

**[Slide 1] George F. Edenharter – Magnificent Failure or Ultimate Success?
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Alan D. Schmetzer [Slide 1a]**

It seems reasonable to assume that few of you here this evening would be very familiar, if at all, with the life and career of George Frederick Edenharter. He has, after all, been dead for some ninety years. Thus it may be wise to start with some background information. George was born in Piqua, Ohio, [Slide 2] on June 13, 1857, to first generation German immigrant parents, John and Elizabeth Edenharter. His father was a cabinet maker by trade who came to the U.S. in 1848, settling originally in Cincinnati but moving to Piqua shortly thereafter. The family later settled in Dayton when George was about ten years of age so that he and his brother could obtain a better education. In 1875, presumably following work opportunities, John and Elizabeth moved to Indianapolis with George following in 1878. Young George came to our city to get into the cigar making trade at the John Rauch factory [Slide 3] and remained a cigar maker's union delegate for many years thereafter, although he left the Rauch firm in 1881 to pursue medical training.

In the 1880s, most medical schools in the U.S. were proprietary in nature – that is, owned by one or more local physicians who organized and charged for lectures in the various relevant subjects. George attended two such schools, first the Physio-Medical College of Indiana, [Slide 4] graduating in 1884, and then completing additional studies for the Doctor of Medicine degree at the Medical College of Indiana [Slide 5] in 1886. Although the quality of medical schools at the time was spotty, his having attended two such institutions would tend to indicate that he received a better than average medical education for his day. It should also be noted that the Medical College of Indiana was eventually incorporated into Indiana University School of Medicine, [Slide 6] initially established in Bloomington in 1903 and reorganized in Indianapolis

in 1908. IU's medical school was one of the few to receive a relatively positive review by Abraham Flexner, [Slide 7] whose 1910 report on the problems with U.S. and Canadian medical education brought about large scale reform in physician training.

Following Edenharter's doctor of medicine degree, he served as Chief of Staff of the Marion County Infirmary for two years and then as a physician and surgeon for the Marion County Workhouse. [Slide 8] His abilities gained him respect within the community – and it probably did not hurt his local reputation that from 1883 to 1887 he represented the 8th Ward on the Indianapolis City Council. A life-long Democrat, he was also a candidate for mayor of Indianapolis in 1886, although that election was ultimately won by Republican, Caleb S. Denny. In any event, his political connections, as well as his early demonstration of medical executive skills, served him well enough that in 1889 he was appointed Superintendent of City Hospital. This facility had initially been proposed in 1855 at the urging of Dr. Livingston Dunlap, first president of the Indiana State Medical Association, due to a smallpox epidemic. It opened in 1859 and was soon utilized to treat the sick and wounded veterans from the Civil War. The city took over administration of the hospital in 1866. You may better know City Hospital by one or more of its subsequent names – it was called Indianapolis General Hospital beginning in 1947, renamed Marion County General Hospital by 1959, then dedicated as William Niles Wishard Memorial Hospital in 1975, and now in 2013 called Sydney and Lois Eskenazi Hospital.

Getting back to Dr. Edenharter, he had married Marion Ella Swadener of Dayton, Ohio, on June 6, 1888, and their only child, Ralph was born on July 19, 1889. Now we are about to come to the key portion of Dr. Edenharter's career as it relates to this essay. On April 7, 1893, following his four years of heading up City Hospital, he was appointed by the Board of Trustees of the Central Indiana Hospital for the Insane (the name was not changed to Central State

Hospital until 1929 [Slide 9]) as its eleventh Superintendent. He began these new duties that May.

Hopefully this preamble points up some of the more salient formative events affecting Edenharter's thought processes in making his first major recommendation for Central Indiana Hospital. To recap, we've discussed his family's desire for a better education for their children in their new homeland (his surviving brother became an attorney); his father's trade as a cabinet maker; his early positions tending to the medical needs of the underserved poor, including relatively early involvement in administering such programs; and his involvement in politics. Perhaps taken together these factors can aid us in understanding his perspective in addressing his new responsibilities as Superintendent at Central.

Dr. Edenharter's tenure at Central Hospital for the Insane [Slide 10] came at a time when the population of the nation's mental hospitals had already been growing at a rapid pace. Opening on November 21, 1848, with only five patients, the hospital would ultimately grow to a population of over 2,500. Unfortunately due to cost, the size of the treatment staff within such facilities was never able to match the growth of referrals for care. The hospital would have had about 2,000 patients during Dr. Edenharter's time there. His first impetus, just as it had been at City Hospital, was to determine what could be done to help improve the lot of the patients now under his supervision. One of his initiatives at City Hospital had been to reorganize and improve its laboratory services, so it is probably not surprising that he selected a similar target – lab facilities – as a starting point for his work at Central. He kept up with medical progress, so he was aware of the pathology research building constructed in 1884 for Bellevue Hospital in New York with help from an Andrew Carnegie donation and the pathology laboratory at St. Elizabeth's Hospital in Washington, D.C., established in 1889. He certainly wanted to initiate

some sort of new programming that would inspire those involved in patient care, and what better way than to try to study the underlying pathology of mental illness and the efficacy of available treatments? [Slide 10a] His further goal would be to disseminate the information so derived beyond the confines of the medical staff of his own facility by scheduling presentations for medical students as well as graduate practitioners within the larger community and, indeed, anyone else he could get to come and learn, thus exposing as many of the public as possible to the plight of those with mental illnesses.

In order to accomplish all of his goals, he concluded that Central Indiana Hospital needed a new building [Slide 11] – one that could house the necessary laboratory space, autopsy facilities, record room, a museum for storing and preserving gross pathological specimens, a medical library (which eventually grew to some 1,200 medical texts), and an amphitheater. [Slides 12 & 12a] By doing so on a campus dedicated to patient care, he incorporated all of the elements of a modern medical school. In fact, his vision was sufficiently ahead of its time that his building was still being used by IU Medical School for neurologic and psychiatric lectures into the late 1950s.

Next, Edenharter and the hospital's Board enlisted Adolph Scherrer to draft the blueprints for the New Pathology Department, as it was to be called. Scherrer was born in St. Gaul, Switzerland, and trained as an architect in Vienna and Budapest. He had emigrated to the U.S. in 1870 and arrived in Indianapolis from Chicago in 1873. Scherrer is probably best known in Indiana for completing Edwin May's original design for the state's current capitol building and supervising its construction to completion in 1888. It seems clear, however, that Dr. Edenharter himself had an immense personal influence on every aspect of his Pathology Department's design. You will recall that George's father's trade was cabinet making, and this building

resembles nothing so much as a large, brick encased cabinet. All major laboratory equipment and all of the related tools, stains, and chemical reagents are allotted not only ample bench space for their intended use, but also cupboards and shelves of the appropriate sizes and shapes are included for their storage and any necessary protection. For example, if a chemical is light sensitive, the door of the cabinet in which it is stored has a dark blue glass insert to further protect it from exposure to light from the building's multiple windows. All of the massive autopsy record books are neatly shelved by date, and there is a custom desk for transcribing the notes directly from the autopsy room via a "speaking tube" connecting to the record room. Gross pathological specimens are housed in an interior room with a skylight, and there are rooms to store microscopic specimens and glass slides for projection during lectures as well. The remainder of the building has finish carpentry and paneling complementing the laboratory space.

[Slides 13 & 13a - f]

Once Edenharter had the architectural specifications, the next step was to secure funding. One would think that, given Edenharter's political connections, this step might have been relatively easy. One would be wrong. Indiana has an exemplary public tradition of remembering our mentally ill with statements and proclamations – but our track record for follow-up funding is not so impressive. In fact, the General Assembly had failed to make any financial provision for the hospital in 1857, causing then-Superintendent, Dr. James Athon, to remand all of the hospital's approximately 300 patients at the time to their counties of origin. Records from the Indiana legislature in the 1800s are scanty and difficult to follow, but it is generally believed that Edenharter ultimately had to find the \$12,000 necessary for constructing and equipping his new structure within his existing appropriations. That he was able to see his

vision take physical form at all is mostly a testament to the frugality, flexible thinking, and perseverance of the good doctor.

Construction was begun in 1895, with the dedication ceremony held on December 18, 1896. Dignitaries attending the event, hosted by the Marion County Medical Society, included keynote speaker, Ludvig Hektoen, M.D., Professor of Pathology at Rush Medical College in Chicago, who said in part, “The present occasion marks a most significant step in the advancement and improvement of the humanitarian care in which institutions like the Central State Hospital for the Insane are engaged. The inauguration, under the present auspicious circumstances, of a fully equipped, substantial department of this hospital, built in accordance with the most modern views, reflects great credit upon the development of American alienism, upon the intelligence of the board of control of this institution and of its superintendent.” Honoring the occasion, the medical society presented Dr. Edenharter with “the latest pattern of Bausch and Lomb’s biological microscope,” a beautiful brass monocular instrument capable of magnifications up to about 1,200 power.

Already, some of you may see the problem with Dr. Edenharter’s “vision,” so to speak. [Slide 14] Light microscopy, aided by the cellular stains available in the 1890s, would never be able to uncover the causation of mental disorders. The science simply was not sufficiently powerful. Finding the building blocks of even a rudimentary understanding of the brain – neuroreceptors and the transmitters that fit them and complex interactions of brain structures – would require electron microscopes and various chemical assays that were many years away from development in his day. Scientific progress ascends on the ladder of prior discoveries, and the tools for this magnitude of undertaking are not fully developed even today. There were some other practical problems in the way. Edenharter could – and did – mandate that his medical staff

members schedule time away from their clinical duties to attend labs, lectures, and demonstrations in his facility, but he had no success in attracting a clinical neuropathologist who could lead these discussions in any meaningful way.

Dr. Edenharter did teach himself how to apply for what external research funding existed at the time, but there was no National Institute of Mental Health, developed in 1949, to which to apply, so funding applications were idiosyncratic and financial success, therefore, elusive. He touted the work done in his Pathology Department frequently, using the Annual Reports from the hospital as one resource. But he also had serious – and vocal – detractors, even within his own hospital staff. One such was Dr. Edward J. Kempf, who gave a disturbing account of the Pathology Department to a Legislative Visiting Committee in 1912, saying that autopsy reports at the hospital were “padded, not scientific, and thoroughly incomplete,” and that “not one whit [of Dr. Edenharter’s vaunted scientific treatment of patients was being] used in [this] institution.” While Dr. Kempf may have had ulterior motives – Dr. Edenharter had reprimanded him for trying to use psychoanalysis in treating his patients, which would have allowed him to care for a fraction of those assigned to him – the hospital’s lack of leadership in clinical neuropathology would indicate there was also some substance to his criticisms. Dr. Edenharter died on December 6, 1923, and it would be left to his protégé, Dr. Max Bahr – whom he had earlier granted a year’s leave of absence for the pursuit of specific psychiatric training in Germany – to further the work for which this new department was primarily intended.

And to his credit, Bahr [Slide 15] stayed true to Edenharter’s vision and vindicated those plans to the best of his ability. Here, Walter Bruetsch, enters our story. [Slide 15a] Born in Heidelberg and initially a scholar of Greek and Latin, his studies were interrupted by the onset of World War I. He suffered a paralyzing spinal injury, and after capture by the French, was

successfully treated by Joseph Babinski the famous French neurologist of Polish descent. This “up close and personal” experience of the miracles of modern medical science led Bruetsch to change his course of study, and he graduated from medical training in Freiberg in 1922. Bahr then met him at a social event hosted by the local German American community while Bruetsch was visiting and was able to convince the neuropathologist to move to Indianapolis and work in his hospital’s Pathology Department in 1924.

The timing was excellent. It had long been known that some patients with severe psychiatric symptoms would improve if they contracted an illness producing a significant fever. Julius Wagner-Jauregg had recently identified what the specific psychiatric disorder was – tertiary syphilis – and had tried an attenuated strain of malaria as a treatment. This work would win Wagner-Jauregg the Nobel Prize for Medicine in 1927. Such syphilitic deterioration brought a number of patients to state-run psychiatric hospitals in the early 20th century, with Central State being no exception. In today’s age of antibiotic treatment, it may seem extreme, perhaps even barbaric, to deliberately infect patients with one potentially fatal disease in order to treat another. But whereas the mortality rate from malaria was about 5% and the effects could be ameliorated using quinine, neurosyphilis killed virtually all of the time and no truly effective treatment was known. Bruetsch was an excellent scientist; and Bahr, a competent and careful observer whose medical histories were always highly detailed. They were among the first to provide any large scale review of Wagner-Jauregg’s approach and eventually were able to report on 100 such cases. In this initial study, 25 patients were able to be discharged of whom 21 had returned to their previous careers. An additional 12 were “expected to be released home soon,” and of the remaining 58 surviving patients, all were noted to be in less need of intensive nursing supervision than before. Five died, but only two of the deaths were attributed to malaria, while

two others were due to late stage general paresis (neurosyphilis) and one from pneumonia. At the time, such success was unprecedented, and the studies brought international attention to the work of the hospital. Bruetsch's reputation was further enhanced when he reported that the malarial infection triggered the production of specific white blood cells that consumed the syphilis-producing spirochete, rather than simply killing off the offending pathogens directly through the high fever. Bahr's careful patient histories also paved the way for later family genetic studies in psychiatry, but of course this did not score the immediate "home run" effected by the syphilitic treatment.

So Dr. Edenharter's basic strategy did eventually produce significant results within his own department, but the benefit took more time than he had hoped so he did not personally live to see this notable success. However, the ultimate vindication of his vision may actually lie elsewhere, even further removed temporally from the completion of his "New" Pathology Department.

The next step in our story occurred about 60 years after the dedication of Edenharter's pathology building and revolved around [Slide 16] Dr. Larue Depew Carter, Medical Director of Norways Sanitarium in the 1940s and an eloquent proponent for a "new kind" of state hospital to be developed in Indiana. He saw a need for a facility less like the old Central Hospital – which had become essentially a "warehouse" for the mentally ill – and more akin to private psychiatric hospitals of his day – evaluating patients more rapidly and utilizing the latest treatments to get them back home "quickly" – in months instead of years. It was also to be involved in research and education within the field of mental health. Carter died suddenly prior to seeing his hospital built, and it seemed fitting to those who followed up on his vision that the new facility be named in his memory – Larue D. Carter Memorial Hospital [Slide 17]. Admitting its first patients in

1952, it was built on a site, not hidden away in the country like Central and other state hospitals of its time, but right “downtown” in Indianapolis in the midst of the campus of Indiana University School of Medicine. [Slide 18] Though hobbled, much like Central State Hospital before it, by problems in securing adequate funding – for example inaugural Superintendent, Juul Neilsen, M.D., [Slide 19] was strongly criticized almost immediately by the mayor of Indianapolis when he found it absolutely impossible to recruit high quality staff members for the hospital at the salaries the State Personnel Office authorized – Carter Hospital would eventually become internationally recognized in its own right for its contributions to the clinical study of psychiatric disorders and their treatment. Additionally in 1956, following intense lobbying by Indiana’s first Commissioner of Mental Health, [Slide 20] Margaret Morgan, M.D., a complementary program, the Institute of Psychiatric Research, had its building dedicated right next door to Carter Hospital, and connected to it by a tunnel that carried utilities – and for many years, enabled patients and staff to move back and forth as well in inclement weather. [Slide 21] Taken together, these two facilities once again reproduced Dr. Edenharter’s plan for studying the causes of psychiatric disorders, assessing the effectiveness of their treatments, and disseminating the knowledge so gained. We see the same architectural pattern – space for clinical and basic bench research, a professional library (actually, two this time – one in each structure), classrooms and an auditorium (located in Carter Hospital) for educating students in all of the newly developing mental health disciplines, medical center staff members, and physicians and other citizens from the larger community. Many gifted scientists and clinicians have contributed to the reputations of these linked facilities. Under the leadership of second and longest serving superintendent, [Slide 22] Donald F. Moore, M.D., followed by his successor, Clare Assue, M.D. – the first African American state hospital superintendent in the country [Slide 23] – were such

well-known clinician-scientists as husband and wife team, Drs. Joyce [Slide 24] and Iver Small and their frequent collaborator, Victor Milstein, Ph.D. Their research group studied every major psychiatric treatment from the 1950s through the end of the 20th century. Another significant contributor was child psychiatrist, Marian DeMyer, M.D., [Slide 25] who carefully teased autism from “childhood schizophrenia” as a clinical entity and found that parenting style was not the cause of the disorder as previously thought. Meanwhile, “across the street,” the first Director of the Institute of Psychiatric Research, who was also Chair of the IU Medical School’s Department of Psychiatry at the time, John I. Nurnberger, Sr., M.D., [Slide 26] led such world renowned researchers as Morris Aprison, Ph.D. [Slide 27] and Robert Werner, M.D. (who together published the first definition of the term “neurotransmitter”); Charles Ferster, Ph.D. (a behavioral psychologist and colleague of B. F. Skinner).; Joseph Hingtgen, Ph.D. (who headed up the first neurobiology graduate program at IU) [Slide 28]; and William McBride, Ph.D. (who has extensively studied the neurochemistry of alcohol and drug dependency); and many others with highly successful academic careers as well – really too many to list in the time available. In 1994, Central State Hospital was closed, but by then, Carter Hospital and the Institute had long since picked up the baton, continuing the work envisioned by Dr. Edenharter but using new neurochemical and genetic paradigms, central nervous system imaging, and animal models of disease about which no one could have dreamed half a century earlier.

But it has now been yet another 50 plus years since the dedications of Larue Carter Hospital and the Institute of Psychiatric Research, and, like Central Hospital’s Pathology Department, the “newness” just does not survive such lengths of time. [Slide 29] The original Carter Hospital was torn down in 2010 to make way for the recently dedicated Eskenazi Health complex, [Slide 30] and Carter Hospital now operates from “new” quarters in a former VA

facility, much of which actually pre-dates the construction of the original [Slide 31]. What could be described as the third iteration of Dr. Edenharter's original vision has now been erected, this time just south of Methodist Hospital on 16th Street – the IU Health Neuroscience Center. [Slide 32] The IU Department of Psychiatry's clinical research and adult outpatient service, educational programming, and administrative offices moved into their new quarters there in September of 2012. The laboratories and faculty offices currently housed in the Institute of Psychiatric Research building will be moving into the east wing of this neuroscience complex, along with those of the Stark Neurosciences Research Institute and other related research divisions, upon the completion of their building scheduled for later this year (2014). [Slide 33] The original plan for this neurosciences complex called for the patients of Larue Carter Hospital to move to the same site as the Neuroscience Center, but Indiana's economic downturn has placed that portion of the project on indefinite hold. This latest venue, whether Carter's beds become part of it or not, follows once again the model outlined by Dr. Edenharter – research and medical educational space in the midst of, and informing, clinical treatment – only this time it includes “full service” neuroscience because neurology, neurosurgery, neuroimaging, physical medicine and rehabilitation, and other related departments are also partners with psychiatry in this setting, making the overall work more collaborative and highly promising. The complex also includes a neurosciences library, auditorium seating about 120, and several class/conference rooms. Medical students and physicians, as well as others from the community, are welcome learners. The new research tools available within this latest facility include multiple functional neuroimaging techniques, including PET scanning and transcranial magnetic brain mapping, and new treatments are being tried and tested, including robotic surgeries and intra-surgical imaging

done in the enlarged neurosurgical suite at IU Health Methodist Hospital across 16th Street. The tools are cutting edge, but the concept would be very familiar to Dr. Edenharter.

“Translational research” and “evidence-based medicine” are two of the most significant phrases to be added to our medical vocabulary for the practice of 21st century medicine. [Slide 34] The former means the movement of useful findings from the laboratory into the hands of clinicians as quickly and accurately as possible, while the latter can be defined as aggregating data from carefully controlled studies to show the level of belief that one can place in any given treatment approach to a specific medical problem. [Slide 35] These concepts were pursued by Dr. Edenharter as the basis for his New Pathology Department in the 1890s – although he did not have the vocabulary available at the time. One day, we will actually understand “how the brain makes up its mind,” and just what treatments do when the process breaks down. Clinicians will be able to individually tailor approaches to each specific patient – thanks in part to the work of Dr. Edenharter begun the 1890s.

This is not to say that Dr. Edenharter was the only, or even the first, person to pursue this approach – remember, all scientific progress rests on the shoulders of prior science – but his work is a part of Indiana’s unique contribution. And, unlike any of the other similar institutions of its era, Dr. Edenharter’s monument to our 19th century scientific roots still stands, should you wish to walk its halls for yourself. To forestall demolition, IU neurologist, Dr. Charles Bonsett, used this building for some of his muscular dystrophy work long after everyone else had left for more modern quarters. Then with a few others, he petitioned for its placement on the National Register of Historic Landmarks. It is now home to the Indiana Medical History Museum, located at 3045 West Vermont Street, near the northwest boundary of the old hospital grounds which are currently in the process of being re-developed into schools, housing, and retail – the

old hospital (built on the former Bolton farm) having long since been absorbed into Indianapolis. Two years ago, while taking psychiatric residents on “fieldtrips” to the museum as part of our courses on the History of Psychiatry and Community Psychiatry respectively, Lucy King and I concluded that the nearly forgotten story of Dr. George Edenharter and his “New Pathology Department” – with its seminal links to later IU facilities at approximately 50-year intervals – deserved to be told. [Slides 36 & 36a]