

Dry Bones Come Alive*

S. G. BROWNE, O.B.E.

Leprosy Study Centre, London

On 9 December, 1969, at the Medical Historical Museum attached to the University of Copenhagen, Dr. Johs G. Andersen successfully defended his doctoral thesis entitled *Studies in the Medieval Diagnosis of Leprosy in Denmark*† before a packed auditorium. He was interrogated for upwards of 3 hours by Professor V. Møller-Christensen, Professor of the History of Medicine in the University of Copenhagen; Dr. Jorg Balsler Jorgensen; Dr. D. L. Weiss, Professor of Pathology in the University of Kentucky; Dr. Egill Suorason; Dr. Otto Kæfæd Petersen; and Dr. S. G. Browne, Secretary-Treasurer of the International Leprosy Association; and others.

Dr. Andersen's researches embody in effect part of the continuing studies of the material originally excavated by Professor Møller-Christensen in the burial ground attached to the mediaeval monastery at Næstved in Denmark, studies that have already given to the world such important publications as *Bone Changes in Leprosy, Ten Lepers from Næstved in Denmark*, and numerous articles by Møller-Christensen in learned journals; and *Spondylosis Cervicalis: a Pathological and Archaeological Study*, by Philip Sager. A dental colleague, Danielsen, is known to be making a study of the dentition, the microscopic appearances of the teeth, and the changes present in the tooth-bearing bones of the skulls retrieved from the same burial-ground.

These fascinating glimpses into the past may shed unexpected light on the clinical and epidemiological problems of today, as well as provide indications concerning the spread of leprosy in the Middle Ages, the dimensions of the endemic, the clinical identification of the disease at the time, and the persistence over

hundreds of years of recognizable patterns of specific bony changes attributable to leprosy. It was through these early studies that the erosion of the nasal spine and of the alveolar process of the maxilla was first recognized. Since then, of course, these specific stigmata of leprosy have been identified by numerous radioscopic and clinical studies in the living; microscopic investigations of cartilage and bone have incriminated direct infection of these tissues by *Mycobacterium leprae* and secondary invaders.

Dr. Andersen's thesis summarizes his first-hand investigation of many of the historical references to leprosy that have been cited uncritically by numerous authors subsequent to their first—often tentative and equivocal—publication. Herein lies the most obvious and most valuable contribution of Andersen to the continuing debate on the origin and spread of leprosy. The issue has been, and still is, repeatedly confused by vocabulary, and by the vagueness and imprecision of descriptive terms used in a pre-scientific age.

However, certain conclusions appear to be clear-cut and reasonably well based. Despite numerous claims to the contrary, the Chons' swellings referred to in the Ebers papyrus (c. 1552-1350 B.C.) are not considered to be indicative of leprosy, but rather perhaps of gas gangrene. The references to "leprosy" in the Authorized and subsequent versions of Old Testament scriptures (Hebrew *tsara'ath*) emphasize ritual defilement associated with a scaly condition of human skin, cloth, and leather goods and the walls of houses. There is no osteological, archaeological, or literary evidence that would incriminate infection with *Myco. leprae* in any of the instances of *tsara'ath* recorded in the Old Testament.

Andersen makes great play with the fact that true leprosy was unknown to even such a careful observer and precise chronicler as

*Received for publication March, 1970.

†*Studies in the Medieval Diagnosis of Leprosy in Denmark. An Osteo-archaeological, Historical and Clinical Study*, by Johs G. Andersen. Copenhagen: Costers Bogtrykkeri, 1969. Also, published as supplement 9, *Danish Medical Bulletin* (1969) 16.

Hippocrates. Had the disease that had been known and accurately described in India for at least 300 years been present in Europe, Hippocrates would certainly have recognized, described and recorded it. His "*lepra*" was probably a summer prurigo. Andersen then links these 2 facts, first that leprosy was known in India, and second that the disease made a sudden (and well-documented) appearance in the Mediterranean littoral around 300 B.C. He suggests that the troops of Alexander the Great, returning from the Indian campaign in 327-6 B.C. must have brought back leprosy with them. Certain it is that thereafter the occurrence and spread of leprosy may be traced with certainty and in some detail throughout Europe. In those early records the salient clinical features of low-resistant leprosy are recognizably described, as well as the pathognomonic signs in the skin and peripheral nerves. These 2 groups of observations are held to differentiate this new disease from any previously known morbid condition.

Meanwhile, there is some evidence that true leprosy may have existed at this time in Egypt, perhaps introduced there from Central Africa by Nubian slaves. Pompey's troops, returning from Egypt in 62 B.C., almost certainly took leprosy with them into Italy. Thenceforward, leprosy spread in the wake of soldiers, merchants, and later, priests and crusaders.

Since leprosy is known to have existed in the first century of our era in the countries bordering the Mediterranean, some of the New Testament instances of *lepra* may have referred to true leprosy. In this case, the lay Greek term was used, and not the medical term for leprosy, which was *elephantiasis Graecorum*.

Andersen reminds us that the earliest skeletal remains showing indubitable signs of leprosy date from the fifth century of our era, and are in Coptic mummies from the Upper Nile. Even though the victims of leprosy in ancient times might have passed their days and ended their lives far from the haunts of men, the absence of osteological evidence of leprosy from those distant epochs is, to say the least, passing strange.

In Denmark, low-resistant leprosy appears to have been accurately diagnosed by the laity, to judge from the Næstved bones. In mediaeval England, however, the word "leprosy" had a very broad connotation, embracing any chronic skin disease and (by extension) dirt, beggary, and even venery; it was also used for the blight of growing crops and mildew of stored grain. Hospices originally founded for the relief of "lepers" may never have housed any person suffering from true leprosy as at present defined.

In a succession of interesting chapters, Andersen brings us right up to date, as he clothes the dry bones rescued from the oblivion of the Danish mediaeval churchyard with the flesh and blood of the living patients he examined and recorded in the Mission Hospital in Purulia, West Bengal, and elsewhere. The specific maxillo-facial bony changes are seen clinically and visualized radioscopically; the non-specific but extremely characteristic absorption of the phalanges and the mid-tarsal bones, the ossification of the interosseous membrane, the typical clawing of hands and feet, the evidence of long-standing secondary infection of the exposed bones of the extremities—are all documented from the mediaeval burial-ground and the modern leprosarium.

One striking feature of the Næstved study is the predominance of low-resistant leprosy in the bony remains. The skeletons themselves provide no answer to the questions whether high-resistant leprosy was unknown, or not recognized as leprosy, or not regarded as needing either compassionate care or segregation. Literary and palaeo-archaeological studies elsewhere may provide answers to these questions.

Dr. Andersen has, by his painstaking studies and critical review of historical documents, placed the world of leprosy in his debt. The quotations from classical authors alone, and his critical interpretation of long-available translated material that has been either too precise or too vague, will make his thesis an indispensable source-book for any medical historian who in the future thinks of writing on the history of leprosy.