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ANALYSIS OF BONES

AFFECTED WITH

MOLLITIES OSSIUM.

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IN a Paper published in the 21st Volume of the Medico-Chirurgical Transactions, I shewed, by analysis, that the different bones of the adult human skeleton, in health, contained animal and earthy matter in different proportions.

Having lately had an opportunity, through the kindness of my friend Mr. Hilton, of examining some specimens of diseased bones affected with mollities ossium, I considered it a subject of interest to ascertain whether or not the law of relative proportion observed in health was maintained in the diseased condition. Careful analyses of three diseased specimens, obtained from the same adult subject, yielded the following results; which I shall compare with those obtained from healthy bones:—

	MOLLITIES.		HEALTH.	
	Earths	Animal Matter	Earths	Animal Matter
Fibula	32.50	67.50	60.02	39.98
Rib	30.00	70.00	57.49	42.51
Vertebra	26.13	73.87	57.42	42.58

On examining this Table, it will be observed, that, in the diseased as well as in the healthy bones, the fibula contains more earthy matter than either the rib or vertebra; and the rib more than the vertebra:—thus we have the same order preserved as in health. It may be noticed, that the vertebra and rib, in health, approach very nearly, in their proportions of animal and earthy matter; while in mollities, a considerable difference exists between them in this respect. This indicates, that though the bones are all acted upon by the absorbents in mollities, yet that the absorption does not go on equally in the bones; some being acted upon more

than others. There is, however, an approach to an equality of action: for, notwithstanding that the diseased bones have lost about half of their earthy matter, yet they keep the same order, as regards proportional constitution, which we observe in health; viz. the fibula containing more earthy matter than the rib, and the rib more than the vertebra.

Having ascertained, by previous experiment, that the earthy matter obtained from the long bones of the extremities contained, as nearly as possible, 86 per cent. of phosphate of lime in health, and that the earthy matter from the trunk bones contained, on an average, *83.03 per cent; I determined on mixing together the earths obtained from the fibula, rib, and vertebra affected with mollities, and subjecting them to analysis. This bone-earth, on examination, proved to contain only 78 per cent. of phosphate of lime. There is evidence here, that the absorption of earthy matter by disease is accompanied by a decrease in the proportion of phosphate of lime to carbonate. This would seem to shew that the absorbents carry away earthy matter containing a very large per centage of phosphate of lime: for were it otherwise, we should never find bone-earth containing so small a per centage as 78 of that earth; the smallest, in health, being 81.2 of phosphate, to 18.8 of carbonate of lime.

That the carbonate is absorbed together with the phosphate of lime, in certain though small proportion, in these processes, is proved by the fact, that bones, even those most changed by the absorption of their earthy matter, are not very greatly removed from healthy bone-earth in the general average proportion of phosphate and carbonate of lime.

* This average was drawn from results obtained from seven specimens: the extremes were 81.2, and 85.0.