## Notes on the Human Teeth obtained from Aveline's Hole, Burrington Combe, Somerset.

## BY E. K. TRATMAN.

With a few exceptions all the human teeth from this cave have been found separate from the bones of the jaw, and so it has been easy to measure not only the crowns but also the roots; but owing to the great amount of attrition which had taken place in the case of the incisors, canines and premolars no reliable measurements of the crowns could be obtained. The molar teeth were generally not worn down far enough to prevent accurate measurements of the crowns being taken. As there is no means of telling whether these teeth belonged to males or females (except that all the skulls appear to have belonged to females), in order to make a comparison with teeth of the present day a number of teeth were taken haphazard from the extraction room of the Bristol General Hospital for the purpose of obtaining the necessary measurements.

An analysis of the figures obtained shews that the teeth from Aveline's Hole are slightly shorter in respect of the roots of the lower incisors and the upper and lower premolars than those of the present day. On the other hand the roots of the upper incisors are rather longer than their modern representatives. Both the upper and lower molars from this cave have slightly smaller measurements than the corresponding ones of the hospital teeth, both as regards their crowns and roots, but the average length of the crowns compared to the average length of the roots is greater in the teeth from Aveline's Hole than in the modern examples. The actual figures are as follows :—

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		Lengt	h of roo	Length of crowns in MM.				
	No.	Anter. Buccal,	Post. Buccal.	Palatine,	Average.	Mesio- distal.	Bucco- lingual.	Average.
Aveline's Hole Modern	20 30	12·5 14·4	11·0 12·85	12·5 13·9	12·0 13·7	9·3 10·6	11·4 11·7	10·35 11·15

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to at any		Length of	roots in 1	Length of crowns in MM.			
to bide	No.	Anterior.	Posterior.	Average,	Mesio- distal,	Bucco- lingual.	Average.
Aveline's Hole Modern	17 21	11·0 14·3	9·6 12·9	10·3 13·4	10·6 11·1	9·4 10·2	10·0 10·7
x	- A A	Average le Average le	ngth of cr ngth of ro	$P = \frac{97.0}{79.9} \frac{A}{M}$	veline's F lodern.	Iole.	

No. = Number of teeth measured. Anter. = Anterior. Poster. = Posterior.

The third molars both in the upper and lower jaws shew a reduction in size, and this is especially marked in the case of the upper ones. This reduction is also present in the case of the man dibular teeth of the Cheddar man.

Only a few canines have been recovered so far, but all of them shew a marked flattening of the root mesio-distally together, with grooving on both the mesial and distal surfaces.

One upper central incisor shews a pronounced curvature of the root, which may indicate alveolar prognathism. the maxillæ

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preserved do not shew this feature, and the curvature of the root in question can readily be accounted for by some accident (such as a blow), during development.

Now assuming that the appearance of present day teeth subject to certain diseases holds good for prehistoric material, there are a number of morbid changes in the teeth from Aveline's Hole which are worthy of note. Of the 100 odd teeth examined, over 55 per cent, shewed signs of having been subject to chronic periodontitis alternating between the proliferative, and the rarefying types, as the increased amount of cementum on the roots has not a smooth appearance, but an irregular rough one.<sup>1</sup> In a few cases the rarefying type only has been at work with the result that the roots shew signs of commencing absorption : the amount of additional cementum present varies considerably with the individual tooth, but is usually well marked, especially in the apical region. The teeth most affected are the upper molars, followed closely by the lower premolars and molars and the upper premolars in that order. The lower incisors shew little signs of infection, while the upper incisors appear to have escaped altogether.

There are a number of carious teeth in the collection, and these are, with the exception of a lower incisor, all molars or premolars. The chief starting points for the caries was either at the cervical margin interstitially, or in the fissures on the occlusal surfaces of the molars. There are at least three examples of the natural arrest of caries in the molars after extensive loss of tooth substance, the enamel of the occlusal surfaces of the crowns having completely disappeared. In every case where there has been extensive destruction of the dentine, either by attrition or by caries, the pulp has reacted and laid down secondary dentine, which has to the naked eye an appearance similar to the normal dentine, though it is usually slightly darker in colour.

There are one or two examples of the exposure of the pulp, the cause being apparently the fracture of the tooth during mastication.

Several of the lower molars and premolars shew occlusal facets worn on the mesial or distal surfaces. This can be ac-

<sup>1</sup> J. F. Colyer, Dental Surgery and Pathology, p. 478.

counted for by the loss of a tooth in the mandible with the resultant descent of the then unopposed upper tooth until it again meets with resistance by occluding with the mesial or distal surfaces of the remaining lower teeth. On the other hand, according to Sir K. Goadby<sup>2</sup>, this faceting is often caused, in prehistoric man, by the slight movements of the teeth during the masticatory act. Though this may account for some of the examples I do not think it explains all.

A number of the upper incisors exhibit a marked pitting of the enamel in the gingival third of the crowns. Assuming that the present rates of development correspond to those of prehistoric times this mal-formation of the enamel points to a deficient diet from the eighteenth to thirtieth month of childhood.

One lower incisor shews cutting and trimming of the root which could only have been carried out after the loss of the tooth.

## CONCLUSIONS.

1. It is reasonable to conclude that the people who inhabited Aveline's Hole had on the whole good teeth, but that they were by no means immune to caries, and suffered in addition from chronic local or possibly chronic general periodontal disease.

2. The teeth being slightly smaller than those of the present day we should expect the jaws also to be smaller. The total maxillary width opposite the first molar in the only complete specimen is small, being only 54mm.<sup>3</sup> In addition the fragment of mandible recovered also appears to be on the slender side. But it must not be forgotten that all the skulls are probably temale, and that this fact would probably account for the rather smaller jaws and teeth compared to the present day teeth selected for measurement, as some at least of the latter must have belonged to males.

3. The defective enamel of the upper incisors suggests that they were possibly subject to some deficiency disease during the first two to three years of life.

2 Sir K. Goadby, Diseases of the Gums and Oral Mucous Membrane, p. 16.

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<sup>3</sup> E. Fawcett, Proceedings Spelæological Society, vol. I., No. 2., 1920–1921 p. 80.