

T H A D D E U S C A H I L L

(June 18, 1867---April 12, 1934.)

A P r e l i m i n a r y P a p e r .

By

George F. Cahill.

Thaddeus Cahill, lawyer, scientist and inventor, known to his friends as a man of wisdom, of consideration for others, of wide learning in law, history, science, electricity, music, thermo-dynamics, geography and government, and for his unusual breadth-of-view on many subjects, died suddenly at his residence, 316 West 84th Street, New York City, on Thursday, April 12, 1934. A few moments before, he had been in his usual good health and cheerful spirits, and had said nothing to anyone about feeling ill, suffering pain, or being in any way out of sorts.

Apparently he passed away without any warning, or, so far as anyone knows, without pain or consciousness that he was ill. The very able doctor who was called in immediately, was certain that death had been instantaneous, due probably to the passage of a tiny clot of blood into the Heart. And his face showed no sign of pain, fear or mental disturbance.

Then Death, which had not entered our home in thirty years, and but once in more than fifty years, entered it a second time within fifteen months, for our eldest sister, Mary, had passed from us on January 12, 1933, to that better world which must exist for such Spirits as hers.

Thaddeus was the eldest son of Dr. Timothy, and Ellen Harrington, Cahill.

From childhood he and Mary were marked as children entirely apart from the usual. Father, a descendant of vigorous and educated men, a Harvard Doctor and a loving parent, who daily associated with and studied his children, early perceived what "Golden Children" Mother had borne him. With high ideals and a fine sense of parental responsibility, he cultivated their minds, guided their reading, discussed and explained things to them.

Mary and Thaddeus were a remarkable pair. Even one such child is seldom granted to any family. They were born citizens of the higher world of thought, study and knowledge. Father opened the door for them and they breathed that air naturally. They studied and read, and discussed with him, the great

thoughts of the ages from their childhood. They never played games, read Mother Goose, or needed to go to school. If they had books, they could learn from them. Thaddeus was an official court stenographer before he attended school at all. In fact, he never went to school a day in his life until he entered the graduating class of the high school after the Christmas holidays. There he became the favorite alike of the boys, and of the Superintendent who put him forward to recite an oration in Latin at Commencement. Mary first and Thaddeus later learned the multiplication table up to 12 times 12 in a single day---and they learned it thoroughly and forever.

Mary's memory, the exactness of her knowledge, and the way her mind brought up whatever she needed at the moment, would have been famous in almost any circle if Thad had not been there---as would have been the range of her knowledge, for one who was not a writer, a teacher or a professional student. If the time she spent on mythology and the classics had been spent on music, her singing would have delighted multitudes. God gave her one of the richest and most musical singing voices I have ever heard, and preserved it almost to the day of her death. To have heard her singing at 70, without seeing her, was to suppose that you heard a full young voice of rare color, richness and beauty. She would have adorned a professorship or made a fine physician and a famous diagnostician. Yet it is only as I write this, that I more fully realize these facts myself.

The breadth and range of Thad's knowledge, the crystal clarity of his memory no matter how distant or unimportant the event; the effortless way that his mind correlated everything that he had ever seen or heard or read that bore on the subject at hand, the moment it was needed; all at the service of a judgment

which went very quickly if not instantly, to the correct final conclusion, which too often other men attain only ultimately, after weary years, experiments and failures--- those qualities were manifested from his childhood to such a degree that from his boyhood he was the companion of the finest and wisest elderly men and women of the community, and his opinions were listened to with respect by men old enough to be his grandfathers.

When but 14 years of age he served as official court stenographer, and although so young was invited by able lawyers on the Circuit to come into their offices and study law with them. Later in life, as many in Washington, Springfield, Holyoke and New York will remember, he impressed children and grown people of all classes of society as a good and wise man, very considerate of others. People just naturally came to him for information and advice. His views were treated with marked respect by all classes with whom he came into contact, and, strikingly so, even by able men who differed from him on some business matter, and by opposing lawyers.

Yet, probably, his inventive and constructive ability, guided by that judgment, wide knowledge and incomparable ability to do difficult and complex things correctly the first time, was the crowning proof of his genius.

Although educated for the law and a member of the Bar of the Supreme Court of the United States, and, although offered a partnership very soon after graduation in one of the foremost law firms of its kind in Washington, Thaddeus Cahill devoted most of his life to mechanical, electrical and scientific studies and inventions, for which he had early developed a striking talent. He built and put upon the

market the world's first Electrical Typewriter, which halved the nervous strain of typewriting, permitted an easy legato touch in place of the stilted staccato touch, doubled its manifolding power and raised the speed of the average operator greatly.

That electrical typewriter was exhibited at the World's Fair in Buffalo, in 1901, by, and at the expense of, the Government of the United States, and on its initiative, as an epoch making invention and as an outstanding proof of the value of the Patent System. Notwithstanding that start, notwithstanding the enthusiastic reception of the machine by operators wherever they saw it, and the fact that the first Cahill Electrical Typewriters which we sold stood up to their work beautifully for years, dissension and trickery ruined the company and wrecked the enterprise. In the opinion of my brother, Arthur, and myself, none of the electrical typewriters put out by the great Typewriting Companies in all the years since have at all compared with Dr. Cahill's first electrical typewriter, except for the fact that they are "visible writers", which was not the custom then.

Next, he invented the process of producing Music in the form of electrical vibrations at a central station, impressing those musical electrical vibrations upon wires and transforming them into audible music on the premises of a multitude of different subscribers simultaneously. No such thing had ever been heard of in the world before.

In the early summer of 1902, Dr. Cahill moved from Washington, D.C., to Holyoke, Mass. There he continued his studies and experiments, and built the great Electric-Music Plant, which was to astonish the scientific world, to charm the musi-

cal world, and to bring a stream of prominent and distinguished scientists, business men, bankers, writers and musicians from all parts of America, and even from Europe, to Holyoke to study his work and to hear the music which he had produced in so new and wonderful a way.

Not only was that music produced in new and wonderful ways. It was itself a new and wonderful music. Thus---

1st. The elements---ground tone and overtones---of each note were produced separately. Dr. Cahill enabled musicians not only to so combine those elements as to imitate many well-known instruments of the past but, also to produce many beautiful new tones, which were not imitations of other instruments at all. On this point, the New International Encyclopedia says, "The performer has absolute control over the notes, both as to expression and timbre; he can produce at will the notes of practically any instrument, and even notes of an entirely new quality. And the notes produced are of a remarkable purity, being surpassed only by that of a good string;"

2d. One might well have been satisfied had each note from such an instrument spoken with uniform power as does each reed or pipe in an organ. Musicians would have been delighted had each responded to the touch of the performer, as does a piano, whether it had then died away, or had held steadily thereafter like a pipe. But Dr. Cahill made the loudness of each note to respond at every instant to the pressure of the finger upon its key, as the violin responds to the pressure of the bow upon its string;

3d. Further, for the first time in the world, he not only produced a keyed musical instrument that

could not get out of tune, after it was once properly tuned (?), but

4th. He enabled such an instrument to be played in the just or natural temperament which is in the mind of man, and which makes the music of skilled string and vocal quartets, so much more beautiful, when they are freed from the equal or compromise temperament of keyed instruments, than when they are accompanied by such instruments---also, the singing of otherwise ignorant and untrained colored singers;

5th. To have produced music of such purity, of greater wealth of tone-quality than any instrument had ever formerly possessed, and with a perfection of tuning never before attained---to have done all those things in one place would have been wonderful enough. But Dr. Cahill put that music upon wires and enabled one musician, or set of musicians, playing at a Central Station, to be heard in a multitude of places at the same time. That may seem commonplace to young people now, but to the learned and the ignorant alike it seemed marvelous thirty years ago;

6th. Neither was that music spoken in that multitude of places in the whisper of the telephone, nor with the scraping and distortion then universal in the phonograph and graphophone. Thaddeus Cahill and Arthur T. Cahill made it sing in loud, clear, full tones in each place, as would an orchestra in the room. In a few years, as only one part of a great undertaking, and at not one per cent of the cost that others incurred almost without result, they made diaphragms speak as diaphragms had never spoken before---as the money of wealthy companies and the work and genius

of literally hundreds of inventors and experimenters had not been able to make them speak in thirty years before, and had not done for twenty-five years thereafter---if they have yet done so at all; and

7th. Music is far more primal, far more cosmic, than sculpture, poetry, painting or speech. Its foundations are laid more deeply in the nature of things---its rules are more imperious. Primarily, music is pitch, and the first rule is that you keep the pitch---the second, that you progress, by exactly the right step, to the next pitch. But pitch---the exact number of vibrations per second---is not easily kept, nor the right steps easily taken. Yet that pitch and those progressions are in the mind of man. He who knows not "that two and two make four," is positively displeased if a singer passes from a do of 256 vibrations per second, to a sol of anything but 384 vibrations per second. 383 or 385 will not satisfy him. But the progression from exactly 256 to exactly 384 delights him. So Dr. Cahill based his Electrical Music in mathematics and, for the first time in the world, compelled it to speak always and only in the exact number of vibrations per second (itches) that are in the mind of man. When men, whether ignorant or learned, heard music with those absolutely correct intervals and absolutely correct pitches in every tone and in every chord, and in every harmonic of every tone in every chord, they responded with extreme satisfaction and approval. And, as often happens when genius does something easily and very well, the warmest appreciation and applause came from the greatest masters in that line who had striven desperately to do that very thing themselves, but had

not quite been able to do it.  
(See quotations below.)

Within five years after he began to devote his entire time to Electrical Music, Thaddeus Cahill had successfully concluded several lengthy negotiations for the sale of territorial licenses; had himself written elaborate, comprehensive, and far-reaching license contracts; had continually helped his licensees in their financing by entertaining their guests and giving demonstrations for them; had moved his laboratory from Washington to Holyoke; had created the new science of Electrical Music; had solved a multitude of complex mechanical, electrical and musical problems; had invented and built 145 different electrical generators of new types, of many different sizes no two of which produced the same number of vibrations per second; had compelled those 145 different generators, with 145 different frequencies (itches), to produce perfect harmonies by a train of gearing, cut in his own shop by men who had never cut gears before, after the best gear experts of the greatest gear-cutting houses in America had refused to recommend that their houses undertake so complex and fast-running a set; had built the massive structural steel main frame; had assembled the 145 different generators and the unprecedented but unavoidable gear train upon it; had provided a water-cooling system for the generators and the gear train; had invented and constructed a whole family of different lesser machines; had made tone purifiers, tone blenders, chord combiners; keyboards for the musicians to play upon; expression mechanisms with remarkable artistic powers, etc. etc.;---literally carload after carload (not including the main frame, the generators, the gearing or the other heavy parts) of delicate electrical devices, such as man had never seen before; had made all that vast assemblage of whirring

machinery and electrical devices to produce, not a single thing, but a whole multitude of things simultaneously---not some coarse or simple product, but music---beautiful music---music so responsive to the touch of the performer that it was said one's ear could tell whether the musician had drunk coffee before playing or not. He had trained musicians to play upon it, and he and Arthur had taken the plant down, moved many carloads of it to New York, had set it all up again and had made it to sing once more.

And he had done all that, in those few years, single-handed and at the first attempt, one might almost say. There was, it is true, a little, partial, first plant in Washington, but---wonderful as it was---it bore not much more relation to the elaborate and complex plant than does a wheelbarrow to an automobile. Arthur and I assisted him, of course, as did Peter Lobben, our superintendent; Orvill Keeler, chief electrician; and Harold Craig, chief draftsman. But no one of us had ever studied electrical engineering, the mathematical science of music or anything bearing on the subject, or had any training for the work except that Mr. Lobben was a practical, although not a graduate, mechanical engineer. No one of us would have pretended that any part of the creative work or of the solving of the endless problems was his, except for Arthur's contributions to the speaking devices.

When I think of what Thaddeus accomplished in those few years---of the baffling variety of the problems---of the self-education---of the breadth of knowledge needed even to understand them---of the endless studying and figuring before solutions could be expressed in concrete form---I marvel at the grasp, at the comprehension, at the incomparable judgment and intuition which led him continually to a solution

that would work; at the creative genius that supplied the whole family of varied electrical and mechanical apparatuses that did work; and most of all at the brain that could carry and coordinate that multitude of problems and mechanisms without forgetting anything or falling down anywhere. At the end of that five years, there was practically no "junk pile"---all the way through them but one important disagreeable surprise---a little explosive effect at the beginning of a note, which he diagnosis as "static" and finally overcame. No one of the thousands of parts had failed to work or to produce its intended result. And but one unexpected guest---the dread of all experimenters---had arrived. The world knows a hundred times more about "static" now than it did then.

And the marvel grows, when one remembers that the man who did all those things never had a single day's schooling in electricity, in mechanics, in harmony, in acoustics, in the mathematics of music, in drafting, in designing, and practically none whatever in physics or mathematics.

Seldom, I believe, has the life work of even a dozen inventors encompassed more than he did in those five years, or produced a more perfect and finished product. We did not ourselves then realize the greatness of that accomplishment, or the superlative quality of the music. We knew the music was beautiful---that the perfection of the chords and the intervals lent a dignity and charm to even simple strains, which they had not possessed before. People said it was the most beautiful music they had ever heard. A learned musical Critic had called it "music of almost ethereal purity". People passing by would stand for considerable periods outside the window to listen to it. The famous "McClure's Magazine" (July, 1906), had published an im-

portant article on "New Music for an Old World," by Ray Stannard Baker. I had seen business men and lawyers stand, in the office of a machine shop, with heads bowed and eyes closed as if in prayer, during the rendition of Handel's Largo by Paul Fishbaugh, a young business man who was not a professional musician, although he might well have been one. But we were surprised at the praise the Electric Music --- Telharmony, as others frequently called it---was said to be winning from that galaxy of musicians which made the Metropolitan Opera House so famous thirty years ago. To quote but a few:

The greatest of all Tenors, Caruso, was quoted as saying:

I have listened to the Cahill Telharmonic Electric Music and I must declare that it will bring a revolution into the musical world, both through its artistic expression and by bringing really good music to all kinds of people.  
 Enrico Caruso.

The famous and popular Gadski:  
 The beauty and varieties of tone produced by the Telharmonic system were to me a revelation; and to think that what I heard, could be heard by thousands of others miles away. A veritable miracle.  
 Johanna Gadski Tauscher.

Among the marvels I saw in North America, ranks first the Telharmonic system, a wonderful application of the most useful of natural agents to the most beautiful of arts.  
 A. Bonci.

The Telharmonic system does not only seem to me a scientific achievement of the first order, but an invention which seems to promise more for art than any other instrument ever did. The intonation is a real joy to the ear \* \* \* besides its

artistic possibilities.

Anton Van Rooe.

\* \* to listen to the delicate tones of the flute or the clear tones of the French Horn, and to realize that \* \* all this music, in its wonderful mass of color and tone, can be transmitted to any desired point, almost passes comprehension.

Marcel Journet.

I have been delightfully surprised at the wonderful results of the Telharmonic electric music. I really think that the marvelous purity of tone produced by electricity will certainly make a revolution in the musical world, and especially in orchestral productions.

M. Ancona.

From the then Musical Director of the Metropolitan Opera House:

I have listened to the Telharmonic Music and to my mind it is the greatest achievement artistically and commercially. \* \*

Arturo Vigne.

From the then Leader of the Orchestra at the Metropolitan Opera House:

My opinion of the Telharmonic system is that it opens up unlimited possibilities in the world of music. Being founded on scientific principles, it is capable of the widest development. \* \*

Alfred Hertz.

From the then Leader of the Orchestra of the Manhattan Opera House:

I am so deeply impressed with the Telharmonic system that I have no words except to say that it is marvelous. \* \* \*

Cleofonte Campanini.

From the then Administrative Manager of the Metropolitan Opera House:

To distribute really good music by electric wires, is to my mind one of the greatest benefits that

could be bestowed on a community.

\* \* I was deeply impressed by the wonderful purity and variety of the tones produced.

A. Dippel.

Remembering the gauntlet of criticism that almost every new invention has to run, and the chorus of condemnation from the art to which it pertains that it must endure, we were surprised and incredulous. Thaddeus himself could scarcely believe it. So Arthur called upon the Administrative Manager of the Metropolitan Opera House, Mr. A. Dippel, and asked him about the matter. Mr. Dippel assured Arthur that the signatures were genuine and that the singers had meant all that they said. He had heard them talking about it and said that Arthur could absolutely depend upon those statements. We knew that writers were praising the quality of the tones, the response of the instrument to the feelings of the musician, and the matchless goodness of the intonation. At a later date, I myself heard the famous Pianist and Conductor, Ossip Grabrilowitsch, say to Thad of the Electric Music, "I said to myself that will displace all other music."

Meanwhile prominent monthly magazines and scientific publications in America, England, France, Italy, Germany, Austria, etc., etc., were describing the new system and the wonderful apparatus for the production and distribution of music electrically, were praising the beauty of the music, and publishing pictures of the apparatus and of Dr. Cahill.

Even before that, it had attracted so much attention in informed circles in Europe that both the Kaiser Wilhelm, and the Emperor, Franz Joseph, had sent representatives to report to them upon it. They and the French Ambassador, M. Jules Cambon, had personally