Andry, who was born in Lyon in 1658, first became a priest and then a theological teacher in Paris. In 1690 he commenced medical studies in Reims where he graduated and in 1697 he received a doctorate in Paris, ultimately becoming Dean of the Medical Faculty. In 1700 he wrote *De la génération des vers* . . . , an important work on the recognition and treatment of parasites. Sadly much energy was dissipated in lobbying fiercely for the superiority of physicians over surgeons. He opposed the King's first surgeon, G. Maréchal, for creating five surgical demonstratorships and had them revoked in a scheme to suppress all teaching by surgeons and to stop lithotomy except with physicians present.

His most scurrilous campaign was launched at J.-L. Petit, the respected Director of the Academy of Surgery who invented the screw tourniquet and was first to open an infected mastoid and to describe osteomalacia. Andry officially approved Petit's *Les maladies des os* of 1705 but then attacked the second edition of 1723 in a series of pamphlets, achieving supreme absurdity in denying the existence of closed rupture of the tendo achilles. In reality Petit's book on the diseases and injuries of bones and joints was the first comprehensive orthopaedic textbook and, paradoxically, more profound than Andry's lightweight contribution for parents. However Petit did not devise the triumphant neologism 'ortho-paedia'.

JOHN R. KIRKUP

Telling the bones

"The old order changeth, yielding place to the new."

Alfred Lord Tennyson

Percival Pott died in 1788, yet his name lives on, not only as an eponym for spinal tuberculosis, but also as a rudimentary classification of ankle fractures. Not so long ago, 'Pott's 1, 2 and 3' fractures were part of the common parlance of orthopaedics, though there was little unanimity, even among the *cognoscenti*, over the exact meaning of these terms.

Current terminology still employs 'name-grade-n' or 'name-type-x' descriptive formulations. There are perhaps 20 classifications of olecranon fractures (Rush 1955; Knight 1957; Van der Kloot 1964; Weber 1965; Keon-Cohen 1966; Adler, Fay and Macansland 1962; London 1967; Aldredge and Gregory 1969; Bakalim and Wilpula 1971; Colton 1973; Delyannis 1973; Eppwright and Wilkins 1975; Scharplatz and Allgöwer 1975; Newell 1975; Wadsworth 1976; Wilson 1976; Kiviluoto and Santavirta 1978; Horne and Tanzer 1981). All areas of the body vulnerable to skeletal injury bristle with multiple categorisations of fracture patterns. Is the fracture in Figure 1 a Judet type 3, a Riseborough and Radin type 2, a SOFCOT type 4, a T-intercondylar or a Y-intercondylar injury? It is all of them!

Why not have a system which means the same to everyone, an 'Esperanto' for fractures? Some 10 years

ago, Professor Maurice Müller of Berne, having consulted widely with his colleagues within and outside the AO group, set out to devise a system of codification of fractures which would satisfy a number of criteria:

- it had to be logical and consistent,
- it ought to reflect the severity of the injury,
- it should be relatively easy to commit to memory, at least conceptually, and
- it had to be internationally comprehensible, irrespective of the native tongue of the user.

Lastly, it had to be compatible with the techniques of computer data acquisition and processing.

Fig. 1

Though few would have argued with the desirability of such laudable goals, even fewer would have rated highly his chances of success, yet this classification is now complete for long bone fractures (Müller, Nazarian, Koch and Schatzker 1990: see page 527) and well on its way to accommodating all the bones of the body.

C. L. Colton, FRCS, FRCS Ed, Consultant Orthopaedic Surgeon
Department of Fracture & Orthopaedic Surgery, University Hospital,
Queen's Medical Centre, Nottingham NG7 2UH, England.

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Each long bone, or pair of bones (as in the forearm or lower leg), is allocated a numerical code:

humerus 1
radius/ulna 2
femur 3
tibia/fibula 4.

The next level of subdivision relates to the bone's three main zones:

proximal metaphyseal/articular 1
diaphyseal 2
distal metaphyseal/articular 3

– the malleoli are an exception and have the zone code 4.

So, a 1.3 is a humeral fracture in the distal metaphyseal/articular zone.

Diaphyseal fractures are graded A, B or C in order of increasing severity, each pattern being precisely described for a given anatomical location. Thus, a 3.2.B represents a fracture of the femur (3), in the diaphysis (2) with a third fragment (B) as shown in Figure 2.

Fig. 2

Fig. 3

In the metaphyseal/articular zones (1 and 3), A, B and C denote respectively extra-articular, unicondylar and bicondylar injuries (Fig. 3). This alphabetical categorisation reflects the progressive complexity of the fractures and is clearly defined for each end of each long bone. A 4.1.B is therefore a fracture of the proximal tibia of the unicondylar type.

Further levels of subdivision are available for increasingly detailed morphological description. Two additional levels give a 5 digit code, offering very precise categorisation of any long bone fracture as shown in Figure 4.

1 = Humerus

1 = Proximal metaphysis

B = Extra-articular, bifocal

3 = With dislocation

2 = Vertical cervical fracture
+ greater tuberosity
+ ant-med dislocation

11.B.3.2

Fig. 4

How much better to be able to compare different methods of treatment of 4.1.B.3 fractures than to try to work out if it is valid to compare the results of operating on Schatzker and McBroom type 5 tibial head fractures with the conservative treatment of Hohl and Luck type III tibial plateau injuries. A 4.1.B.3 is a 4.1.B.3 in any language, and in anybody's computer.

Parallel systems for pelvic/acetabular fractures and for spinal injuries are receiving their final polish. Similar schemes to code associated soft-tissue injuries, both open and closed, as well advanced and one can look forward to the day when surgical journals take the logical step of requiring authors to analyse their data on the basis of this system. There should, of course, be no embargo on the parallel use of other classifications alongside the universal one, but the simplicity, and consistency of the Müller classification may soon render redundant such duplication of effort.

Perhaps the day is near when surgeons will speak, or at least read, a lingua franca of injury classification. The next task is to devise a code of outcome and one could then foresee the era (albeit somewhat distant) when the definition of the injury and the description of the functional outcome would both be comparable from paper to paper. Then we might really begin to know how to treat fractures.

C. L. COLTON

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