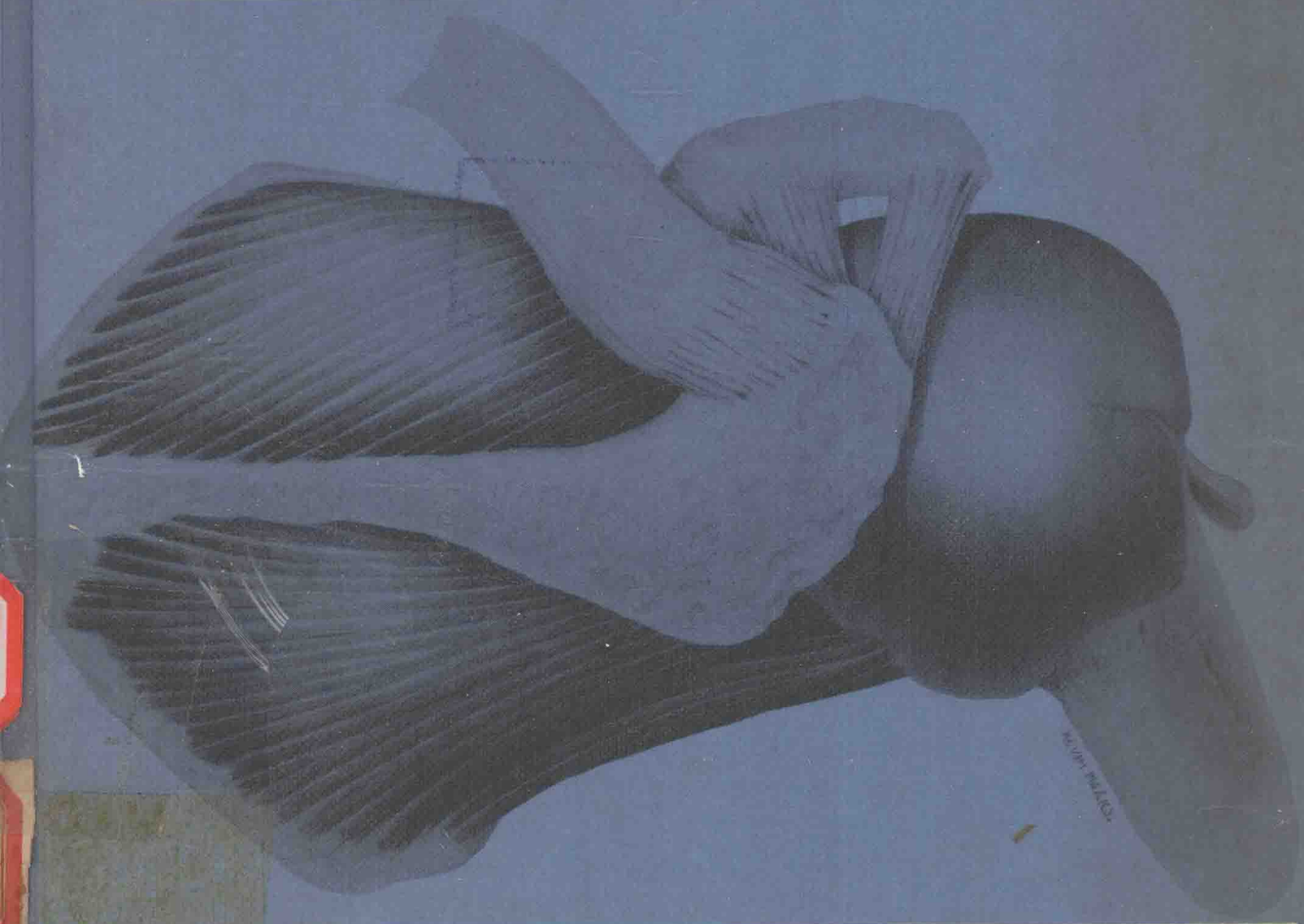
Shoulder Surgery

Edited by
Ian Bayley and Lipmann Kessel



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Foreword by Sir Henry Osmond-Clarke

With 199 Figures

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Foreword

It is interesting to observe the evolution of medical education over the years. The massive textbooks of the past have almost disappeared except as works of library reference. In their place we now find an increasing number of publications which explore the detail of particular specialities and sub-specialities. Once the young surgeon has acquired his basic knowledge of surgery in general (as it is now called), postgraduate education, whilst seeking to maintain the general scientific and humanistic principles of surgery, is forced to provide specialised reference works in a whole variety of fields, amongst which the postgraduate will choose his own future interest. This tendency emphasises the importance of the Conference on Surgery of the Shoulder organised by Professor Kessel and his colleagues. This first international gathering of surgeons and others in related disciplines who are interested in the disorders of the shoulder was self-funded under the aegis of the Institute of Orthopaedics and University of London, and it is to be hoped that other Universities, hospitals and medical foundations will give maximal financial and moral support for further ventures of this kind. This volume places on record the concepts and practices of those interested in the injury and disease of the shoulder joint, and thus becomes a reflection of our knowledge in this field in the second half of the twentieth century.

London, August 1981

Sir Henry Osmond-Clarke,
KCVO, CBE, FRCS, FRCSI

Preface

Some time early in 1980 when the idea was conceived of organising a conference on surgery of the shoulder, we were not aware that it was to become the Inaugural International conference, since none such had previously taken place. In the event, the response was almost overwhelming. 99% of those approached immediately agreed to participate, and only a few were unable to do so on account of previous commitments. We tried to gather together 'everybody who was anybody' in the world of shoulder surgery, and to a considerable extent we were successful beyond our most optimistic dreams.

Although we had half an idea that the proceedings of the Conference might be recorded, it was not until Springer made a forthright and unambiguous offer to publish, that our ambition became a reality.

The tranlation, editing and publication of conference proceedings presents unusual problems. There are both positive and negative qualities in such a publication. Its virtues lie in the breadth of ideas arising from the variety of approach from many different centres in the world, as well as a refreshing immediacy. Its deficiencies lie in the variation of styles in which the charm of the spoken word cannot always be conveyed into a written text. It is for this reason that the editors have inevitably been responsible for a certain amount of *gleichschaltung*, possibly to the discomfiture of some of the original authors, but hopefully easing the reader's task.

The publication attempts to be an up to date account of concepts and techniques concerned with most of the surgical problems of the shoulder. It does not pretend to be a comprehensive account of shoulder disorders. The choice of subject is, however, by no means arbitrary and is based on the conceptual developments of shoulder disorder during the past decade. For example, although the surgical anatomy and treatment of recurrent dislocation of the shoulder which so excited past generations is now a well understood routine problem, we have only recently begun to recognise that it is only one facet of a spectrum of shoulder instability. The analysis of the aetiology of shoulder pain until recently included in a ragbag diagnosis of 'bursitis', is now becoming increasingly refined and more accurately understood by the concept of the painful arc syndromes. Prosthetic replacement of the shoulder is so recently on the scene that it must inevitably find a place in this volume. The 'frozen shoulder' remains an enigma whose understanding can only be advanced by a full exchange of ideas from many different centres. Only those aspects of trauma to the shoulder girdle have been included when there is some contention regarding the traumatic anatomy and management: the standard range of fractures and dislocations are more properly treated in an appropriate textbook.

In 1961 F. Campbell Golding entitled his Makenzie-Davidson Memorial Lecture to the British Institute of Radiology: "The Shoulder — The Forgotten Joint". Hopefully the 1980 International Conference, followed by the publication of its proceedings, will do something to redress this balance. A fellowship of surgeons concerned with the shoulder has been created and preliminary arrangements for the next gathing in Toronto in 1983 is already underway.

London, August 1981 — Ian Bayley and Lipmann Kessel

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Codman – His Influence on the Development of Surgery of the Shoulder

Carter R. Rowe

This is a very happy occasion for me, and an honour which could be given to a number of the contributors to this symposium. I am very appreciative and grateful. Ian Bayley, Honorary Secretary of the Inaugural International Conference in the Surgery of the Shoulder, wrote to me stating that the Organising Comittee had decided to include a designated lecture as part of the conference, and that the name which came to mind was Codman. He also inquired who around Boston was old enough to remember Codman and yet young enough to speak for an hour! I replied that only a very few were left to meet these criteria. Perhaps, as I had had the privilege of meeting Dr Codman and as both of us had paced the halls of the same hospital, the Massachusetts General, for many, many years, and as I was still alive and able to speak for some part of an hour, by the kind process of elimination, it fell to me to give the lecture. However, there is one of our colleagues with us today, a student of Codman's life, who has written the preface to the reprint of Codman's book, *The Shoulder*, I speak of Dr Anthony DePalma.

May we first express our gratitude to Professor Lipmann Kessel for the concept of an international meeting of surgeons interested in the shoulder and to Mr Ian Bayley for his extraordinary organisational ability in gathering us up from all parts of the globe to meet together and discuss the many problems of the shoulder.

With the convening of our meeting it is appropriate that we honour, with an eponymous lecture, one who has influenced every surgeon interested in the shoulder and who single handed shocked the medical profession out of the nineteenth century and into the twentieth; from the time-honoured custom of being satisfied with one's unchallenged surgical results to a new idea of follow-up evaluation in which the surgeon and the hospital must account for their results.

The choice of Dr Codman by Professor Kessel and his committee is timely and shows keen insight. Although many surgeons have contributed to surgery of the shoulder, no investigator has revealed the shoulder in its entirety as has Codman. My instruction concerning this lecture was "to deal with Codman himself– and his influence on the development of surgery of the shoulder". This assignment has been made quite easy, for few authors have revealed themselves as clearly and completely as Codman has in his classic book, *The Shoulder*.

One has only to read even a portion of his book to appreciate the uniqueness of Ernest Amory Codman. The reader will quickly realise that he has been introduced to a man of intellect, courage, conviction, controversy and irrepressible honesty, in fact at times too much honesty for his own good. Codman, who stood 6 feet 2 inches, a true Bostonian "carved from stubborn New England granite", was born on the 30th of December 1869 and died on the 23rd of November 1940. He graduated from Harvard College, where he was, as he stated, "a conventional enough Boston-Harvard boy", and entered Harvard Medical School in 1891 at the age of 22. For his third year, he visited various clinics in London, Paris, Berlin, Vienna and Cairo, an experience which enabled him to pass his third-year examinations and obtain his medical degree. His professional life was spent fighting for an idea, for necessary changes in the practice of medicine of his day, and in revealing the problems of the shoulder to the medical profession.

Students of Codman's life and works will list three diverse contributions to medicine.

The first was the End-Result Idea, which he described as "merely the common sense notion, that every hospital should follow every patient it treats, long enough to determine whether or not the treatment has been successful, and then to inquire, 'If not, why not?', with a view of preventing failures in the future". This was an

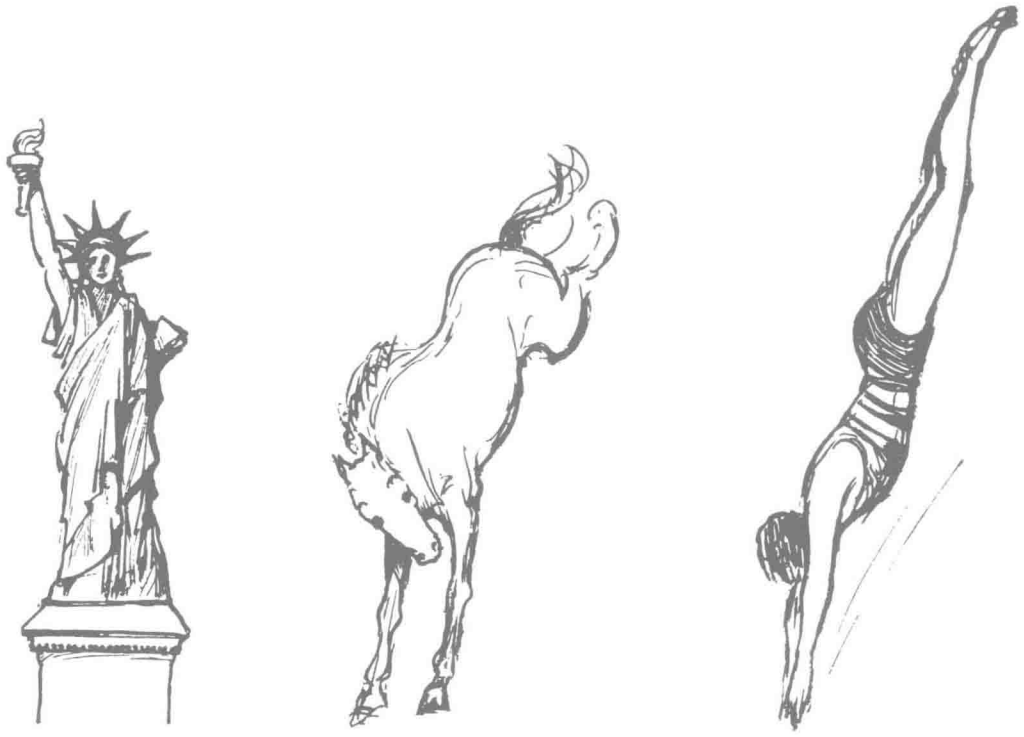

Fig. 1. Sketches by Dr Codman's cousin Lady Carter and Mr Philip Hale add to the individuality of *The Shoulder*

entirely new idea, and a rather electrifying one at that: how could an eminent surgeon in his right mind question his own results or indeed those of another surgeon? This was heresy, yet, as we know, it has become the accepted and unquestioned basis for clinical practice and research today.

The second major accomplishment was the establishment of the Registry of Bone Sarcoma, which was the first step doctors had taken to classify, evaluate, and follow-up the results of treatment of bone sarcoma. This set the stage, we might say, for the study of all tumours.

His third legacy was the publication of his book, *The Shoulder,* which was the first book limited to the shoulder and one in which one finds, in addition to its scientific content, the author's philosophy of life, his professional and social views, his hobbies—a book which every medical student and every surgeon interested in the shoulder should read, and reread (Fig. 1). In the author's words in the preface of his book—and this is very revealing of Codman:

> Let him try his sense of humor, heavy as it may be, let him ride his hobbies, relate to his favorite anecdotes, tell his life history, or otherwise endeavor to please himself. Despite these amusements if you must, but do not forget that they are normal pleasures of the average man, especially if he is over sixty. No one is obliged to read a preface, but in it the author should introduce himself to the reader and give him a glimpse of his own personality, amusements, and intellectual processes.

What a delightful introduction, with a touch of fantasy and a sprinkling of egoism!

Although I had seen Dr Codman from afar as a student, I first met him when I was an orthopaedic resident at the Massachusetts General Hospital in 1937. He had been called in to see a patient with osteosarcoma of the shoulder and it was my lot to present the patient to Dr Codman. I remember him as a quiet, gentle person, with steady, penetrating eyes. One quickly sensed integrity, intelligence, and confidence. His faithful Irish setter always accompanied him when he visited the hospital, settling down quietly in the corner of the patient's room while he interviewed and examined the patient. Dr Codman had a good sense of humour and a nimbleness of mind, much as did Sir Robert Jones, and enjoyed putting it to use. Henry Marble, one of our pioneer hand surgeons, tells the story that early in his career when he assisted Dr Codman he received a message one day that Dr Codman wished to see him at noon of the coming Wednesday, "to pick a bone with you".

Knowing that Dr Codman was a very exacting person, he wondered what had gone wrong? What had he done, or had not done correctly? At noon on the Wednesday, Henry appeared at Dr Codman's office, rather worried and showing it. Dr Codman's secretary asked Henry to be seated, indicating that Dr Codman would see him in a few minutes. Soon she reappeared and ushered Henry into Dr Codman's office, where, in the centre of the room, a table was set, and two plump partridges, freshly cooked, were ready for lunch. "Henry, I shot these birds a few days ago, and thought you would enjoy picking a bone with me today". "That", Henry added with a smile, "was a very enjoyable bird!" Sir Harry Platt remembers Dr Codman, "He was somewhat eccentric, but a very interesting person — he did indeed leave us something".

I am certain that the majority of those of us in this room have read parts of or all of his book, *The Shoulder,* published in 1934 by Thomas Todd, Boston. It was out of print for many years, but has been republished by G. Miller & Co., Medical Publishers, Brooklyn, New York, with an excellent introduction by Dr Anthony DePalma.

Codman actually became interested in the shoulder when he spent his third year at Medical School travelling in Europe. "It was in Vienna", he wrote, "that my attention was first attracted to the subdeltoid bursa, because it was mentioned in a little book by Dr. E. Albert in 1893. I had never heard the bursa spoken of at home by my teachers." After completing his second year of surgical houseship at the MGH, he became an Assistant in Anatomy at Harvard Medical School, where he had the opportunity to dissect the subacromial bursa and study its pathology. Although the shoulder interested him very much, his primary interest, at that time, was his End-Result Idea. His work on the shoulder would have to wait. Referring to the medical practice of his day, he explained, "I am not a reformer on a principle, but merely because I am naturally disgusted with humbug, hypocrisy, smugness and cupidity." He sought to bring surgeons to attest to their operative results, and we will touch on this only to reveal Dr Codman in action.

A classic cartoon (Fig. 2) displayed at the closing of a meeting at which he had presided on Hospital Efficiency at the Boston Medical Library, January 6, 1915 caused quite an uproar. It shows an ostrich, representing the rich Back Bay

Fig. 2. The Back Bay Golden Goose

patient, with her head in the sand, devouring humbug and kicking out golden eggs to the professors. President Lowell of Harvard stands on the Cambridge Bridge, wondering if the professors could support themselves on their salaries, without the golden eggs. On the right, the Board of Trustees of the MGH is deliberating whether the Back Bay ostrich actually would continue kicking out her golden eggs if she knew by the End-Result System how many mistakes the professors were making. This cartoon jolted the local medical profession and resulted in his temporary separation from the Massachusetts General Hospital and the Massachusetts Medical Society and in the founding of his own hospital on Beacon Hill to demonstrate the effectiveness of his follow-up system. Through the freedom of his own hospital, he continued his fight for the End-Result System, which actually played a part in initiating the formation of the American College of Surgeons in 1913, but that would require another chapter in itself.

With his absence from Boston during World War One Dr Codman's hospital fell into financial difficulties and had to be closed. As he was in good graces again at the MGH, he accepted a special assignment on the shoulder which, in time, resulted in the publication of *The Shoulder* in 1934.

What were Codman's specific contributions on the shoulder, and what has been his influence on the development of shoulder surgery since then? When one mentions Codman, or his book, the subacromial bursa first comes to mind. This part of the body had received little attention before Codman became interested in it, studied its anatomy, and researched its clinical problems.

The painful bursa was Codman's only lead to account for the many puzzling problems under the acromion. The first section of this symposium is

concerned specifically with the "painful arc" syndrome of the shoulder, the second with ruptures of the rotator cuff, and the third with recurrent instability of the shoulder. Each of these sections contributes in obvious and hidden ways to what Codman was most concerned with: the painful subacromial area. It is quite clear that this concern continues to challenge orthopaedic surgeons today.

Codman demonstrated in 1902 that calcific deposits, another major cause of shoulder pain and disability, were located in the substance of the rotator cuff rather than in the subacromial bursa and that by careful atraumatic surgery the deposits could be removed with complete relief to the patient. He also pointed out that absorption of the calcium left a weak area in the tendon which predisposed to its eventual rupture. When the calcium was surgically removed, the tendon should be repaired at the same time. His first publication on removal of calcium from the tendon was in 1904.

Dr Paul Norton recalls that in the early 1930s, when he was in charge of teaching third year medical students orthopaedics at the MGH, he frequently asked Dr Codman to lecture to them on the shoulder. Dr Norton wrote:

> His lectures were always pertinent, and he drew upon a wealth of personal observations to support the points of discussion. These lectures often resulted in quasi-heated debates between Dr Codman and myself, because for several years I had been needling calcium deposits in the rotator cuff. Old E.A. simply would have no part of it.

Dr Codman later gave Paul a copy of his book inscribed "Dear Doctor Norton, may your interest in sore shoulders continue, until you can correct every error in this book — Sincerely, E.A. Codman". I can see the twinkle in Dr Codman's eye when he wrote this.

His chapter on adhesive capsulitis, or "frozen shoulder", is indeed ahead of its time and should be read by every enthusiastic orthopaedic resident or young orthopaedic surgeon, who, it seems, must learn through experience. Dr Codman reveals his learning processes over the years and admits that he went through stages of forceful manipulations under anaesthesia, of opening the bursal areas surgically, and breaking up the adhesions. An interesting observation was made by him on one occasion when operating on a patient with a frozen shoulder, he inserted his finger into the bursal area and upon manipulation of the shoulder felt the tearing of the subscapularis muscle. Following this experience, he advised gradual rather than forceful stretching of the adhesions and wrote "I do not always give an anesthetic and break up the adhesions, as I used to do many years ago, nor do I open the bursa and break them up with my fingers, as I did for a period". We have all had to learn that the idiopathic "frozen shoulder" is a self-limited condition and that the majority of patients will become pain-free with full range of motion within a year or 18 months. Our problem has been: how can we shorten the painful period effectively and atraumatically? This syndrome remains a puzzling one and another challenge to our therapeutic approaches. For years Dr Julius Neviaser studied and wrote on this subject in America and his experience would have made a valuable contribution to the section on frozen shoulder.

Ruptures of the rotator cuff, primarily the supraspinatus tendon, were another consuming interest of Codman. He demonstrated that this lesion could be easily diagnosed and is credited with being the first surgeon to report the beneficial results of surgical repair of the rotator cuff in his paper "Complete Rupturing of the Supraspinatus Tendon. Operative Treatment with Report of Successful Cases" (*Boston Medical and Surgical Journal,* May 1911). For years, Dr Codman tried to convince his surgical colleagues that one of the principal causes of the lame shoulder was rupture of the rotator cuff. In some frustration, he wrote:

> A dog may bark up a tree for a long time before anyone comes to see what is up in the branches. For 20 years I bayed, but not continuously, about the importance of rupture of the supraspinatus and I owe a debt to Dr Philip Wilson, the first prominent surgeon, to take time enough to study the evidence that there was something at which to bay.

Dr Codman introduced the transacromial sabre approach to the rotator cuff and suggested that the greater tuberosity could be sacrificed to serve as a fresh bony attachment for the rotator cuff. He agreed with Dr Wilson that fascia could be used to reinforce complete ruptures. These principles have been researched and perfected by the late Harrison McLaughlin of New York, by the present very effective use of fascia reconstruction by Dr James Bateman of Toronto, and by the ingenious techniques of the contributors to the section on rotator cuff ruptures. Codman also researched the microcirculation of the rotator cuff, particularly of the "critical zone" of the tendon, which has lead to further investigation and recent contributions by Dr Ian McNab of Toronto, Canada.