International Society of Barristers

Volume 51 Number 2

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The Intersection of Natural Flavor and Nutrition
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Quarterly

Annual Meetings

2019: March 24–30, Ritz-Carlton Dove Mountain Resort
near Tucson, Arizona

2020: March 22–28, The Sanctuary at Kiawah Island,
Kiawah Island, South Carolina

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THE INCREDIBLE MR. APPLEMAN: A TRIBUTE TO JOHN ALAN APPLEMAN, 1912–1982*

Stephen Pate**

I
INTRODUCTION

Insurance-coverage attorneys will know of *Appleman on Insurance Law*[1] and will have frequently consulted this treatise during their careers. Yet who today knows of John Alan Appleman, who first published the work in 1941? Sadly, he seems to be forgotten today. Yet, he deserves to be remembered. Through his groundbreaking insurance treatise and his other works it can be said that he founded the insurance coverage bar in the United States. Moreover, he was renowned in his time as a trial lawyer and as a teacher of trial advocacy. He revitalized or was instrumental in founding no less than three major bar associations: what is now known as the Federation of Defense and Corporate Counsel, The International Academy of Trial Lawyers, and The International Society of Barristers.

In addition, Appleman had many interests outside the law. He wrote a western novel that was published in England. He wrote a book of poetry. He wrote several financial planning works. Finally, he wrote a book entitled *Your Psychic Powers and Immortality*, a book in

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* Article previously published in NEW APPLEMAN ON INSURANCE: CURRENT CRITICAL ISSUES IN INSURANCE LAW (Winter 2017).

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1. This is the colloquial name. It was originally published as *Insurance Law and Practice, with Forms* (1941).

which he examined what he believed to be his own powers of telepathy and ESP.

Perhaps Appleman would best be described as a polymath. Others would say that he was "a man for all seasons," or "a Renaissance man." Certainly, he was a lawyer who was right for his times. His career began at a time when American insurance and tort law were beginning to fully develop. Appleman aided greatly in that expansion. He was always on the cutting edge of legal developments. One cannot forget his other interests, including those in his community and his Midwest "boosterism," which seemed to be a hallmark of the last century. Yet, at the end of the day, John Alan Appleman was first and foremost a lawyer, and he was a lawyer's lawyer.

II
APPLEMAN'S EARLY YEARS

Appleman was born in Webster Grove, Missouri, on May 14, 1912.[2] His father was an Army officer, and Appleman lived at or near several different Army posts in his youth.[3] He began working at fourteen and was self-supporting from that age forward. He worked in his early years as a salesman, shipping clerk, theatre manager, journalist, and even as a dancing teacher.[4] He attended the University of Illinois, where it was noted that he was extremely active in interscholastic sports and campus activities.[5] He worked as an athletic director for several summers.[6] A recognizable picture of Appleman as a twenty-year-old member of the University "Cavalry

2. *John Alan Appleman*, WHO'S WHO IN AMERICA (42d ed. 1982–83).

3. MELVIN M. BELLI, III THE VOICE OF MODERN TRIALS (JOHN ALAN APPLEMAN, ILLUSTRATION OF CROSS EXAMINATION TECHNIQUES) (1960) (booklet accompanying records).

4. *Id*.

5. Frederick Fell, *Preface* to JOHN ALAN APPLEMAN, YOUR PSYCHIC POWERS AND IMMORTALITY (1968).

6. BELLI, *supra* note 3.

Officers Club" appears in the 1932 University of Illinois yearbook.[7] One of the first mentions of him in print is when the *Chicago Tribune* noted that he had been elected Vice President of the Independent Council at the University of Illinois.[8] This was the organization that controlled activities of students, not members of fraternities.

This is perhaps an early example of how Appleman would join and become a leader in a group. He was elected to Phi Beta Kappa in his junior year and graduated Magna Cum Laude. This was not to be unexpected, as Appleman reportedly had an IQ of 175.[9] He graduated from the University of Illinois Law School and received his law license in 1935.[10] It should be noted that he worked his way through both undergraduate and law school.[11] Moreover, he did his undergraduate work in three years, and obtained his law degree in two.[12]

It was now that Appleman began his legal and writing career. The 1936 Peoria, Illinois, City Directory lists him as an adjuster, not as an attorney.[13] In the midst of the Great Depression this was not an unusual first job for a young law-school graduate, as many law firms were not hiring. Perhaps this work as an adjuster sparked his lifelong interest in insurance. His first published article appeared in January 1936 in the American Bar Journal, only a few months after he had graduated from law school. The article reflected that he was a member of the Peoria Bar. The article, oddly enough, has nothing to

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7. 1932 UNIVERSITY OF ILLINOIS Y.B. 391.

8. *Chicago Student Heads U of I Independent Council*, CHICAGO TIMES 24 (May 13, 1931).

9. Fell, *supra* note 5.

10. Craig Spangenberg, *John Alan Appleman, In Memoriam*, 19 INT'L SOC'Y BARRISTERS Q. 371 (1984).

11. Fell, *supra* note 5.

12. BELLI, *supra* note 3.

13. 1936 PEORIA, ILLINOIS, CITY DIRECTORY 52.

do with insurance law and was entitled *The Tort Liability of Charitable Institutions.*[14]

At a later date, Appleman would comment upon his legal writing and upon this article. He wrote,

> I've been writing one thing or another since about age 13. My first legal article, at age 23[,] came about because of my indignation over the state of the law in that area and how to change it. All other books on the law were written because of the void which needed to be filled, and these became standards.[15]

How many twenty-three-year-olds publish serious, scholarly works in the American Bar Association Journal? A review of the article shows that it is a deep, scholarly survey of the law regarding charitable institutions in every state. In the article, Appleman discusses how different states addressed whether charitable institutions were immune to suit by recipients of their charity or suits by strangers. In order to determine how particular states had ruled on the issues, he had personally contacted professors at different state universities when he could not find recorded decisions.[16] It is a solid work and indeed complains about the inequities among the different states and the public policy that he felt should be changed.

It was in July 1936 that Appleman's first insurance article appeared: *Forecasting Loss Ratios on Personal Liability*.[17] By the time of this next article, he was practicing law in Bloomington, Illinois.

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14. John Alan Appleman, *Tort Liability of Charitable Institutions*, 22 ABA J. 48 (1936). This was the January edition. He would not turn twenty-four until May.

15. Stephen Pate, *Above and Beyond the History of the Federation of Defense and Corporate Counsel*, FEDERATION OF DEFENSE AND CORPORATE COUNSEL (75TH ANNIVERSARY ED.) (Fall 2011), www.thefederation.org.

16. *See* Appleman, *supra* note 14, at 48.

17. John Alan Appleman, *Forecasting Loss Ratios on Personal Liability*, 3 INS. COUNSEL J. 21 (1936).

Perhaps because of the location—State Farm is located in Bloomington—it can be presumed that by this time he had joined State Farm Insurance Company as legal counsel. It is known that he worked with State Farm for a period of time supervising tort litigation in some thirty-eight states.[18] Appleman did not choose the most interesting of subjects for this first insurance article. Yet it can be said that he saw a problem and sought to *remedy* it. The article appeared in the *Insurance Counsel Journal*, and in it Appleman wrote that estimates regarding claims losses could be forecast according to the scientific method. He noted that "this has been done to some extent to the present time, but[,] at best, it has been a matter of mere hazard or guesswork."[19] He then proceeded to lay out a system upon which loss ratios could be accurately calculated.

Appleman was always on the cutting edge. Here, in 1936, at the dawn of the era of tort expansion, he was laying out a system for forecasting how claims losses could be forecast. He noted, "[M]any statisticians will ignore this idea entirely, not realizing that some such method of forecast is inevitable."[20] Of course, he was right. Loss forecasting is an important part of the insurance industry today.

More articles followed. In December 1936, he published *Special Phases of the Family Purpose Doctrine* in the *Tennessee Law Review*.[21] This article shows in his byline that he was indeed working in State Farm's Legal Department in Bloomington.

In 1937, Appleman published his first book—*Automobile Liability Insurance: Based Upon the National Standard Policy Provisions*[22]—with which he became, at twenty-five, a published author of a noted legal text. Many of Appleman's early writings were

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18. *See* Spangenberg, *supra* note 10.

19. Appleman, *supra* note 17.

20. *Id.* at 22.

21. John Alan Appleman, *Special Phases of the Family Purpose Doctrine,* 14 TENN. L. REV. 307 (1936).

22. JOHN ALAN APPLEMAN, AUTOMOBILE LIABILITY INSURANCE: BASED UPON THE NATIONAL STANDARD POLICY PROVISIONS (1937).

on automobile liability issues. Those were not, however, Appleman's only focus. In 1938, he wrote an article entitled "*Guest Cases in Aviation Law*" for the Air Law Review.[23] In that article he stated, "[W]ithin the next 20 years aviation law will become one of the major fields of jurisprudence."[24] He noted then that "the comparison between automobile and aviation law is like that between an old slow-growing town and a planned city. . . . Aviation law with its future still before it may be developed in a clear[-]cut and accurate manner."[25] This was something that appealed to Appleman, and he would write on aviation law for the rest of his life.[26]

Despite the fact that he had control over litigation in many states, a major task for one so young, Appleman did not appear to be content at State Farm. This can be assumed because of an article he wrote for the *Insurance Counsel Journal* in January 1937. This article, entitled *Insurance Companies and Their Lawyers*,[27] was a frank discussion of the way insurance companies treated their defense counsel in the Thirties. In that article, Appleman stated, "[T]here is an excellent future for lawyers with quick intelligence, pliability, and a capacity for thoroughness[] who are willing to learn ever[y] detail involved in insurance cases. Fees[,] while not excessive, represent a very fair return for work done."[28] He was right; this could describe the insurance defense bar for many years to come. "But," Appleman further noted,

> a position within the personnel of an insurance company is greatly different. Insurance companies

23. John Alan Appleman, *Guest Cases in Aviation Law*, 9 AIR L. REV. 30, (1938).

24. *Id.*

25. *Id.*

26. *See, e.g.*, John Alan Appleman, *Get Ready for the Sonic Boom*, 3 INT'L SOC'Y BARRISTERS Q., no. 4, 1968, at 33.

27. John Alan Appleman, *Insurance Companies and Their Lawyers,* 4 INS. COUNSEL J. 19, (1937).

28. *Id.* at 19.

> search for legal aid as carefully as the Department of State would select an Ambassador Plenipotentiary. The young lawyer must have excellent legal training, a fine and discriminating mind, tact, character, courage, personality, speaking ability, sales magnetism, and a capacity for thorough work. They seek for something very few lawyers ever hope to possess. When such a man is found he is relegated to a legal clerkship with a maximum future salary ranging from approximately $3,600 to $12,000. Usually he is placed either in the claims department[,] where he attempts to settle all claims which might be lost in litigation, or he is placed in the legal department in a brief-making capacity.[29]

Appleman observed that many in-house counsel lost heart and their initiative, and he believed that when they did, their great value was gone. Many left either to become plaintiffs' attorneys and earn three times what the insurance companies would pay them, or to be recruited eventually by outside law firms.[30] Obviously, stating these opinions revealed what been on Appleman's mind, and doing so probably did not endear him to State Farm's management. It appears that by February 1938, Appleman had left State Farm and entered private practice.[31] At that time he was associated with Lord Lloyd and Bissell in Chicago, Illinois, a predecessor to today's Locke Liddel law firm.[32]

Soon, however, Appleman would move to Urbana, Illinois. It was where he had family, and it was a good small town to raise children. He had married Jean Gerber on January 9, 1935.[33] Their daughter, Jean Appleman, who would become a law professor and later his coauthor, was born October 14, 1939, in Urbana.[34] Urbana is

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29. *Id.*

30. *Id.*

31. *See Contributors to This Issue*, 22 MARQUETTE L. REV. 92 (1938).

32. *Id.*

33. WHO'S WHO, *supra* note 2.

34. *Jean Appleman*, WHO'S WHO IN AMERICA, (42d ed., 1982–1983).

in east-central Illinois, the county seat of Champaign County. Appleman would live here until illness forced him to move to California. In 1949, he purchased a farm on the rural outskirts of Urbana.[35] It had a stone house he called "The Maples," reached by a dirt lane, branching off a secondary road.[36] Because of this rural location, Appleman would often call himself a "country lawyer," though nothing could have been further from the truth. The Maples would become famous to a generation of visiting attorneys involved with Appleman and his bar association duties, and to those who practiced law with him. They would note its "Big City private library."[37]

Early in 1941, the Bloomington, Illinois, *Pantagraph* bore the headline, "Former Resident Writes 20-volume Work."[38] This article stated that "John Alan Appleman, for many years head of the legal department of the State Farm Insurance Companies, is the author of a 20-volume work, 'Cyclopedia of Insurance Law,' it was announced Monday." This was the announcement of what Appleman would best become known for: the work known as *Insurance Law and Practice, with Forms*, which would be published and written by Appleman, and later by Appleman and his daughter, Jean, until 1981. Today it continues under Appleman's name.

This publication and his other activities began to give Appleman a measure of fame as an attorney. By the early 1940s he was traveling to give speeches to different bar associations. For example, he spoke at the South Dakota State Bar Convention and the Texas State Bar Convention.[39] He became a civic booster, becoming active in the Champaign County Bar Association, which he would

35. *See Appleman v. U.S.*, 338 F.2d 729, 731 (7th Cir. 1964).

36. Spangenberg, *supra* note 10 at 371.

37. *Id.*

38. *Former Resident Writes 20-Volume Work*, PANTAGRAPH, Feb. 12, 1941, at 14.

39. *See, e.g., Lawyers Arrive for Bar Meeting*, DAILY PLAINSMAN, August 21, 1940; *Insurance Section to Hear Appleman, Hutcheson*, 4 TEX. BAR J. 334 (1941).

later serve as President,[40] and an active member of the Rotary Club, and by 1946 a member of the Federation of Insurance Counsel.[41]

It was during this period that Appleman's interests outside the law began to surface. In 1945, he was somehow able to get the United Nations to consider Champaign County, Illinois, where Urbana was located, as a possible site for the new permanent headquarters of the United Nations. The Illinois *Decatur Herald* wrote that an invitation had been sent from Appleman, who said that he had "acted with advice and assistance of unnamed friends in Washington and London."[42] Anyone could have invited the prestigious United Nations to locate its headquarters in his hometown. Appleman actually got the Committee to act. The paper reported that "a seventeen man UNO subcommittee yesterday listed the Champaign County location as one of twenty-two in the United States suggested."[43]

Appleman had suggested Champaign County because it had a rural rather than concentrated population, a central location, the new University of Illinois airport, railroad service, highway access, and proximity to Chicago, among other things. Of course, the United Nations decided to permanently locate in New York, but Appleman was responsible for a small Illinois county being short-listed for the United Nations' location. No one today can identify who his contacts in Washington and London were, but undoubtedly, he had them.

III
THE FIFTIES: BAR ASSOCIATIONS AND A WESTERN

Appleman continued his legal practice and his other interests. In 1950, he obtained a Master's Degree in International Law from the University of Illinois Law School.[44] In 1950, he became President of

40. *John Alan Appleman*, *supra* note 2.

41. *Id.*

42. *List Champaign for UNO Site,* DECATUR HERALD, Nov. 30, 1945, at 13.

43. *Id.*

44. *John Alan Appleman*, *supra* note 2.

the Federation of Insurance Counsel (FIC), now known as the Federation of Defense and Corporate Counsel. He did not found the FIC, but he saved it from extinction. In 1949, exactly twelve members had attended its nationwide annual meeting. In 1950, when Appleman became president for a two-year term, only sixty-five members attended, and there was not enough money to pay the hotel bills.[45] Appleman took control and turned the organization around. He wrote this about the 1950 meeting:

> There comes a time when every organization must take stock of its past, its present and its future. At this Convention, this was done. Following the final meeting, the new officers met and talked with brutal frankness. It was felt that certain fundamental changes of policy should be made to maintain the type of organization which our members are entitled to expect. Fundamentally criticisms levelled were of two types: (1) that there should be a closer supervision of persons selected for membership invitations; (2) that there should be closer contact with the members throughout the year . . . .[46]

Appleman then established the *Federation of Insurance Counsel Quarterly* and, publishing it from Champaign, wrote the first article—on military tribunals.[47] By the time he concluded his term as President in 1952, the FIC had tripled its membership and had become established as a premier defense organization with high standards for membership. The organization to this day awards the *John Alan Appleman Award* for outstanding service by a member.[48]

While engaged in resurrecting the FIC and practicing law, Appleman also engaged in another extracurricular pursuit. In 1953

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45. Pate, *supra*, note 15.

46. John Alan Appleman, *Message of Incoming President*, 1 FED. INS. COUNSEL Q. 1, 5 (1950)

47. *Id.* at 17.

48. This article's author is the 2005 recipient of that award.

he published a Western novel. Using the pseudonym Bill Daley, he entitled the work *Restless Saddles*. It was published not in the United States, but in Great Britain, by Billing and Sons, Ltd., located in Guildford and Esher. Today, there is a cottage industry of successful trial lawyers publishing murder mysteries or courtroom dramas, most of them quite awful. Appleman published a Western, completely unrelated to his law practice. While the book will not rival the efforts of Zane Grey or Louis L'Amour, it is not bad. The blurb at the book's beginning summarizes its plot:

> *About the Story*
>
> Austin Scott and his partner, Rodney Webb, stumble into the midst of a range war by which Burton McClean plans to eliminate old Pop Holmes of the Y Bar and capture his land. Turning the tables on the raiders brings in all the most popular elements of the wild west, including flaming guns—fistfights—bushwhacking and rodeo—as we are carried spellbound through this breathless adventure.[49]

In the book, Appleman described characters as "long-legged galoots,"[50] talks about "ki-yotes,"[51] and has a main character named "Mr. Steven Austin Colonel Bowie Johnson," familiarly known as "Aus."[52] The book reflects a remarkable knowledge of western firearms and shooting.

Appleman did not give up his legal writing. *Restless Saddles* was published at approximately the same time as Appleman's first major book on trial practice, *Successful Jury Trials* (1952), followed by *Successful Appellate Techniques* (1953). By this time, he had developed an interest in estate planning and published *How to Use Life Insurance in Estate Analysis* in 1954.

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49. BILL DALEY, RESTLESS SADDLES (1953).

50. *Id*. at 24.

51. *Id.* at 53.

52. *Id.* at 121.

But more than writing a Western or continuing to publish legal texts, in December 1951, Appleman did something else that he should be remembered for: Appleman was a life-long Illinois Republican.[53] 1951 was the height of the Red Scare in America. Appleman wrote a letter that was published in the ABA Journal reacting to other attorneys' calls for constitutional amendments pertaining to Communists and calling for loyalty oaths. Appleman strongly opposed such measures. He wrote that "if constitutional protections are abandoned the witch hunt is on."[54] He further noted that "star chamber proceedings are not in accordance with our ideas of justice and I, for one, do not want to see my fellow citizens browbeaten into false confessions, sent to concentration camps, or executed without a semblance of a fair trial."[55] Being a rock-ribbed Republican in Illinois in the 1950s did not mean that John Alan Appleman did not believe in civil liberties.

And what of the man? The introduction to an article he'd written the *Rotarian Magazine* in May 1953 noted his love of music: "[W]hen not untangling estate problems, he [Appleman] relaxes by writing music and playing the piano."[56] The article demonstrates, once again, the full range of Appleman's talents. By this time, apparently, he was heavily involved in practicing estate law. The article, entitled *Now is the Time*,[57] is a cautionary tale about enjoying life to its fullest. It begins by Appleman's describing that much of his work is estate planning, where clients ask for advice on insurance and investment programs. He wrote, "I ponder why so many have no goal beyond their pre-occupation with financial success."[58] The point of the article is that as he examined his clients who sought his

53. *See GOP to Pick Delegates in Friday Meeting,* DECATUR DAILY REV., Jan. 3, 1962, at 28.

54. *Views of Our Readers*, 37 ABA J. 937 (1951).

55. *Id*.

56. John Alan Appleman, *Now Is the Time*, 82 ROTARIAN MAGAZINE 5, 6 (1953).

57. *Id.* at 9.

58. *Id.*

counsel on finance and planning, he saw many who concentrated on material wealth to the exclusion of all else. He asked the rhetorical question, "[W]hy don't we live once we go along?"[59] In this article, Appleman expresses his philosophy of life:

> The spiritually mature person doesn't need to prop his ego. He is himself always. He may wear a flannel shirt and with no mental discomfort, drive a jalopy. He knows the pleasure in little things—the feel of the breeze, the single flower, the budding tree, the scudding clouds, the lonely kitten, the puppy's eager nose, the tawny haired child clutching a doll, the fascination of a ruined brick building and the silent cobblestone street . . . What then is worthwhile in life? To eat one's fill, to sleep a dreamless sleep, to have family and friends, to love, to sense the meaning of living. Money cannot purchase more.[60]

This is a good philosophy of life and, frankly, one rarely heard from a lawyer. It was said of Appleman that if he had located his office in a metropolitan area, "his fees would range annually in the millions."[61] While he did well and, as will be seen, overworked himself, his true passion seemed to be the love of his profession, and of legal scholarship.

Nor would he compromise his principles to please his client base. By the 1950s, Appleman had long been associated with the insurance industry. Yet in the September 1953 *Reader's Digest*, Appleman published an article entitled *Health and Accident Insurance Policies —How Much Can You Rely Upon Them*? in which he was sharply critical of health-and-accident-insurance carriers.[62] He noted that health-and-accident insurance was a "black sheep in the

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59. *Id.*

60. *Id.*

61. Mayo L. Coiner, *Preface* to JOHN ALAN APPLEMAN, PREPARATION AND TRIAL v (1967).

62. John Alan Appleman, *Health and Accident Policies—How Much Can You Rely Upon Them?* READER'S DIG., Sept. 1953, at 23.

industry."[63] He wrote that "exclusion" and "exception" clauses in policies stating conditions under which the company would not pay were often "deceptive and misleading."[64] These clauses were in small type and frequently ambiguous[65] and seldom understood by the average policyholders who wrongly believed themselves to be fully protected. Appleman compared the health-and-accident insurance industry to a legalized confidence game that involved "browbeating the sick, the maimed and the bereaved."[66] Appleman urged every one of his readers to read his policy thoroughly and insist on an explanations in writing of any obscure provision. He advised his readers to select their insurance agent as carefully as they would select their doctors or lawyers. He noted, "Don't buy bargains; there aren't any. Good health and accident insurance is never cheap."[67]

The article caused a great deal of consternation. When Appleman wrote about insurance, people took note. Years later, Appleman noted that "30 million people read the *Reader's Digest* article."[68] He wrote that as a result of the article, the Interstate Commerce Commission set up an Enforcement Division to bring charges against . . . companies engaging in improper practices.[69] A 1958 article called Appleman's *Reader's Digest* piece "[o]ne of the most famous articles published about insurance in recent years."[70] This article noted,

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63. *Id.* at 26.

64. *Id.* at 23.

65. *Id.*

66. *Id*. at 26.

67. *Id*.

68. John Alan Appleman, *A Forecast: Troubled Waters but New Horizons*, INS. L.J., Feb. 1977, at 79, 79.

69. *Id*.

70. O.D. Dickerson, *A Note on Insurance Articles in the Popular Press*. 24 J. INS., 4, 89 (1958).

> "[I]t is difficult to see after a lapse of a few years how this article could stir up such a storm of controversy. However, it did and the wide reaction it awakened on the part of the public was a contributing factor to the Federal Trade Commission's attack on health insurance advertising and to the adoption of codes by the industry."[71]

The article claimed that Appleman's piece "was hardly scholarly despite the attainments of the author."[72] Indeed, the article is not scholarly; it consists, in the main, of a series of anecdotes about unfairly denied claims. Still, because of its author, it had a major impact.

Amazingly, the criticism of the insurance industry found in the *Reader's Digest* article apparently did not impact Appleman's insurance practice. His 1956 Martindale-Hubbell listing shows approximately fifty insurance companies still using his services.[73] To be sure, Appleman let it be known that he was commenting upon only some unscrupulous companies.

Respect for Appleman was enormous. John Rhea, an early member of the Federation of Insurance Counsel and a friend of Appleman's, recalled that Appleman would travel all over the Midwest on his cases. When Appleman arrived at a lawyer's office in a small Midwestern city, the local bar would learn of his presence. Attorneys would go to where Appleman was yet to meet him, and frequently, to ask his advice. Appleman always obliged and "held court."[74]

In 1954 Appleman published what the author believes to be his true masterpiece: *Military Crimes and International Tribunals*.[75] Both

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71. *Id*.

72. *Id.* at 90.

73. John Alan Appleman, MARTINDALE HUBBELL LEGAL DIRECTORY (82d ed. 1956).

74. Conversation with John Rhea (2006).

75. JOHN ALAN APPLEMAN, MILITARY CRIMES AND INTERNATIONAL TRIBUNALS (1954).

Appleman's undergraduate degree and his master's in law had been in international law.[76] Therefore, it was no surprise that Appleman had a deep interest in the war-crimes proceedings that had occurred after the Second World War. Many books had already been published upon the Nuremberg trials, and many have been published since. Appleman's work was a methodical, step-by-step description of the substantive law applied, the procedures used by the tribunals, and then descriptions of the several different Nuremberg trials, such as the Medical cases, the Krupp case, the SS cases, and the High Command cases.[77] Appleman then turned to the much less well-known International Military Tribunal for the Far East and discussed its nature and what it had achieved. Many later scholars have criticized this tribunal. Appleman was perhaps the first to do so by stating,

> With reference to the procedure to be followed, the trial leaves much to be desired, and it would seem essential that future bodies crystalize in advance the nature of evidence to be introduced, rules of procedure to be followed, and the respective duties owed by counsel to the tribunal and by the tribunal to the counsel.[78]

Military Tribunals and International Tribunals is a detailed, methodical look at the functioning of the war-crimes tribunals. It is neither a flashy nor a juicy read, and is not designed to be so. It is full of detail not found in other books upon the subject. It is a lawyer's book. The amount of detail and research involved is breathtaking. In his description of individual cases, Appleman relates the particulars of the indictments, the evidence produced, arguments of counsel and even comments upon the performance of counsel. To prepare the book, he consulted Justice Robert Jackson of the United States Supreme Court and Telford Taylor, both former Nuremberg

76. Spangenberg, *supra* note 10.

77. *See* MILITARY CRIMES, *supra* note 75, pt. III.

78. *Id*. at 264.

prosecutors, and Louis Johnson, former Secretary of Defense, among others.[79]

In 1958, Appleman was once again engaged in the early years of another prominent legal organization. This time, it was the American Academy of Trial Lawyers. His friend Craig Spangenberg later wrote, "[T]he soft spoken author from Urbana, Illinois, John Alan Appleman became Dean. John . . . was a switch hitter but at that time he was generally considered to be a Defendant's man."[80] This would change. As time wore on, Appleman would become increasingly identified with the Plaintiff's bar.

Indeed, at the end of the decade, Appleman plowed new ground for plaintiffs in a personal case. On May 14, 1959, his forty-seventh birthday, he purchased an expensive Lincoln Premier automobile from Fabert Motors, Inc., a car dealership in Urbana.[81] The car was a lemon. After suffering valve trouble, vibrations, broken left springs, transmission issues, temperature-gauge troubles, as well as other problems, Appleman's wife Jean took the automobile to the car dealership and left it. Later she talked to the car salesman. The car salesman told her that he would make it right. When neither Ford Motor Company nor the car salesman did make it right, Appleman brought suit on an implied warranty of fitness for a particular purpose.[82] The trial court found for Appleman. The holding was appealed, but the court of appeals affirmed the verdict. In doing so, it noted,

> It is realized that this opens up a broad field of litigation, but where an automobile is so unquestionably unfit for use as an automobile as the one involved here, where it developed trouble that could have injured or killed its occupants, . . . there

79. *Id*. at xi–xii.

80. Craig Spangenberg, *The History of the International Academy of Trial Lawyers* (1989), https://www.iatl.net/i4a/pages/index.cfm?pageID=3552.

81. *Appleman v. Fabert* 174 N.E. 2d 892 (Ill. App. 1961).

82. *Id.* at 427.

> can be no question that it was unfit for the general purpose for which it was sold . . . .[83]

In establishing that an automobile was subject to an implied warranty of fitness for a particular purpose, Appleman did indeed open up a new area of law.

IV
THE 1960S: HIS GREATEST CASE, THE ILLINOIS SUPREME COURT BID, AND "APPLEMANIANS"

As the 1960s began, Appleman was well-established in his profession. By then, he engaged in no general practice, only litigation. Though he would have some partners, most of the time he had a plaintiff's solo practice, with his office in his home. He tried cases primarily before rural and small-town juries.[84] The 1960s would see him take on a case that would lead to a substantial verdict and—probably more important to Appleman—new standards in medical-malpractice law. He also made a failed bid to become a judge, started another bar association, and opened his own trial school. In March 1965, however, he suffered a catastrophic heart attack, which kept him from ever practicing law again.

What was Appleman like in the courtroom? Del Mitchell, now a prominent attorney in Quincy, Illinois, who served as a law clerk for Appleman, remembers watching Appleman in trial. Mitchell recalls that Appleman was incredibly well prepared and always thought out how to present his case to the jury in the most persuasive manner possible. Mitchell relates that Appleman was a genius, with a prodigious memory.[85] Spangenberg, himself a famous trial advocate known for the creating the "Eggshell Plaintiff" theory, stated that Appleman was a "lifelong proponent of the non-flamboyant school of advocacy. He believed that a lawyer who quietly presents the facts,

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83. *Id.* at 432.

84. Coiner, *supra* note 61.

85. Telephone interview with Del Mitchell (June 27, 2017).

so marshalled and integrated . . . that those facts would lead to but one rational conclusion, could trust the jury to reach that conclusion."[86]

Mitchell has interesting memories of Appleman. Appleman was able to achieve all he did because he rarely slept. Mitchell stated that though he was called a law clerk, in fact he was an investigator who would take statements and present the results to Appleman. His appointments with Appleman were usually at either ten or eleven at night. These were normal working hours for Appleman. Appleman employed two secretaries, one who would work from 8:00 a.m. to 5:00 p.m. and then another who would work from 5:00 p.m. until midnight. Mitchell relates that, early on, he realized that as brilliant a man as Appleman was, he had certain faults. One of these was that he would misplace things, including reports that Mitchell provided for him. He would then chastise Mitchell for not providing the reports. Mitchell quickly learned to always make copies of the reports so that he could provide them again.

Mitchell recalls that Appleman enjoyed deep friendships with other lawyers. He and Jack Horsley, his friend and frequent opponent, kept up a lasting and teasing line of communication; Horsley would append personal notes to his formal correspondence to Appleman stating something along the lines of: "How does Jean (Appleman's wife) put up with you?"[87]

Indeed, Mitchell relates that Melvin Belli, the flamboyant "King of Torts" was a close friend of Appleman. In the Fifties and Sixties, this unlikely pair collaborated on some long-playing records on trial techniques entitled *The Voice of Modern Trials*.[88] Appleman's portion of the set were three records on cross-examination techniques in which he gave actual demonstrations from his trials. It is interesting to listen to Appleman's voice. He had a Midwestern accent, and the voice is somewhat high-pitched. Mitchell relates that Appleman had

86. Spangenberg, *supra* note 10, at 372.

87. Mitchell, *supra* note 85.

88. Belli, *supra* note 3.

"delicate" features.[89] Perhaps Appleman did not fit the classic portrait of a trial lawyer, as Belli did. He was certainly the opposite of the rough and ready Belli. Yet listening to the content of the records, and knowing of his successes, reveals how effective Appleman was. It is a matter of style. In reviewing Belli's famous book *Ready for the Plaintiff*, Appleman, though recommending the book highly, dryly noted that "there are places of course, where the ideas of this reviewer and Mr. Belli do not coincide."[90]

In 1963, Appleman began what he called the "Professional Trial Lawyers Seminar."[91] This was perhaps the first true "trial school." Appleman himself noted that in the 1960s very few law schools taught trial-advocacy courses.[92] His own law school did not want to offer a trial-advocacy class for fear of being "known as a "trade school;"[93] that must have enraged Appleman. The National Institute for Trial Advocacy itself did not begin its sessions until 1972.[94] Interestingly, despite all the legal books and seminars, there is no indication that Appleman ever served as a professor at a school of law, either full-time or as an adjunct. This is despite the fact that his home was near the University of Illinois Law School. However, he was renowned as a teacher, and Spangenberg would write that "above all else Appleman was a teacher who shared his knowledge with young lawyers from both the Plaintiff's and Defendant's ranks."[95]

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89. Mitchell, *supra* note 85.

90. John Alan Appleman, Book Review, *Ready for the Plaintiff*, 43 ABA J. 723 (1957).

91. *See* John Alan Appleman, WHO'S WHO, *supra* note 2.

92. John Alan Appleman, *The Advocate and his Future*, 4 INT'L SOC'Y BARRISTERS Q., no. 3, 1969, at 5, 13.

93. *Id.*

94. *See* www.NITA.org

95. Spangenberg, *supra* note 10.

The trial school was two weeks long and was conducted in Urbana.[96] An attorney had to be selected to attend the seminar, and selection was limited to only one attorney from each locale.[97] In 1963, the inaugural year, only twelve attorneys attended,[98] and 1969 only twenty-five could attend.[99] Entrance to the program was highly sought after. Attorneys who attended the program eagerly sought to publicize their attendance in their local newspapers.[100] Those newspaper articles noted that local attorneys were taught by "an acknowledged legal genius"[101] and a lawyer, who as a plaintiff's attorney, had achieved a verdict of $750,000.[102] Seven-hundred-fifty thousand dollars equates to approximately $5.1 million in 2017.[103]

The seminar was an intensive, coordinated series of lectures and demonstrations on all aspects of preparation and trial.[104] As Spangenberg commented, "These were not narrow, one-man shows. John reached out to all of his friends to contribute their ideas, which he synthesized and polished into themes and variations to show the many forms the art of persuasion can take."[105] Appleman charged $1,000 a student, a considerable sum for the 1960s. He limited the number of students, because of the "intensely personal nature" of the course.[106] It was a great innovation. Prior to the school, trial lawyers had learned by second-chairing their mentors in trial, or simply by

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96. *See Howard McKissick to Attend Seminar,* NEV. ST. J., June 30, 1969, at 2.

97. *Id.*

98. *See id.*

99. *Attorney Home from Seminar*, (Hagerstown, Maryland) DAILY MAIL, July 27, 1963, at 18.

100. *See*, *e.g., supra* notes 96 and 99.

101. *Howard McKissick*, *supra* note 96.

102. *Id.*

103. DollarTimes, Inflation Calculator, www.dollarTimes.com.

104. Spangenberg*, supra* note 10, at 372.

105. *Id.*

106. JOHN ALAN APPLEMAN, PREPARATION AND TRIAL (1967), at viii.

going into trial. Now Appleman gave the lucky few a "post-graduate finishing school."[107]

Appleman was not happy that only a relative few could afford to attend the seminar. Some young lawyers criticized him for this, and "these criticisms have haunted me," he wrote."[108] The result, as might be imagined, was a book, the magnificent *Preparation and Trial*.[109] Published in 1967, Appleman considered it his finest work.[110] This is Appleman's *magnum opus* on trial work, an 895-page treatise that takes lawyers step by step through discovery, pre-trial motions, trial, verdict and appellate post-trial motions.

Preparation and Trial is still found in most law-school libraries. Even after fifty years, any young trial lawyer could find much to learn from it. Appleman dissects *every* aspect of trial; for example, how to handle the "bullying," "smart-aleck," or a "confused but honest" witness on cross-examination.[111] He discusses damages in depth, with advice to Plaintiff's counsel: "Don't Oversell."[112] His advice to defendants in closing arguments? The defense should stick to rebutting the Plaintiff's main points: "when blasting, use dynamite!"[113] He does not lecture; he describes. He uses actual trial and deposition transcripts to make his points.

Thus, in that era, because of Appleman's publications, lectures, and trial school, it was said that it was "inconceivable that there is an actively practicing lawyer unfamiliar with his name."[114] One trial lawyer said "of the rising crop of advocates[,] '. . . they are Applemanians to a man.'"[115]

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107. *Id.*

108. *Id.*

109. *Id*.

110. Spangenberg*, supra* note 10, at 372.

111. APPLEMAN, *supra* note 106, at. 302–02

112. *Id.* at 725.

113. *Id.* at 808.

114. Mayo L. Coiner, *Preface* to APPLEMAN, *supra* note 106, at v.

115. *Id*.

Still, though Appleman was esteemed by his peers, when he sought judicial office in the early 1960s, he was unsuccessful. In late 1961, a vacancy in the third district of the Illinois Supreme Court occurred when an incumbent died.[116] Appleman became one of the nine candidates seeking the Republican nomination in the special election to fill the vacancy.[117] Of course, Appleman was not half-hearted about this campaign. The *Decatur Herald* noted on January 6, 1962, that the race was in full force and that campaign mail was being sent to people in the third district:

> The most detailed to date is an information sheet published by the committee backing Champaign attorney John Alan Appleman. In addition to a picture of Appleman it has a picture of some of the 35 volumes of legal works of which he is author.
> While most campaign literature makes note that the candidate is a good Republican, the soft pedal is given to that. But in Appleman's literature his committee boasts that he has voted in every Republican primary since he was 21. [He is 49] and has contributed generously and consistently to the Republican Party.[118]

A lawyer's poll was taken of the area's lawyers. Of the nine candidates, Appleman polled a very respectable third.[119] But politics raised its ugly head. The Champaign County Republicans endorsed an attorney named J.C. Ermantrout, who had ranked eighth in the poll among the nine candidates. Appleman was displeased. The *Decatur Daily Review* stated, "Appleman himself expressed bitterness yesterday over the Champaign's Republican's disregard of the poll of

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116. *GOP to Pick Delegates in Friday Meeting,* DECATUR DAILY REV., January 3, 1962, at 28.

117. *Id.*

118. *Lawyers Being Polled On Pick for Court Post*, DECATUR HERALD, January 2, 1962, at 3.

119. *Lawyer Poll Held Inconclusive for Court Vacancy; Drake, Smith Lead*, DECATUR HERALD, January 6, 1962, at 3.

lawyers as to their choice for judge."[120] Yet there was nothing he could do. His campaign ended.

This was not the only time Appleman was considered for a judgeship. In 1956 Senator Everett Dirksen of Illinois had sent biographical information on four men to the Justice Department so they might be cleared for possible appointment to a United States Supreme Court vacancy. One of the men was John Alan Appleman.[121]

Perhaps it was for the best that Appleman did not receive the judgeship. For it was later in 1962 that Appleman obtained what he and others would regard as his crowning achievement: winning the landmark *Darling v. Charleston Community Memorial Hospital* case,[122] a major event in medical-malpractice law. Forty years after the decision, a commentator wrote that, in his view, "the *Darling* decision was "the 'Big Bang' event that, in an instant, gave rise to a totally new and still expanding universe of hospital liability theory."[123] The *Darling* decision, he wrote, had effected two radical changes in hospital-liability jurisprudence.

> The first [was] the extension of direct liability theory to hospital entities in their role as providers of care. The second [was] what [could] constitute competent evidence of the duties of care owed by a provider-hospital directly to its patients . . . .
>
> No court prior to *Darling* had ever enunciated either of these two radical elements, much less ever combined them. Before *Darling,* there was no equivalent in the American jurisprudence of hospital liability for either of these elements. Then the *Darling*

120. *Champaign Republicans Endorse Ermantrout*, DECATUR DAILY REV., Jan. 6, 1962, at 12.

121. *Dirksen Joins Fight to Name Federal Judge*, CHICAGO TRIBUNE, Aug. 2, 1957, at 40.

122. The verdict came down in the fall of 1962. The Illinois Supreme Court decision affirming that verdict is found at *Darling v. Charleston Community Memorial Hospital,* 211 N.E.2d 253 (Illinois, 1965).

123. Michael J. Wiet, Darling v. Charleston Community Memorial Hospital *and its Legacy*, 14 ANNALS HEALTH L., no. 2, 2005, at 399.

> Big Bang occurred, giving rise to a new and still expanding universe of hospital liability theory."[124]

The same article notes that, as of 2005, the *Darling* case had been cited in over 340 state and federal cases, and some 389 law review articles, monographs, and treatises.[125] This would undoubtedly have made Appleman very proud.

The facts of *Darling* were these: Darling was an eighteen-year-old college football player who broke his right leg while playing football. At the Charleston Hospital emergency room, a Dr. Alexander put Darling's leg in a plaster cast. Soon after the cast dried, Darling began experiencing pain in his toes; the toes began swelling, became discolored, and were cold and insensitive. After the patient's complaints, Dr. Alexander made modifications to the cast, including notching it and then splitting the sides with a saw, cutting Darling's legs. The nurses did not follow hospital procedures to monitor Darling's toes for changes in color, temperature or movement, did not check for circulation and did not report any changes to medical staff. Finally, Darling was transferred to another hospital, where he was treated by a doctor who found that his leg contained dead tissue resulting from an overly tight-fitting cast, which had interfered with blood circulation of the leg. After several unsuccessful operations, the leg was amputated.[126]

Despite these egregious facts, in 1962 America, the case seemed hopeless. As Appleman noted, "there were no medical experts nor hospital authorities willing to testify for the plaintiff."[127] Yet Appleman took the case on. He organized the facts and came up with the issues. He believed that Dr. Alexander had applied the cast negligently, had negligently cut the patient in splitting the cast, failed

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124. *Id.* at 400.

125. *Id.* at 399–400.

126. Darling v. Charleston Community Mem. Hosp., 211 N.E.2d 253, 255–56 (Ill. 1965).

127. John Alan Appleman, *The* Darling *Case—A Real Tiger*, INS. L.J., Dec. 1975, 714, 716 (1975).

to associate physicians who had skills beyond his, and failed to take steps consistent with the physical conditions previously described.[128] Moreover, Appleman believed that the hospital had been negligent in failing to supervise Dr. Alexander, to review the treatment rendered to Darling and by failing to have a sufficient number of nurses to provide for the bedside care of Darling.[129]
In a 1975 speech on the case, Appleman described some of his preparations for the trial:

> In my own library I had probably every good orthopedic text published in the United States from 1925 on, as well as the better British texts. Prior to the trial, I had visited the medical library of the Charleston Hospital, the doctors' cloak room, and the offices of expected adverse expert witnesses and noted the books and magazine which were present there.[130]

Appleman knew that he could not find an expert witness for the Plaintiff. He wrote, "It was once said that no gentleman would testify that any woman was unchaste. Similarly, for decades, almost no physician would testify that a colleague had blundered."[131] To solve this problem, at trial, Appleman took the state medical regulations, standards of accreditation, books from the hospital's own library, and standard medical treatises. He then began to call the hospital staff members, doctors, and nurses as adverse witnesses and obtained damaging admissions from them when they acknowledged they had not followed their own procedures.[132]

Appleman's meticulous preparation won the day. The jury returned a verdict of $150,000[133] (equivalent to approximately $1

128. *Id*.

129. *Id.*

130. *Id.* at 717.

131. *Id.* at 714.

132. *Id*.

133. *Id.* at 719.

million in 2017 dollars).[134] Appleman believed that the significance of the *Darling* trial itself was that "no longer were malpractice cases the subject of a 'swearing contest' between hired experts over which the Courts had no control."[135] "Here at last were certain standards recognized, in law, for those who administer to the care of the sick and injured. They constituted evidence which could aid the jury in determining the presence or absence of negligence."[136]

Appleman later commented that the *Darling* trial judge had stated at the conclusion of the trial that he had spent many years trying lawsuits and presiding over them, and that the *Darling* case was the finest example of advocacy on both sides he had ever seen. This must have pleased Appleman to no end. He had tried the *Darling* case against his personal friend, Jack Horsley.[137]

Appleman's *Preparation and Trial* treatise contains many excerpts from the *Darling* case, such as his *voir dire* questions and his opening and closing statements. Most notably, the book contains Appleman's cross-examination of the hospital administrator. It is a masterful example of destructive cross-examination, and after fifty-five years, still worthy of being taught in any trial-advocacy class. Without trickery, or traps, Appleman inexorably uses medical texts and the hospital's own rules to box the administrator in. In turn, the administrator is evasive or openly combative. At the end, his own concessions turn him into Appleman's expert.[138] Though an excellent attorney himself, Horsley could do nothing on redirect.[139]

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134. DollarTimes Inflation Calculator, www.dollarTimes.com

135. Appleman, *supra* note 127, at 719.

136. *Id.* at 720.

137. Mitchell, *supra* note 85.

138. APPLEMAN, *supra* note 106, 655–75.

139. *Id.*

V
APPLEMAN'S HEART ATTACK

By 1965, Appleman was at the top of his game. The *Darling* case had been affirmed by the Illinois Court of Appeals and was about to be affirmed by the Illinois Supreme Court. Appleman himself was involved in founding another bar association for the trial elite, the nonpartisan International Society of Barristers. Yet in March 1965, two months before his fifty-third birthday, John Alan Appleman suffered a devastating heart attack, which ended his trial career forever.[140]

Del Mitchell, Appleman's former law clerk, says Appleman was undoubtedly a workaholic who did not take care of himself. Mitchell recalls being with Appleman the day before the heart attack. Appleman went to Barnes Hospital in St. Louis, Missouri, to take a deposition. There he suffered his heart attack, and Mitchell believes had it not occurred in a hospital, where he received prompt care, he would have died.[141] As it was, the damage was severe enough. Appleman himself described the heart attack as follows: "On March 6, 1965, I was taken into Barnes Hospital as a result of myocardial infarction. Because it had been misdiagnosed for almost a week (not by Barnes' physicians), during that period I had been doing all types of physical and mental activities inconsistent with such condition and permanent damage to the heart resulted."[142]

The next ten years would see eight hospitalizations, cardiac-bypass surgery, serum hepatitis from transfusions and a resection of his bowels because of cancer.[143] For an outstanding trial attorney to have his career cut short at the age of fifty-two might have caused many other men to simply give up and turn their faces to the wall. Appleman kept going. This led his friend Craig Spangenberg to speak of his "courage under outrageous stress."

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140. JOHN ALAN APPLEMAN, YOUR PSYCHIC POWERS AND IMMORTALITY 127 (1968).

141. Mitchell, *supra* note 85.

142. APPLEMAN, *supra* note 140 at 127.

143. Appleman, *supra* note 127, at 714.

> When his trial career was ended with a devastating heart attack, followed by survival but minimal recovery, John Alan Appleman continued to research, create, write, teach, make LP records and cassettes, revise his texts, finish "Preparation and Trial," and did it all while tethered to his life support oxygen tanks. By sheer effort of will he outlived every doctors' prediction by a full decade.[144]

It is useless to speculate what Appleman might have accomplished had his trial career not been cut short. It would be similar to wondering how many symphonies Mozart would have written had he not died at thirty-five. Like Mozart, Appleman had already accomplished more than most. Appleman did continue to write and to lecture as much as he was able. Still, he would continually refer to having been put "on the shelf"[145] as a result of the heart attack. Moreover, after the heart attack, it seems Appleman did take time to turn to some interests outside the law.

VI
OUTSIDE THE LAW: PSYCHIC POWERS, POETRY—AND INCREASING YOUR MONEY-MAKING POWERS

To those who, rightfully, regard Appleman as a great legal scholar and a great trial attorney, it is perhaps astonishing to know that Appleman wrote a book about physic powers, ESP, telepathy and other subjects. In fact, Appleman readily acknowledged that the subject was one often reported on "by kooks" and that it was considered "nutty stuff."[146] Nevertheless, he wrote a lengthy book about these powers, including his own experiences. This book, *Your*

144. Spangenberg, *supra* note 10, at 372.

145. Appleman, *supra* note 127, at 714.

146. APPLEMAN, *supra* note 140, at 5. As a measure of Appleman's international reach, the book was published in Mexico as *Sus Poderes Psiquicos y la Inmortalidad* (1975).

Psychic Powers and Immortality[147] is far different than anything else he ever wrote.

Appleman's evaluation of the subconscious begins with him explaining that he became interested in the subject when exploring medical literature to learn about the functions of the brain. Obviously, this was because he was researching a case on medical malpractice. Throughout the book he weighs in some of his experiences as a trial attorney and the nature what is, in fact, direct and circumstantial evidence.

Then, Appleman becomes personal. Appleman believed that he could read minds.[148] Here is what he wrote: "[W]hen a brother of mine and I attended the University of Illinois, we could be at opposite ends of a large room and glance over towards each other and know precisely what the other was thinking. Rarely was there a need for verbal communication between us except for the benefit of others."[149] He relates how he could stack a deck of cards using his mind powers.[150] He notes an incident in which he told a perfect stranger what floor of a hotel he was staying on.[151]

Beyond telepathy, he describes several incidents in which he had been clairvoyant.[152] More than his own personal experiences, which obviously triggered his interest in the subject, Appleman discusses all manner of telekinesis, precognition, and whether people had auras. In the chapter on immortality, he discusses many examples of near-death experiences, which of course has now become a popular subject. It is indeed an interesting book. It is not for us to judge Appleman's interests. Aristotle allegedly once wrote that no great mind ever existed without a touch of madness.

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147. *Id*.

148. *Id.* at 49.

149. *Id.*

150. *Id.* at 50.

151. *Id.*

152. *Id.* at 60–61.

Another literary effort by Appleman was in a perhaps more ordinary vein. In 1969 Appleman published a volume of poetry entitled *The Elusive Song*.[153] He used the pen name James St. David Montrose. Appleman was not the first attorney, nor indeed the first Illinois attorney, to publish poetry. Edgar Lee Masters, Clarence Darrow's law partner, wrote the *Spoon River Anthology* and other major works.[154] In one copy of *The Elusive Song*, a handwritten note dated May 9, 1969, said, "You may find this a strange area of writing—yet I felt that you, my friend, would appreciate it. The pen name is an old Scot family name. It comes to you with deep affection following another long and severe hospitalization."[155]

Appleman's preface to the book discusses his thought upon poetry and some of his favorite poets. Many of Appleman's *Elusive Song* poems had been published before in different poetry reviews. Many of the poems are quite lyric and are dedicated to persons important in Appleman's life, such as his wife, Jean. Here is an example:

The Hush of Evening

A star gemmed crescent moon
In this quiet place
With gentle radiance
Illuminates your face.

The breeze about us kisses
Despondency away.
The soft caress of evening
Erases cares of day.

We stay to watch this tempter
With its glowing peace.

153. JAMES ST. DAVID MONTROSE, THE ELUSIVE SONG (1969).

154. Randall Tietjen, *Clarence Darrow and Edgar Lee Masters*, 13 GREEN BAG 411 (2010).

155. Handwritten note in *Elusive Song* in this author's possession.

Talk stops, time stays its march.
All interruptions cease.[156]

Another poem perhaps represents Appleman's thinking after his heart attack:

The View of Youth

I would not die of age
Or of a sere decay
But—like the flash of Dawn
Flame briefly, die away.[157]

The last poem in the volume reads thus:

Last Line

I can speak no more.
My thoughts are gone.
Which might have formed a perfect song—
They clash against each other now
And I can speak no more.[158]

Appleman had another, more-practical interest: making money. He wrote of his time after his recent heart attack, saying "A solo trial lawyer whose income suddenly ceases finds himself rather helpless. I had to replace that income by investing sagely—not too easy in recent years."[159] Appleman had earlier written a book entitled *How to Increase Your Money Making Power*.[160] Throughout

156. MONTROSE, *supra* note 153, at 33.

157. *Id.* at 57.

158. *Id* at 63.

159. Appleman, *supra* note 127, at 714.

160. JOHN ALAN APPLEMAN, HOW TO INCREASE YOUR MONEY MAKING POWER (1959).

the 1960s this book was advertised for the cost of $5.98 with a ten-day free-trial period.[161] The advertisement, which ran in major newspapers, stated that the book would disclose insider's financial knowledge with seven "smart money secrets"[162] that would help increase a person's finances.[163] The advertisement also said that the book was "brought to you by one of the few men in America qualified to write this book. His name is John Alan Appleman. He is a unique blend of financier, corporate president and scholar.[164] In 1975, as his last nonlegal publication, Appleman, along with his daughter Jean, would publish *The Midas Touch: Dynamics of Market Investment*.[165]

VII
THE LAST YEARS

Because of his health, Appleman left his beloved Maples estate sometime before 1975 to move to Lake San Marcos, California, a community located near San Diego.[166]

In August 1975, he gave what could have been his last lecture when he spoke on *Darling* to the insurance-practice section at the Annual Meeting of the American Bar Association. By 1977 he'd published his last two articles, both in the *Insurance Law Journal*, one in February and another in May. The first, entitled *A Forecast: Troubled Waters But New Horizons* discusses his belief that insurance companies were headed for trouble because of "deceptive terminology and shortsighted claims practices."[167] Appleman observes that such industry greed would, and was, resulting in

161. *See Advertisement,* ST. LOUIS POST, January 10, 1965, at 85.

162. *Id.*

163. *Id.*

164. *Id.*

165. JOHN ALAN APPLEMAN & JEAN APPLEMAN, THE MIDAS TOUCH: DYNAMICS OF MARKET INVESTMENT (1975).

166. John Alan Appleman, *supra* note 2.

167. Appleman, *supra* note 68, at 79.

(deserved) punitive damages: in California in 1976 a major insurer had denied a claim for $200 a month on a disability policy and wound up with a verdict of $100,000 in actual damages and $5.3 million in punitive damages.[168]

The article also discussed another recent development in insurance law. Appleman was remarkably prescient about the frontier of directors' and officers' liability. He wrote,

> I predict with some confidence that one of the next vast fields of litigation will be against corporate officers and directors. Insurance companies . . . being among the most corporate entities in terms of assets—and their interactions (and errors) being more easily traceable—will be favorite defendants. Lawyers could have a field day and send their children through college on the profits from such cases."[169]

After making some suggestions for reform in the insurance industry, he concluded by saying, "But don't call me! Remember, I'm on the shelf.[170]

Appleman's second, and last, article was entitled *Jabberwocky Revisited—Or What Does My Policy Cover?*[171] In it Appleman complained that the average property and casualty policy written then was unclear and that insurance companies would be paying the price for poor drafting. He wrote that it was time for redrafting and simplification of policies so that the insureds knew just what was covered and what was not covered by their policies.[172] At the conclusion of the article he gave the following suggestion:

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168. *Id.* at 80.

169. *Id.* at 82.

170. *Id.* at 84.

171. John Alan Appleman, *Jabberwocky Revisited— Or What Does My Policy Cover?* INS. L.J., May 1977, at 279.

172. *Id*. at 279.

> Organizations of insurance attorneys, working with the American Bar Association, could well help to organize a standardization committee; but, after the committee has produced its finest effort, it should submit the policy to students at the 8th grade level and ask them to describe what it means. If they misunderstand any provision, then it's back to the old drawing board.[173]

Appleman concluded with a now-familiar refrain: "Sorry, don't call me. I've been on the shelf now for 12 years and my days of personally rewriting insurance contracts are in the past. But good luck."[174]

With those words, Appleman's forty-one-year career as a writer and lecturer on law came to an end. But what an end, and what a career. In his last two articles he correctly predicted the rise of extracontractual litigation and the rise of litigation against corporate officers and directors. Moreover, he foresaw the need for the simplification of policy forms, which became a growing trend in the next twenty years. Even at the end, Appleman was on the cutting edge, as he had been when he sought to change the law concerning charitable-organizations immunity in 1936.

In 1978, Appleman appears in one last appellate decision, not as an advocate, but as a litigant, in *Appleman v. National–Ben Franklin Insurance Company*.[175] It was a last, anticlimactic coda to his career. While in California, Appleman underwent cancer surgery and incurred hospital expenses. He sent the bill to his insurer, National–Ben Franklin Insurance Company. The policy was a Medicare supplemental policy. The carrier declined the claim, saying the expenses were "not actually incurred" because Appleman had not been required to pay the charges, their having been paid by

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173. *Id*. at 284.

174. *Id.*

175. *Appleman v. National–Ben Franklin Ins. Co.,* 84 Cal. App. 3d 1012 (1978).

Medicare.[176] Appleman argued that if Blue Cross or "a like insurer," had paid those costs (rather than Medicare), National Ben Franklin would have paid the bill again.[177] Payments from Medicare were no different. The Court disagreed, holding it was the hospital, not the individual who entered into the contract with the federal government to participate in the program. As part of its participation, the hospital agreed not to charge the individual for services rendered. Appleman's claim fell squarely within the policy exclusion because he was not required to pay.[178]

This is a rather unremarkable decision, but the Court made a rather stinging remark in a footnote:

> In his treatise on insurance law, the eminent authority John Alan Appleman says: "It has been the rule that insurance contracts should be properly construed according to the normal tenor and meaning of the terms employed so as to carry out the intention of the parties and if any question arises, it should be liberally construed in favor of the insured. . . . [T]his rule does not justify abandoning principles of normal interpretation where the contract is clear, or taking such a construction as would vary the true meaning of the contract and the intention of the parties.". . . Here the contract is clear[.] [T]he company does not pay those expenses which the insured is not required to pay.[179]

What could Appleman do to respond to this (probably justified) comment? Nothing. He had a rule about this. "Jones may cite Appleman against Appleman," he wrote, "but Appleman can't cite Appleman in his own support. 'Twould never do!"[180] There is no

176. *Id*. at 1014.

177. *Id*.

178. *Id.*

179. *Id.* at 1015, n.1.

180. APPLEMAN, *supra* note 106, at 33.

other record of Appleman's appearing in court after this decision. Thus, with the *National–Ben Franklin* case, after forty-three years, John Alan Appleman rested and closed.

VIII
CONCLUSION

Appleman died in Lake San Marcos, California, on July 14, 1982.[181] Since his death, one writer has stated that he "has undeservedly faded from our consciousness."[182]

Yet, is this so? When Sir Christopher Wren, the architect of St. Paul's Cathedral in London, died, his son buried him in the cathedral and inscribed upon his grave the following: "*Lector, Si Monumentum Requiris, Circumspice*." Translated from the Latin, "Reader, if you seek his monument, look around you." For John Alan Appleman's monument, look at the medical-malpractice standards that arose from the *Darling* case, the constant updates in policy drafting, his legal texts, the bar associations he founded, the number of trial-advocacy courses that exist today and of course *Appleman on Insurance Law*. Reader, if you seek his monument, look around you.

181. Spangenberg, *supra* note 10, at 371.

182. Anonymous, *The Early Days: An Appleman Addendum*, 49 INT'L SOC'Y BARRISTERS Q., no. 1, 2015, at 89, 89.

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COOKING: THE INTERSECTION OF NATURAL FLAVOR AND NUTRITION*

Jimmy Schmidt**

I
EATING 101

Most people come to me and say, "Okay, what's the hot new trend? Where is food going? What are we doing next? What restaurant should I try to get a reservation at?" But to answer all those questions, we have to go back to the beginning. I'm not that type of historian, but to see where we are in food, I think we have to ask where we got started, where we are going, and what we are going to do in the future.

II
BACK TO THE BEGINNING

The planet Earth started 4.6 billion years ago. It took about 1.2 billion years for the first life to show up on the planet. Plants were some of the first to get here, a long time ahead of us. It took a couple billion more years for the first plants to develop, but they had us beat by 450 million years. So, in simple terms, plants got here first. They thought that they had the whole kingdom.

Plants and Plant Eaters

The plants were vital. They survived the first big five extinctions. They made it through all those changes that caused most other species to die off, including the dinosaurs. The plants flourished from their

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inception 450 million years ago, and they survived because they had developed a lot of interesting traits. The next 300 million years, their methods of reproduction changed: they got higher above the ground, made seeds, and eventually became flowering plants. Then and only then did bees show up on the planet to take care of the flowering plants.

The plants were really good at surviving because they developed substances called lectins. Lectins are a plant-based protein molecule that basically messes with you. It's also known as a molecular Velcro. It likes carbohydrates and sugar molecules really well. It attaches onto them and so gets into your own body's system. An example of how poisonous lectins can be is ricin, which is one of the deadliest poisons in the world. It comes from the castor bean; even the smallest amount—a milligram of it—will kill you. You might remember the Bulgarian dissident who was killed in London in 1978 with a ricin-loaded umbrella tip. Lectins are something to at least be aware of. Before humans even arrived on the evolutionary scene, the plants were already saying, We want to survive for the future. We are going to produce these elements to keep predators from eating us.

Then along came the plant eaters. Neanderthals started foraging for food about 230,000 years ago. Homo sapiens' dining trends started a 195,000 years ago, when we went from going to where the food was to cultivating it where we were. We went from being hunters to farmer-gatherers in pockets where we could start raising food. We had the most wonderful, completely certified-organic, biodiversity-safe, worldwide supermarket system.

But we had a problem. We had to figure out how to be able eat this stuff and not have it kill us. The first person who walked over to the castor-bean plant and said, "Hey, that looks pretty tasty" found it didn't work out so well. We went through a lot of trial and error to figure out how we could eat plants—there were no safety labels on anything, no allergen warnings or such—and, more importantly, how we could extract its nutrients. That behavior shaped our world today.

Lectins existed only in the plant world—and would still, except for the wonderful Holstein cow. In 100 B.C., the Hess tribes went up the North Sea and they got their white cows together with the black

cows and produced these black and white cows, the Holsteins. Holsteins were amazing because they produce warm milk like crazy. They're like milk machines. The Holsteins became the predominant milk source for cheese and every other dairy product in the world. But a natural mutation of their beta-casein molecule, the protein inside milk, occurred: it went from being an A2 double-bonded casein to an A1, and A1 is a lectin. These lectins have been labeled as the devil in A1 milk, shown to promote Type 1 diabetes, auto-immune disease, heart disease, Autism and schizophrenia.[1] It's also a neurotransmitter blocker. So choose your milk carefully, as well.

Crops and Calories

The major food crops that came out of this transitional period from hunter to farmer–gatherer all look pretty wholesome. And they are. They're wholesome, but they're packing other, more problematic, things.

Wheat produces, on average, 6.4 million calories per acre.[2] Prior food staples were low-calorie foods that could not support larger populations, while wheat calories enabled human population growth. That's important. But equally important are wheat-packed lectins in the husk of the bran. And these low-caloric grains pack phytates. Phytates, or phytic acid, connect to free-swimming or freely available minerals. They bind the grain to the minerals, which are used in the plant to germinate the seed for its energy to grow, to sprout. That's important for the plant, but when we eat phytates and they go into our body, they do the same thing. They bind onto the minerals in our digestive tract and become an antinutrient. They pull nutrients out of our system that could be available for digestion of our nourishment. Wheat has all this stuff running around in it.

Wheat also has its own allergens that get into our system and, for some, trigger allergic responses. It also has the gluten protein

1. *See* KEITH WOODFORD, THE DEVIL IN THE MILK: ILLNESS, HEALTH AND THE POLITICS OF A1 AND A2 MILK (2009).

2. *E.g.*, http://www.waldeneffect.org/blog/Calories_per_acre_for_various_foods/.

which spells trouble for the celiacs. We figured out how to refine many of the good nutrients out of the flour when we made our beautiful white flour of the 40s and the 50s but left in the allergens and gluten. But in 1940, we realized that we'd pulled out so many good nutrients, there were no good nutrients left. By an act of Congress in 1942, the Enrichment Act, flour was one of the first foods ever mandated by law to have nutrients added back in so that people didn't die of malnutrition in our own country. So "refining" our food can actually be a serious situation.

Rice was a little bit more friendly. It's one of the most ancient foods, producing eleven-million calories per acre.[3] Lectins hide inside the hull and the husk. The bran also contains phytates. Early rice was actually shaken and beaten to remove all the husks. The ancients had figured out that they'd have to get rid of this stuff because otherwise the rice would have adverse effects. The big thing about rice is that you had to cook it really well. They cooked it for days and days and days, and that old sticky rice was favored because it was higher in starch and lower in protein, and they were getting rid of the bad lectin proteins. Certain immune-system situations are still in effect, even for rice. Rice is gluten-free, but not lectin-free. So if you're seeking gluten-free foods, mostly it's rice flour that's being substituted back in. But rice flour is not lectin-free, so people are still having reactions to it.

The next big food on the list is corn, which came out of Central America. Corn is an amazing, amazing crop, producing around 15 million calories per acre.[4] It could feed a whole lot of people really well. But it's extremely high in phytates, to a point that it can produce a disease called pellagra. Pellagra is the three big Ds: dysentery, dementia, and dermatitis, to the point that your hands actually turn black and clot up. It's pretty gross. The best of the three Ds is

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3. Tamar Haspel, *In Defense of Corn, the World's Most Important Food Crop*, WASH. POST (July 12, 2015), https://www.washingtonpost.com/lifestyle/food/in-defense-of-corn-the-worlds-most-important-food-crop/2015/07/12/78d86530-25a8-11e5-b77f-eb13a215f593_story.html?utm_term=.d2c749a543ac.

4. *Id.*

dementia: pellagra actually causes hallucination. The Mesoamericans created a technique, nixtamalization, mixing mix the corn in with limestone or ash from the fire, which are alkalines, by which they could free up the proteins, allowing more proteins and nutrition to be delivered to the diet and thus avoid this illness.

You know food guys like to be responsible for everything, including being given credit for the expansion of those populations: now they had more protein and available nutrients getting into peoples' systems. Corn has given us other wonderful things like high-fructose corn syrup. And corn oil. Corn oil captures all of those lectins and it is pretty high in the phytates, too.

Potatoes are actually the nicest of the group. They're very, very productive, with about 15 million calories per acre.[5] They do produce a few allergen-type compounds. The more you cook potatoes, the less of these troublesome proteins there are, which is good. There is a wildly diverse population of potatoes coming out of Central America and South America—over five thousand varieties. A lot of varieties are really, really nutritious. The potatoes we usually get in French fries are the dumb ones—they're not as good for us.

Then, of course, soybeans, coming out of Northern China. They don't produce a lot of calories: 6 million calories per acre.[6] And they're high in lectins, as well as allergens. These were all the crops that everybody was living on and whose side effects they had to deal with. Lentils, legumes, were also very high in the phytates and the lectins. You've got to cook the heck out of them. This is a great example of where your grandmother's technique of soaking the beans for three days and each day rinsing them and adding more water and rinsing them and then finally cooking them for an extended period broke down many of those lectins.

For each of these ingredients, the ancients developed techniques to get around these protectionary devices of lectins and phytates. Again, always cook them very deeply.

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5. *Id*.

6. *Id*.

Peanuts also fall into the high phytates and the lectins category and peanut oil obviously has pretty heavy allergens. Then, of course, you can't leave out sugarcane. Everybody runs on sugarcane. It doesn't have any phytates or lectins, but it creates other adverse dietary consequences.

Now, the wine party starts in 7400 BC. And, actually, grapes were pretty smart. People took the juice and fermented it into wine. And once you had wine, what did you want to do? Just grow more grapes. So they were propagated by their own influence.

The Colombian Effect

Then came the Colombian effect: the Old World found the New World. All these products started to move around. You had the nightshade family coming out of the Americas—the tomatoes, the potatoes, the peppers. You obviously had cacao, the chocolate. You had corn for polenta. All of these other ingredients started moving to Europe. It still took the Europeans hundreds of years to adapt to actually use them. The foliage on the tomato and the potato is highly poisonous. They were originally raised in the papal gardens for their visual effect—their flowers. Then somebody got really hungry and decided to eat a potato, and they didn't die. So someone said, Hey, let's move these to Ireland, which they did.

When the food started to travel, some things went great. Look at Italy. You couldn't think of Italian food without tomatoes and peppers and polenta. And the wheat came from North Africa. If you took all those ingredients away from the Italians, they'd be really upset, but more importantly, they tasted pretty good. And the potato worked pretty well going into Ireland. The famous Irish Lumper potato, at around 15 million calories per acre,[7] supplanted the parsnip, their best food before the potato. There were no calories to speak of in that poor parsnip. You could eat them forever and not gain any weight. By one farmer's being able to raise so many calories per acre of potatoes, though, the rest of his brothers could go work in the factories. So the

7. *Id.*

potato really was the fuel enabling the start of the industrial revolution. It really changed the world, the lowly potato.

But we had a problem. The Irish grew only one type of potato, the Irish Lumper. And along came the potato blight, which attacks the plant and rots the potatoes down in the ground. This is an important point because, in our land of abundance, you'd think, How can anybody starve anymore? One million people died of starvation. One million people moved to New York to become cops. It changed the whole world. The population of Ireland went down by twenty-five percent.[8] This is what happens when we don't have biodiversity. We could have grown other potatoes. There were 4999 other varieties out there that were probably blight resistant, but we depended on a single crop to get us to where we wanted to go. And when it failed, the results weren't so pretty.

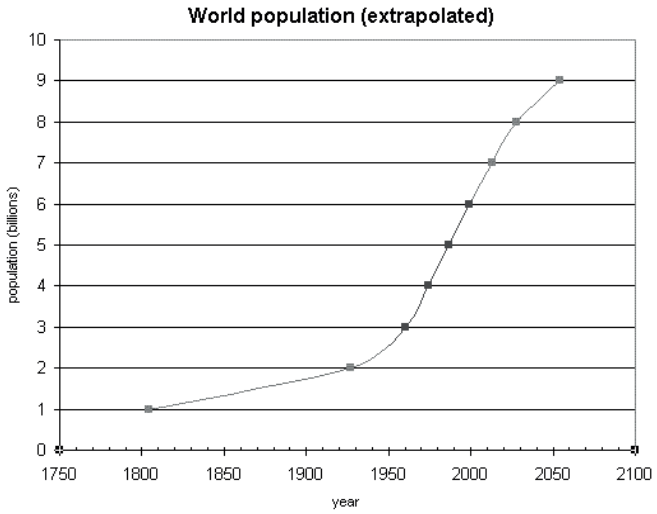
The next big food migration came with the invention of the refrigerated railroad car and modern agricultural techniques. At that point, rural America changed to urban America. People moved to the cities where there were jobs. They didn't have to do low-paying work on the farm anymore just to raise food. Modern mechanization and the farms and the tractors were producing tremendous amounts of food. This dynamic changed America, and it's never gone back.

And with this paradigm, here's what happens: We had some 7500 varieties of apples in the world. But only fifteen apples are deemed commodity apples that are safe for shipping; you can get crop insurance on the commodity. So if you grow some of those other really pretty little apples, nobody buys them. They don't get to market. And if you have a crop failure, you can't get insurance on that type of crop. What we've done in this massive move to the city and the change of our distribution system has shrunk biodiversity, what our offerings are. So we're back to where the Irish were with one potato.

8. *E.g.*, https://www.ancestry.com/contextux/historicalinsights/irish-potato-famine.

Where We Are Now

So we've narrowed the biodiversity of our foodstuffs once again. One unfortunate effect of this restricted American menu is obesity. Obesity has gone through the roof because we're not necessarily bringing the most nutritious products to the market. Likewise, diabetes. In 2015, 23.1 million adults and children in the United States had diabetes.[9] Another 84.1 million adults were prediagnosed with diabetes.[10] It's now an arresting situation. We have a growing world population,[11] and the United States has a growing waistline. We've got



to figure out how to get that situation in hand, as well.

9. Centers for Disease Control and Prevention, U.S. Dep't of Health and Human Services, *National Diabetes Statistics Report, 2017*, 3 (2017). https://www.cdc.gov/diabetes/pdfs/data/statistics/national-diabetes-statistics-report.pdf.

10. *Id*. at 7.

11. Source of chart: https://en.wikipedia.org/wiki/File:Extrapolated_world_population_history.png.

Moreover, the United States has the highest food waste in the world. Fifty percent of all produce is thrown away, 60 million tons.[12] One hundred sixty billion dollars a year isn't feeding anybody.[13] And from the time the food is picked to the time that you eat it, each one of those periods lowers the nutrient value of the food itself. The food is alive; when you pick it and throw it in a dark box, it thinks it's dead, just like a coffin. So it shuts down all its systems and the quality of the food greatly declines. An efficient, timely distribution method is absolutely essential to get rid of all our food waste, to take all that energy of growing that food and dumping it, instead putting it into better, affordable food to put on the plate. This modified distribution is part of the answer because, right now, the price of our food includes that waste factor to keep people in business.

This tendency to favor monoculture and low-nutrient foods, resulting in ill health and food waste, has been the result of this new method of agriculture and of food distribution. But, luckily, you have farmers' markets. Farmers' markets are sprouting up everywhere. We're connecting back to the farmer, which is absolutely terrific. Those farmers are all about the biodiversity of all kinds of heritage apples, and that interest ignites an exploding food scene. The buzz is about where to go eat, what's new on the horizon, what's the new food trend.

And this is what my restaurant in California is all about: the ingredients. People producing those ingredients are artisans; they're prospering and getting their foods to market. This is the renaissance of food in America. You've never had so many choices in food, styles, different ethnicities. We're at a kind of warm and fuzzy spot, if you believe that.

But there are the challenges for the future.

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12. Suzanne Goldburg, *Half of All US Food Produce Is Thrown Away, New Research Suggests*, GUARDIAN (July 13, 2016), https://www.theguardian.com/environment/2016/jul/13/us-food-waste-ugly-fruit-vegetables-perfect?CMP=share_btn_tw.

13. *Id*.

III
THE HUMAN ECOSYSTEM

The new food frontier that we've been active in and that has been the focus of research over the last ten years or so is the whole human inner ecosystem. This is really coming to the forefront now. A lot of books on this topic are being released this year, like *The Plant Paradox*, by Dr. Steven Gundry, that deal specifically with the notion of our human ecosystem. What this is, in a nutshell, is pretty simple. Ninety-three percent of your body is DNA (excluding nonliving tissue, like bone, and water, and nonliving cells, which have no nucleus, like red blood cells). We are all individuals, but we're really also each our own ecosystem. For example, we've got all these cells down in our gut—our biome—that are doing their things. Though the DNA for humans is 99.99% the same for us all, not even identical twins have matching biomes. The composition of one's biome is largely an effect of the mother's vaginal bacteria and the environment to which a person is eventually exposed.

Now, the biome, gut bacteria, is pretty cool: it's a barter system. We give it raw materials. The bacteria take those and turn them into nutrients or get rid of it for us. They actually feed and protect us and are an integral component of our own wellbeing. They prevent many diseases. But if the biome goes, you get cells down there in your gut that aren't so happy with you, and they can cause some adverse side effects.

There are four phyla, or bacteria groupings, in the gut,[14] which go through and kind of munch down all the raw materials and turn them into nutrients. If they're out of balance, they can actually cause malnutrition. Take two people eating the same amount of food: one

14. Firmicutes, Bacteroidetes, Actinobacteria, and Proteobacteria—the four bacterial phyla predominant in the gut. Sahil Khanna & Pritish K. Toshet, *A Clinician's Primer on the Role of the Microbiome in Human Health and Disease*, 89(1) MAYO CLIN. PROC. 107 (January 2014), http://dx.doi.org/10.1016/j.mayocp.2013.10.011.

can have great weight gain and the other can be malnourished—all based on the balance of the phyla in their gut.

Immune-system cells in the gut are one line of our defense against raw materials that might endanger us. The immune system takes a look at all of this stuff we're putting down there, and it has to decide quickly whether it's friend or foe, friend or foe, whether to send in the troops or to let it go on past. It's reading the proteins and the carbs on the surface of the molecule coming through very quickly. It's kind of like customs at the airport: it's got to figure out who is going through and who is not. The effect of the system's determination of foe is that it sends in the troops to attack. Now, if the invader mimics your own cells, then the immune system attacks your own cells, as well. Hence all the autoimmune disorders we encounter, including inflammation from arthritis, cardiovascular disease, and so forth.

We know that much of what happens in our body is determined by our brain and its thirty billion firing neurons and by the central nervous system. But there's another nervous system in the gut, the intrinsic nervous system, that runs off the biome. Its fifty million neurons collect all this information and send it up the spinal cord through the Vegas nerve (a great name for it). The information gets up to the brain and, from there, the body decides what it's going to do with it. There's a whole connection between the brain and the gut's sensing something and saying, Hey, this is a problem, I think it's sugar, we should drop insulin in the system; or, Hey, we should send in these troops to wipe out those cells. All this messaging is originating in the gut and going to the brain.

How to Eat

We are what we eat. We try to get the best foods. We buy organic. We really try to eat right. We go to great restaurants. We trust people to tell us what to eat, what's healthy, what's not, whether to eat whole grains that are full of lectins. You try to navigate through all this information. You think that you eat right and that you should be rewarded and have good health. Then you say, What the heck is going on? Lectin and phytates coming into play really change the whole situation.

In the plant world, nutrition and taste, their components, their chemicals, all developed simultaneously. Nutrition and taste go hand in hand. If something tastes great, it's probably got a lot of nutrients for you. What this means for producing food is that natural, organic, biodynamic, sustainable farming produces better results. It produces higher levels of flavor and nutrients. That's important. So we're going in the right direction.

What we need to do, first, is navigate our ingredient choices to find the foods that provide the nutrients we actually want. And, second, we have to tap into the variety of cooking techniques available through our ethnic diversity, many of which have at times been thrown to the wind. We need to pull those techniques back in that enable the release of the nutrients that will help us live better lives. And, third, biodiversity is pretty important for our future, too. If an apple blight comes in, we'll have to go back to nature to find other answers. As you know, the Irish potato famine wasn't the first time famine caused by a monoculture happened. It happened with wheat and caused the French Revolution. There are many points over time that that has happened. And biodiversity is great for dining, for chefs *and* for diners.

In the future, we need to explore the new frontiers of nutrient-delivery systems. This is the direction of my research—alternative protein- and nutrient-delivery systems. What we do, basically, is take a couple of proteins that are positively charged and normally repel each other. We get them to like each other by balancing their isoelectrical charges, so you can put them together and make foods more nutritious.

Here is the easy takeaway: Know your farmer. Know your food. That's pretty obvious. Know who is farming it and where it's coming from, what they're doing, and the varieties they're using. That's pretty easy. Know your plant. Know your fate. Eat as though it matters, for you and the world depend upon it. We had an old slogan in Chefs Collaborative: Vote with Your Fork. Make wise food choices. How you eat will change what people bring to market; it will change the world.

QUESTIONS & ANSWERS

Q: Jimmy, talk a little bit about how some of these things affect you, not only in terms of being a good chef, but also in terms of being a restaurateur. How are you working with those things—[the lectins, the phylates, monoculture, and the like].

A: Well, our choice of ingredients obviously matters. When we go out and get food from farmers, we provide an economic incentive for them to continue what they're doing. So paying fair-market prices or prices that reward them for what they're doing means they can afford to keep doing it and not have to compete in the commercial world. Think, for instance, about the fig producers in the Palm Springs Valley: they pick all their fruit green because it has to go to Los Angeles and then clear from Los Angeles to whatever city it is going to from there. And if there's any rot in the case, they just write off the whole pallet; they're not going to get paid. We're fortunate in that we get figs almost free from the farmers because they're the ripe ones. They're the beautiful ones that can't go to market. We try to work with connecting those people, with the ripe produce, with the chefs.

We formed a company three years ago called FoodShed Exchange, which connects the farmers to the chefs. It's tiny, mostly exploratory, but we connect farmers to Wolfgang Puck and Thomas Keller and others like them, who are like-minded. It's a market-disintermediation model. We took out all the middlemen. We've got native fishermen in northern Washington state, way out in native fishing grounds, pulling halibut out of the water, taking a picture, throwing it in a box. The box is labeled with their name, the boat's name, the GPS for exactly where it was caught, and the water temperature. They pull the fish out and throw it in such a box and ship it to us in Palm Springs.

We did a comparison. We deal with some of the best fish sources in Los Angeles. They do a great job, but we found that we could get the fish two to three days more quickly directly from the fisherman. And doing so was five dollars a pound cheaper, and the fisherman was making more money. It was better for the restaurant. We're kind of

rebalancing out that scale. We try to identify really great sources, really high-nutrient ingredients, and go in that direction.

As a side note, as a chef in the restaurant, I use lots of oils. Lectins are hiding in most of the oils that are out there. Avocado oil is safe. Olive oil is safe. In the same way, other fats are, or are not, safe. Any type of beef fat or duck fat are great. But corn oil, soybean oils, and peanut oils are just loaded with lectins. Fried food may not taste so bad because it's crispy and crunchy on the outside, but it may have been fried in pure lectins in the oil. We look at all of the ingredients and put in only those ingredients that contribute taste but also nutritional values. We make different salts and salt blends for each dish. Different oils are complement the dish. We have a whole situation where we study the frequencies of those ingredients and they pretty much line up, just like photography. My next book with be *"The Colors of Flavor."* Colors and taste and flavors align spectroscopically.

Q: What do you eat for breakfast?

A: What do I eat for breakfast? That's a good question. Well, actually I drink my own juice. I've got this stuff called Jimmy Juice, which is protein and carbs and it has an electrostatic charge that increases the muscular uptake of nutrients. Pretty cool. It was developed for the twenty-four hours of Le Mans for Corvette racing. It actually stabilizes your blood sugar and it's like plugging in your laptop. Everything is good again. You've got Wi-Fi.

Q: What is it?

A: It's kind of a cult beverage. The most recent factory, in Michigan, making it for us agreed to let us do all these crazy things in there, but it closed, so we're without a factory. We were just a little part of their production. They ran only a few things for us. My wife and I take credit (and are in the credits for) the movie *Cars* for providing John Lasseter and his team with Jimmy Juice, which fueled the finishing of that movie.

Q: I have just one question. You seem to have a lot of influence in the food world. What can you do about sugared cereal? When I walk

into the cereal area, it's all Cocoa Puffs and other different sugar-coated flakes. That goes for every grocery store you walk into. It's all sugared cereal being sold to the American parent for their American children. Just take a look at what they're offering here.

A: It's true. We reward those companies with our money, so they're not changing anything soon. Now, the cereal makers did convert to this whole-grain approach, that's somewhat suspect with what we know about lectins today. Perhaps the new information coming out on lectins might change that situation.

Our research, primarily, is trying make the foods you love like pizza and pasta love you back. We've changed the ingredient profile to use nonlectin, phytate-based seeds, which are like super foods. You combine them you could eat the pizza today and go, Wow, great pizza! We're working on launching products like high-protein cookies that that taste sweet, but the sweetness is coming from inulin, which is a carbohydrate fiber that comes from the chicory root. Nature has lots of answers in nature, but we need to know more. By the way, inulin is a prebiotic, your gut flora just think it's party time when you feed them that. You feed them sugar and it's like your kids on sugar. They go nuts. There are other parts of the nutrition picture we can work on to change, but it's got to be a bigger voice to get that done.

Q: I was listening to a lecture by Ethan Brown, who was pretty candid in saying that plant-based protein doesn't quite have the taste yet. My question to you is, How far are we away from plant-based bacon?

A: Honestly, I hope we're a long ways away. There are some purities in life, and bacon is one of them. We can change it out of pork into Wagyu, which is from the Wagyu beef cattle. We make a Wagyu bacon that's really good. But, yes: to get plant-based protein to taste like meat-based protein is really interesting. I'm not sure it can be a solution for the world. Plant-based protein can be more efficiently raised from water and nutrients, then rework it. But it's not really reworking it. It's just a different recipe. You can mix it together and make doughs, and they handle very well and can be machined. And

they can deliver your taste profiles and your nutritional profiles to do it.

Let me back up here. The new definition of memorable dining is to activate all of your senses—your taste, your sense of smell and touch, your hearing. My mentor Madeleine Kamman once said, "You probably remember the best meal you ever had in your life, and you probably remember the worst meal you ever had. But what did you have for dinner last Thursday?" Most people don't remember any of it, at all. The more senses and moods food can activate, the more memorable it will be. That's where aligning the nutrition with nurturing comes in. The FoodShed Exchange and the pizza that we produce are part of that sensory and nutrition solution. We're getting all these proteins that want to fight and get them to come together. If you align them, they can do some really cool things.

I don't think I can change what the world wants to eat, but I'm trying to help keep what you really like to eat from killing you. And I'm trying to help promote food that provides life, provides biodiversity, favors ethnic diversity, and makes great use of the materials and assets on the planet for now and for the future. Food trends come and go. You see things go in and out. One year it's Thai. The next, Italian is back. Now the old French is back in New York City. But, apart from the trends, we have to address some larger issues: What foods are we going to eat? How are we going to encourage biodiversity so we can keep eating them? How are we going to get them safely to everybody who needs them? How will these foods work out with our biome?

I'll close with this: There's a disease in Central California called the Celery Pickers' Disease. It's a cancer specific to the central coast, affecting Hispanics who are out in the sun, but completely covered, picking celery for your Bloody Marys. They have the highest incidence of skin cancer in the world. How could this be, if their skin is completely covered? Well, researchers discovered in just the last couple of years that it's the celery's lectins when it's being picked that are radiating out, signaling that they're under attack. Those lectins block the melatonin in the pickers' bodies. So the little bit of sun that can get past the fabric causes skin cancer. We're only starting to

scratch the surface on these kinds of things. But, as I said, know your plant, know your fate. Figure out what's good and good for you, and go from there.

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TREATING THE UNBORN PATIENT: CURRENT INDICATIONS AND FUTURE DIRECTIONS FOR FETAL SURGERY AND GENE THERAPY*

Brad A. Feltis, MD, PhD**

ABOUT THE SPEAKER

Dr. Brad Feltis earned three degrees from the University of Minnesota: a medical-technology degree in 1987, a medical degree in 1995, and a PhD in surgical sciences in 2002. He then went to the University of Washington for a fellowship in pediatric surgery in 2005. He started his first big-boy job at age forty because he had been in school that long. Since 2005, he's been a pediatric surgeon at Pediatric Surgical Associates in Minneapolis; since 2010, he's been the Director of the Midwest Fetal Care Center in Minneapolis.

Besides being busy in his practice, Dr. Feltis also does yearly medical-mission trips to Zambia, Africa, and travels to Colombia to teach surgical residents there.

Brad diagnoses and treats babies with medical problems or concerns in the womb. He performs surgeries through a three-millimeter incision in the mother's abdomen: that's less than the width of your pinky. They've had a breakthrough at his clinic and other clinics in treating and correcting spina bifida in the womb.

I
IN UTERO FETAL SURGERY

All of the talks I give are centered on the patients we treat. It's such a privilege to be able to treat these people and be able to offer

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* Address delivered at the Annual Convention of the International Society of Barristers, Cancun, Mexico, 23 March 2017.

** Surgical Director, Children's Minnesota Midwest Fetal Care Center; Pediatric Surgery Associates, Minneapolis, Minnesota.

what we now can in 2017, which is a lot different than what we could offer even five years ago, in 2012.

Twin-to-Twin Transfusion Syndrome

A family came to us eight years ago with a bad problem. They were happy that they were pregnant with identical twins. But they were sad to learn that their twins had something called Twin-to-Twin–Transfusion Syndrome.

Identical twins come from one sperm and one egg. The syndrome occurs in "mono–di twins"—Monochorionic-Diamniotic. Monochorionic means that they share a placenta. Diamniotic means each has his own gestational sac. About ten percent of these monochlorionic twins go on to develop Twin-to-Twin–Transfusion Syndrome. In Twin-to-Twin–Transfusion Syndrome, for reasons we don't completely understand, an imbalance in blood flow between the twins occurs. One twin acts as the donor twin, donating blood volume to the recipient twin. The recipient twin baby gets really big, and his gestational sac gets really big because he's trying to get rid of that volume by making urine. One baby goes into horrible kidney failure and the other baby goes into horrible heart failure. Left untreated, ninety-five percent of these babies die before twenty-four weeks. It's a crummy, crummy, crummy disease.

Up until about ten years ago, the only treatment for this, really, was what we call therapeutic amnioreduction. It's just sticking a needle in, just as you'd do in amniocentesis, sticking a needle through the maternal abdomen into the gestational sac and drawing off fluid. We'd draw off two or three liters of fluid from the mom two or three times a week. It makes her feel better, but it doesn't do anything to treat the disease. It makes the survivability a bit better, but it's still miserable.

These babies had a bad problem with very few options until about a decade ago, when medical-device technology and optics technology finally advanced to a point where we could start doing things inside the womb. Operating with tiny cameras and tiny equipment is called fetoscopic surgery. People have known for the last generation that if you could figure out a way to disrupt those blood

vessels, to disrupt those communications between the babies, then you could potentially treat the disease. That was shown in a randomized, controlled trial that finished in 2005—a little over ten years ago. That was the start for advanced fetoscopic surgery's becoming a reality in a few centers worldwide.

We can do this surgery as early as seventeen weeks. The babies themselves are in the way during this surgery, because we really need to do the operation on the placenta. We use a 1.8-millimeter operating telescope, the other end of the size spectrum from the James Webb telescope. The blood vessels going from one baby to the other are what we need to track. There are usually about thirty or forty of these blood vessels, and we start on one end and follow each of the blood vessels all the way. Sometimes the blood vessels circle back to the donor baby. Sometimes they go all the way across. We have to find which of those blood vessels are going from one baby to the other.

Once we do that, we introduce a six-hundred-nanometer laser fiber, called a diode laser. It fires under water and cauterizes or cooks the blood vessels that go from one baby to the other. The tricky part of the operation is movement. Mom's heart rate is around a hundred, and the placenta is bouncing. The babies' heart rate is around two hundred. My heart rate is around three hundred. You have to hold the probe right next to the blood vessel without actually touching it because the babies have only about half an ounce of circulating blood volume and they can hemorrhage to death really quickly if you rupture one of those blood vessels.

Schematically, it's pretty straightforward; but practically, it's pretty challenging. The good news, though, is that if we get all of the blood vessels, we create what we call a new vascular equator. We call it "dichorionizing" the placenta. We turn the placenta into essentially two separate halves. Each of the babies has their own half of the placenta, the disease process then reverses itself.

This is that family with healthy, newborn twins. Talk about secondary gain in a profession, right? These are babies that wouldn't have lived before, and now you get the best Christmas picture of all time.

And you keep getting yearly follow-ups. Again, it's all about the patients we serve and what we can do for them. As I said, I have more secondary gain in my field than anyone, I think.

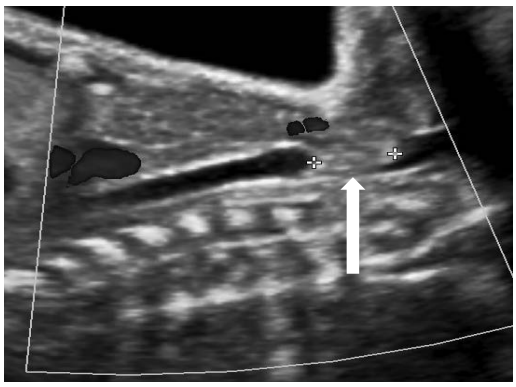
Fetal surgery is a new field. You're probably familiar with laparoscopic surgery. Laparoscopic surgery started in the early- to mid-80s. I remember being in medical school in 1990, and most general surgeons were still saying there was never going to be a day that we're taking out gallbladders using little cameras. And now in the pediatric population—even four-kilogram, three-kilogram

babies—we do almost everything laparoscopically or thoracoscopically. Fetoscopic surgery is the final frontier, doing things on babies that are still inside the womb. You're limited with what you can do because the pregnant human uterus will generally accept only a single puncture. If you puncture the uterus more than once, it gets irritated, and the woman may go into premature labor and the uterus expels its contents, which is a bad deal. So, generally, everything that we do, we have to do through a single three-millimeter puncture.

The instruments are developed for fetal surgery are in the nanometer range. We have a six-hundred-nanometer scissors, a six-hundred-nanometer grasper, a six-hundred-nanometer laser fiber. Everything needs to be able to go through the same incision. That's one of the current technical limitations for fetoscopic surgery.

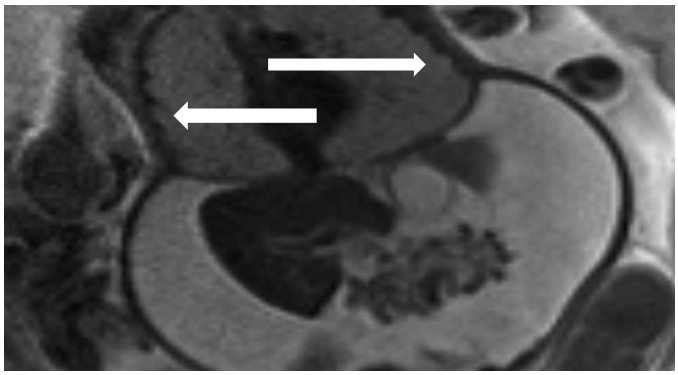
The field is in its infancy. There are only a handful of programs in North America doing advanced fetal surgery because it requires a lot of programmatic building and a lot of technical personnel. But the neat thing about being able to do such minimally invasive surgery is that now for the first time ever we have a way of addressing really bad problems.

Laryngeal Atresia



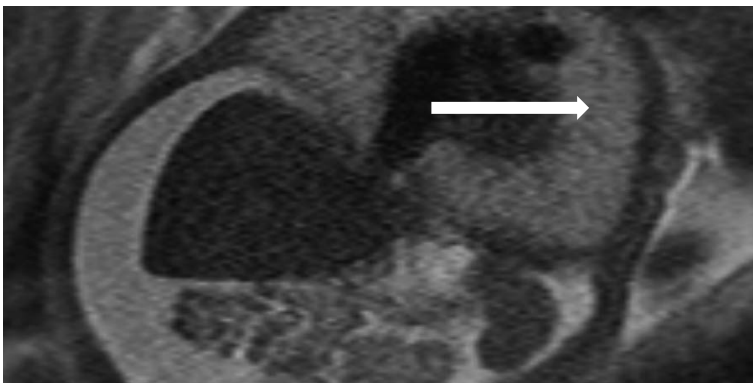
In a case we saw last year, called laryngeal atresia, an almost one-centimeter area of the larynx or airway—the windpipe—didn't form. [See the area above the arrow.] We saw the baby at twenty-five weeks. It usually is a fatal problem. The baby's lungs get hyperinflated. During development, fluid constantly leaks out of the lungs.

So if the lungs are blocked at the airway, the lungs get very big. As the lung gets big, the baby develops that scalloping of the lungs, which you can see in the MRI.



That white area below the arrows is called ascites—the accumulation of fluid in the abdomen. A baby with a lot of ascites is "hydropic." This was a hydropic baby with laryngeal atresia at twenty-five weeks, and the condition is uniformly fatal. This is a baby that I would expect to live for only a few more days.

We hadn't done it before, but we told the mother that we thought we could decompress the lungs. If we could just drain that fluid off of the lungs, we should be able to give baby a few more weeks. So we advanced our fetoscope into the stomach to pin the baby. The baby is floating in fluid, and you can't do delicate operations transplacentally with a baby floating in the fluid. We knew we had to stabilize the baby because we had only a little over a one-millimeter target for where we had to put our needle. We advanced the needle into the baby's distal trachea. The carotid arteries were on either side of the pocket we were targeting. It was maybe two millimeters at its widest point—so it's a tiny area, a tricky thing to do. But we were able to do it. We got off eighteen milliliters of fluid, the adult equivalent of which would be like taking a liter of fluid from adult lungs—a lot of fluid. We were hoping to get at least ten mils, but we got eighteen mils. Immediately after the procedure, we saw that the scalloping had started to reverse. An MRI in postop, day one, showed that the scalloping was getting much better; we had started reversing the disease process immediately just by draining off the fluid.



EXIT for CHAOS

We call it EXIT for CHAOS: EX utero Intrapartum Treatment for Congenital High Airway Obstruction. It's much easier to say "exit for chaos," right? In an EXIT procedure, you partially deliver the baby. You leave the baby on placental bypass, hooked up to the mother, while you operate on the baby. Then you unhook the baby from the mom. Even though we had drained the fluid off the lungs of this baby and gotten several more weeks of gestation out of this pregnancy, the baby's airway was still completely blocked. Of course, as in all of these cases, this mom came in, in labor, at ten o'clock on a Thursday night. We had to mobilize the whole team. And it's a big team. It's fifteen people who started this case at midnight on a Thursday. We made a C-section called a Pfannenstiel. We deliver most of the baby—sometimes all of the baby—but we put a little scalp probe on the baby's scalp to start monitoring its vital signs. We keep the baby hooked up. We don't clamp the cord because the baby is going to continue to be on placental bypass. We can operate on a baby for up to ninety minutes on placental bypass; you don't have to rush through anything.

The baby is outside the womb, on placental bypass, just resting on the mom. The ENT surgeon confirms that there should be an opening going down into the trachea and the lungs, but there's a complete obstruction, complete blockage. Once the diagnosis is confirmed, we do a surgical tracheotomy. We make an incision in the baby's neck, which takes us about fifteen minutes. We do a little cut

down onto the baby's trachea. We put a breathing tube in, put the baby on the ventilator, clamp the cord, and hand the baby off. This baby spent a month in the NICU.

The baby is home now. This summer the baby will have a laryngeal reconstruction—a really big surgery—but the baby is alive. The baby is doing great and is going to make it.

We presented this surgery at an international meeting last year. Nobody had described this before, but these are the kinds of things that are available now: a twenty-five-week hydropic baby with laryngeal atresia that up until just a few years ago, everyone would have said is a nonsurvivable problem. We are trying our best to never use that word, "nonsurvivable," again. We like to say that there's hope for pretty much everything that we see.

Open Fetal Surgery

In open fetal surgery, you actually open up the uterus and operate on the baby. These are far more technically sophisticated operations in which you actually need to sew things or you need to put in patches or you need to remove things. You can do an open fetal surgery to expose some or all of the baby, operate on the baby, put the baby back in, and have the pregnancy continue. Up until a few years ago, the only indication for open fetal surgery was for lethal problems, because it's a big deal. The mother gets a big surgery that she doesn't need. If the mom has open fetal surgery, she'll never be able to labor normally again. She'll have to deliver all subsequent pregnancies by C-section, and you can have maternal complications. So the mom gets a surgery she doesn't need—a big surgery to operate on baby who does need a surgery.

Lots of potentially ethical dilemmas are being explored because of surgeries like this, because informed consent for a pregnant mom is different. A pregnant mom is going to do everything she can to save her baby. That's a separate topic, but worth mentioning.

The MOMS trial

Open fetal surgery hit a milestone a few years ago. A randomized trial was performed for repair of myelomeningocele, also called spina bifida. Spina bifida is an opening in the back and a herniation of the spinal elements. As parts of the spinal cord herniate out, the hind brain, called the cerebellum, herniates down. It blocks a place called the fourth aqueduct, and fluid builds up, and you get hydrocephalus. The trial was on prenatal repair versus standard postnatal repair of randomized babies with spina bifida. The significance of this trial was that this was the first time people had proposed doing a big open fetal surgery for a nonlethal defect. Occasionally, some babies do die of spina bifida, but the death rate is only in the low single digits. Most babies don't die of spina bifida, but they do have severe, lifelong problems. Most of them aren't ambulatory by the age of ten. Most of them need shunts to drain their hydrocephalus. A lot of them have bowel and bladder problems. It's a crummy disease.

Fixing this problem just involves patching up the hernia. It's pretty straightforward. We don't want amniotic fluid leaking in, and we don't want cerebral spinal fluid leaking out, so the goal of the surgery is to create a watertight seal. The "MOMS" trial was called the Management of Myelomeningocele Trial. It was randomly assigned and performed at three institutions. The prenatal surgery was done before twenty-six weeks, and we measured fetal outcomes against standard, post-birth repair. The three-year findings reported dramatically better results in the prenatal repair, a significant reduction in shunt rate, and a significant improvement in neurocognitive ability: the kids were brighter. They're thinking better and had significant improvement in their ambulation rates. The follow-up data was presented just last year. The results are not only durable, but they're accelerated. They're improved and they're sustained.

We started our program in open fetal surgery just last year and are the ninth center in America to start doing open fetal surgeries, of which we've now done almost ten. The first baby on which we did open fetal surgery had spina bifida. Philadelphia has the world's

leading program in open fetal surgery, but to have the surgery there, a baby's family would have to relocate to that area. If this family had wanted to go to Philadelphia, they'd have had to move there when the pregnancy was at twenty-four weeks, then have the surgery, then possibly stay in Philadelphia for the duration of the pregnancy and the care after birth. That's a lot to ask of someone.

We told this family, "Listen. Our first recommendation is to go to Philadelphia for this procedure. However, if you can't, we have our team in place. We've spent five years pragmatically preparing to do open fetal surgery. We've been doing these other types of surgeries for almost ten years. We're now ready to initiate our program here in Minneapolis. What about being our first patient?" This was about a doctor–patient relationship.

At any rate, they agreed to be our first patient. As with EXIT for CHAOS, we make a Pfannenstiel incision, a transverse incision as we do for a C-section, and then expose the uterus. We make an incision in the uterus to expose the baby, then we operate on the baby. It's much, much different than doing a standard C-section. You have to have the uterus completely relaxed. We call it double deep relaxation because you want there to be as much blood flow and perfusion through the uterus as possible. You don't want to jeopardize any perfusion to the baby at all. The uterus has a ton of blood in it, so it's a tricky procedure. We take a measurement so we will be at least six centimeters away from the placenta when we make our incision. Placental rupture would be a catastrophic event. The placenta is just randomly placed, so a very tricky part of the procedure is just maneuvering the baby in the uterus away from the placenta and right underneath our incision. We don't want to bring the baby out of the uterus. We want to manipulate the baby as little as possible, float it up to where we make our incision in the uterus. Then we want to fix the baby and then tuck the baby back in.

It's a ninety-minute surgery. About twenty-five people are in the room, around the baby. We all have different roles. You need a full team for the mom; you need a full team for baby; you need a standby team for baby. You need maternal anesthesiologists, pediatric anesthesiologists, cardiologists, neuroscientists, neonatologists, and

pediatric surgeons. It's amazing. I mean there are twenty-five people in the room for this operation. Of course, you also need a big operating room.

Here's everyone who is in the room. The neurosurgeon rotates in to do the spina bifida repair. He cuts the tissue to either side of the repair to mobilize enough tissue. He does a multilayer closure and closes up the spinal canal. In the next layer, he's closes the skin over it, making a multilayer, watertight closure, preventing any cerebral spinal fluid from leaking out and any amniotic fluid from leaking in. Then there's a special way we close up the uterus with a bunch of heavy sutures so the uterus doesn't rupture during the pregnancy. From now, at twenty-four weeks, we've got to get the pregnancy to continue for another twelve weeks. And that's a tricky part, too.

When it's over, we put in stay stitches. We introduce a stapler that uses dissolvable staples. You can't put anything metal into the uterus; otherwise, it will act as an IUD and the moms would never be able to get pregnant again. So we use a special stapler with dissolvable staples.

But here is baby Clara. She is now a little more than a year old. She doesn't have hydrocephalus. She's ahead of her neurocognitive goals. She's ahead of her motor goals. She's scooting all around. This is a little girl who should be able to move and play and be in school and be with her age-matched peers and not be in a wheelchair. She still has spina bifida. We haven't cured the disease, but we've dramatically reduced its effects. And that's what our goal is for these surgeries. So again, more secondary gain from what I do.

II
GENE THERAPY

We have a gene-therapy lab. We had a pretty significant breakthrough last year. I think gene therapy has the potential to not only cure disease locally and regionally, but nationally and internationally. It might be one of the keys to the health-care crisis we have worldwide. We're right at the cusp of applying gene therapy to humans.

The work in our lab is spearheaded by one of my partners whom we recruited back from Philadelphia. His name is Joe Lillegard. We do our work in conjunction with several other labs in Rochester,

Minnesota, in Pittsburg, and with Oregon Health Sciences. Major research like this is never done without a lot of collaboration.

Our research focus is ex vivo gene therapy. Within a few years, we're going to do in utero gene therapy. We will be able to give genes now missing from developing babies. Ultimately, we want to do gene correction. Gene therapy is a term that's been around. Now it's gene editing and gene correction. The new technology is called CRISPR gene-editing. You can specifically target exactly where in the genome you're missing a gene and you can put it back. A number of genetic disorders are single-gene disorders—diseases like sickle-cell anemia and cystic fibrosis and blood disorders called thalassemia. If you can put the defective gene back where it belongs, you can cure such a disease. We can do this in the laboratory, and we're very, very close to doing it in humans.

Inborn errors of metabolism of the liver are very common—there's almost one in every twelve-hundred live births. People go into liver failure. A liver transplant is the only solution for these babies. In the disease HT1, or human tyrosinemia Type 1, there is a gene product called FAH. This enzyme fails to break down the last product in the metabolism scheme. Because it doesn't break down, you get a buildup of this product, and that leads to cirrhosis, cancer, and death. For kids born with HT1, without any treatment, they typically need a liver transplant by the time they're two. Otherwise, they would die. It's a crummy disease, without any cure.

Dr. Lillegard and his team had an idea about how to cure this disease with gene therapy. To test the theory, they had to create a large-animal model of HT1. They developed a pig model called a "knockout" model. They had to find the gene amongst thirty billion genes; they had to find that FAH gene in a pig whose genome is not mapped.

And they did. They found the gene. They spent years developing the knockout FAH pig and built it just a few years ago. Now we can try our hypothesis. We can try our therapy. This is called ex vivo gene therapy. We operate on the pig to take out part of the liver out—just the left lateral segment. We dissolved this segment into a single-cellular mixture by making a slurry, which takes a couple of hours to

do. We engineered a virus that has the FAH gene in it. A virus' normal mode of attack is to get into the cell to intercalate their DNA into the host cells' DNA, take it over, and make more viruses. We can trick a virus and have it deliver the gene product that we want it to deliver instead of its own gene product. We had the virus deliver the corrected gene to the hepatocytes that are all in culture. We reintroduce this corrected hepatocyte back into the patient through the veins. The liver cells will find their way. This is a phenomenon known as Darwinian competition. The healthy hepatocytes out-compete the defective hepatocytes, so you end up repopulating the entire liver with healthy hepatocytes.

It took Dr. Lillegard and his team several years to do this, but just last year they submitted their work and got it published in in one of the world's most prestigious journals, the *Journal of Science of Translational Medicine*. The journal editor, one of the most prestigious science writers in all of North America, picked this article to write a commentary on. The editor called it "Skipping the Waiting List." The writer's conclusion was this: "Having demonstrated in large animals the use of materials that are safe for use in people, the technology is now poised to move into patients to regenerate their own livers and to spare them the long wait times on liver transplant list."[1] Ex vivo therapy with a viral vector is an efficacious method, and this therapy may obviate the need for liver transplant in children.

This editorial was published just last January. Our spirits were lifted. Now we're in talks with the FDA, asking FDA what else it needs to see before we offer this to humans. It's a big deal. The last gene-therapy trial in humans was in the early 90s in Philadelphia, and the patient ended up dying. This set the field back a long, long time. You can imagine things have changed a lot since the early 90s. This is safe. We now have pigs that are almost four years old with human tyrosinemia that has been corrected, so there's no suggestion that it's

1. Raymond D. Hickey et al., *Curative ex vivo liver-directed gene therapy in a pig model of hereditary tyrosinemia type 1*, 8 SCIENCE TRANSLATIONAL MED. 349 (27 Jan. 2016) (Editor's Summary, "Skipping the Waiting List," http://stm.sciencemag.org/content/8/349/349ra99).

not a durable repair. But again, it's tricky going to the FDA to have them approve a first trial of gene therapy in children.

That's where we are right now. We're hoping that within the next two to three years we will have treated our first patient with this. This works in pigs; there's really no reason it shouldn't work in humans. It cures the disease. You can imagine the cost savings from a liver transplant and lifelong immunosuppression or the cost savings for cystic fibrosis. You don't ameliorate these diseases, as you do with spina bifida. You actually cure the disease.

We're right on the cusp of this therapy in humans. We can do it in large-mammal models, and we're just about to take that next step into trying it in the human population. The potential of gene therapy for human beings is tremendous both in reducing disease and in reducing the heavy current burden on the healthcare system.

QUESTIONS & ANSWERS

Q: What's the cost of that surgery with so many people in that large operating room? Is it covered completely by insurance?

A: There are CPT codes [Current Procedural Terminology codes] for what we do as providers. For every CPT code, there's an RVU [relative value unit] associated with it. As private-practice pediatric surgeons, we negotiate reimbursement-per-RVU with twenty-eight different payers. When we started doing these operative fetoscopy procedures in 2008, there wasn't a CPT code. Now, there is.

It's hard to nail down an exact cost because it differs for each geographic area and who the payer is and what your contract is with them. But people have looked into this for spina bifida. For operative fetoscopy, the first five years we did this, we didn't get paid for the procedure because it was considered experimental. There are now CPT codes. For operative fetoscopy, the charges for the procedure are somewhere around twenty-five thousand dollars for the whole bundle. That includes everything, which I think is pretty reasonable, compared to some things. The bundle price for an open fetal surgery is about fifty thousand dollars.

Generally, fetal-care centers are expensive. The people at Children's Hospital in Minnesota were a bit concerned when I informed them of the costs associated with a fetal-care center. So they all need philanthropy to run. We have been fortunate to have generous philanthropists who have been instrumental in helping us get our program off the ground in Minneapolis. Every single advanced-fetal-care center has significant philanthropic funding behind it. Many of those people who are in the room—most of them—are donating their time because there are no billing codes for "being available."

But there's been a study showing cost reduction in disease severity, especially for spina bifida. You take the first decade of care and you turn a one-million-dollar medical bill into about a hundred-thousand-dollar medical bill for caring for these patients. Even though you have more expenses upfront with the fetal intervention and the care for mom and baby, you really save a lot of money on the back end.

Q: Who paid for the gene-therapy research you've just talked about? Is that a federally funded program?

A: My partner Dr. Lillegard is proud of this. He and his team developed the HT1 pig while he was a resident in Rochester Mayo with a small grant. He's a bright, bright guy. Children's Hospital in Minnesota has partially funded Dr. Lillegard's research because it's one of their key projects. We currently also have grants. Bringing this to human trials is going to cost twenty-five-million dollars. So we currently have a lot of different avenues. We're looking at a venture-capital avenue. We're looking at a philanthropic avenue. We're looking at multi-institutional avenues. But it's expensive, expensive stuff.

Q: You've mentioned that two three-millimeter incisions on a fetoscope would cause the mother to miscarry. How do you avoid miscarriage on these big open procedures?

A: Great question. We keep the uterus really, really relaxed. The mom is on a magnesium drip for the first several days after surgery. We keep the uterus as quiet and relaxed as possible, and we put them

on something called a calcium channel blocker that also prevents contractions. You have to pay a lot of attention towards sealing up the membranes when you close the uterus back up. If you can get the membranes to heal, then you can usually avoid preterm labor. But that's one of the complications of the case, that the mother might go into unpreventable preterm labor shortly after the procedure. The average age of the procedure is around twenty-three weeks. The average age of delivery is around thirty-two weeks. So almost all of these babies are born early. Out of our first ten, we had one baby born at twenty-six weeks, which was a lot earlier than we wanted. But that's just part of the risk. That baby ended up doing great but had to spend several months in the NICU. It's not clear whether the risks or complications of prematurity are going to outweigh the benefits of prenatal surgery, but this is why we have a multiday conversation with these families.

The providers talk to these families for hours over the course of several days. Then, before we approve any family, we have a whole committee that meets—our biomedical ethicist, our social worker—everyone has got a veto vote. One no, and the case doesn't go on. If mom doesn't have the social structure at home to accommodate four months of bedrest, then it's a no. We've taken great pains towards educating families as to exactly what they're signing up for. And, again, having at least eight different people from eight different fields signing off that to say, Yeah, this person is a good candidate. They understand what's going on.

Q: Would you describe some of your work in Africa for this audience?

A: So, my worldview, my philosophy, is that to whom much has been given, much is expected. I've been given a lot by society. It's been expensive to train me; I think paying it back is part of the equation. And I get a ton of secondary gain out of doing it. I go to Zambia every year. I have a friend who has devoted his whole life to being in Zambia. He went to medical school and became an obstetrician and then moved to Africa as soon as he got done training. He's been in Africa for twenty-five years just taking care of patients in Sub-Saharan

Africa. He's been in the town of Monze in Zambia for the last twelve years. He saves his pediatric-surgery cases for me, and I'm able to go there and take care of some kids every year. It's been neat because we've been able to turn it into a rotation away for the Rochester Mayo surgery residents. They get experience for an international rotation. The hospital pays for them to be there, and I have help when I'm there. So people get exposure to another culture, another developing country. There's all sorts of secondary gain.

It's interesting especially in the field of pediatric surgery. Probably about half of my colleagues in pediatric surgery do some sort of international outreach mission. It's popular, it's common, and it's exciting to see that area growing.

Q: I have a question, a set of questions, actually, about the moms. How do the moms cope with a gestation period of twenty-four to thirty-six weeks? Are they sick? Are they bedridden? Does it run a whole gamut?

A: Yeah. It runs the whole gamut. Most of them do really well. Most of them are on strict bedrest for the first week, then light duty for the second week. If they get two weeks out and their uteruses are quiet—we usually follow them twice a week—we can let moms go back to work if they want. We can let them go back to light duty. We have them avoid physical activity. One mom ruptured her membranes. Her membranes had never sealed postoperatively. That mom was in the hospital for the entire duration, from twenty-four weeks to thirty-six weeks. That's a long time to be in the hospital. But that's one of the risks. I have this rule. I call it the law of no surprises. You can't be surprised to find out that you might have to be in the hospital for four months. Right? That's why there's extensive counseling.

One of the horrible things that could happen is that the mom's life is at risk. It is possible she may die during this procedure. There have certainly been babies who have died during the procedure. So now you have a procedure that you're doing for the baby who doesn't have a lethal defect, but who has a chance of not making it through the

procedure. All of those things we go through in detail with the families.

Q: Any complications with anti-coagulant and that kind of therapy—DVTs [deep-vein thrombosis]—that kind of thing?

A: No. We haven't had any. We just use our standard anti-DVT therapy. But the moms can't have a hypercoagulable state. They can't have too high a body-mass index. There's a very narrow window—strict criteria—for who are candidates for this surgery. If mom has any medical comorbidities, she's not a candidate for the surgery.

Q: And the second part, with the gene therapy, is it perceived that these people will not have to do any antirejection drugs, no cyclosporine—all the other kinds of drugs.

A: Yup. It's their own cells.

Q: Nice. All self in self. Nice.

A: It's their own cells we're treating, so, yeah, they need no chronic medications afterwards.

Q: Just a quick follow-up on the gene therapy: I know it's still in its infancy. (Sorry.) What do you foresee for the future? You're talking about curing many diseases. In your vision, are we talking about a point where it will almost be like an inoculation? I mean where do you see the medicine going in that regard?

A: The technology is available now, and it's relatively inexpensive to have our own genes mapped. It costs probably a few thousand dollars. In two or three years, it will be a few hundred dollars. Five years from now, most of us will have a chip with our genome on it if we want it, because everything is going to be tailored to your genome. Pharmacogenomics is a huge area. My response to an acid blocker is going to be based on what my genome is and so even if you need a Zantac, you know you should take Ranitidine instead of Cimetidine because of your genome. Everyone is going to know, if they want to know it, everyone will know their genome for a few hundred dollars in the not-too-distant future. So the future for us is going to have all this knowledge of what our genome reads and what our risks are and what the risks to our kids are.

To answer your question, within ten years, we're going to be treating these diseases in utero, so the babies are never even going to be born with the disease. As long as you can pick it up, there shouldn't be cystic fibrosis in ten years. There shouldn't be sickle-cell anemia. There shouldn't be human tyrosinemia—especially all of these single-gene disorders. There are some more-complex, advanced disorders. But all of these single-gene disorders—they should be gone in ten years; I think they should be gone in five years. So treating them after the kids are born is the first step. The next step is treating them before the kids are born while they're still in utero.

Q: I was wondering about the protocol developed by the FDA for the evaluation of your gene therapy and whether that was inhibiting your evaluation and the timelines.

A: Dr. Lillegard started working with the FDA a few years ago when his lab began publishing their promising results with gene therapy. The FDA likes to partner with research teams. We're not just going to them with a big folder saying, Hey, what do you think? They're a group of our colleagues—scientists, experts in the field. They're actually part of our experimental design and our research algorithm. We wanted the FDA to work with us on designing the next set of experiments that they want to see for any additional information before they say, Yeah, you're ready to try this in humans. That's where we get the two- to three-year window. We think that we're going to have the rest of the experiments finished up within the next couple of years and then be ready to lobby for patient trials.