



# **FRACTURES AND JOINT INJURIES**

**BY**

**SIR REGINALD WATSON-JONES**

**B.Sc., M.Ch.Orth., F.R.C.S.**

Director of Orthopædic and Accident Service, The London Hospital  
Surgeon to the Robert Jones and Agnes Hunt Orthopædic Hospital  
Civilian Consultant in Orthopædic Surgery to the Royal Air Force  
Honorary Director of Rehabilitation, Miners' Welfare Commission  
Member of National Advisory Council on Resettlement of the Disabled  
Member of Council of the Royal College of Surgeons of England  
Member of Council and Chairman of the Fracture and Accident

Services Committee of the British Orthopædic Association

Hunterian Professor, Royal College of Surgeons

Formerly Honorary Lecturer in War Surgery, British Postgraduate  
Medical School, Honorary Orthopædic Surgeon, Liverpool Royal  
Infirmary, Lecturer in Clinical Orthopædic Surgery and in Orthopædic  
Pathology, Liverpool University

## **VOLUME II**

**Third Edition**

*Second Reprint*

A WILLIAM WOOD BOOK  
**THE WILLIAMS AND WILKINS COMPANY**  
BALTIMORE

1946

Printed in Great Britain by T. and A. CONSTABLE LTD,  
at the University Press, Edinburgh

**FRACTURES**  
**AND**  
**JOINT INJURIES**

*First Edition . . . . . January 1940*  
*Second Edition . . . . . January 1941*  
*Second Edition Reprinted . . . May 1941*  
*Third Edition, Volume I . . . July 1943*  
       "      "      "      *II . . . October 1943*  
*Third Edition Reprinted . . . October 1944*  
       "      "      "      "      *March 1946*

# CONTENTS FOR VOLUME II

## PART IV

### INJURIES OF THE UPPER LIMB

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | PAGES   |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| CHAPTER XXII INJURIES OF THE SHOULDER . . . . .                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 411-462 |
| Supraspinatus tendon; tendinitis 411; calcification 413; rupture 414; incomplete rupture 417. Excision of the acromion process 418. Rupture of biceps tendon 420. Periarthritis and adhesions of shoulder 421. Fracture of clavicle 424. Dislocation of sterno-clavicular joint 428. Dislocation of acromio-clavicular joint 430. Fracture of scapula 435. Fracture of great tuberosity 436. Fracture of neck of humerus 438. Recurrent dislocation of shoulder 453. Fracture-dislocation of shoulder 459. |         |
| CHAPTER XXIII INJURIES OF THE ARM . . . . .                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 463-466 |
| Fractures of shaft of humerus 463. Fractures with slow union 466. Ununited fractures 466.                                                                                                                                                                                                                                                                                                                                                                                                                  |         |
| CHAPTER XXIV INJURIES OF THE ELBOW . . . . .                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 467-511 |
| Traumatic synovitis 468. Tennis elbow 468. Fracture of head of radius 470. Fracture of capitellum 475. Fracture of olecranon 478. Supracondylar fracture 482. Intercondylar T fracture 490. Epiphyseal injuries 492; external condyle epiphysis 495; internal epicondyle epiphysis 499; upper radial epiphysis 503. Dislocation of elbow joint 504. Fracture-dislocation of elbow 507; "baby-car fracture-dislocation" 510.                                                                                |         |
| CHAPTER XXV INJURIES OF THE FOREARM . . . . .                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 512-535 |
| Fracture of shafts of radius and ulna 512. Monteggia fracture-dislocation 520; summary of treatment of Monteggia fracture 526; fracture of shaft of radius with inferior radio-ulnar dislocation 531.                                                                                                                                                                                                                                                                                                      |         |
| CHAPTER XXVI INJURIES OF THE WRIST . . . . .                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 536-577 |
| Sprains and tenosynovitis 536. Tendovaginitis stenisans 537. Colles' fracture 538. Fracture of radial styloid process 545. Posterior marginal fracture 546. Spontaneous rupture of extensor pollicis longus 548. Anterior marginal fracture 549. Lower radial epiphysis—displacement 551; crushing and premature fusion 552. Fracture of carpal scaphoid 554. Chip fracture of triquetral 566. Dislocation of lunate 568; perilunar dislocations 571; unusual dislocations 575.                            |         |
| CHAPTER XXVII INJURIES OF FINGERS AND HAND . . . . .                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 578-602 |
| Principles of treatment 578. Fracture of metacarpals 581. Metacarpophalangeal sprains and dislocations 587. Fracture of proximal phalanges 589. Interphalangeal sprains and dislocations 591; Mallet finger 592. Trigger finger 596. Ring avulsion of finger 597. Burns of fingers and hand 597. Treatment of stiff and contracted fingers 599.                                                                                                                                                            |         |

## PART V

## INJURIES OF THE LOWER LIMB

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | PAGES   |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| CHAPTER XXVIII INJURIES OF THE HIP . . . . .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 605-662 |
| <p>Avulsion of epiphyses 605. Displaced upper femoral epiphysis 606. Traumatic dislocation 615. Fracture-dislocation of hip 624. Fracture of neck of femur 628; abduction fractures 630; adduction fractures 632; nailing operations 633; complications of nailing 646; avascular necrosis 653. Basal fractures 655. Un-united fractures 656.</p>                                                                                                                                                                                                                                                                                                              |         |
| CHAPTER XXIX INJURIES OF THE THIGH . . . . .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 663-699 |
| <p>Subtrochanteric fracture 663; well-leg traction 668. Fracture of shaft of femur 672; fixed traction 672; balanced traction 678; Braun's splint 680; Russell traction 681; open reduction 683. Open and infected fractures 684. Mal-united fractures 688. Supracondylar fractures 689. Fracture of condyles 695. Displacement of lower femoral epiphysis 697.</p>                                                                                                                                                                                                                                                                                            |         |
| CHAPTER XXX INJURIES OF THE KNEE . . . . .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 700-747 |
| <p>Traumatic synovitis and hæmarthrosis 702. Injuries of ligaments 702; lateral ligaments 703; cruciate ligaments 706; tibial spine fracture 708. Dislocation of knee 709. Injuries of semilunar cartilages 712; technique of operation 717; multiple tears 719. Loose bodies in knee 722. Rupture of quadriceps apparatus 722; avulsion of quadriceps 724; fracture of patella 724; excision of patella 727; avulsion of ligamentum patellæ 730; fracture of tibial tubercle 730. Dislocation of patella 735. Fracture of tibial tuberosity 737. Arthroplasty and arthrodesis 747.</p>                                                                        |         |
| CHAPTER XXXI INJURIES OF THE LEG . . . . .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 748-764 |
| <p>Fracture of tibia and fibula 748. Continuous traction 749; disadvantages 754. Operative reduction and internal fixation 755. Slow union 758. Open and infected fractures 760. Un-united fractures 764.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                  |         |
| CHAPTER XXXII INJURIES OF THE ANKLE . . . . .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 765-804 |
| <p>Sprain of ankle 765. Momentary dislocation of ankle 766. Recurrent dislocation of ankle 769. Dislocation of peroneal tendons 772. Rupture of internal ligament of ankle 774. Classification of fracture-dislocations 775; external rotation fractures 778; abduction fractures 784; diastasis of inferior tibio-fibular joint 784; adduction fractures 787. Un-united fracture of internal malleolus and periosteal interposition 788. Open fracture-dislocations 790. Vertical compression injuries 794. Mal-united fracture-dislocations 797. Arthrodesis of ankle 798. Lower epiphysis of tibia—displacement 803; crushing and premature fusion 804.</p> |         |
| CHAPTER XXXIII INJURIES OF THE FOOT . . . . .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 805-849 |
| <p>Adhesions 805. Fracture of calcaneus 806; treatment 816; summary 821. Classification of dislocations of talus 821. Subtaloid dislocation 826. Total dislocation of talus 828. Fracture of neck of talus 829. Fracture of neck of talus with subtaloid dislocation 832. Fracture of neck of talus with subtaloid dislocation and dislocation of the body 832; with un-united fracture of internal malleolus 835. Avascular necrosis 835. Arthrodesis 840; after astragalectomy 840. Fracture-dislocation of navicular 844. Mid-tarsal fracture-dislocation 844. Fracture of metatarsals 846. Fracture of toes 847.</p>                                       |         |

PART VI

REHABILITATION, ORGANISATION, SUMMARY

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | PAGES   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|
| CHAPTER XXXIV REHABILITATION . . . . .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 853-872 |
| General principles 853. Psychological treatment 855. Social service 857. Muscle redevelopment and joint mobilisation 858. Recreational exercise 862. Occupational therapy 862. Massage and electrotherapy 862. Teaching to walk, run and jump 864. Rehabilitation after amputation 867. Rehabilitation in hospital wards 868; in special centres 870.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |         |
| CHAPTER XXXV ORGANISATION OF AN ACCIDENT SERVICE .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 873-882 |
| Importance of organisation 874. Value of organisation in R.A.F. orthopædic service 874. Organised fracture service 875. Organised accident service 879.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |         |
| CHAPTER XXXVI UNUSUAL AND INSTRUCTIVE CASES . . .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 883-916 |
| Traumatic spondylolisthesis 883. Un-united Colles' fracture 884. Arthroplasty of elbow for mal-united fracture 886; inclusion of external epicondyle epiphysis in elbow joint 887; unusual fracture-dislocation of elbow joint 888. Replacement of humerus by transplantation of fibula 890; replacement of radius by radio-ulnar fusion 890. Congenital dislocation of head of radius 892. Intramedullary Kirschner wires for shaft fractures 893. Radiographic diagnosis of rotational displacement of shaft fractures 894; radiographic diagnosis of crack fractures 895; dislocation of wrist 896; carpo-metacarpal dislocation 896; forward dislocation of carpo-metacarpal joint 897. Isolated dislocation of base of fifth metacarpal 898. Bipartite carpal scaphoid bone 899. Unusual fracture-dislocation of radius 900. Supracondylar fracture of humerus with forward displacement 902. Recurrent dislocation of hip joint 904. Multiple lesions of semilunar cartilage 907. Vertical dislocation of patella with interlocked osteophytes 908; dangers of treating fracture of patella with wire 909; mal-united fracture of patella 910; compound dislocation of knee joint 911. Internal fixation of fractures gone crazy 912. Bullet and aircraft-fragment wound—severed femoral artery 913. Subtaloid fracture-dislocation 914; unusual fracture neck of talus with subtaloid dislocation 914. Dislocation of ankle joint concealed even after X-ray in inversion 915. Fracture of calcaneus, mid-tarsal dislocation, and paralysis of the plantar nerves 916. |         |
| CHAPTER XXXVII HIGHLIGHTS OF FRACTURE TREATMENT .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 917-923 |
| Radiographic diagnosis 917. General principles 917. Upper limb injuries 919. Lower limb injuries 921. Spinal injuries 923. Rehabilitation 923.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |         |
| INDEX OF AUTHORS . . . . .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 924-928 |
| GENERAL INDEX . . . . .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 929-960 |

















