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Of Dreaming on Solid Grounds and Silent Triumphs of One Man: A Story About Josef Warkany

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INTRODUCTION

In the words of Albert Schweitzer, the most precious thing about man, however creative he may be, is man himself. This is a story about a man who has steered us away from views once popular and now largely repudiated. A child suffering from congenital malformations can no longer be dogmatically held as a portent of parental genetic "faults" nor can a fetus be considered immune from environmental assaults. From his earliest contributions to the influential *Mitchell-Nelson Textbook of Pediatrics*, Dr. Warkany foretold the importance of prenatal factors in diseases of children and stated that "eugenic measures and advice are not restricted to the genetic aspect of prenatal life ... the fetus should be assured so far as possible by protection of the expectant mother from adverse environmental influences" [Warkany, 1950]. The causes that once fueled political movements for the betterment of races are now dormant, and science has tempered our views [Race Betterment Foundation, 1928]. The American Teratology Society, the procedures for the protection of the unborn adopted by governmental agencies, and the recognition by Dr. Warkany's peers of his pioneering role and influence on these societal changes are symbols of his silent triumphs. In his story about his life as a teratologist, Dr. Warkany recognizes the importance of history, serendipity, intuition, and the scientific toil of many. These triumphs have not blunted his realism nor his concerns about the limited capacity of men to learn from past mistakes. Dreamers and good causes are as abundant now as they were before. Vigilance is needed to prevent new departures toward undreamed cost-effective but ill-conceived utopias. The scientific itinerary of Dr. Warkany can be charted from his own biography and his visions of enigmas can be surmised from his etchings [Brent, 1982; Warkany, 1988a–c]. To some, his self-discipline and strong philosophy of life can be intimidating. Thoughtless comments and sentimentality rarely escape his self-control. His indifference to populistic causes and movements is glacial. Inhuman traits some may say, but such a view melts rapidly as one savors his humor, liveliness, and attachments. In a recent letter to a friend he closed with "stay in touch, keep me alive." Had he not chosen medicine, Dr. Warkany would, I am sure, have become a creative artist, most likely a writer, poet, painter, or architect. I doubt he would have considered business, politics, or the law. Even under his medical cloak, Dr. Warkany emerges as a man of letters. A theme he often touches is the necessity to preserve the truth from assault by exploitative speculations. Yet, he also champions human intuition, which he considers the source of freedom and creativity. With concern, he points out that creativity, scientific or artistic, declines without freedom, and he casts doubts about cost accountants and well-intended bureaucracies. He sees the infiltration of politics into science as a portent of impending decay.

Perhaps the story about this man should be written in a detached way, akin to a perception of mountains that reveal their majesty softened by distance and the mists of time. That task I leave to those who have not known Dr. Warkany personally. This story is written by a friend who could not have become an adversary. Perhaps the view is narrow, but it is close to the mountain and I hope I can bring others to discover their own vistas.

What follows is a collage of thoughts, mostly from passages extracted from the voluminous writings and speeches by Dr. Warkany (a complete bibliography can be found in Warkany [1988a], and subsequent contributions are listed in the References) [Dignan and Warkany, 1989; Warkany, 1988a,b, 1989a,b]. The quotations cited are signals of cardinal views, samples of linguistic virtuosity, notations of feelings and concerns that are characteristic of this man. Readers can remedy shortcomings by consulting the bibliography. The responsibility for my temerity in undertaking this task I transfer to those that Dr. Warkany lists as "my best friends and younger mentors," Drs. Robert L. Brent, Robert Miller, Kurt Benirschke, Jack Rubinstein, Peter Dignan, Clarke Fraser, Harold Kalter, and many others. They encouraged me to commit to print thoughts which I expressed earlier during a recent tribute to Dr. Warkany.

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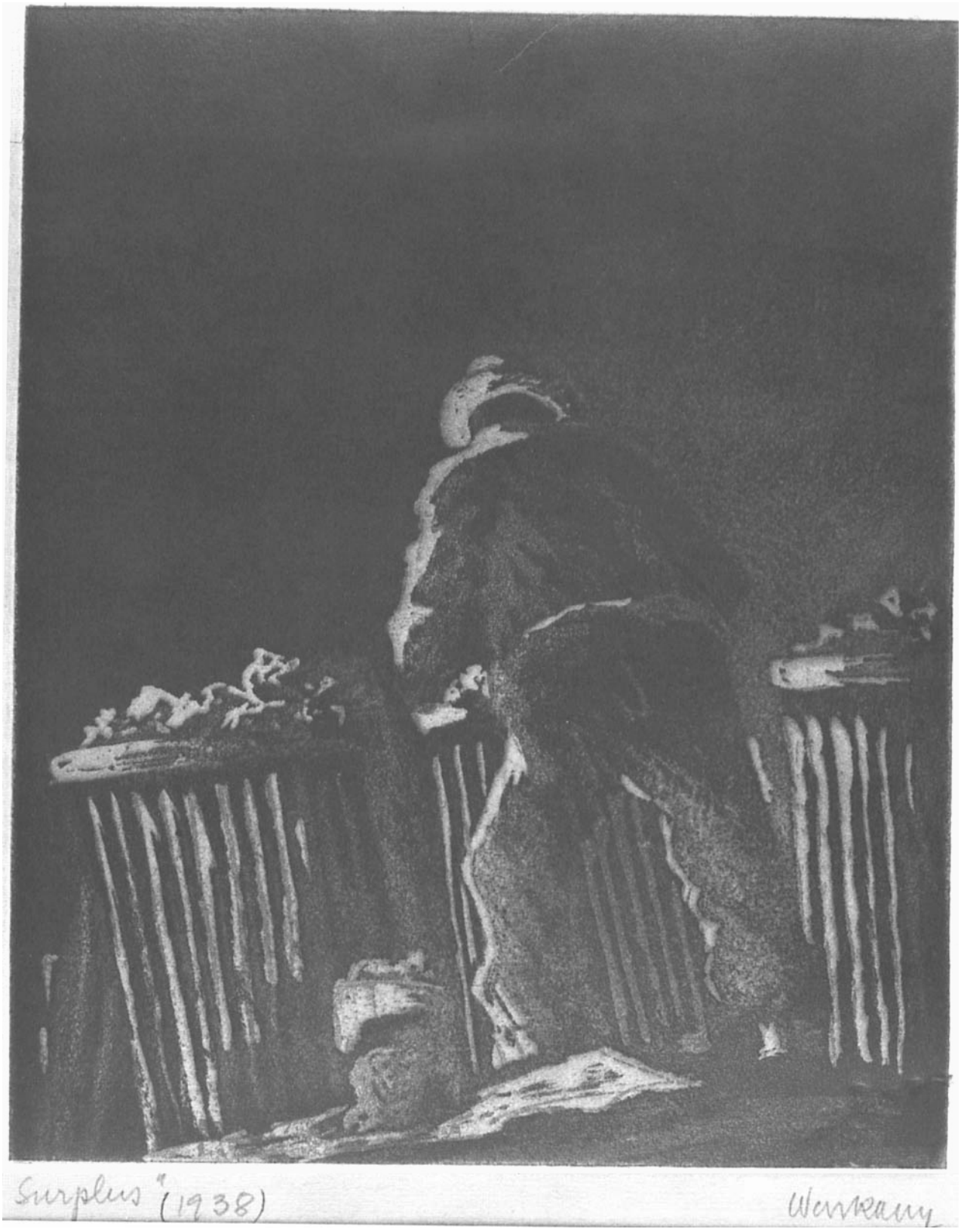

Fig. 1. *Surplus* (1938).

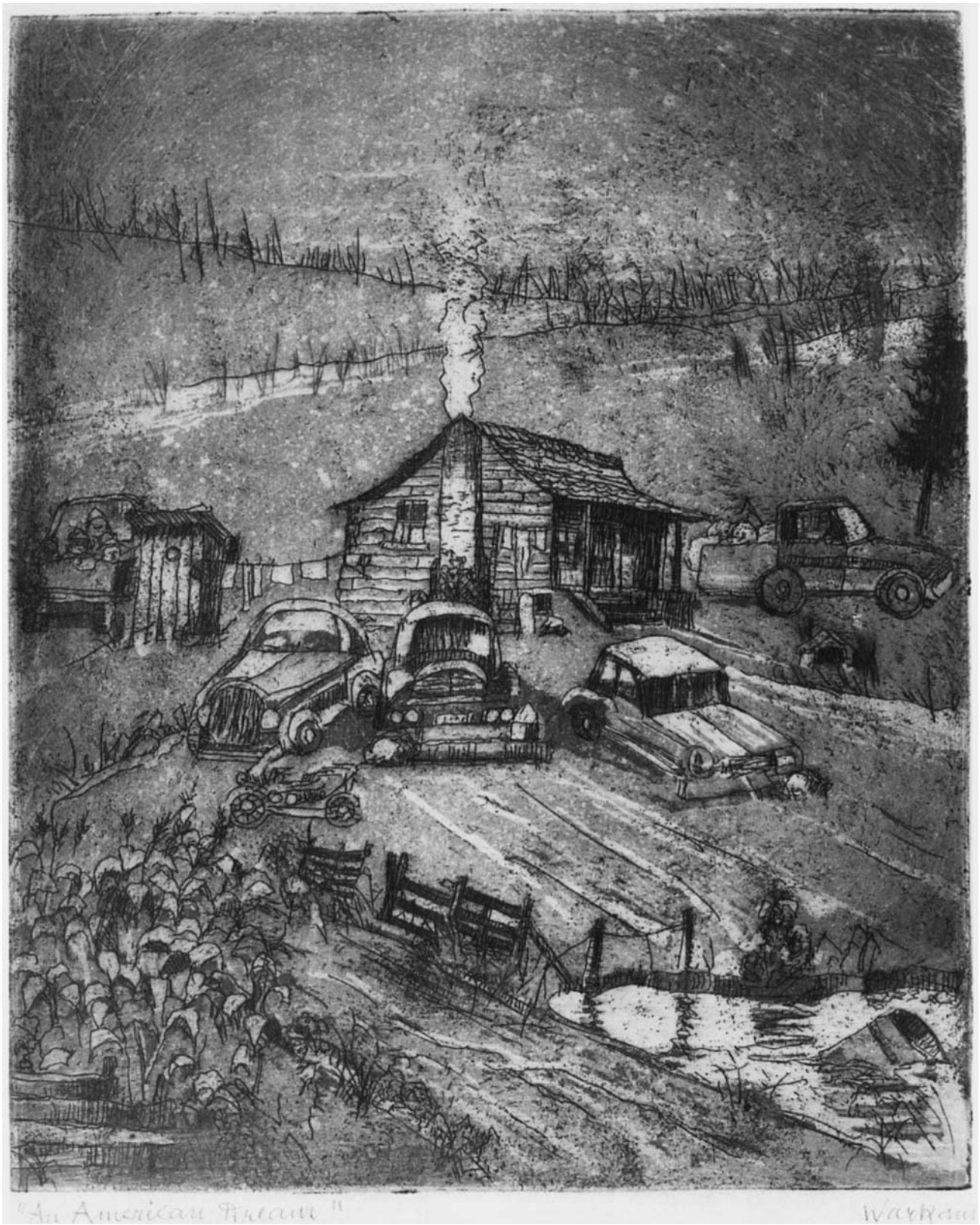

Fig. 2. *An American Dream* (1977).

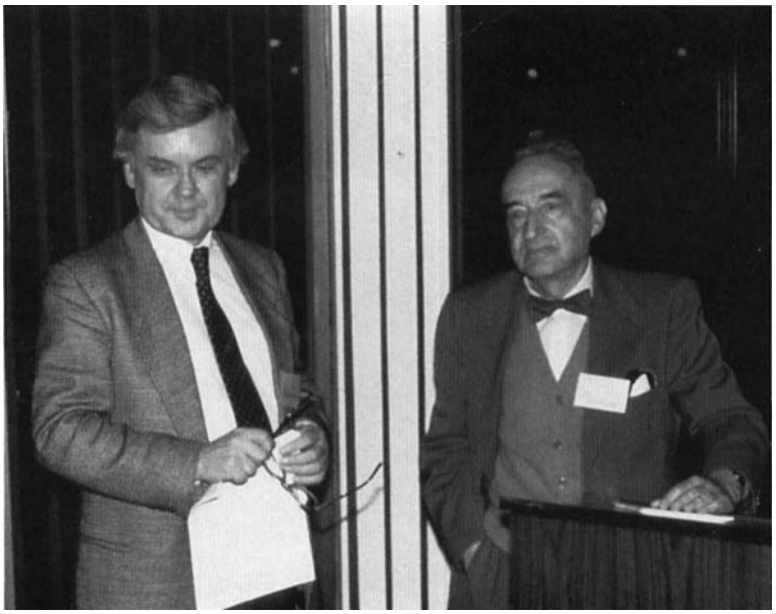

Fig. 3. With the author during the "Josef Warkany Symposium"(Cincinatti 1988).

I address Dr. Warkany as Don José, a Spanish term I have bestowed on him because it denotes dignity, affection, and respect for those whose blend of knowledge and living philosophy becomes a source of knowledge and strength to others.

Josef Warkany was born in Vienna in 1902, a city that harbored traditions and a university that is identified with the germinal core of modern medicine. With this legacy also came the pervasive influence of the romantic "Natürphilosophie" related to Goethe, Oken, Haeckel, and many others. These evolving theories of biologic predeterminism promised to reveal secrets from the past and to lead to future utopias. The persistent calls of Haeckel for racial purity and a "just" state led to an easy mutation from his "monism" to national socialism. Even Sigmund Freud was favorably predisposed to Haeckel's doctrine. When asked if he knew Sigmund Freud, Don José once said ". . .of course I knew of him," with stress on the "of"; ". . . I was interested in philosophy and read early the *Interpretation of Dreams* . . . but . . . I found out that I had the wrong dreams, . . . mine were different . . . I turned to more solid grounds." I believe that since then, Don José has remained immune from prevailing metaphysical dogmas, whether political, statistical, genetic, or molecular in nature.

It is with evident pleasure that Don José recalls his teacher of psychiatry, Dr. Julius Wagner-Jauregg, whom he describes as a "dry and down-to-earth physician, a stable investigator who taught well the right concepts . . . and who deserved the Nobel prize he received in 1927 for his studies of malarial therapy of syphilis." To recognize the core of a dilemma is a talent that was nurtured in Don José during his student years in Vienna. He credits in particular Dr. Clemens von Pirquet, recalling that while studying the pupillary reflexes of children with tuberculous meningitis, he was admonished ". . . study something of importance . . . find out why these children die." His writing style Don José attributes to Dr. Alfred F. Hess, the first American colleague he met upon arrival to New York from Vienna on January 1, 1932. The Warkany style and philosophy burst forth free and are most palpable in the leading chapters of his book *Congenital Malformations, Notes and Comments* [Warkany, 1971]. Few authors can worship science, preserve the unknown from speculations, and yet remain poetic in style.

In an era of books reflecting collective views, *Congenital Malformations, Notes and Comments* offers a singular statement of classic character. Facts are enriched by precepts without detriment to the unknown because Don José does believe that ". . . ancient history . . . does not teach us much about the origin, prevention or treatment of congenital malformations . . . but it tells us a great deal about the human mind . . . its reactions to unexplained phenomena . . . man insists on an explanation . . . does not wait until science gives him a satisfactory answer." The reader is warned that "there is less need for imagination than facts . . . therefore, I have omitted explanations and theories that are unproven. . . ." But while clearly devoted to facts and aloof from speculative systems, Don José is also realistic and cautious:

It is not easy to define the borderline between a superstition and a theory . . . both are based on a disproportion between knowledge and belief . . . we must be aware that we can create new superstitions in place of the old . . . to blame, without proof, congenital malformations on faulty DNA, RNA, mutant genes. . . . Considerations of the past have shown how inflexible such statements become once written in clay tablets, papyrus or paper . . . and if the reader is also the writer of popular journals . . . beliefs are carried to millions . . . the whispered word is powerful

Fig. 4. *Ten Shadows Without Men*, Hiroshima 1945 (c. 1960).

Fig. 5. *Substandard Housing: Haydn's Birthplace, Rohrau (Trstnik), Austria* (c. 1972).

but the written word endures ... as long as beliefs are treated as unproven hypotheses that stimulate research and experimentation, they are useful and necessary ... if they are stifling the work of others who have different theories, they may become superstitions even if expressed in the most modern multifactorial and statistically cloaked scientific terms ... superstitious explanations can coexist with naturalistic and scientific views. In our own time we have witnessed ... the Third Reich ... but let there be no mistake ... as long as we cannot explain to a mother why her child is deformed, she will retain her own explanation.

From an autobiography of a physician about to become married and who delivered a monstrous child he quotes: "... it was a sign, a portent ... silly you say ... granted ... but a doctor can't be coldly scientific all the time ... and if he could ... I believe that he would lack the kinship with the rest of humanity that makes for a good physician...." And from William James: "... not a sparrow falls to the ground but some of the remote conditions of his fall are to be found in the Milky Way, in our federal constitution or in the early history of Europe...." Economic considerations have branded *Congenital Malformations, Notes and Comments* for extinction by a declaration of "out of print." But its value is timeless, because its views integrate past, present, and future and separate truth from theory, and throughout there is an echo, reminiscent of Lucretius "... of nature we learn with our reason ... of Gods we have intuitions".

In Vienna, Don José grew up in what he calls a "voluntary ghetto," where Dr. Sigmund Freud, Robert Baranyi, Theodor Herzl, Gustav Mahler, and other famous people resided. A mile away lived an unknown watercolor landscape artist named Adolph Hitler. Don José, like his brother, drew well. He learned etching from a Belgian physician. His early interest in architecture changed toward medicine. After graduation in 1926, he decided to specialize in pediatrics as a resident under the brilliant Professor Clemens von Pirquet. His career in Vienna was short but fruitful. His investigations were mostly concerned with rickets. By 1931, he had a substantial scientific bibliography and obtained a $1,500 scholarship from Dr. Graeme Mitchell to join the growing scientific team being assembled in Cincinnati. With his colleagues Waldo E. Nelson, George M. Guest, Robert A. Lyon, Frank Stevenson, Merlin Cooper, and many others, pediatric history was made.

Once in New York and before traveling to Cincinnati, Don José enjoyed the hospitality of Dr. Alfred H. Hess, a pioneer in rickets research, and who was aware of the studies of Don José on the subject. There, he met Dr. Abraham Flexner, an educator who had an impact on medical education and founded the Institute for Advanced Study at Princeton, which Dr. Albert Einstein was to join the following year. While in New York he visited Dr. Bela Schick, who left Vienna earlier to join the pediatric team at Mount Sinai Hospital of New York. The impact of such pioneers had a molding effect on the young Don José. Concerning beliefs and science, Don José acknowledges that he counted himself among the group of "phosphanatics"; the opposition believed in the greater importance of calcium. But with the discoveries by Dr. Alfred Hess and others, the "phosphanatic" and calcium factions were rendered obsolete.

Of the Cincinnati era of 1932, Dr. Warkany said:

we were not paid much, but it was a happy time, a paradise ... and a paradise lost by now ... the most important research equipment was the investigator's mind; this was a revolutionary group, but we had no slogans, no banners, and no flags ... what the founders of our institution did was to create a place to work ... politics of any kind was absent ... now research consists of grant writing ... should not the investigator have the right to change his mind according to his observations? ... if one knows what one will do and find in it, then it is not research ... in the past, the patrons of artists gave their protégés a place ... but left it to the artist to choose a subject and to execute his dreams, ... why don't we learn? ... now, gadgeteering is replacing ideas ... let us be honest, many scientists contributed to the general decay ... it will take a Thomas Mann or a Cervantes to describe the decline ... in the parlance of modern genetics [the decline] has multifactorial causation ... which means nobody and everybody is responsible ... we have forgotten that, in the main, research consists of thinking [Warkany, 1970, 1977, 1984].

Often Don José evokes in me memories of Albert Schweitzer: "... how can the individual assert himself in the face of the multitude ... these magic formulas ... of whatever economic or social order they stem from, are always just this ... the individual must give up his own personality and must become part of a multitude which claims control over him...." [Schweitzer, 1961].

Of those early days Don José also recalls that "beer and cheese were cheap, trolley cars went up and down the hills of Cincinnati," and when he was asked to stay, he did. Soon after and unintentionally he became a "cause celèbre," and with passing years, the story acquired deeper coloration. Apparently, Don José was assigned by his academic superiors the task to be the male companion of two Chinese ladies about to undertake a cross-country trip in an open touring car. The trip was rough; the roads were mostly unpaved. At one point, their limited driving skills placed them in the center of a circus caravan parading through the main street of a rural town in Iowa. Between cages of lions and elephants, this Viennese physician with two attractive Chinese ladies drew cheers from hard-working farmers lined along the street. The populace must have wondered what entertainment this trio would offer in the evening performance. Don José, who was neither tall, nor slim, nor muscular, endured the cheers and continued west. At this point the story becomes variegated; what is certain is that Don José failed to reach the west coast. In Wyoming, he turned back after being replaced by a cowboy who drove better. On his return, his nerves may have been frazzled, but he met and soon after married Miss Suzanne B. Buhlman. They

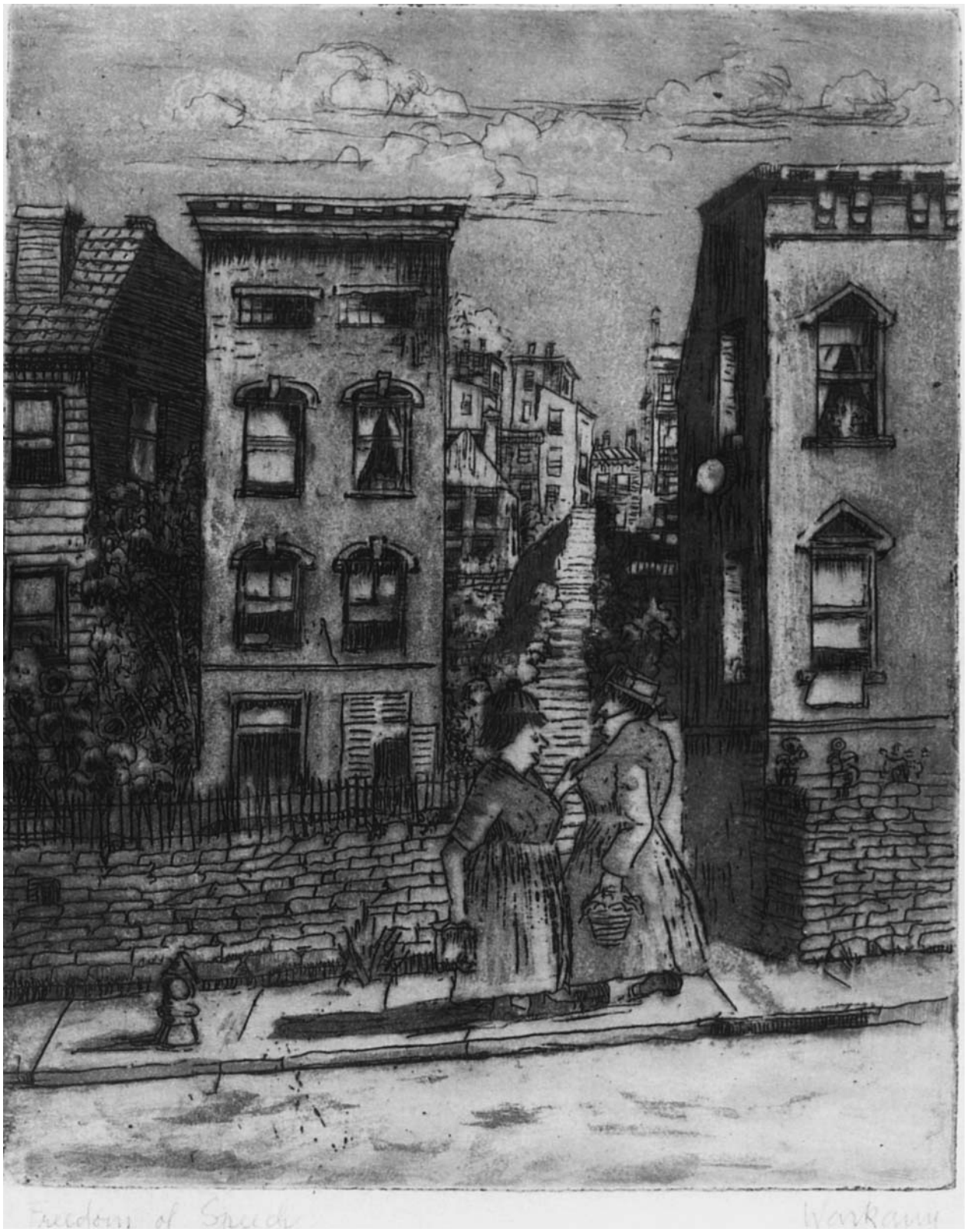

Fig. 6. *Freedom of Speech On Liberty Street* (c. 1982).

Fig. 7. **a:** Learning surgery (Vienna, 1927). **b:** On board *SS Deutschland* from Hamburg to New York (1931). **c:** Waldo E. Nelson, Clement A. Smith, Charles A. Janeway, Helen B. Taussig, Harry H. Gordon, Albert B. Sabin, and Josef Warkany during a Howland Awardees Dinner (1978).

bought a house on Biddle street where they raised two sons and in an ample attic Don José printed all his etchings.

The path that led Don José toward his study of congenital malformations sprang from his interest in endemic goiter and cretinism. He still believes his articles on these topics are "the most important and best pieces I have written." In 1940, Don José began to report scientific observations that broke the hold of traditional views that congenital malformations were inherently genetic in nature. His early studies culminated in the formulation of the scientific principles of teratology. The reports of 1940 and 1942 concerning "Congenital Malformations Induced in Rats by Maternal Nutritional Deficiency" represent landmarks about the environmental etiology of congenital malformations, of which Don José said,

F. Hale preceded me by eight years with his studies of vitamin A and anophthalmia in pigs . . . our studies were begun with the aim to induce rickets . . . it was a failure that led to something better . . . riboflavin was found to be a preventive and (to be an) essential nutritional factor needed for normal prenatal bone development, needed before ossification and chondrification began . . . this was war time and few could continue their scientific studies . . . I could not defend our work until it was independently confirmed . . . Dr. Giroud, a Frenchman, confirmed our experiments about seven years later [Warkany and Nelson, 1940; Warkany et al., 1942].

The serendipity of scientific discovery, the freedom of the scientists to create and change their minds, do concern Don José. In 1975 he wrote to an eminent virologist,

As one who has been in medical research for many decades, I have learned a great deal about the vicissitudes of medical investigations . . . the lesson to be learned is that usually crash programs succeed because the ground has been prepared for 50 to a 100 years . . . may I make a modest suggestion for your consideration? . . . I took up cancer research because of my interest in congenital malformations that are said to predispose to cancers . . . it is possible to produce in animals congenital malformations . . . we obtained a contract . . . after 15 months it became obvious that (contrary to expectations) . . . irradiation reduced significantly the incidence of tumors . . . this phenomenon is more interesting than the project we planned . . . (the contract was terminated) . . . serendipity is a well-known instrument of science . . . many investigators who looked for silver found gold . . . I wonder if . . . a clearing house could be established that could shift contracts from one branch to another when impartial investigators obtain interesting results contrary to expectations.

The letter was not answered by the addressee but by a lay assistant chief for policy, who replied ". . . impracticable and indeed contrary to existing Government procedures and regulations." Such shallowness often leads Don José to quote Albert Szent-Györgyi, who, although a Nobel prize winner, was discouraged, and stated,

scientific research is, in many ways, related to art . . . the foundation of science is honesty . . . the present granting method is so much at variance with the basic ideas of science that it has to breed dishonesty . . . one of the widely applied practices is to do work and then present results as a project and report later that all predictions were verified . . . I am not applying [for grants] any more [Szent-Györgyi, 1974].

As an immigrant to Ohio, Don José had to "take a belated state board examination . . . and I learned that the symptoms of chronic arsenic poisoning . . . had a resemblance to acrodynia." In 1945, when confronted with a patient showing poisoning symptoms, Dr. Warkany's search for arsenic revealed instead the presence of mercury. These events were the first step in the eradication of acrodynia, a serious disease of childhood, but progress was slow. In 1954, there still were as many as 30 million calomel-containing teething powders sold by a single British pharmaceutical firm. In 1966 he wrote "Acrodynia, Postmortem of a Disease" and noted that "there is nothing more dead than a dead disease . . . but there is always merit of looking backward . . . to pause and contemplate . . . not to reminisce about old times, but to learn from the experiences and errors of the past" [Warkany and Hubbard, 1948, 1951; Warkany, 1966]. The initial reaction of colleagues from across the Atlantic ocean was to bestow on the work of Don José the title of "trans-Atlantic madness." Such triumphs should not be forgotten.

In 1949, Don José was admitted with tuberculosis to the Trudeau Sanatorium in Saranac Lake in New York. He became a "horizontal doctor" and wrote of his treatment by "vertical doctors," and his experience with psychoanalysis, and he depicted his feelings in his etching "Patient's Point of View," which has already been published [Brent, 1982]. This etching depicts a pair of bare feet and an empty solitary corner and is a reminder to those delivering prognostic or genetic counseling, as if the counselor had a choice of whether to strip those feet further and make the corner deeper or to help a patient walk again to find his own path. He said that at the time ". . . death seemed to be a happy solution . . . our Board of Directors had generously promised to pay my expenses at the sanatorium, but when the stay became protracted . . . it was thought that to withdraw this promise would increase my desire to get well. . . . But Don José was not forgotten. He received the American Academy of Pediatrics Borden Award of 1950 [Warkany, 1951]. It was then, he recalls fondly, that Dr. F. Clarke Fraser wanted to join him in Cincinnati. This was not possible, but he "became my best friend and mentor." Of Dr. Carleton Gajdusek and his deserved 1976 Nobel prize he speaks often as "the one house officer that made rounds at night and slept during the day . . . produced brilliant observations . . . and who in my hour of need offered me a job, of all places, in Afghanistan." Don José recognizes the influences of his "younger mentors" and has introduced

Fig. 8. Playing soccer with Eberhard Passarge (1967).

Fig. 9. With author and Mrs. Susan Wertelecki seeking news about teratogens from the popular magazine "Mother Jones" (Stanford University, 1981).

generations of pediatricians to genetics through his contributions to the *Mitchell-Nelson Textbook of Pediatrics*. His concerns about dogmas lead Don José to often proclaim himself as an "antigeneticist,", "... the concepts of multifactorial ... life itself [are] multifactorial ... reduced penetrance ... reduced expressivity ... the causes and reasons for common sporadic congenital malformations ... including mutations remain unexplained".

In 1957, after meeting with Basil O'Connor, president of the National Foundation—March of Dimes, Dr. Warkany was instrumental in inducing the foundation to shift emphasis from poliomyelitis, a nearly vanquished disease, toward the study of "birth defects," a term that Don José did not favor because

against the widespread belief that the problems of congenital malformations and those of inborn errors of metabolism are identical, it should be emphasized that there are striking differences in these disorders requiring different approaches ... the extension of the term [birth defects] ... may contribute little to progress, since not all congenital malformations are due to abnormal molecular structure [Warkany, 1977, 1978, 1979, 1981, 1986a].

For several years, Don José opposed the organization of a teratology society because "... the premature formalization of an emerging discipline could stunt its growth" while proclaiming that "... it must be realized that congenital malformations are manifestations of prenatal pathology, an area as large and complex as that of postnatal pathology ... obscured by the inaccessibility of the unborn ... and unresponsive to investigative methods traditional in postnatal research.... In April 1959, a conference on Congenital Malformations was taking place in Palm Beach, Florida. A series of landmark presentations were made and reported in the *Journal of Chronic Diseases*. The views expressed then by Don José on the role of congenital anomalies in the etiology of chronic diseases remain current now [Warkany, 1956]. Since then, congenital malformations have gained importance as causes of infant mortality and chronic disability. But at that time, a review by a steering committee of scientists, appointed by the National Foundation—March of Dimes and composed mainly of virologists linked to studies of poliomyelitis, judged that the study of inborn errors of metabolism and other genetic problems were of greater interest than studies of structural malformations. A few days later, during a walk along the edge of a nearby beach, Drs. Clarke Fraser and Jim Wilson and Don José decided that it was time to call for the creation of the first teratology society. One year later, the American Teratology Society, the first of its kind, was organized and Don José became president. When recalling these events, he mused "... how is one to convince virologists of the importance of structural malformations? .. I still think we should take care that molecular biology does not become mini-biology".

In 1986, the first Basil O'Connor Award was to be given to Don José. Asked by the National Foundation—March of Dimes, I reviewed the events of those days. Several colleagues recalled how nearly 30 years earlier Don José was persuasive about the importance of congenital malformations as a field for scientific investigations and how some concluded that "... the American people would not respond to an appeal focused on congenital malformations," while others recalled that the term birth defects was chosen because "... it was a decision based on the advice of Public Relations specialists." Concerning genetic counseling, Mr. Melvin Glasser, in his introductory speech at the award ceremony, recalled how Don José had advocated parental counseling in pediatrics, how such a suggestion met with a stonewall of opposition, and how the audience could judge now who was right and who was wrong [Glasser, 1986; Warkany, 1958, 1986b]. When Don José rose to give his acceptance speech he noticed that his tag indicated that he was from Chicago instead of Cincinnati, and said "... I am glad you found me at last ... this may explain why I have not heard from you for 25 years...." After the celebration dinner, while chatting with friends, Don José noticed that the award check was missing. He immediately proposed that the check may have been sent to Chicago, and when it was found abandoned on the podium, Don José still denied the possibility of the existence of Freudian slips.

Since "retirement" Don José has written over 100 scientific reports and has expanded his horizons "from Pediatrics to Geriatrics" [Warkany, 1985]. His interest in the human condition is acute, and recently he remarked how "... in advanced countries, the causes of bad health include maladaptation, faulty relationships, poverty, ignorance, [and] fear" and asked "... how are such to enter into cold calculations of cost-benefits and who should appoint such accountants? ... the medical profession and its related institutions ... were declared businesses ... and in spite of this shameless system, the progress has been fantastic".

Don José is a man of action and optimism; despair is foreign to him. His realism is triumphant and often is contrary to prevalent views:

Being ignorant of the causes of spontaneous mutations implies that direct prevention is not possible ... teratologic experimentations ... are endless enterprises ... seldom useful in prevention of the malformations these workers deal with ... we must reconsider our methods ... not only emphasize frontal attacks but also consider less glamorous indirect methods ... malformations like all diseases and all events in this world—are determined by long chains of causative factors—these chains can sometimes be interrupted by cutting their weak links— ... enigmatic cases ... deserve mention and description irrespective of their value to established disciplines ... generalizations and imaginative concepts ... are less needed than facts ... (concerning massive studies of uncertain value and quoting J.H. Poincaré) ... chance is a measure of our ignorance ... if so, statistics is ignorance

Fig. 10. With David W. Smith and Robert L. Brent in Snowman, Colorado (1979).

Fig. 11. With Basil O'Connor (c. 1959).

Fig. 12. Giving the signal to establish a teratology society during a meeting in Palm Beach, Florida (1959)

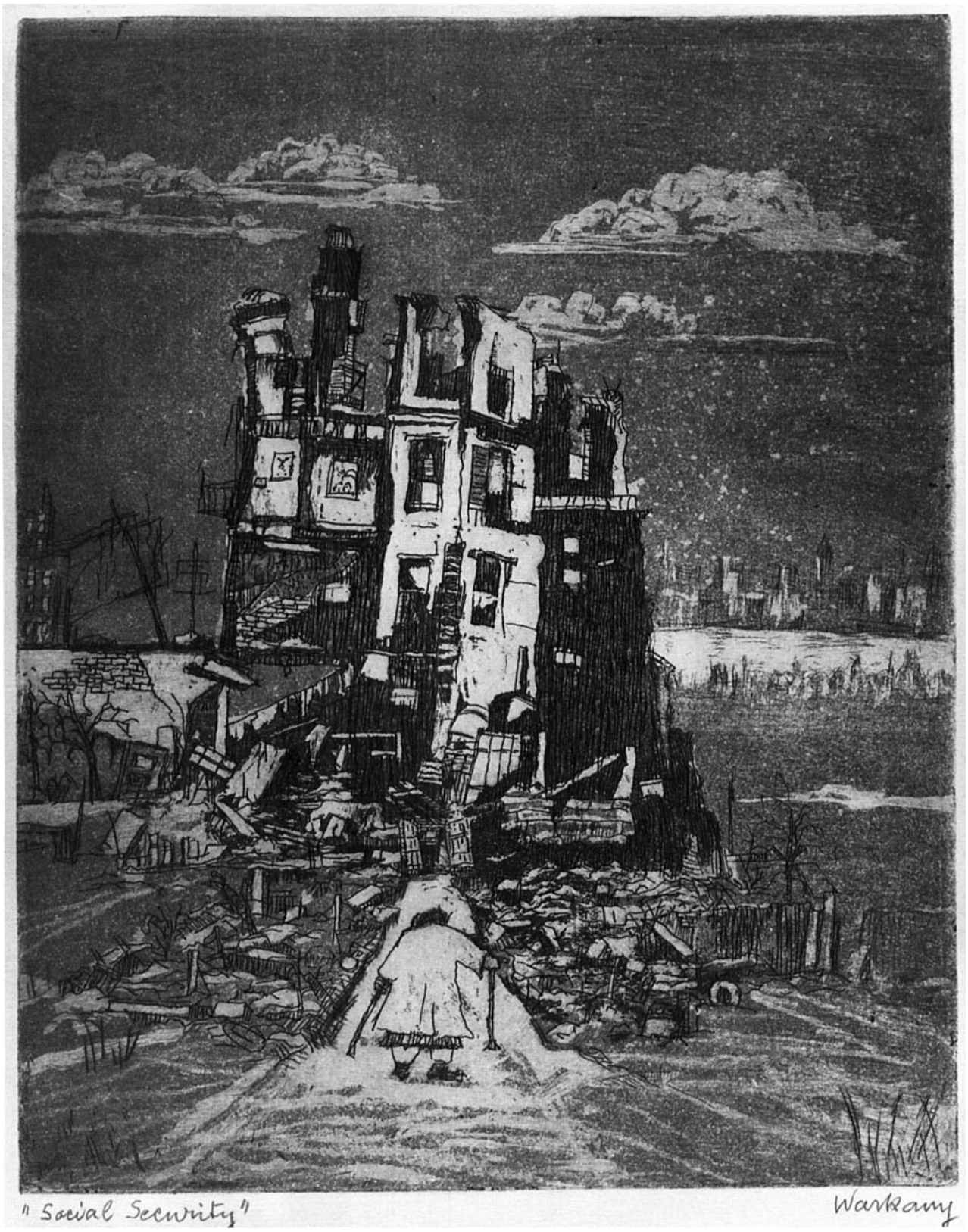

Fig. 13. "Social Security" (c. 1978).

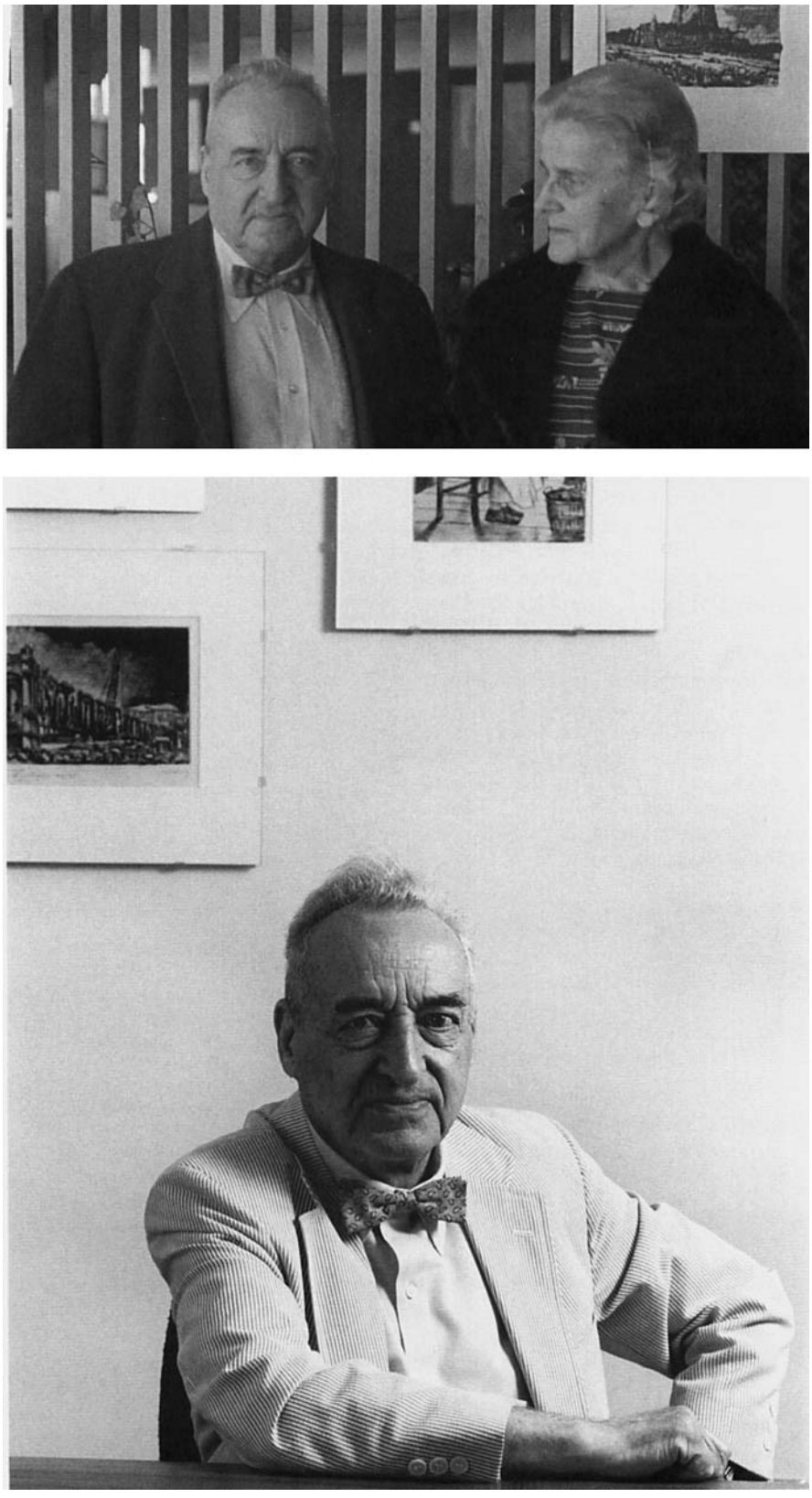

Fig. 15. In front of his etching *Silent Triumph* commemorating the demolition of an infectious disease hospital ward (Mobile, 1965).

made respectable . . . yet ignorance cannot be respectable even when dressed up in mathematical formulas.

Like Goethe, Don José recognizes that mathematics is best suited for the study of mechanical phenomena.

In Don José I continue to find a cohesive philosophy of nature. As a realist he derives his strength from experience. While he abstains from metaphysics and has little confidence in dreamers, he acts in the sphere of the human character:

It seems doubtful that it is necessary in our times to sacrifice the weak for the strong, the retarded for the advanced and to look at the management of the extremes as alternatives. There are situations in which the physician may doubt that preservation of life of a severely defective child is justified or defensible. But preservation of life is the physician's task. . . . a charitable attitude toward the weak, the deformed and the mentally handicapped—irrational as it may seem sometimes to clever analysts—apparently has a beneficial effect on the society that maintains it and fosters it. We have witnessed in our lifetime fine civilizations and states go down to ruin, destroyed . . . not by . . . their weak and deformed but by apparently well-formed physical specimens whose minds were considered superior by millions of their fellow citizens. Since our society and our laws protect the life of the imperfect child, we must contribute to its care and rehabilitation. It does not seem right to leave the entire financial and emotional burden to the parents, whose misfortune is undeserved. Abnormal children teach us a great deal. . . . To contribute to their care is the price to be paid by those who have normal children-the price to be paid for overcoming the barbarism and cruelty inherent in the societies that eliminate the weak and dispose of the deformed [Warkany, 1971, pp. 28].

Perhaps, as voracious humanity accelerates its consumption of nature, the thoughts offered by Don José will illuminate our search for answers to questions implying judgments of life, human or not, perfect or imperfect—and about who should appoint such judges. Like Albert Schweitzer recently, and others since antiquity—Don José finds nature, truth, and ethics inextricably intertwined.

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