CHAPTER XVI.

DISCOLORED TEETH.

A TOOTH of loose structure quickly becomes dark, and in instances, almost black, on the death of its pulp. This opacity possesses a twofold explanation: First, death of pulp implies diminution in vital relations; out of this arises loss in translucency. Second, a dead pulp decomposes more or less quickly, becoming, in its liquefied expression, absorbed into the tubules.

To restore translucency in a dead tooth is impossible; the organ can be whitened, never vitalized.

When a tooth-pulp has died experience directs as a proper course to pursue that it be at once removed from its cavity, and that its place be occupied by a plug of gold, solidly impacted; such plug extending to the extreme end of the canal.

A tooth already discolored, the pulp-canal is to be freely opened, and any remaining contents removed by means of a broach. Succeeding this is the syringe. Repeated washings are to be employed. The fluid used may be dilute chlorine water.

A pulp-canal enlarged, cleansed, and the tubules saturated with chlorine water, a napkin or the dam is to be placed about the tooth, and a process of intra-tubular drying inaugurated. To effect this drying, pellet after pellet of bibulous paper is to be introduced until, as such means express it, all moisture has disappeared. Next the canal is to be packed with carbonate of magnesia. Thoroughly removing this, after a few minutes have passed, the hot-air syringe being used to blow it away, the extreme apex of the canal is plugged solidly and permanently with gold. By this plugging the bleaching process, if that be the mode of whitening adopted, is not at a later time interfered with by reason of secondary discoloration.

Bleaching.—Immediately on completion of the apex plug, and while the part is still enveloped in dam or napkin, a wisp of absorptive cotton is made to entangle as much as possible of common chloride of lime, which wisp is carried into the pulp-canal: the orifice being sealed instantly. In the use of this material advantage is taken of the antiseptic virtue of the chlorine, but most particularly is it the object to suck out from the tubules of the tooth the putrescent moisture attracted by the affinity existing between itself and the preparation. Taking into consideration the caustic quality of the application, judgment is required to be exercised as to the length of time it is to be left in a tooth. Where the dentine is loose in structure and full of moisture,

the unsealing of the cavity after one or two minutes will show the cotton to be wet. Here it has been in quite long enough, perhaps too long. If, on the contrary, the cotton be found dry, the lime has not yet done its work, and the application is to be continued or renewed.

One or two employments of the lime having been made, a succeeding step considers its complete removal. This is generally accomplished by the clinging of the moisture to the cotton; not so fully, however, is this a result as to be entirely trustworthy; it is found desirable to use freely a syringe.

The cavity again made as dry as possible by means of Japanese bibulous paper, it is packed, either with a fine article of English prepared chalk, or with the carbonate of magnesia. This completes the operation for the day; the orifice being hermetically sealed.

Zinc in place of lime is preferred by many. Having the cavity plugged at the apex, and under dam or napkin as before, pack into the canal as many of the crystals of the chloride of that salt as it will hold. When full, seal quickly the outlet, and retain for from five minutes to half an hour. The application may be repeated daily until color is restored. In the interim the tooth is to be kept filled with chalk or magnesia as before directed.

A manner of bleaching, having in it little risk or danger, consists in free syringing with dilute chlorine water, and the use of chalk continued for some few days, the preparation being renewed each twenty-four hours. A week having passed, an oxychloride plug, made by union of the aqueous solution of zinc chloride with a perfectly white preparation of oxide of zinc, the chloride being in excess, is introduced into the cavity, and protected until about two-thirds set. This imperfectness permits of an easy removal, which removal is to be succeeded by renewals of the plug. Repetition results in whiteness.

Another bleacher is the familiar salt, chlorate of potash: this is to be used without much regard to evil results.

Labarraque's solution, an aqueous chlorine preparation, permits of reasonable freedom in its employment; it is conveniently applied on a wisp of cotton and the orifice of the cavity is to be sealed while it is in a tooth. Renewal of the application is to find directions in indications.

Immediate bleaching is secured by fitting a delicate canula tightly into the orifice of a tooth-canal, and forcing a stream of chlorine gas into the tubules.

In the use of chlorine preparations the facts are to be constantly in mind that the agent employed is a decomposer of organic substance; that it is of such chemical characteristic advantage is taken to get the hydrogen of organic combinations, consequently, in the case considered, the discolored element; that acting primarily on the most exposed material, which, in the instance of a discolored tooth, is the pulp-substance filling the tubuli, this is primarily removed or destroyed; that a secondary action must be on the animal portion of the dentine; that necessarily secondary action is destructive to the integrity of a tooth, rendering it brittle and crumbling.

Whitening.—Integrity of relation being disturbed by the use of chlorine preparations, the peculiar and marked harm arising out of their employment where caries has undermined the enamel of a tooth is evident enough. Taking as an example a front tooth where decay, running in from an approximal face, has decomposed much of the underlying substance, the injudiciousness of the use of chlorine needs not to be discussed. Whitening in this and similar cases is to be effected by removal of the discolored dentine and the replacing of it by oxychloride of a shade to suit. Here injurious result is to be obviated by complete neutralization of the chloride by the oxide of zinc; such neutralization rendering the filling entirely inert from a chemical standpoint. Free chlorine being no longer existent in it, the plug is one that has in it the meaning alone of color.

A manner of whitening employed with fair satisfaction in particular cases consists in underlaying a plug of gold by a sheet of plaster of Paris. Another manner employs a mat of white paper, which, being put in place, is immediately overlaid by a second made of gold. Still another manner is to take a scale of porcelain and mould it as a support to the wall to be whitened; plaster of zinc chloride being used as the plastic. Another manner still shows a brushing of zinc or lead paint through the discolored face, the paint being covered by zinc phosphate or other plastic material. Preference is to be given to the zinc chloride plastic.

Hæmatin.—Immediate discoloration of a tooth sometimes arises out of a pulpitis so severe as to rupture the red corpuscles of the blood, permitting thus escape of the hæmatin and its speedy absorption by the dentinal tubules. A tooth so disturbed is the subject of such discomfort to a patient that the practitioner is apt to be brought very quickly in contact with it. Treatment consists in opening at once into the pulp-cavity and by means of warm water thoroughly cleansing it. So almost certainly is the death of such a pulp assured that it will commonly be found the best practice to quiet by use of obtunders and afterward apply the arsenical paste; or, if the organ have been freely exposed, its destruction is to be instantaneously assured by means of London paste, a small portion of which, if laid directly in contact with it, kills the part in a moment. Subsequent treatment is as directed in previous cases. Hæmatic discoloration, having the expression of purpura, may take place slowly; the condition is very uncommon.

Discoloration being dependent on absorption of a liquefied dead pulp, or constituents of a pulp, it follows that inter- and intra-dentinal calcification are antagonistic to discoloration; hence, shadings of vascular excitement, existing to an extent promotive of calcareous expression in the dental pulp exudate, are prophylactic of absorption. Teeth naturally dense darken slowly or little at all.

It is not amiss to add in conclusion of the subject that experience leads to much stronger dependence being placed on processes of whitening than of bleaching.

CHAPTER XVII.

REPLANTATION AND TRANSPLANTATION OF TEETH.

By replantation is meant the return of a tooth to its socket after extraction.

By transplantation is meant the transferrence of a tooth from its original to some other locality.

The initiative of these operations lies in experiments performed by John Hunter, in which that famous anatomist transferred teeth taken from the human mouth to slits made in the combs of cocks. These transferred teeth were found not only to become fixed and tolerated in their new position, but subsequent examination of the relation showed that teeth and combs were attached after a manner similar to that which exists between teeth and their natural alveoli.

Replantation.—The frequency with which this operation has now been performed and the success attending it in the hands of a capable practitioner justify the placing of it in the category of operations to be recognized and commended.

It is to be assumed as a start-point that any healthy tooth can be lifted from a healthy socket and returned within reasonable time with an almost absolute certainty of reunion. Per contra, it is to be deduced that in proportion as parts are unhealthy probabilities of reunion are lessened.

Mistakes in Extraction.—A wrong tooth being accidentally removed, the parts being healthy, it is to be returned to its socket immediately on the cessation of bleeding; this cessation to be expedited by means of cold water held in the mouth. To retain the organ in place silk or thread ligatures will most likely be required.

Teeth that have been extracted many hours are found capable of re-fastening. Example: Some fifteen or eighteen years back a young gentleman applied to the author about six o'clock of an evening with a view to having an impression taken for the purpose of replacing with an artificial substitute a central incisor that had been extracted very early in the morning of the same day. Inquiry elicited that the tooth had been removed by mistake. Replantation being proposed, the organ was found, after some search, in one of the pockets of the patient, being mixed up with keys, pieces of money, a knife, and the varied et ceteras of that receptacle, not to exclude the mention of a fair amount of dust. A first step was to throw the tooth into warm water, to which was added about ten per cent. of tinctura iodinii. A second