

**STUDIES IN THE MEDICINE
OF ANCIENT INDIA: PART I.
OSTEOLOGY OR THE BONES
OF THE HUMAN BODY**

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A. F. Rudolf Hoernle

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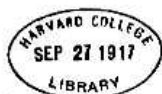
**PART I
OSTEOLOGY OR THE BONES OF THE
HUMAN BODY**

BY

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PREFACE

OUR knowledge of the Medicine known to the ancient Indians is at present extremely limited. I was made painfully aware of this fact in the course of preparing my edition of the two old Indian medical tracts preserved in the well-known Bower Manuscript of the fifth century A.D. The exigencies of that edition led me to a closer study of Indian Medicine, and the present treatise on its osteological doctrines is one of the firstfruits of that study.

Probably it will come as a surprise to many, as it did to myself, to discover the amount of anatomical knowledge which is disclosed in the works of the earliest medical writers of India. Its extent and accuracy are surprising, when we allow for their early age—probably the sixth century before Christ—and their peculiar methods of definition. In these circumstances the interesting question of the relation of the Medicine of the Indians to that of the Greeks naturally suggests itself. The possibility, at least, of a dependence of either on the other cannot well be denied, when we know as an historical fact that two Greek physicians, Ktesias, about 400 B.C., and Megasthenes about 300 B.C., visited, or resided in, Northern India.

No satisfactory knowledge of human anatomy can be attained without recourse to human dissection. Of the practice of such dissection in ancient India we have direct proof in the medical compendium of Susruta, and it is indirectly confirmed by the statements of Charaka. It is worthy of note, however, that in the writings of neither of these two oldest Indian medical writers is there any indication of the practice of animal dissection.¹ Whatever

¹ The only mention of an animal subject is in connexion with training in surgery. Thus 'puncturing' is to be practised by the medical pupil 'on the veins of dead animals and on the stalks of the water-lily'; similarly, 'extracting,' on the pulp of various kinds of fruit and 'on the teeth of dead animals'.

knowledge of the structure of the human body they possessed would seem to have been derived by them from the dissection of human subjects. And, whether or not cases of such dissection were frequent, their surprising proficiency in osteology argues a considerable familiarity with the bones of the human body. As to the Greeks there is indubitable evidence that an extensive practice of human dissection, on dead, and even on living subjects, prevailed in the Alexandrian schools of Herophilos and Erasistratos in the earlier part of the third century B.C. But their knowledge of anatomy appears in some particulars, such as the nervous and vascular systems, so much in advance of that of the early Indians, that, if there was any borrowing on the part of the latter from the Greeks, it must have taken place at a very much earlier period, in the time of Hippokrates and his immediate followers—that is to say, in the second half of the fifth century B.C.

This conclusion is confirmed by the chronological indications, no doubt more or less vague, given to us by the Indian tradition which places the earliest Indian medical schools of Ātreya and Suśrūta at some time in the sixth century B.C., a date supported by the Vedas. This being so, and considering that we have no direct evidence of the practice of human dissection in the Hippokratic school, but know of the visit, about 400 B.C., of Ktesias to India, the alternative conclusion of a dependence of Greek anatomy on that of India cannot be simply put aside. On the other hand, there is some indirect evidence that the Hippokraties were not entirely unfamiliar with human dissection¹; and once admitting the practice of such dissection among both the early Greeks and the early Indians, the general similarity of standard in their knowledge of human anatomy may well be conceived without the hypothesis of an interdependence. In order to be able to verify a dependence of either upon the other, we require the evidence of agreement in points which are both peculiar and essential in the respective systems. It

¹ On this and other points touching Greek anatomy, see Dr. Puschmann's *History of Medical Education*.

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is, in part at least, with this object that the present essay on the osteology of the ancient Indians has been prepared. It presents the Indian side of the evidence with respect to that particular department of anatomy. The Greek side of it yet remains to be exhibited; and in the absence of it, as well as of my competence for the task, I have entirely abstained from complicating my subject with references to any ancient osteology other than Indian, lest the presentment of the latter should be unduly biased.

I am tempted, however, to offer one or two passing observations. No summary of osteological doctrine, such as we find in the writings of Charaka and Susruta, appears to exist in any of the known works of the earlier Greek medical schools. If this is the case—and I am writing under correction—it greatly adds to the difficulty of making any satisfactory comparison. There exists, however, a somewhat similar osteological summary in the Talmud (see the Note, p. viii); and as the Talmudic anatomy is admittedly based on the anatomy of the Greeks, the summary in question may perhaps be taken to reflect the contemporary Greek doctrine on the subject. It is ascribed to the first century A.D.; but certain points in it, such as the inclusion of 'processes' and cartilages to make up its total of 248 bones, seem to point to its being rather a survival of the system of the Hippocratic school. In any case, however, in its method and details of classification it differs materially from the Indian; and if it may be taken in any way as a representative of Greek doctrine, it is difficult to believe in any connexion of the latter with the Indian. In this connexion a statement of Celsus, who is a fair exponent of the Greek osteology of the first century B.C., may be noted. Referring to the carpus and tarsus, he says that they 'consist of many minute bones, the number of which is uncertain', but that they present 'the appearance of a single, interiorly concave, bone'; and with reference to the fingers and toes, he says that 'from the five metacarpals the digits take their origin, each consisting of three bones of similar configuration' (beginning of Book VIII). In the latter numeration of fifteen joints in the hands and feet, Greek osteology

agrees with the Talmudic and Indian. As to the carpus and tarsus, the two views of 'a number of small bones' and of 'a single bone' are also found in the Indian osteological summaries of Suśruta and Charaka respectively; the Talmudic summary implies a reckoning of eight small bones.

Another object of the present treatise is to vindicate the true form of the osteological summaries of Charaka and Suśruta. The former is at present in imminent peril of total displacement and oblivion in favour of a well-meant but very ill-considered substitute, to which the otherwise meritorious first edition of Charaka's Compendium by Gangādhara has given general currency. But in this matter Indian medical history is only repeating itself. For, many centuries ago, the same misfortune overtook the osteological summary of Suśruta, the true form of which is now totally lost from all manuscripts owing to its supersession by a falsified substitute which gained general acceptance through the great authority, apparently, of Vāgbhaṭa I, who once held a position in India somewhat analogous to that of Galen in the mediaeval medicine of the West. At a very early period in the history of Indian Medicine, owing to the ascendancy of Neo-brahmanism, which abhorred all contact with the dead, the practice and knowledge of anatomy very rapidly declined, and concurrently anatomical manuscript texts fell into great disorder. Attempts were made from time to time to restore and edit such corrupt texts; but divorced from and uncontrolled by practical knowledge of anatomy, they could not but prove unsatisfactory. The earliest example of such an attempt which has survived is what I have called the Non-medical Version of the summary of the osteological system of Ātreya, which may be referred to the middle of the fourth century A. D. A more conspicuous example is the falsification of Suśruta's osteological summary, under the authority of Vāgbhaṭa I, probably in the early part of the seventh century A. D.

The latest example is presented in Gangādhara's invention, not quite thirty years ago, of what professes to be the osteological summary of Charaka. In this last-mentioned case, owing to the modernity of the substitute, it is not difficult, by an appeal

to the consensus of still existing manuscripts, to expose and prove its baselessness. But that remedy is not available in the case of the osteological summary of Susruta, the genuine form of which has now disappeared from all available manuscripts, and can be recovered only by a laborious application of textual criticism combined with an appeal to practical anatomy. But what has occurred in the case of the osteological summaries may have happened also to other parts of the ancient Indian texts concerned with anatomy and surgery. These texts require careful scrutiny before they can be trustfully accepted and cited as evidence. The present dissertation is offered as a first example of such an investigation. Of its success I must leave others to judge, only hoping that it may induce more competent hands than mine to take up and continue the inquiry.

It only remains for me to offer my cordial thanks to the scholars who have given me their help in various ways: to Dr. W. Osler, Regius Professor of Medicine, who gave his valuable support to the publication of my monograph by the Delegates of the University Press; to Dr. Arthur Thomson, Professor of Human Anatomy, who most kindly gave me the benefit of his skilled judgement on several difficult points; to Dr. P. Cordier, of the French Colonial Medical Service, to whose letters and publications I owe several useful hints; but especially to Dr. J. Jolly, Professor of Sanskrit and Comparative Philology in the University of Würzburg, and Dr. Hamilton Osgood, of Boston, formerly Lecturer at Jefferson College, Philadelphia, U.S.A.,¹ who both did me the favour of carefully reading the whole of my manuscript, and supplying me with some valuable corrections and suggestions in the Text-critical and Anatomical Sections respectively. My thanks are due also to the authorities of the India Office for their liberality in granting a subvention towards the cost of publication. For most of the illustrations in the Text I am indebted

¹ His lamented death occurred on the 10th July, 1907, while these pages were passing through the Press.