OSTEOARTHRITIS OF A BRONZE-AGE PELVIC SKELETON

With some notes on modern treatment and aetiology

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BONES of a skeleton exhibited in The Pitt-Rivers Museum in Dorset, showing the effects of pelvic arthritis found in the Romano-British Village of Rotherley, together with the opinion given by Mr Arbuthnot Lane in 1886, are described in this note.

Figure 1 shows the left side of the pelvis and the right and left femur of Celtic skeleton No. 2 at Rotherley in the Cranborne Chase series and the effects of osteoarthritis—not, as then described, *rheumatoid* arthritis. Figure 2 is a sketch of the position of the skeleton, as found in the southern ditch, and is figured in Volume II of General Pitt-River's *Excavations in the Cranborne Chase* (Plate CXXVI, Fig. VI).

General Pitt-Rivers expressed his indebtedness to Professor Mosley, F.R.S., at that time Keeper of the Pitt-Rivers Collections at Oxford University, for bringing to his notice a paper in the *Transactions of the Pathological Society of London* in 1886 by the then Mr Arbuthnot Lane (afterwards Sir Arbuthnot Lane the distinguished orthopaedic surgeon), who thus described the effects and causes of these bony growths.

It was not, in the opinion of this author: " properly speaking a disease but more frequently the result of continuous pressure, and it is present more or less in the bones of nearly all labourers who have been subject to hard work ". (Especially labour which involves stooping and carrying heavy loads. G.P-R.) " The upper surface of the head of the femur is worn down by continued trituration and friction against the articular surface of the acetabulum, at the same time bone is deposited on the margin of the acetabulum and on the sides of the head of the femur, thereby increasing the area of the articular surface of the opposing bones."*

**Note:* As shown at C.4 and 6 in figure 1

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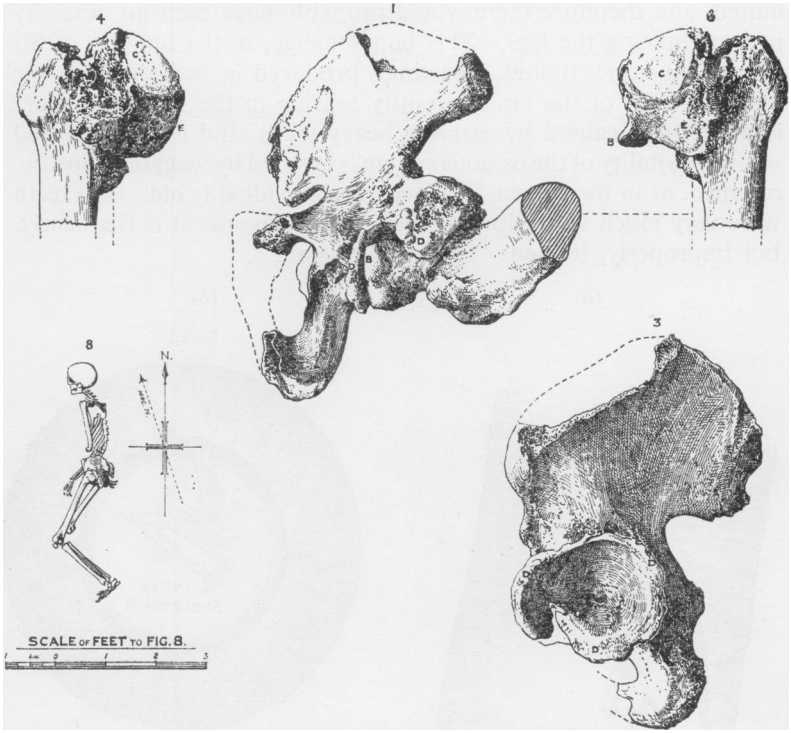

Figure 1

Views of left side of pelvis, and of the right and left femora of skeleton no. 2, showing the effects of arthritis, with a sketch of the position of the skeleton as found in the Southern Ditch, Romano-British Village, Rotherley

By examination of these then so-called ' rheumatoid ' changes the author stated that he was able to determine the previous labour, history and occupation of the individual.

" In the present example ", wrote this author, " the osteophytic growth on the acetabulum has overlapped that on the head of the femur, so that the bones have become locked. The femur is represented in the illustration at right angles to the line of the vertebral column, and it is seen that the individual during life could have brought his legs to this position, but not higher. As the body was placed in the grave in the position represented in figure 2(b), the legs were not drawn up to the fullest extent to which, by the appearance of the bony growth, they might have been ". Bronze Age interments were habitually buried in the twice bent position in the Pits, Tumuli and Round Barrows, as in figure 2(b), Pit 59.

The bony surfaces of the pelvic joint of skeleton 2 never became

united, and therefore there would probably have been no difficulty in straightening the legs. This bony change, in the opinion of Sir Arbuthnot Lane, though sometimes produced in bedridden people by the weight of the hip constantly bearing in the same direction, is more often caused by carrying heavy loads, and it is aggravated when the vitality of the osseous system is lowered by want or exposure, or when, as in the present instance, the individual is old. The teeth were very much worn down. Viewed as a disease, it is frequently, but improperly, termed: " poor man's gout ".

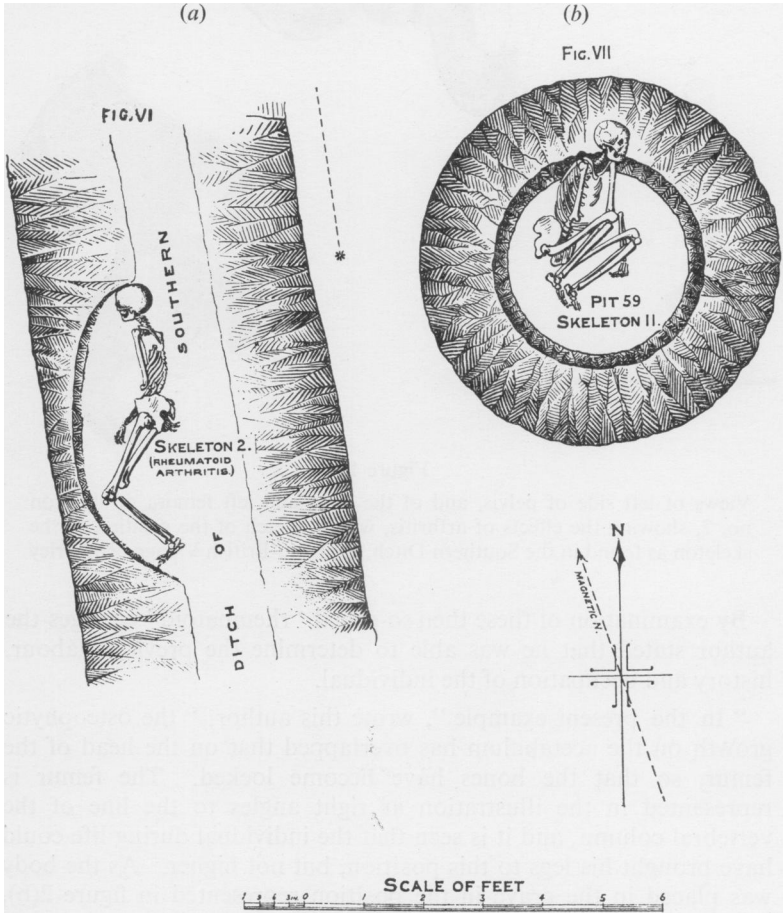

Figure 2
(From General Pitt-Rivers's *Excavations in the Cranborne Chase*, Plate CXXVI, figure VI)
Plans showing the positions of the skeletons discovered in the Southern Ditch, and in Pits 54 and 59, North Quarter, Romano-British Village, Rotherley

Considering the number of skeletons found at Rotherley showing marks of this disease proves it to have been prevalent amongst the inhabitants.

As noted, at the time Sir Arbuthnot Lane was writing (1886) the distinction between ' rheumatoid ' and osteoarthritis was not made; the latter term was introduced at a much later date. It is not recognized that whereas ' rheumatoid ' arthritis is a systemic disease, and is liable to affect all joints of the body; osteoarthritis is invariably of traumatic origin resulting either from accidental lesions or provoked by continued pressure and unilateral displacement of the vertical balance of the body when walking. The cartilaginous cushion between the femur head and the acetabulum becomes softened producing pitting and fibrosis, which may result in rigidity making articulation impossible, until finally the joint is entirely arthriticized.

Modern treatment, when successful, may avert this particularly disabling result, even when the cartilage is worn away, by developing the compensatory muscles (the erect posture and abduction muscles, particularly, e.g., the gluteus maximus and fascia tensa lata) so that the surfaces of the bones in contact become ebonized or smoothed hard, and the joint capable of a certain amount of articulation though, of course, to a limited extent. This, however, sometimes requires the severe manipulative operation of abducting the affected limb by removing the femur head from the pelvic socket and breaking down the adhesions until mobility can be restored. Alternatively, artificial plastic joints are sometimes inserted.

The General's grandson, the present writer, was operated upon by the late Sir Arbuthnot Lane in 1914, undergoing two successive operations involving at the second essay the first successful muscle graft ever made to join and suture the tibialis anticus of the left leg severed by shell wounds, although several more years passed before the voluntary contraction of the muscles became normal. The uneven gait and a partially dropped foot during the long marches in the New Guinea jungles led eventually to severe osteoarthritis of the left pelvic joint. This condition during the Second World War, required the manipulative operation of abduction by the late Mr Rowley Bristow to correct the severe osteoarthritis of the same leg, resulting from the disbalance in walking over a period of many years.