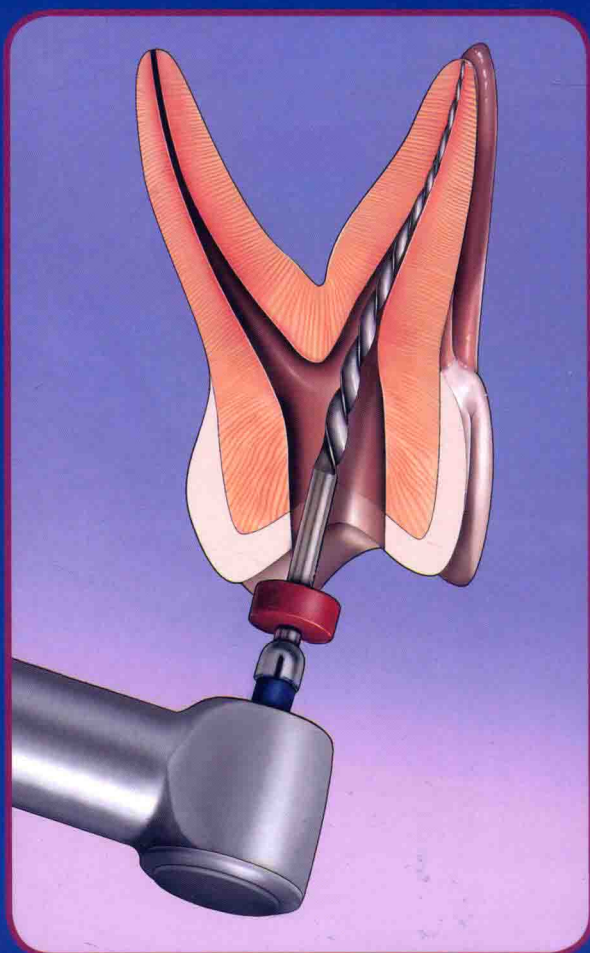


英文原版

Ingle's
Endodontics
Ingle 牙髓病学

第6版



Ingle
Bakland
Baumgartner



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PEOPLE'S MEDICAL PUBLISHING HOUSE

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Ingle's
ENDODONTICS 6



DEDICATION

The editors of Ingle's *ENDODONTICS* are proud to dedicate this edition to two of the most inspired and beloved teachers and practitioners of endodontics during our generation: Dr. Dudley H. Glick and Dr. Alfred L. Frank. True gentlemen, world famous, innovators, and the closest of friends. So close, Al and Dudley were often referred to as Al Glick and Dudley Frank. Both practiced in Beverly Hills, both with a bevy of famous patients, they could have been long time competitors. Instead, they were inseparable - Damon and Pythias - professionally, academically, and socially. Their wives, Ellie Glick and Teri Frank, are the very best of friends. Between them they have eight sons.

Both were born, raised and educated in Ohio; they served with honor and decoration in World War II and following the war Dudley and Al were both graduated in dentistry from the University of Southern California. As predoctoral dental students they were infamous for their unusual interest in endodontics, in a school famous for its restorative dentistry. Upon graduation they both started general practices in the Los Angeles area and were soon noted for their superb restorative dentistry. They joined the endodontic faculty at USC and when word of their endodontic skills spread, referrals started to pour in. After consulting a number of endodontic friends, they "took the leap," and announced they were limiting themselves to endodontics, among the first really fulltime endodontists in Southern California.

They were the last of the "self-trained" endodontists. Self trained, that is, by taking every postgraduate endodontic course and attending available meetings, and visiting professionally with the nation's best known endodontists; first on the West Coast and then nationwide.

Over the years they became the endodontist's endodontists. If we, ourselves, needed root canal treatment, we would travel cross country to have either Al or Dudley perform the treatment. There was never a fee! They were proud of the trust placed in them by other skilled professionals. In fact, dentists, physicians and the clergy were rarely charged in their offices. That was their strong belief in professional courtesy. And everyone else paid the same fee, whether you were Cary Grant, Nancy Regan, Mae West or Joe the plumber. Except teachers who received a reduced fee.

As they gained in renown, both Al and Dudley, were inundated with requests to speak to national and foreign audiences. No one made and retained so many devoted friends around the world. Their homes in Beverly Hills became a haven for the famous and students alike, sometimes for weeks at a time, as young people came to learn from the masters.

They never ceased their dedication to teaching, at USC, at UCLA, at Loma Linda, and at Cedars-Sinai Hospital. Both Dudley and Al were honored over and over by societies and universities alike.

They became famous locally, nationally internationally, yet remained the same modest, generous, considerate, literally lovable gentlemen they always were, brimming with integrity and honesty. This is what endeared them to those of us fortunate to have been their friends and disciples, students, employees and patients. We only wish the entire specialty profession had had the same opportunity.



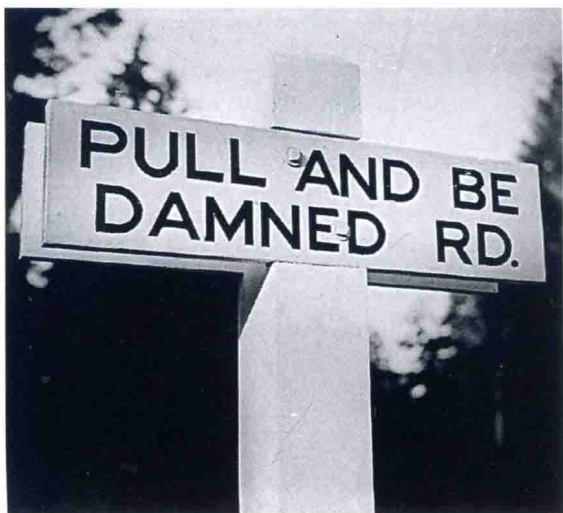
Dr. Dudley H. Glick



Dr. Alfred L. Frank



PREFACE TO THE FIRST EDITION OF ENDODONTICS 1965 “PULL AND BE DAMNED ROAD”



This book was begun at Snee-oosh Beach, a quiet retreat overlooking Puget Sound and the San Juan Islands. At Snee-oosh it is possible to escape from complex civilization, and concentrate on the job at hand—writing an endodontic text.

Hard by Snee-oosh is an old Indian trail called PULL AND BE DAMNED ROAD. One could hardly imagine a more fitting location while writing a text on the pulpless tooth than

nearby PULL AND BE DAMNED ROAD, for “Pull and be damned” could well be the motto of the dental profession from its inception.

PULL AND BE DAMNED ROAD goes down to the shores of Skagit Bay, an inside passage of the gentle Pacific leading ominously to DECEPTION PASS. This delusive inlet, which so easily deceived the early explorers, reminds us of how our profession has practiced self-deception over the years. Unfortunately, many pass into the “pull and be damned” deceptive phase of dental practice, never to return.

Inside DECEPTION PASS, however, lies HOPE ISLAND, our symbol of the future. HOPE we must have, coupled with resolve. HOPE that the future of dentistry will noticeably improve. HOPE that an enlightened profession will be guided by the concept of retention and rehabilitation of the dental apparatus. HOPE for the rejection of “oral amputation.”

In this new text we hope to inspire dentists to consider root canal treatment as an integral part of their practice. We discuss in great detail the operative aspects of endodontic therapy: cavity preparation, canal débridement and filling. We leave to others the detailed discussion of anti-infectives, local anesthesia, oral microbiology,

although these subjects are dealt with in this text, brief and to the point. We have spent, however, and unusual amount of space and time in developing the chapter on DIFFERENTIAL DIAGNOSIS OF ORAL AND PERIORAL PAIN, so necessary in arriving at a proper diagnosis. Diagnosis of pain is falling more and more in the province of endodontics. Proper diagnosis is the discipline that separates the really competent dentist from the merely mechanical. So a great deal of thought and talent has gone into developing the four background chapters on normal and pathologic pulp and periapical tissues.

Snee-oosh Beach is no Walden Pond, nor are we Thoreau for that matter. But we may learn from Walden. "Simplify, Simplify!" was Thoreau's text, and simplification we have taken to heart. We have removed the "mumbo-jumbo" from endodontic treatment, a significant factor that discouraged dentists from including endodontics in their practice.

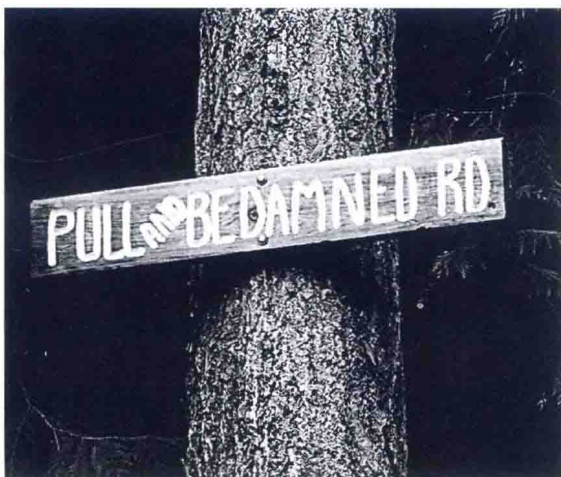
We have attempted to present the subject, not only in a simplified form, but in a systematic manner leading to success, pleasure and profit. We have attempted to remove the mystery and retain the basic core of the subject. We only hope this text succeeds in bringing some order out of the present chaos.

John I. Ingle
Seattle, Washington
1964



PREFACE

“PULL AND BE DAMNED ROAD” REVISITED



The original sign for Pull and be Damned Road has been pilfered so many times the authorities have had to place a new sign over 20 feet above the ground. (Courtesy of Dr. James Stephens.)

Over 40 years ago the preface to the first edition of *Endodontics* featured “Pull And Be Damned Road.” Nothing from the first edition left such a lasting impression as that saying. Even today, “old timers” come up to me at meetings to reminisce about this preface. They may not remember the details of endodontic cavity preparation or the chapter on pain first expressed in that edition. Those features have become an integral part of any endodontic practice. But they do remember “Pull and Be Damned Road.” And for good reason.

Forty years ago it was more prevalent to extract teeth than to save them by root canal therapy. A plea was made in this preface to trust endodontic treatment and to reverse this trend toward “oral amputation.” Gradually this became a fact, as endodontics spurred ahead and full dentures declined.

And this brings to mind an incident I long have savored. I was a speaker at the Hinman Dental Meeting in Atlanta. Joining me as a headliner was Dr. Will Menninger, head of the famous Menninger Psychiatric Clinic, then based in Topeka, Kansas. Dr. Menninger and his brother Karl were unquestionably the world’s most famous psychiatrists. Dr. Will had been a brigadier general in World War II, head of all the army’s psychiatrists. In 1948 he was the first psychiatrist on the cover of *TIME* magazine. It was an honor for me to be on the same program with him, and I eagerly attended his first lecture that preceded mine.

When I began my lecture, there was Dr. Menninger seated in the front row. I considered it professional courtesy on his part, but I did notice him taking notes.

The Hinman had a format wherein each lecturer would repeat his same lecture the next day. I didn't attend Dr. Menninger's second lecture but he attended mine. There he was again, seated in the front row. I was flattered beyond measure. At the end of the lecture I asked him why his sudden interest in endodontics. His reply was startling.

"Dr. Ingle," he said, "I was so impressed with your lecture, but I was also terribly embarrassed. On behalf of my profession I must apologize to you for my past behavior. When I think of how many patients I have recommended that they have their teeth extracted, I am appalled at the destruction I have caused. I had no idea. Now I find these teeth could have been saved and their abscesses healed. You have no idea how thankful I am to you, for directing me from my past behavior." Spoken like a psychiatrist!

We've come a long way since those days, a time of wholesale extractions. But we face a new challenge today; not wholesale extractions but **selective extractions**; for the sole purpose of placing an implant. Once again, dentists are urging patients to have teeth extracted, ignoring the fact that a healthy root is far preferable to a mechanical implant; less costly, less painful, less time consuming, and above all, more biological.

Now I'm not saying implants are unhealthy or less successful. What I am expressing is my concern that many salvable teeth are being sacrificed on the altar of insatiability. Back to pull and be damned. I'm not against implants! As a matter of fact, implant therapy is now being taught in a number of endodontic post doctoral programs. The thesis being, however, that teeth that cannot or should not be saved by endodontics may well be extracted and replaced by an implant rather than a bridge. And who better to place that implant than a well-trained endodontist who has just made that judgment?

The 6th edition of *Endodontics* is replete with new innovations and knowledge. Now, more than ever, it remains the "Bible of Endodontics" a name long applied by others to the previous editions.

I feel most comfortable as I "pass the torch" to the new editors, Leif Bakland and Craig Baumgartner. And I have a feeling the profession will come to its senses; veering off "Pull and Be Damned Road" and onto the "Road Best Traveled."

John I. Ingle
December 2007



ACKNOWLEDGEMENTS

Once again, I am particularly indebted to my wife Joyce and my son Geoffrey, who were so helpful in manuscript preparation and computer utilization. And speaking of computers, I am especially indebted to my computer “maven”, Lynda Arnett, who frequently spent hours “setting me straight and bailing me out” of trouble.

Being isolated in a city without a school of dentistry presents a problem in literature search. Dr. Robert Bravin of El Cajon CA, who has a nearly complete library of the *Journal of Endodontics*, was especially helpful in providing back issues of JOE. In addition, I received a great deal of help from the dental school library at the University of Southern California and Chief Librarian, Professor Frank Mason, as well as Librarian John Glueckert. And at the University of Washington, in the Department of Dental Health Sciences, Dr. Peter Milgrom, chairman, and Janessa M. Stream Graves, Research Coordinator, were most helpful with trends and statistics. I received similar help from Jill Cochran at the American Association of Endodontists.

Finally, I must acknowledge the advice and counseling I received from my dear friend the late Dr. Dudley Glick. But most of all, I acknowledge, with pride and admiration, my coeditors, Dr. Leif K. Bakland and Dr J. Craig Baumgartner. They have carried the major load in producing this edition of *Endodontics*, tireless hours, hundreds of emails, phone calls and faxes. I leave this text in the good hands of these skilled and highly knowledgeable individuals.

John I. Ingle

A textbook with the scope and format of this, the 6th edition of *Ingle's Endodontics*, would not be possible but for the tremendous effort by numerous individuals. Each contributor to this book devoted considerable time to research, preparation, and writing. To them I express much gratitude for their efforts, but also for putting up with my deadline prodding. My hope is that this collaborative effort makes them as proud as it makes me.

Editing manuscripts from around the world (Europe, Asia, and the Americas) would be impossible but for the expert secretarial support provided by Luci Denger and Shannon Kokanour in the Department of Endodontics at Loma Linda University. These capable coworkers skillfully completed in a timely fashion all the requests for changes, corrections, formatting and interactions with authors and publisher. To both Luci and Shannon – your contributions are most appreciated.

Anyone who takes on the job of editing a major text book knows that it will have an impact on the “day job” that each of us has. Were it not for an understanding dean, Dr. Charles Goodacre, and a cooperative department faculty, Drs. Mahmoud Torabinejad, Robert Handysides, and David Jaramillo, there would neither be the time nor the energy to complete this task. To them I say a heartfelt “Thank you.”

This grand textbook is not the result of any single individual, a fact that is true with regards to the editing as well as the writing and publishing. This was truly a team effort by John I. Ingle, J. Craig Baumgartner and me. We were in contact with each other, often daily, and I appreciate so many aspects of that interaction. John continues to teach me grammar and style, and Craig has a way of seeing through problems with humor and clarity. John and Craig, you have truly enriched my life.

Producing a textbook is more than writing – to reach you, the reader, it needs to be assembled, printed and distributed. My appreciation for making this possible goes to:

Brian Decker, who enthusiastically supported the notion of a textbook dedicated to the specialty of endodontics; Tricia Bindner, who served as production manager and who prodded when necessary and was always available for help and advice; and the support staff at BC Decker. Thank you all.

Looking back at the past several months of intense effort and the setting aside of other activities, it is clear to me that one person in my life made it possible, namely my wife Grete. Understanding when pressures mounted, re-assuring when doubts occurred, Grete unfailingly supported my efforts. Without her selfless partnership, my work could not have been completed on time. From my heart, thank you Grete.

Leif K. Bakland

I want to acknowledge and thank my dear wife Teddi, for her loving support of my academic endeavors. In addition, I especially want to thank John Ingle for the honor of being asked to participate in the editing of the 6th edition of *Ingle's Endodontics*. Also thanks to our co-editor, Leif Bakland, for his enthusiastic encouragement on virtually a daily basis during the long process of editing a text of this enormity. And finally a hearty thanks to all the contributors for their expertise and the tireless effort required to make this text the very best it can be.

J. Craig Baumgartner



FIGURE ACKNOWLEDGEMENTS

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- Figure 2: Ingle JI, PDQ Endodontics 2005, Figure 5-4
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- Figure 3: Modified from Ingle-Bakland, Endodontics; 2002
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- Figure 2: Ingle JI, Bakland L, Endodontics 5th ed.2002, p476
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- Figure 2: Ingle JI, PDQ Endodontics 2005, Figure 11-3 A,B
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