

## In Memoriam: Jack L. Pulec, M.D.

### AS I REMEMBER HIM

I first met Jack Pulec in July 1964 when I started my residency at the Mayo Clinic, Rochester, MN, with George Facer, Gene Kern, and David Wilson. We were invited to a barbecue at Kinsey Simonton's house. Jack had just returned to the Mayo Clinic to begin his neuro-otological practice. He was affable, outgoing, and engaging and still had a hint of his Nebraska accent. He was interested in all of us, from our families to our educational background and goals, and was always encouraging us to further our intellectual pursuits in our specialty.

Jack was born in Crete, NE, where he grew up. During his youth, he became interested in automotive engines, which carried through to his ardor for maintaining his own automobiles. He sought a medical education and, after graduating as a physician, decided to pursue a career in obstetrics and gynecology. After only one year, he switched to otolaryngology and was a fellow or resident at the Mayo Clinic in that field. During that time, he developed a close relationship with his chief, Henry Williams. After his residency, Jack established a practice in Omaha, NE, where, after a short period and with some direction from Henry Williams, he accepted a fellowship with William House. It was during this year that he would establish his basic professional interests and his wanderlust. He came away from that year with a full knowledge of the neuro-otological surgical approaches for the treatment of acoustic tumors and the remedy for dizziness, including vestibular nerve section and the endolymphatic sub-arachnoid shunt. He also had developed an interest in the diagnostic evaluation of neurootological patients, including the more subtle tests of auditory function, electronystagmography, and Pantopaque posterior fossa myelography. In addition, he adopted the then newer concepts of the management of middle-ear otosclerosis and chronic otitis media.

During this year, when Bill House could not honor some speaking engagements, Jack went in his stead, beginning a lifelong habit of visiting colleagues the world over who were working in areas related to his professional interest. In July 1964, when I arrived at the Mayo Clinic, Jack was returning from this fellowship to establish his newly learned concepts and practice within the Mayo Clinic. He encouraged residents to find projects

by which to obtain a master's degree while in the program. He expressed an interest in what I was doing in the first quarter of the residency, where I was "the treatment man." This job involved undertaking various office treatments requested by the consultants. In addition, caloric testing was part of my responsibility. Differential ice-water calorics were performed at 5, 15, and 30 cc, and I recorded the presence, absence, direction, and intensity as a degree of the induced nystagmus.

From the basis of this patient population, Jack established electronystagmography at the Mayo Clinic. As Fred Gilford had done before him, according to the standard set by Nils Henriksson, Jack converted a Swedish electrocardiogram machine to allow for measuring the corneal retinal potential. With the cooperation of the engineering department of the Mayo Clinic, caloric water baths for the alternate binaural bithermal caloric bithermal of Fitzgerald and Hallpike were assembled.

During this time, Jack established acoustic neuroma surgery in the department of otolaryngology at the Mayo Clinic. One cannot begin to understand the adversarial climate in which he attempted to establish this surgical specialty. The national neurosurgical societies had a policy against having those "nose and throat" surgeons involved in their area. He was fighting battles almost daily between departments and within his own department at the clinic. These battles occurred despite the invitation to establish this emerging field in their midst. At the same time, he was standard-bearer for a new faction in the management of otological disorders. Jack became the advocate for the canal wall-up surgery for chronic otitis media with cholesteatoma among a group of otolaryngologists performing surgery for this condition at the clinic.

Jack encouraged the clinic residents to learn to use an ear speculum without a speculum holder during surgery. As an adjunct to these concepts, he introduced modern surgical approaches to the management of facial nerve palsy and glomus tumors of the ear. Further, he introduced the middle cranial fossa and translabyrinthine approaches that made total facial nerve decompression possible.

On opening a middle ear for a consultant for what appeared to be otosclerosis, I found a facial nerve neuroma, the first such lesion on which Jack operated. During a search of the Mayo Clinic records to study acoustic



neuromas, I discovered facial nerve neuromas in the cerebellopontine angle that were previously undistinguished from other neuromas in the records. The ability to isolate and identify these lesions fostered in Jack an intense interest in facial nerve neuromas, and he amassed a large personal series of such cases, which became a career goal for him.

From this point on, Jack became interested in facial nerve neuromas and collected a large personal series, which became a career objective for him. Jack also had an interest in Eustachian tube function and especially the clinical management of an abnormally patent Eustachian tube. He pioneered the use of Teflon paste injection to treat the frequently disabling symptoms resulting from an abnormally patent Eustachian tube. In searching for a project for my master's degree, under Jack's supervision I sought to investigate the clinically desirable location for Teflon paste injection. In addition to finding this location, serendipity caused us to discover serous otitis media. This unanticipated finding led to concepts of understanding the etiology of serous otitis media. In addition, it provided a research study for another master's degree project by Carl Reiner.

Also during this time, Jack became interested in nervus intermedius neuralgia. He was able to pinpoint the clinical presentation of this difficult diagnosis and use his surgical skills to section the nervus intermedius, with relief of patients' pain.

The results of all these endeavors were a testimony to his intellectual curiosity, his knowledge of the medical literature, and his eagerness to help patients with newfound information. The need to satisfy his curiosity led to an understanding of the diseases of the ear and related structures and the surgical approaches to these disorders.

Through his friendship with Henry Williams, Jack developed a career-long ambition to study Ménière's disease. He hosted the first international symposium on Ménière's disease in 1967 at the Mayo Clinic, which attracted otologists from all around the world. On editing the recorded discussion from the proceedings of the meeting, he was impressed with the fact that Sir Terence Cawthorne spoke in perfect sentences; the extemporaneous remarks of the remainder of the discussants required considerable editing to create coherent sentences. It was at this meeting that Dr. Izhak Fick from South Africa described his pick procedure for Ménière's syndrome. This presentation led to the concept and eventual surgical procedure using the "Cody tack."

In the mid-1960s, Jack became involved with the Electronystagmography Study Club, the precursor group for the current American Neurotology Society. During the club's infancy, Jack was its secretary-treasurer. Through this association, he developed a lifelong friend-

ship with Wally Rubin, Cecil Hart, Nicholas Torok, and the other giants involved in the evolution of neurootology in the United States. In addition, he was able to garner the friendship worldwide of those interested in neurootology. They included Nils Gunnar Henriksson, Claus Claussen, Sir Terence Cawthorne, C.S. Hallpike, Jan Stahle, Martin Bergstedt, Jun Ishi Suzuki, and many more too numerous to name.

Toward the end of my residency and because of his influence on me, I asked Jack whether I could enter into a fellowship in otology and neurootology under his supervision. He was able to arrange through the Mayo Graduate School a one-year fellowship, the sole fellowship of this type at the Mayo Clinic. His interest in younger people was the beginning of Jack's involvement with a large number of postgraduate fellows while he was practicing with the Otologic Medical Group in Los Angeles and later in his own practice. He was also able to establish a vehicle whereby interested fellows could obtain a master's degree from the University of Southern California for the research performed during their fellowship.

During my fellowship, we were able to look at the results of electronystagmography in approximately 5,000 patients, some of whom ultimately showed no evidence of neurootological disease. This finding formed a basis for the understanding of normal values for electronystagmography as it was performed in our vestibular laboratory. This information began to fit with the information that was being generated around the world, as this form of vestibular evaluation was growing. During the fellowship year, Jack arranged for me to attend the Acoustic Neuroma Symposium held under the auspices of the Los Angeles Foundation of Otology. During that meeting in January 1968, which brought together neurosurgeons and otologists to discuss the cooperative treatment of acoustic tumors, I was recognized as the only physician in the world undergoing a formal neurootological fellowship. We flew to this meeting with the Mayo Clinic's chief of neurosurgery, who remained skeptical of the neurootological approach in spite of having Jack in his midst for nearly 4 years!

In September 1969, after completing my fellowship and 9 months after I left to begin practicing in New York, Jack left the Mayo Clinic to join the Otologic Medical Group and the Los Angeles Foundation of Otology. There he helped to establish the temporal bone laboratory. Along with the engineer Jack Urban, he assisted in the development of new tools for the technical management of otological problems. During this time, he befriended Dan Slotton, the artist who was rendering anatomically accurate drawings for teaching otological anatomy and surgery and the wonderful slides that were used to illustrate the surgery.

Also during this time, Jack started an electronystagmography course for physicians. Using the temporal bone laboratory, he established a course to teach neurosurgeons the use of the instruments and the surgical approaches used by the neurootologists for the surgical management of acoustic tumors and approaches to the posterior fossa. In conjunction with the neurosurgeon William Hitselberger, the retrolabyrinthine approach to the cerebellopontine angle was described. The approach was first described to treat the symptoms of trigeminal neuralgia. Other surgeons subsequently adopted this approach for vestibular nerve section and other procedures in this area, thus avoiding the need to enter through the inner ear.

All during this time, Jack was involved in many endeavors. His interest in Ménière's disease continued and, along with Hugh Powers, he envisioned an investigation the results of which showed that Ménière's was most likely a syndrome with many different causes or contributing factors. From these concepts of thyroid problems, hyperlipidemias, blood glucose problems, and allergy came the understanding that an identifiable cause might exist and that the disorder is more appropriately termed *Ménière's syndrome*. This led the way for others, such as James Spencer, Wally Rubin, and Jennifer Derebery, to expound on these medical causes of Ménière's syndrome, which was always believed to be a surgical disease.

In the mid-1970s, Jack struck off on his own in Los Angeles, developing his own clinic and center for training both clinical and research fellows. In this environment, he continued his areas of interest, including the rotary chair and the vestibular autorotation test. The investigation of surgical approaches to the treatment of tinnitus became an area of focus for him. He developed an allergy practice and became a fellow of the American Otolaryngologic Allergy Society. During this time, he also became the secretary of instruction of the American Academy of Otolaryngology.

In 1992, Jack assumed the editorial helm of the *Ear, Nose, and Throat Journal*, which had been floundering for many years in attempting to gain its place within the otolaryngological community. Once Jack became its editor and added his signature style and interests, the journal took off with his concept of excellent clinics, his pointed editorials, and the peer-reviewed articles of clinical otolaryngology from around the world. As evidenced by the increasing number of advertisers, the journal has gained preeminence for its value to practicing otolaryngologists.

In 1997, Jack became vice president of the western section of the Triologic Society. Despite his active participation in all the societies to which he belonged, he ascended to the presidency only of the Otosclerosis

Study Club. One could never explain why Jack had not gone further in other societies, and I believe he felt slighted when he was overlooked. However, his positive attitude never wavered in his commitment to these professional affiliations.

Given his extreme enthusiasm, unlimited energy, and genius at seeing things that others might overlook, Jack was undaunted by any turn of events. He was able to capitalize on every aspect of things that interested him. He formed a "collegium" for neurootology around the world. With each of the major meetings and frequently at his own expense, he would gather those of us who were interested and would invite fascinating, interested speakers. The speakers would discuss their research activities, be they clinical or basic science, all with a view to solving clinical problems.

Jack was also very outgoing. He enjoyed being with people, visiting them in their homes and places of work, and interacting with them. One had only to walk with him through the corridors of any major meeting place to be stopped every few steps by somebody whom he knew. He always remembered what was interesting about their last encounter, showing a continuing awareness of and interest in whatever was important to that person.

Jack had an earnest interest in making our societies representative of their member physicians. He was active in the state and county medical societies. In the mid-1970s, when the direction of the American Academy of Ophthalmology and Otolaryngology seemed to be incorrect, he became part of the group that looked into the academy's operation and was able to help to change it in spite of strong opposition from others less well informed. He continued his activism wherever he ascertained that constructive change was necessary.

He married his childhood sweetheart, Marlene, and was married to her for more than 50 years. Anyone who observed them knew that they were inseparable. They traveled together everywhere and welcomed multitudes of visitors to their home. When they were involved in meetings in the Los Angeles area, busloads of people were taken to their home to enjoy their generous hospitality. Jack affectionately referred to Marlene as "Blondie." They had one child, Marilyn, who, as you might have expected, became an audiologist.

In the world of neurootology, Jack is one of the giants, and his unique contribution to the understanding and surgical management of neurootological disorders will be sorely missed. He can also be considered a giant of otolaryngology as a result of his successful years at the helm of the *Ear, Nose, and Throat Journal*. In his role as editor, he succeeded in bringing cohesion to the world of otolaryngology and, despite the narrow area of the field in which he practiced, was able to keep up with all the other areas of the field, making the journal



a much-sought-after publication. The void left by Jack's absence is enormous.

Kenneth H. Brookler, M.D.

## IN MEMORY OF JACK

Jack and Marlene have been my close personal friends since Jack was a resident at the Mayo Clinic in his training. I've known him through all these years. He was a wonderful person and an outstanding physician and was very interested in his patients and in people in general.

My wife and I were privileged to spend many days in the Pulecs' home in Los Angeles when I went out there to do various and sundry things (teaching and otherwise). We miss him already, and we will always think about him in a special way because of the wonderful person, physician, and scientist that he was.

Best to you, Marlene. We are still with you and will always be with you.

Wallace Rubin, M.D.

## IN MEMORY OF DR. JACK L. PULEC

Dr. Jack L. Pulec died on December 19, 2003, at a resort in Utah, the victim of a fatal ski accident. Born in 1932 in Crete, NE, USA, Jack was an outstanding figure in modern clinical neurotology. He and his wife, Marlene Pulec, his constant companion and lifelong partner, were bright and generous hosts, and Jack was regarded worldwide as a focal point in modern neurotology for nearly four decades.

I became acquainted with Jack Pulec as early as 1969 when working in the famous neurotology "Barány School" with Prof. Dr. Niels Henriksson in Lund, Sweden. From 1964 to 1969, Jack worked in the field of neurotology at the Mayo Clinic in Rochester, NY. There he also organized special symposia on vertigo and Ménière's disease, which received worldwide attention. The international Neurotological and Equilibriometric Society (NES) had been founded as early as 1974, under the initiative and advice of the late NES member Prof. Dr. Manuel Tato of Buenos Aires. Even then, Tato made us aware that, especially in the field of neurootosurgery, the illustrious neurotological surgeon and scientist Jack Pulec of Los Angeles ought to be coaxed to attend our international neurootological meetings that brought together neurootologists from 48 nations. Ever since that time, Jack regularly stimulated

our activities and thoughts with respect to diagnostic workup and to entering new fields in the differential diagnosis and particularly in the treatment of such neurotological disorders as vertigo, dizziness, giddiness, tinnitus, hearing loss, and facial and trigeminal nerve disturbances.

On March 17, 1995, the NES (in which members represented 48 nations) honored Jack Pulec in a special pre-congress symposium during our annual meeting. Dr. Ken Brookler from New York was the honorer, and Jack Pulec the honoree. The theme of this day-long symposium was neurootosurgery. Many authors from many countries contributed to this homage by presenting special papers devoted to honoring the exceptional capacities and skills of our friend, Jack Pulec.

A few years later, during the Twenty-Third NES Congress on March 22, 1996, Dr. Jack L. Pulec was awarded the Tato-Claussen Award for his outstanding work both in the clinic and in general science with research, clinical examples, and publications in the field of neurotology. He has supported and furthered this field, especially with respect to neurotology, and has encouraged the development of advanced neurotological methods of therapy. From June 17 to June 20, 1999, as vice president of the NES, Jack Pulec hosted the Twenty-Sixth NES Congress at the Disneyland Hotel in Anaheim, CA. The themes for this congress, which had been developed and selected with input from Dr. Pulec, were neurootosurgery; tinnitus and vertigo; allergy and vertigo; modern neurootometric diagnostics (e.g., electro-nystagmography, craniocorpography, vestibular evoked potentials, Doppler ultrasonography, magnetic resonance imaging, and single-photon emission computed tomography); modern neurootological therapy (e.g., psycho-, physio-, and pharmacotherapy); and neurootological expertise. In describing the activities of our friend Jack Pulec, the themes that he had selected for the Twenty-Sixth NES Congress best portrayed what he was covering personally in the broad spectrum of investigations and therapies of disorders of the human cranial senses—which we nowadays call *neurotology*.

All around the world, Jack taught many courses for physicians and their staffs, with special emphasis on neurotology. For the Thirty-First NES Congress that took place in March 2004 in Bad Kissingen, Germany, Jack had agreed to present as part of the German-American Tinnitus Course a session titled "Surgery of the Eighth Nerve in Tinnitus." To our great regret, he was unable to be with us to make this presentation. The Members' Assembly of the Thirty-First NES Congress remembered and mourned for our outstanding member, Jack L. Pulec, by observing a minute's silence, after which I, as NES president, made a commemorative speech.

The personal experience of his vivid thinking, his discussions, and his exemplary publications, especially in the *Ear, Nose, and Throat Journal* (of which he was the editor-in-chief) will sustain a living memory of our friend, the neurootologist Jack L. Pulec, M.D.

Prof. Dr. Claus-Frenz Claussen

### A TRIBUTE TO MY FRIEND, COLLEAGUE, AND TEACHER

Dear Jack:

Where are you?

It seems just yesterday that I listened to the lecture of a Jack Pulec from the Mayo Clinic, speaking in clinical terms of complaints of balance and loss of hearing. His talks stimulated my interest in neurootology.

What followed was for me an introduction to and unique clinical insight into neurootological topics of chronic inflammatory ear disease, facial nerve paralysis, acoustic tumor, deep ear pain, cervical tinnitus, topodiagnostic testing for sensorineural hearing loss, vertigo, an introduction to electronystagmography, and the significance of allergy for neurootological complaints—always integrating clinical topics with the basic science of the underlying complaint. As a teacher, you had the ability both to listen and to speak to your audience with respect; it was always appreciated by all who attended your presentations. Your questions from the floor, when you were not presenting, were always insightful to the topic on the program and reflective of an outstanding clinical experience from which all of us learned.

The publications you wrote have been many in number, not only on clinical topics but in the form of tutorials and texts. Coupled with that was your editorship of the international *Ear, Nose, and Throat Journal* and the teaching of multiple courses on neurootological topics. You became one of our leaders in otology and neurootology at home and abroad.

What followed after my academic introduction to neurootology was a series of invitations to visit your operating room. There I observed a master at work. Your surgical technique was exceptional and was dem-

onstrated with humility. Everything was “easy” or “no big deal,” always sharing with a colleague invaluable “tips” for the ultimate benefit of your patient. Jack, you were one of the outstanding otological surgeons of the twentieth century. You not only were an outstanding technical surgeon but, in our discussions, you realized that to be an excellent surgeon required establishing an accurate diagnosis by integrating clinical history and physical examination with the underlying basic science of the presenting complaint. You had a keen intellect and wit that made discussions memorable.

The emerging field of tinnitology brought us closer together. Your support of the establishment of the *International Tinnitus Journal* and membership on its editorial board contributed to its success. All our discussions and your presentations and publications were constructive, positive contributions that benefited tinnitus patients and clinicians.

The Neurootological and Equilibrimetric Society (NES), an organization of which you were a member for more than 30 years, recognized and honored you in 1995 for your contributions and most recently at the Thirty-First Annual Meeting of the NES in Bad Kissingen on March 26, 2004.

I have been told that you had a ski accident. I can see you at the top of the mountain and start of the run, the glint in your eyes, full of expectation of the joy of the upcoming descent, the speed, the wind on your face, the joy of the descent with the movement of the skis. This was an expression of your life: You lived your life to the fullest in all aspects. All your friends appreciated your enthusiasm.

Your expressions of love and dedication to Marlene were recognized and respected by all. It extended to all of us who have been privileged to know you both.

Wherever you are, my friend, I thank you for your being yourself—honest, direct, constructive in your criticism, always yearning to learn what is new, and sharing information with your colleagues and friends for the benefit of your patients.

Both of us were fortunate to have known each other. Arlene and I celebrate your life and will remember you forever.

Abraham Shulman, M.D.