

ing stage. Nor are we left to conjecture as to the cause of the profuse expectoration and hemorrhage of the more advanced stage : ocular demonstration has likewise shown these tubercles broken down, and blood vessels ruptured by their ravages.

Chemists, too, have analysed the gases, and put us in possession of means to counteract their injurious tendencies. They have determined the exact proportion of the constituents of bone, blood, and muscle. They have made their knowledge subservient to the health and happiness of man, the amelioration of the brute creation, and even agriculture itself.

But much remains to be learned—man has not yet reached the *ne plus ultra* of scientific research, and to an end so desirable, so fraught with interest to the well-being of our fellow creatures, let each one lend himself, and by close observation contribute his share to the establishment of general facts and principles.

The teeth regarded as they are by all, as very important organs of the human body, have come in for a certain amount of scientific observation. Good-sir, Arnold, Blake, Fox, Nasmyth, Harris, and many others have not thought it beneath them to consecrate varied and brilliant talents to the investigation of this subject. We have had elaborate and interesting treatises written on the structure and formation of these organs, and many able disquisitions on the diseases to which they are subject. Caries being by far the most frequent of these, I would desire in this paper to call more general attention to it, in the hope that by stating the opinions of the most eminent dental pathologists, and the few facts I have observed in my own experience, I may induce others to do the same, the result of which will be

the recognition of *general principles*, whereby we may be enabled to interpret accurately the phenomena of dental disease, and pave the way to still greater improvements in dental surgery.

But, in order rightly to understand the cause and treatment of this disease, it may be well to see that we are fully acquainted with the structure and formation of the organs themselves. Fortunately the researches of the **achromatic** microscope have thrown much light on the subject ; indeed, hardly anything remains to be desired.

As early as the year 1678, Leuen-hoch described the human tooth as made up “of very small, straight, and transparent pipes, and he calculated that the number of these pipes in a single molar amounted to five millions.”!! Subsequent investigation has proved the correctness of his investigations, and moreover that these tubuli do not traverse the spaces between the successive layers, as in ordinary bone, but are originated from the pulp cavity, and radiate outwardly, having their long axis corresponding with the course of the tooth fibre.

The diameter of these tubuli at their radiating point is about 110,000th of an inch, but they become much smaller as they radiate towards the surface.

As every one knows the teeth are composed of animal and mineral substances in intimate union, the earthy components are secreted by the red portion of the blood, while the mucilage which goes to form the animal proportion is derived from the white or serous part. According to Berzelius, an analysis of 100 parts of dentine gave the following constituents :—

Phosphate of Lime.....	62.
Fluate of Lime.....	2.
Carb. of Lime.....	5.5