he told his housekeeper he felt terribly weak and was returning to bed for more rest. Members of his household thought nothing of his retirement in view of his health, but when he failed to appear for luncheon that afternoon, they investigated and found he had passed to his eternal reward. His physician, Dr. A. L. Lucchi was summoned immediately and expressed the belief that Father Murgas was the victim of a heart attack two hours previous.

The honors that follow a man as he passes through this vale of tears are at least a solace for those who knew and loved him. Father Murgas' funeral was conducted, as he had wished, without much ostentation; but he was mourned throughout Pennsylvania and many States beyond. Representative citizens of every nationality and every state of life; friends and admirers of all rank gathered to pay their final respects to a famous priest, artist, and scientist. When the casket was carried from the rectory on its way to the church, the cortege paused in the beautiful garden Father Murgas loved so well. The Sacred Heart Slovak Catholic Church was filled to capacity and literally thousands thronged the streets outside. The Most Rev. Bishop Thomas C. O'Reilly of the Scranton Diocese pontificated at a Solemn High Mass

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of Requiem at 10 O'clock on May 15, and after that, from the church he built and from the parish where he ministered as a servant in the vineyard of Christ, they carried the remains of Rev. Joseph Murgas. The procession of priests, scientists, statesmen and laity continued to his grave in the parish cemetery at Dallas, Pennsylvania where the final Benediction was pronounced.

Thus ended the career of a very learned man, who through no fault of his own, was all but deprived of the glory due him. Although, comparatively few individuals knew Father Murgas intimately, he had innumerable staunch admirers. It was a compliment to oneself to be proud of his great achievements for the feeling implied a certain affinity with so intelligent a man and a genius. He worked incessantly for the betterment and uplift of his people in the religious, social, and industrial sphere. His beautiful sermons were ever a delight and an inspiration to his spiritual flock.

Above all, Father Murgas gave visible proof that science can and does advance hand in hand with religion. And finally, in the roll-call of men from many nations who pioneered in the development of wireless and radio among whom we find James Clark Maxwell, of Scotland; Oliver Lodge, of England; Henrich Hertz, of Germany; Edourdo Branly, of France; Marconi of Italy; Thomas A. Edison of America, no list can be considered complete unless it includes the name of Rev. Joseph Murgas, of Slovakia.

CHAPTER X

MEMORABILIA

While this work on Rev. Joseph Murgas is not intended merely as the glorification of a man, it cannot be denied that he was truly a genius who crowded more than his share of achievements into a single lifetime. He excelled as a recognized authority in the field of wireless and radio especially when we recall that in 1925 the late President Calvin Coolidge appointed him chairman of the first United States Radio Communication Commission. Unfortunately, Father Murgas was unable to accept the appointment because of some difficulty over which he had no control.

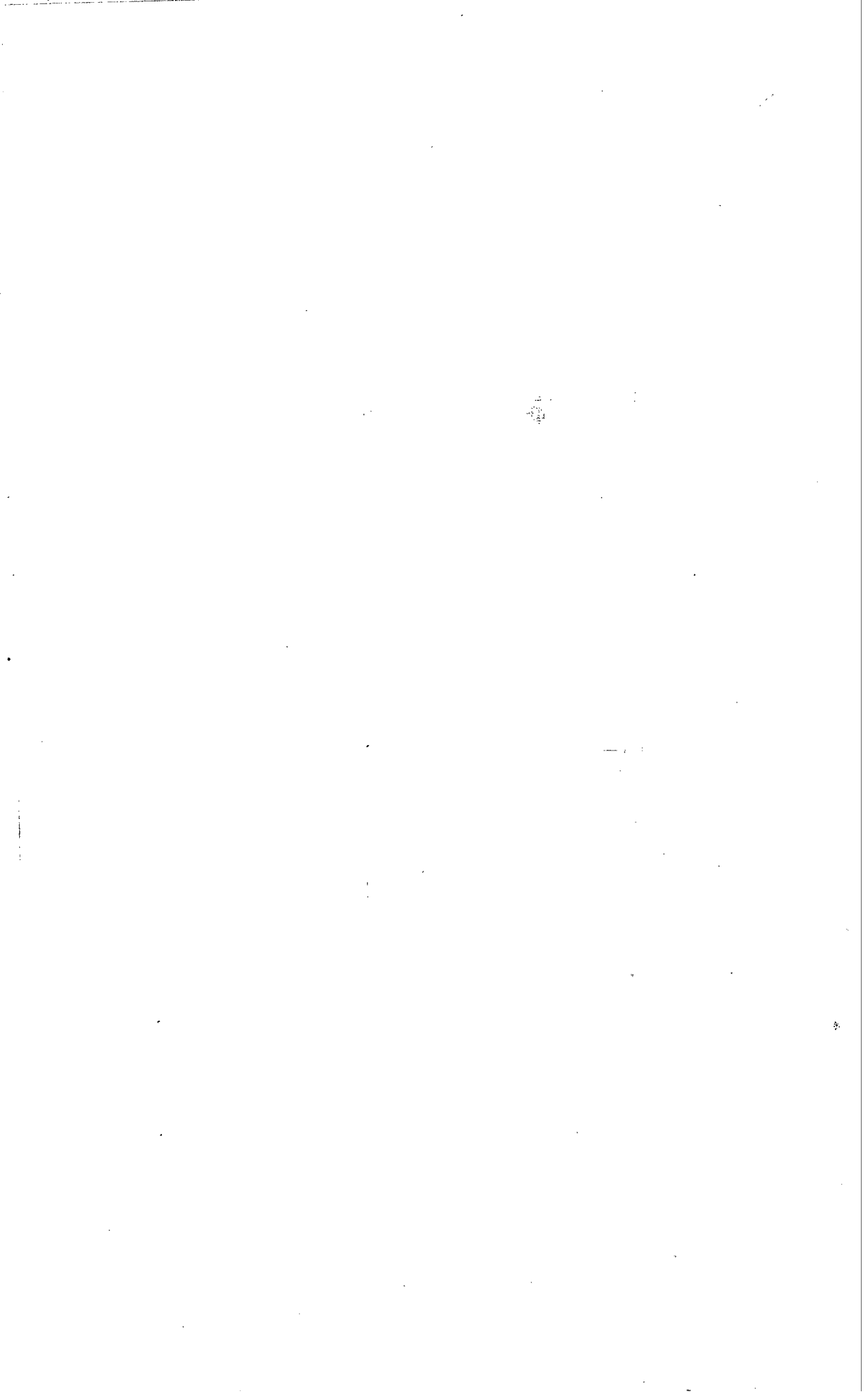
But the greatest honor tendered to the memory of Father Murgas came from his native Slovakia when, in its first public act as an Independent Slovak Republic in 1939, it named its only radio station after him. Shortly afterwards the liberated Slovak government honored his work in the development of radio by issuing a set of special commemorative postage stamps, one a 60 halierov violet and the other a 1.20-koruny gray, both bearing an oval framed picture of Father Murgas with his full name at the bottom and an inscription of his birth and death (1864-1929) on the left side of the stamp and a picture of his Wilkes-Barre powerful antenna towers in the panel at the right.

In the early part of 1944 Father Murgas was featured in a special radio production by the Pennsylvania Historical Commission titled: "Pioneers in Radio" and was carried under the heading of "Pennsylvania — Keystone of Democracy."

During World War II, in conformity with the practice of the United States Navy and in recognition of the support given by Slovak citizenry of Pennsylvania to the War Bond



Rev. Joseph Murgas As He Looked
Just Before Passing To His Eternal Rest.



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Drive, the U. S. Treasury Department arranged to name one of the Liberty Ships "The Reverend Joseph Murgas." This too served as a glowing tribute in honor and memory of Father Murgas as a pioneer in the development of wireless telegraphy and radio. The Liberty Ship was launched on October 12, 1944 in the yard of Southeastern Shipbuilding Company, Savannah, Georgia, and represented a scene of elaborate ceremony following an invocation by the Most Rev. Gerald P. O'Hara of the Roman Catholic Diocese of Savannah. The ship's sponsors were Mrs. Bayard Kilgour, Jr., of Cincinnati, Ohio, and Mrs. Louis Swann of New York City.

In deference to his wish, perhaps, the State of Pennsylvania made little fuss over Father Murgas during his lifetime but it was never unmindful of his stature. Recognition of his work, however, was never so mounting until work on this volume through research became widely publicized in "The Scranton Times," "The Wilkes-Barre Record," "The Wilkes-Barre Times-Leader," "The Philadelphia Inquirer," and other newspapers throughout the country who joined in extending their courtesy to this biographer. Stirred by the publicity, friends and admirers of Father Murgas were actuated into paying greater tribute in City and State celebrations with the result that Governor Edward Martin of Pennsylvania issued a declaration setting aside Sunday, November 12, 1944 as "Rev. Joseph Murgas Day." An elaborate program was arranged and presided over by Assistant Attorney General Peter J. Jurchak of Wilkes-Barre, Pa., at which time Mayor McCole of that city added the words over radio station WBAX, saying:

"This day in which we serve and honor God before His tabernacle, and show honor to one who served so faithfully his Master in this life, should not be easily

REV. JOSEPH MURGAS, *Priest-Scientist*

forgotten. To be permitted to join in this memorial to Rev. Joseph Murgas who was blessed with the vision that once made him known through the world, is a high honor I shall ever feel deeply the privilege of having shared."

Honorable Andrew Hourigan, President Judge of the Orphans' Court, Wilkes-Barre, Pa., who in youth was a close neighbor of Father Murgas delivered the principal talk on the radio program, saying:

"To have known Father Joseph Murgas as a priest, neighbor, scientist, inventor, nature lover, artist and good citizen was my happy privilege since my high school days . . . His study, his experiments and his scientific research brought the whole world within seconds of all other parts of the world . . . and I have been informed that Father Murgas was first to find the basic principles of radio when he succeeded in projecting sound through the air . . .

"Today we honor the man who was of our community and we are proud to acknowledge the genius of his brain."

By executive Decree the "Rev. Joseph Murgas Day" was set aside by Governor Edward Martin of Pennsylvania under the following declaration:

DECLARATION

"Inventor, artist, scientist, sportsman, leader and Statesman. An outstanding American Citizen. These titles among many, including that of an outstanding parish priest, given to Rev. Joseph Murgas, whose name and lifework is honored throughout Pennsylvania on November 12.

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“In a life devoted to his church and to the betterment of others, Joseph Murgas gave much to his fellow men. He held many patents in the field of wireless communication and is largely responsible for the development of the transmission of voices by radio.

“His deep interest in world democracy was most exemplified when, under his successful leadership the ‘Million Dollar Drive’ provided funds which helped to establish the new Czecho-Slovak republic in 1918 . . .

“A leader, and an ever moving creative force for the betterment of man, his life was so filled with outstanding examples of accomplishment, of work for his friend, his neighbor, his fellowman in every walk of life as to set his memory deep in their minds. Pennsylvania is proud to honor Joseph Murgas.

EDWARD MARTIN
Governor of Pennsylvania.”

Under the heading of this chapter, it should also be mentioned that Rev. Joseph Murgas was a member of the American Institute of Electrical Engineers; the American Society of Psychological Research; the Wyoming Historical and Geological Society, and other organizations.

CONCLUDING NOTE

With the last turn in my search for material on Rev. Joseph Murgas completed, I thought it would add to the usefulness of this work by trying to ascertain the unexplained whereabouts of his scientific library and wireless equipment. To do so, I was compelled to venture into the final recesses of Murgas' life and was given legal access to his "Last Will and Testament." Persistent questioning of Murgas' friends and those known to have been within his household at the time of his death proved to no avail. Since the intimate details of a person's Last Will would be of little concern to the rest of us, I will treat with only that part of the document which Father Murgas himself intended for public benefit.

In the fourth paragraph of his "Last Will," Father Murgas made the following provision:

"I give and bequeath unto the Sacred Heart of Jesus SLOVAK SCHOOL of Wilkes-Barre my electrical apparatus, machinery, tools, and complete laboratory equipment . . ."

The provision of this paragraph was never carried out, and while many hypothetical reasons were advanced, none seemed of any consequence when investigated. One rumor has it that the material was "carried off" indiscriminately by "friends" and souvenir hunters. This is most improbable. I am somewhat of the opinion that Murgas' wireless equipment may have gone into the first Stenger broadcasting station established in Wilkes-Barre. I do not mean to infer, however, that anything was done by the Stengers that was not permitted by those who posed themselves as Murgas' representatives subsequent to his death. Moreover, I made an exhaustive effort to substantiate my theory by writing to Mr. John Stenger, Sr.; to John Stenger, Jr.; to the beneficiaries of Murgas' estate; and to those of his household who were present when Father Murgas passed away requesting them to either confirm or deny my conclusions. This also was

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to no avail. Further investigation of the matter brought no cooperation from those whom I expected might be in a position to help. Consequently, I abandoned the quest, for, after all, efforts of this nature do have their limitations.

Father Murgas' scientific library suffered the same shocking fate. In the third paragraph of his "Last Will" we find the following designation:

"I give and bequeath unto the OSTERHOUT FREE LIBRARY of Wilkes-Barre my library of electrical, technical, scientific, and chemical books and other notes."

Upon visiting the Osterhout Free Library to ascertain if that provision of Murgas' Will was carried out and at the same time to avail myself of the opportunity of examining his books, I was surprised to find that only 16 books formerly belonging to Father Murgas reached the library. What happened to the remainder of the collection may be surmised from the following account submitted to me by Miss Florence A. Watts, Librarian at the Osterhout Free Library during Murgas' studies there. The letter from Miss Watts follows:

"My dear Mr. Palickar—

When I read the editorials in the Wilkes-Barre newspapers telling of your plan to write the biography of Father Murgas, I was deeply interested and thought you should know of the gift of books received by the Osterhout Free Library. I wrote to the present librarian, Miss Estes, and learned you had already visited the library.

"I will tell you what I can regarding Father Murgas' gift to the library but I am sorry I cannot give you more information.

"Miss Myra Poland was the librarian and I was assistant librarian at the time that Father Murgas was

pursuing his studies there. I can still see him in memory at his favorite table at the right of the fireplace, utterly absorbed in scientific books and magazines piled high which he studied for hours.

“As I remember it, we did not know of his bequest to the library until sometime after his death, when Miss Poland was asked to go to the rectory to see the books and arrange for their transportation. She told me that she had a peculiar feeling while there and that she was under the impression that the best part of the library must have been removed, but she gratefully accepted what was shown her.

“Upon bringing the books to Osterhout, Miss Poland thoroughly examined them thinking that Father Murgas might have slipped some papers into them, but nothing of the sort turned up. She wondered what happened to the records of his work.

“I shall be deeply interested to know if you were able to trace the rest of Father Murgas’ books.

“I regret that I can tell you so little but am glad to report what I know about the matter for I am now the only one who was on the library staff during Father Murgas’ studies.

“With my best wishes for your success in the noble work you have undertaken in writing the biography of a very unusual and interesting genius who just escaped becoming a world figure.

Yours very truly,

Florence A. Watts.”

Needless to say, the books originally destined for the Osterhout Free Library of Wilkes-Barre by the “Will” and wish of Father Murgas, disappeared under clandestine cir-

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cumstances. Some clues have been divulged to me as to the whereabouts of the remainder of the collection and I made every painstaking effort to recover them but the "barriers" were too strong. It is doubtful at this date that the valuable books and other literary material belonging to Father Murgas will ever be rehabilitated.

It is a most tragic loss and a grave injustice to the memory of a great man.

Incidentally, since the reader may be interested to know what particular type of scientific books Father Murgas used in his research work, it has been decided to list the 16 titles, now held by the Osterhout Free Library, in the Appendix of this work.

Author's Acknowledgements

The author of this biography sincerely believes that the task of producing this important work was inestimably lightened by the kind and willing cooperation of those whom he interviewed and with whom he corresponded regarding every phase of Father Murgas' life. Grateful thanks is also due to those who loaned valuable documents and other material hitherto unknown. In their eagerness to immortalize the memory of Rev. Joseph Murgas, they frequently sought me out to offer their assistance. In this category, the author pays a special debt of gratitude to the following:

C. SEYMOUR THOMPSON, *Librarian*, University of Pennsylvania, for his valuable aid in uncovering Father Murgas' collaborators in the Department of Physics of that institution.

ERNEST R. CRAM, *Radio Engineer of the United States War Department*, (retired). His experience in the science of telegraphy enabled him to give technical counsel and advice in the construction of the electrical chapters of this book. Mr. Cram also submitted valuable material pertaining to Father Murgas' wireless experiments.

GEORGE H. CLARK, *Radio Aid, Bureau of Engineering, U. S. Navy Department*, (retired), and up to recently Radio Historian for the Radio Corporation of America. Mr. Clark not only accorded me unlimited use of his private radio library, but devoted his personal time for several months in the furtherance of my wireless research dealing with Father Murgas.

HON. ALEXANDER T. CONNELL, *Formerly Mayor of Scranton*, who extended his courtesy through correspondence at which time he confirmed the official messages between himself and Mayor Kirkendall of Wilkes-Barre, (since deceased), and who submitted copies of the radio conversation he had with Mr. Kirkendall over Murgas' radio apparatus.

HIS MUSICAL WIRELESS TELEGRAPHY AND THE FIRST RADIO

REV. JAMES J. KORTENDICK, S. J., *Librarian, Catholic University of America*, who submitted valuable clues leading to source material on Father Murgas.

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REV. JOSEPH MURGAS, *Priest-Scientist*

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Wilkes-Barre, Pa. *Dr. Lawrence A. Sheridan, M. D.*, Wilkes-Barre, Pa. *John C. Sweeny*, International Correspondence School, Scranton, Pa. *Hon. Andrew Hourigan*, Orphans Court Chambers, Wilkes-Barre, Pa. *Sister M. Sylvia*, President Marywood College, Scranton, Pa. *Philip L. Shadle*, Glenside Pa. *Michael J. Matta*, Attorney, Philadelphia, Pa.

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Since the accounts of Murgas' wireless career made their primary appearance in newspapers rather than scientific journals, it is but natural that we begin this bibliographical list in that categorical order. In doing so, it will be sufficient to simply give the name of the publication and the year in which the articles appeared in as much as old newspapers would no longer be available to the reader.

As mentioned in the preface of this book, there is no reference material of any sort relating to Rev. Joseph Murgas. Consequently, the entire volume, first of its kind ever given to the public, is the product of "raw material" if I may use the term.

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Chronology

The following is a short chronological list of newspaper headings announcing Father Murgas' progress in wireless and radio as they formerly appeared in various parts of the country. Since there are a duplication of headings in many newspapers, a specified list of only a few will suffice:

1903

(The New York Herald)

WIRELESS TELEGRAPHY INVENTED BY PRIEST
*Father Murgas Says He Can Send Messages Seventy Miles
on Land and Seven Hundred Miles on Sea.*

1904

(Commercial Tribune, Cincinnati, Ohio)

**PRIEST INVENTS SYSTEM
OF WIRELESS TELEGRAPHY**
*Wilkes-Barre Clergyman Claims His Plan is Superior
to That of Marconi's*

—
(The Wilkes-Barre Sunday News)

**FATHER MURGAS GETS PATENT—HIS WIRELESS
SYSTEM A SUCCESS**
*Patent Office Compliments Him On His New Invention
And Grants Papers*

—
(The Philadelphia Press)

PRIEST PROPOSES TO RIVAL MARCONI
*Rev. Joseph Murgas of Wilkes-Barre
Completes a System of Wireless Telegraphy*

—
(The New York American)

PRIEST SAYS HE BEATS MARCONI AT WIRELESS
*Gets Patent On System To Send and Receive
in Half the Time*

REV. JOSEPH MURGAS, *Priest-Scientist*

(The Jersey City Journal)

PRIEST'S WIRELESS WORKS O. K.

(The New York Tribune)

PRIEST PUTS UP WIRELESS TOWERS

Connecting Wilkes-Barre and Philadelphia

With Musical System

(The Wilkes-Barre Record)

**THE TOWERS OF FATHER MURGAS' WIRELESS
SYSTEM**

First in The Country — Much Faith in Experiment

1905

(New York Sunday Tribune, "Front Page")

MUSICAL TELEGRAPHY

Priest Invents a New System of Wireless Telegraphy

(The Wilkes-Barre Leader, "Front Page," Illustrated)

OFFICIAL TEST OF MURGAS' WIRELESS SYSTEM

MADE THIS AFTERNOON

*Distinguished Company of Men Here to Witness the New
Method of Wireless Telegraphy Invented By Rev. Murgas*

(The Scranton Times)

**MURGAS SYSTEM OF WIRELESS TELEGRAPHY
A SUCCESS. ITS INVENTOR AND ITS POSSIBILITIES**

By Gideon W. Shadle

(The New York Herald)

TEST OF MURGAS' WIRELESS COMPLETED

*System Invented by Priest Operated Successfully Between
Wilkes-Barre and Scranton*

(The Wilkes-Barre Record)

PUBLIC TEST OF NEW WIRELESS A GREAT SUCCESS

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*Father Murgas Demonstrates The Efficiency of His New
System*

—————
(The Scranton Tribune)

FATHER MURGAS' WIRELESS IN PERFECT TRIM

Official Test Was Most Successful Yesterday

1906

(The New York Times, "Front Page")

NEW UNDERGROUND WIRELESS INVENTED

Father Murgas Will Try To Communicate With Europe

—————
(The New York Tribune, "Front Page")

MURGAS' UNDERGROUND METHOD

Said to Be Working in Part

—————
(The Chicago Sunday Record-Herald)

NEW UNDERGROUND WIRELESS INVENTED

BY PRIEST

Rev. Joseph Murgas Beats Marconi

By Special Correspondent

APPENDIX NO. 1

The first Memorandum of Agreement between Joseph Murgas and the Universal Aether Telegraph Company.

"MEMORANDUM OF AGREEMENT MADE AND CONCLUDED THIS 15th day of September, A. D., 1904, between Joseph Murgas, of the City of Wilkes-Barre, Luzerne County and State of Pennsylvania, party of the first part, and Penrose A. McClain, Joseph F. Stokes, John Wills, of Philadelphia, State of Pennsylvania, parties of the second part.

"WHEREAS, Joseph Murgas is the owner of two patents, to wit: No. 759,825 'Wireless Telegraphy Apparatus,' and No. 759,826 'Method of Communicating Intelligence by Wireless Telegraphy,' both patented May 10th, 1904 in the Patent Office at Washington, D. C., of the United States of America.

"AND WHEREAS, Joseph Murgas is desirous of proving the method covered under said patents for Commercial purposes, by securing suitable land, by purchase or otherwise, for the erection of Towers and Building in Wilkes-Barre and Scranton, Pennsylvania, as provided in plans and specifications made by Pettebone and Ireland, Architects of Wilkes-Barre, Pa., as well as secure all other appliances conceived by him to be necessary in the premises but is unable to consummate his desire by lack of personal financial ability.

"AND WHEREAS the said Penrose A. McClain, Joseph F. Stokes and John Wills, being parties of the second part, have agreed to furnish to said Joseph Murgas the money required by him in the premises, under certain conditions, and amounts as hereinafter stated.

"NOW, IN CONSIDERATION of the premises, the sum of One Dollar, and mutual agreement hereinafter set forth, this agreement WITNESSETH, that the said parties

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of the second part are to place in the hands of W. L. Reader, Attorney, the sum of Twelve Thousand Six Hundred and Forty one (\$12,641,00) Dollars which sum is to be distributed and used as follows: (*)

“And in addition, fully equip his laboratory and provide him, yearly, with material and apparatus to continue his experiments in the premises, which he believes will not exceed Fifteen Hundred (\$1,500) Dollars per year, and after the completion of all the foregoing details the said Joseph Murgas sends, with the foregoing appliances, an intelligent signal from Wilkes-Barre to Scranton, pay him in addition, personally, the sum of Six Thousand (\$6,000) Dollars in cash, and issue to him 10,000 shares of stock of the Universal Aether Telegraph Company, which company, the parties of the second part agrees, and state, has been formed for the promotion of the ideas of the said Joseph Murgas, in the premises. This payment of \$6,000 cash and issuance of Stock must be made within ten days after notification to any one of the parties of the second part by Joseph Murgas that said signal has been sent and received.

“The said Joseph Murgas agrees, when the foregoing conditions are complied with by parties of the second part, to assign to them and their assigns, his two patents aforesaid, numbers 759,825 and 759,826, and assign to them, in addition, all discoveries made by him in pursuit of his experiments which in any manner improve the aforesaid methods, as covered by said patents.

“IT IS FURTHER AGREED BETWEEN THE PARTIES HERETO that all further important discoveries made by Joseph Murgas which shall convert the foregoing method as covered by the foregoing patents in the other methods.

*) An itemized list of the expenditures covered by the sum of \$12,641.00 placed in the hands of Attorney W. L. Readers which follows this paragraph has already been incorporated into the body of Chapter V. — the Author.

shall be assigned to the said Penrose A. McClain, Joseph F. Stokes and John Wills, parties of the second part, upon payment by them within sixty days, to him, of the sum of Six Thousand (\$6,000) Dollars cash and the issuance of 10,000 shares of the Universal Aether Telegraph Company, for each patent.

“IT IS FURTHER AGREED BETWEEN THE PARTIES HERETO that the costs of all future patents covering improvements in the premises, which shall be required, shall be borne by the parties of the second part.

“IT IS FURTHER UNDERSTOOD AND AGREED that upon the performance of the conditions of this agreement by both parties, all land, buildings and appliances, shall be the property of the parties of the second part.

“IT IS FURTHER AGREED that the parties of the second part shall also pay the Attorney fees of W. L. Reader, in this matter.

“IT IS UNDERSTOOD AND AGREED that in case of the death of Joseph Murgas before consummation of this contract, the patents, towers, buildings and other appliances herein referred to, shall vest in the parties of the second part and their assigns.

“WITNESS OUR HAND AND SEALS TO THIS AGREEMENT, made in triplicate the day and year aforesaid, one copy for the party of the first part, one copy for the party of the second part, and one copy for W. L. Reader, Attorney.

In the presence of:

(Signed) Joseph Murgas. (Seal)
(Signed) Joseph F. Stokes. (Seal)

APPENDIX NO. 2

To the best of the Author's knowledge, the following is believed to have been the last "Agreement" between Joseph Murgas and the Universal Aether Telegraph Company or such remnants of it as may have survived.

"AGREEMENT made this 21st day of December, A. D. 1916, between *Joseph Murgas*, of the City of Wilkes-Barre, County of Luzerne, State of Pennsylvania, party of the first part; and *William P. M. Braun* and *John Wills*, both of the City of Philadelphia, County of Philadelphia, State of Pennsylvania, parties of the second part:

"WHEREAS, the party of the first part has, by an assignment dated the 21st day of December, 1916, sold, assigned and transferred certain letters patent to the Universal Aether Telegraph Company and also to the parties of the second part as Trustees, the said assignment to be for the benefit of the said Universal Aether Telegraph Company, or in case of its having lost its power to do business, then to a new Company which is to be organized on the same general lines as said Universal Aether Telegraph Company; and

"WHEREAS, the party of the first part is the owner of 10,000 shares of the capital stock of the aforesaid Universal Aether Telegraph Company, and it is his desire to transfer the same to the parties of the second part as Trustees under the terms and conditions hereinafter recited; and

"WHEREAS, the parties of the second part have agreed to act as Trustees for the purpose of carrying out the acts and things specifically recited in this agreement;

"NOW, THEREFORE, in consideration of the premises and of the covenants hereinafter contained, the parties hereto have agreed as follows:—

"FIRST: The party of the first agrees to sell, assign and transfer, and by these present does hereby sell, assign and

transfer unto the parties of the second part, as Trustees, 10,000 shares of the stock of the said Universal Aether Telegraph Company, and agrees to deliver the certificates of said stock properly endorsed for transfer at the request of the parties of the second part as soon as the party of the first part has obtained possession of the certificate from the _____ with whom it is now deposited.

“SECOND: The parties of the second part covenant and agree that the stock referred to in Article ‘*First*’ shall be held by them as Trustees with the distinct understanding and agreement that upon the sale of the letters patent above referred to (with or without the stock of the Universal Aether Telegraph Company), said Trustees shall receive a pro-rata proportion of the receipts from such sale as would be applicable to all of the stock of the aforesaid Company, and upon receiving said payment from said sale, said Trustees shall at once deliver the same to the party of the first part; and upon said payment to the party of the first part the title in the said stock shall vest exclusively in the Trustees, parties of the second part, to be cancelled or otherwise as they direct.

“THIRD: It is further covenanted and agreed that should the said Universal Aether Telegraph Company be incapable of conducting business under the laws of the District of Columbia, and therefore incapable of receiving the title to the aforesaid letters patent, and officially making sale thereof, then and in that event, the parties of the second part shall organize a new Company upon the same general lines as the aforesaid Company, and to which new Company all right, title and interest in the aforesaid letters patent shall be transferred, and of which new Company a proportional amount of its capital stock shall be issued to the parties of the second part as Trustees, so that they shall hold in trust the same proportional amount of the stock of the new

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Company that they will hold by this agreement of the Universal Aether Telegraph Company, and which new stock shall be subject to the same conditions and terms as the former stock; it being understood and agreed that in case of the organization of such new Company and the sale of the letters patent aforesaid, the party of the first part shall receive the same pro-rata amount of the disbursements to stockholders under the new stock as he would have had under the stock of the old Company which is hereby transferred to the parties of the second part as Trustees; the conditions as to the new stock to be identically the same as in respect to the stock of the Universal Aether Telegraph Company in so far as it shall effect the party of the first part.

“IN WITNESS WHEREOF, the parties hereto have set their hands and seals, the day and year first above mentioned.

Witnesses:

(Signed) Joseph Murgas. (Seal)
Party of the First Part.

(Signed) William P. M. Braun. (Seal)

(Signed) John Wills. (Seal)

Trustees
Parties of the Second Part

APPENDIX No. 3 (*

THE FOLLOWING IS JOSEPH MURGAS' FIRST PATENT PAPERS

No. 759,825

Patented May 10, 1904

UNITED STATES PATENT OFFICE.

JOSEPH MURGAS, OF WILKESBARRE, PENNSYLVANIA
WIRELESS-TELEGRAPH APPARATUS

SPECIFICATION forming part of Letters Patent No. 759,825, dated May 10, 1904.
Application filed October 2, 1903. Serial No. 175,499. (No model.)

To all whom it may concern—

Be it known that I, JOSEPH MURGAS, a citizen of the United States, residing at Wilkesbarre, Luzerne county, Pennsylvania, have invented certain new and useful Improvements in Wireless-Telegraph Apparatus, of which the following is a specification.

My invention relates to wireless-telegraph apparatus, and has for its object the provision of an improved system whereby signals may be transmitted with great rapidity and accuracy.

It is a further object of my invention to provide an improved "coherer" or "imperfect contact," which is especially adapted for use in the system I have invented, but may have other applications.

It has heretofore been the practice in systems of the character described to transmit a message by means of successive impulses or signal elements of the same character, a given

signal being detected by the time relation of the impulses in a manner similar to that observed in connection with the dot-and-dash system of Morse. It is obvious that if in a given system one signal element requires a greater time for dispatch than others—for instance, the dash of the Morse system requires a longer time interval than the dot of that system—a message so transmitted would require a greater time than one in which the signals were independent of the time relation of the impulse, so that each impulse could be made as short as would be consistent with practical operation. I accomplish this result by providing sending apparatus which is capable of sending impulses of different character and receiving apparatus by which such impulses are received and their difference in character made manifest. In my system, therefore, the message depends upon the character of the impulses, as the frequency, intensity, &c.,

*) A facsimile reproduction of Murgas' first patent paper is herewith given to afford a brief technical study of his work.—The Author

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rather than their time relation, and letters, words, and messages may be conveyed by different arrangements of disconnected impulses or signal
5 elements of unlike character in a manner similar to the combination of dots and dashes in the Morse system. Thus the impulses may differ in their frequencies, and by the word "fre-
10 quencies" I intend to express the number of variations which occur in the circuit of the sending apparatus during a given time when that circuit is closed—as, for instance, where an
15 interrupter is in the circuit I intend to indicate the number of interruptions of the circuit in a given time, and therefore the frequency of discharge across the air-gap—i. e. "spark-
20 gap frequency" or "wave-train frequency," both of which terms have well-understood meaning in the art. By the word "impulse" I intend to express the flow of energy due to a
25 single manipulation of the signal-controlling means—as, for example, a circuit-closing key. In a sending-circuit containing a key and interrupter the interrupter may be of high frequency,
30 opening and closing the circuit many times during a single closure of the key even when the key is operated with maximum rapidity, and the frequency of the impulse due to the
35 key-closure corresponds to that of the interrupter. Such impulses being received in an ordinary telephone-receiver by means of proper apparatus, tones differing in pitch will be pro-
40 duced, and while the number of tones which may be produced is indefinite and a variety of codes may be used, two tones are sufficient to produce a system analogous to the Morse, one
45 tone corresponding to the dot and the

other to the dash. For reasons as already stated the rapidity of transmission will be greatly increased by such a system, and, moreover, signals differing in character are more readily dis- 50
tinguished from each other than those which depend upon time intervals for differentiation. Tones are well distinguished in physics from other sounds, and the range of frequencies 55
of vibration within which tones are produced is sharply defined. They are more readily distinguished than other sounds and hence in systems employing a telephone-receiver I pre- 60
fer to make the frequencies of the impulses come within the range to produce a tone.

A telephone-receiver of the ordinary type may be used as the means 65
for indicating the reception of the impulses, and where all the impulses are received by the same apparatus it is necessary to employ a self-restoring coherer—that is, one in which the 70
parts assume their normal condition after an impulse has ceased and do not maintain the contact established by the impulse after the impulse has
75 passed. Failure to do this would result in confusion of the signals, and various means—such as tapping the parts, providing vibrating contacts and contacts having a rubbing or rolling
80 engagement—have been proposed. I provide a wave-detector or coherer which is remarkably free from noise when in operation. This is an important consideration where the signals are re-
85 ceived by a telephone-receiver, and particularly where it is essential that the pitch of the sounds be distinguished.

My invention can best be described in connection with the accompany- 90

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ing drawings, which illustrate an application of said invention; but it may have other embodiments and applications without departing from the spirit and scope of my invention.

Referring to the accompanying drawings, Figure 1 is a diagram showing transmitting and receiving stations according to my invention. Fig. 2 shows the form of interrupter which I have found it best to employ, and Figs. 3 and 4 show my improved imperfect contact.

Referring to the figures, the sending-station S is equipped with the usual aerial wire A, terminating in the sphere *s*. Separated from the sphere *s* by a spark-gap is a larger sphere of conducting material B, which may or may not be connected to earth, although the operation is improved if so connected, both of said spheres being equipped with terminals to which are connected the extremities of secondary *c* of the induction-coil K. The primary *p* of the induction-coil is connected at one end to the switch-arm *a* and at the other end to one terminal of the Battery D. Circuit may be completed through the primary P and battery D in series by moving the switch-arm *a* into contact with either of the terminals *b* or *d*. The terminal *b* is connected to one terminal of an interrupter I, while the terminal *d* is connected to a similar interrupter I'. The other terminals of the interrupters I and I' are joined together and connected to one terminal of the battery, as shown. If, therefore, switch-arm *a* is in contact with terminal *d*, circuit for the battery and primary of the induction-coil will be completed through the interrupter I', and similarly if the switch-arm is in contact

with the terminal *b* circuit will be completed through the interrupter I.

At the receiving-station R is a vertical wire A', similar to that at the sending-station S. The wire A' is connected at its lower end to a terminal *t*, mounted upon the base F of the imperfect contact or wave-detecting device W. Thence connection is made through the wave-detecting device W to terminal *t'* and thence to ground at E. Connected across the terminals *t* and *t'*, and therefore in multiple with the wave-detecting device W, is a telephone-receiver *r* and a battery G. When an impulse arrives at the receiving-station, it is transmitted from the wire A' through the wave-detecting device W to the ground at E. The passage of this impulse through the wave-detecting device operates to change the resistance of the contacts of the device, and therefore changes the resistance of the circuit through telephone-receiver *r* and battery G. The result of thus changing the resistance is to change the current flowing in the circuit of the telephone-receiver, thereby causing movement of the diaphragm, and the diaphragm will during an impulse vibrate with a frequency corresponding to that of the impulse—that is, to the frequency of the interrupter which is for the time being connected in the sending-circuit. If the interruptions are of sufficient rapidity, a musical tone will be produced, and different frequencies of interruption will produce tones of different pitch.

The interrupters I and I' are designed so that when one of them is connected in circuit one rate of interruption will be caused, while a different rate of interruption will oc-

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cur when the other interrupter is in circuit. If, therefore, the switch-arm *a* of the sending-station *S* be made to contact at one time with terminal *d* and at another time with terminal *b*, different tones will be observed in the telephone-receiver *r* at the receiving-station *R*, and if it be understood that one tone corresponds to a dash and the other tone to a dot of the Morse system a code of signals can be arranged which in rapidity and accuracy of transmission greatly excels any of the systems in which a dot-and-dash arrangement is employed. I have outlined the operation of my system and the apparatus employed in a general way and will now describe which it was not practicable to show details of construction of the apparatus in the diagram.

In Fig. 2 is shown an interrupter of the Wehnelt type, which I have found to give best results in practice. The drawing shows this interrupter in section. The inclosing casing *H* is of lead and at one side has secured to it the terminal *q*, to which one of the circuit-wires is to be connected. Within the casing *H* is a second casing *L*, of insulating material, within which is suspended a leaden electrode *M*, carrying the terminal *q'*, to which the other circuit-terminal is connected. In one side of the casing *L* is an aperture *N*, by means of which communication between the interior and exterior of the casing is secured. Both casings are then filled with dilute sulfuric acid, as shown. Upon the passage of current through the interrupter gases are generated which escape through the aperture *N* and in so doing break the circuit between the circuit-terminals, and it has

been found that the frequency of the interruptions for a given size of aperture *N* is practically fixed and that this frequency can be regulated by varying the size of said aperture.

In Figs. 3 and 4 I have shown details of the wave-detecting device *W*. Said device consists of a base *F*, to which are secured the upright pieces *O* and *O'*, which are joined together at the top by a piece *Q*, which may or may not be integral with pieces *O* and *O'*. Suitably journaled in upright pieces *O* and *O'* is a shaft *U* carrying at one end a carbon pencil *V*, which is tapered at one end to form a truncated cone, and the opposite end of said shaft being sharpened to a point. Rigidly secured to the shaft between the uprights *O* and *O'* is a grooved wheel *X*. Bearing against the pointed end of the shaft *U* and in electrical connection with the terminal *t* is a spring *Y*, pressing axially of the shaft and adapted to maintain electrical contact with the shaft *U* and force the shoulder *m* upon the shaft against its bearing in the upright *O'*. In electrical contact with the terminal *t'* and adapted to bear against the carbon pencil *V* at its tapered end is a spring *Y'*, to which is secured the adjusting-bar *e*, which is in engagement with the adjusting-screw *f*, which is supported by the arm *Z*, which is in turn supported by the uprights *O* and *O'*. By means of the adjusting-bar *e* and adjusting-screw *f* the pressure between the spring *Y'* and the carbon pencil *V* may be adjusted. Within the groove upon the wheel *X* is a cord or band *g*, by means of which the shaft *U* and carbon pencil *V* may be turned. When in operation, the shaft is moved with suffi-

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cient speed if it makes one revolution in one or two hours, and I have found that where the contacts are given a relative movement, as described, superior results are obtained, which I believe is due to the decoherence, avoidance of scratching action, and the cleaning and polishing of the contacting portions.

10 I have further discovered that if precautions are not taken to maintain the contacts of the wave-detector in a dry condition their efficiency is greatly impaired and the operation
15 of the apparatus may even be interrupted. In order to prevent occurrences of this kind, I place these contacts within a compartment, as is formed, for instance, by placing the
20 cover *h* over them and including within the compartment a moisture-absorber *i*, which may be calcium chlorid or other suitable material, and which is shown in this case as being
25 placed in a chamber located at the top of cover *h*.

The wheel *X* may be driven by any suitable mechanism, as clockwork; but I have found that clockwork in
30 which the ordinary escapement regulation is employed produces a decided tick in the telephone-receiver at the receiving-station. I therefore provide an airvane for regulating the speed of
35 the apparatus. This is shown in Fig. 4, in which an actuating-spring *k* is secured to a stationary part at one end and at the other end to a shaft
40 *l*, said shaft being connected to shaft *o* by means of the gearing *w*, the shaft *o* having rigidly secured to it the vane *u* and also the grooved pulley-wheel *v*, the pulley-wheels *v* and
45 *X* being connected by the band or belt *g*. It will be seen that as the

spring operates to rotate the shafts *o* and *U* the vane *u* is rotated and operates to regulate the speed of movement of the shaft *U*. It will of course be understood that proper gearing for
50 securing the desired ratio of movement of the parts will be supplied.

I do not claim in this application the method of transmitting intelligence by wireless telegraphy disclosed herein
55 as this forms the subject matter of a divisional application.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is— 60

1. In a wireless-telegraph system, the combination of a sending apparatus comprising means for transmitting a message made up of signal elements each differing from the others in spark
65 frequency, and receiving means for rendering such difference manifest.

2. In a wireless-telegraph system, the combination of a sending apparatus comprising a spark-producing
70 circuit, a plurality of interrupters of different frequencies, means for operatively associating any one of said interrupters with said circuit at will in such manner as to pro-
75 duce disconnected signal elements, each having a different spark frequency from the others, and apparatus for receiving said signal elements and differentiating between them. 80

3. In a wireless-telegraph system, the combination of sending apparatus comprising a spark-producing circuit, a plurality of interrupters of different
85 frequencies, means for operatively associating any one of said interrupters with said circuit at will in such manner as to produce disconnected signal elements, each having a different spark
90 frequency from the others, and receiv-

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ing apparatus comprising a telephone-receiver, said spark frequencies being such as to produce tones in said telephone-receiver.

5 4. In a sending apparatus for a wireless-telegraph system, the combination of a spark-producing circuit, a plurality of interrupters and means for operatively associating any one of said interrupters with said circuit at will.

15 5. In a sending apparatus for a wireless-telegraph system, the combination of a spark-producing circuit, a plurality of interrupters of different frequencies and means for operatively associating any one of said interrupters with said circuit at will.

20 6. In a sending apparatus for a wireless-telegraph system, the combination of a spark-producing circuit, a plurality of interrupters and a means common to said interrupters for operatively associating any one of them with said circuit.

25 7. In a sending apparatus for a wireless-telegraph system, the combination of a circuit operatively related to a spark-gap, a plurality of interrupters each having a terminal connected to the other interrupters and said circuit and a common means for connecting the other terminals of said interrupters to said circuit at will.

30 8. In a wireless-telegraph system, the combination with sending apparatus comprising means for transmitting signal elements differing in spark frequency at will, of a receiving apparatus adapted to receive said signal elements and a common indicating device for denoting the reception and spark frequency of said elements.

35 9. In a wireless-telegraph system,

the combination with a sending apparatus comprising means for transmitting signal elements differing in spark frequency at will and a receiving apparatus comprising a telephone-receiver common to said signal elements.

50 10. In a wave-detector, a plurality of contacts, means for continuously moving certain of said contacts with relation to others, a casing for said contacts and moisture-absorbing material within said casing.

11. In an imperfect contact, the combination with a shaft, of a contact bearing against the end of said shaft and means for revolving said shaft.

12. In an imperfect contact, the combination with a carbon block, of a piece of metal bearing against said carbon block, and means for causing relative rotation of the said carbon block and piece of metal about their center of contact.

13. In an imperfect contact, a revoluble shaft, means for connecting a circuit-terminal to said shaft, means for revolving said shaft, a carbon block secured to the end of said shaft, a piece of metal spring-pressed axially of said shaft against said carbon block and means for connecting a circuit-terminal to said piece of metal.

14. In an imperfect contact, a revoluble shaft having one end pointed, a carbon block fixed in the other end, a metal spring pressing axially of said shaft against its pointed end, a metal spring pressing axially of said shaft against said carbon block, a circuit-terminal connected to each of said springs, means for revolving said shaft and a vane for regulating the speed of said shaft.

15. In a receiving apparatus for a wireless-telegraph system, a revoluble

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shaft pointed at one end and having
a carbon block fixed in its other end,
means for revolving said shaft, metal
springs pressing axially against the
5 carbon block and pointed end of the
shaft respectively, a circuit-terminal
connected to each of said springs, a
telephone-receiver and a source of
current, said telephone-receiver and
10 said source of current being connected
in series between said terminals.

16. In a receiving apparatus for
a wireless-telegraph system, a revolu-
ble shaft pointed at one end and
15 having a carbon block fixed in its
other end, metal springs pressing axi-
ally against the carbon block and

pointed end of the shaft respectively,
a circuit-terminal connected to each
of said springs, a telephone-receiver, 20
a source of current, said receiver and
source being connected in series be-
tween said terminals, an aerial con-
ductor connected to one of said ter-
minals and means for connecting the 25
other of said terminals to earth.

In testimony whereof I have
signed my name to this specification
in the presence of two subscribing
witnesses.

30

JOSEPH MURGAS.

Witnesses:

W. L. Raeder.

W. C. Olds.

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APPENDIX NO. 4

Books received by the Osterhout Free Library from the estate of
Rev. Joseph Murgas, accessioned June 11, 1929.

AUTHOR	TITLE	PUBLISHER
VanDeventer, H. R.	Telephonology	McGraw
Tesla, N.	Experiments With Alternate Current	Johnston
Sloane, T. O.	Electric Toy Making	Grethlein
Underhill, C. R.	Solenoids	Van Nostrand
Roller, F. W.	Electric and Magnetic Measurements	McGraw
Nottage, W. H.	Calculation and Measurements of Inductance	Wireless pr.
Righi, A.	Die Telegraphic Ohne Draht	Viewig
Fleming, J. A.	Wireless Telegraphist's Pocket Book	Wireless pr.
U. S. Bureau of Standards	Radio Instruments	Wireless pr.
Bucher, E. E.	Vacuum Tubes in Wireless Communication	Wireless pr.
Dammer, O.	Handbuch der Anorganischen Chemic, Enke 5 volumes	
Abegg, R.	Handbuch der Anorganischen Chemic, Hirzel 3 volumes	
Hoppe, F.	Lexicon der Elektrizitat	Hartleben
Wullner, A.	Lehrbuch der Experimentalphysik, 4 volumes	Teubner
Frick, J.	Physikalische Technik, 4 volumes	Viewig
Borchers, W.	Elektro-metallurgie	Hirzel



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Rev. Joseph Murgas