carpal bones of the second and third fingers were soft and pulpy, involved in, and firmly attached to, the diseased growths, he determined to remove these two bones, with the fingers, at the carpal articulation. This was speedily effected; the whole mass was removed, and the palm was left entire. There was a good deal of hæmorrhage; several vessels were tied.

6. The wound is granulating kindly.

18. Has been going on well since the last report, and he will have a comparatively useful hand.

Mr. Liston said, that the above case was a very puzzling one. He had been, by the previous history, led to suppose that the disease was confined to the soft parts. The students, however, had seen what took place in the operation, and that the disease was not only seated in the soft parts, but had extended also to the bones, which were quite soft, and had thrown up spicula into the tumour. It was not improbable that the mischief had originally sprung from the medullary canal of the middle metacarpal bone. He thought at first, on discovering this, that nothing but the removing the hand would avail; but he was enabled, by acting on the spur of the moment, and performing a difficult operation, to save the best part of the hand. He had, as they saw, removed the metacarpal bones of the middle and ring finger, which was certainly much better for the patient than losing his entire hand. Operations of this description were generally required after gun-shot wounds, or injuries from machinery. The hand was not to be removed, though much of it might be involved in disease or perfectly smashed; it was the duty of the surgeon to save as much of it as possible, if it were only the first, or little finger, it should be saved; but where the thumb with a finger to meet it could be preserved, the patient had, to a certain extent, a very useful member, better than could be supplied by any kind of machinery. Surgeons were not warranted in removing the hand in such a case as that (showing a drawing), in which there was a gun-shot wound involving only the first finger; nor were they to operate for removal of the hand even though shot had passed through the middle of it. It was only when mortification had set in that amputation in such cases was a justifiable proceeding. The same rule was also to be observed in injuries of the foot, and an instructive case of this kind had been brought into the hospital, just as the operation in the present case was concluded.

The proportion of still-born children, is about 1 to 22. The proportion is much larger in towns than in rural districts, which M. Quetelet is much inclined to attribute to tight lacing. Still-born births occur more frequently in winter than summer.

THE TEETH A TEST OF AGE.

To the Editor of THE LANCET.

SIR:—I have to request the favour of the insertion in THE LANCET of the following practical observations on the manner in which the examination of the teeth is to be conducted, with a view to determine the age of children, more particularly with reference to their qualification for factory labour. They have been drawn up at the suggestion of Messrs. Horner and Saunders, two of the inspectors of factories, who have, to a considerable extent, adopted in their district the test, into the value of which I instituted an inquiry in the early part of the last year, and have assured me that it has been attended with the most satisfactory results. I have the honour to be, Sir, your obedient servant,

EDWIN SAUNDERS,

16, Argyll-street,
June 16, 1838.

The following observations, which are intended as

Brief Hints to the Certifying Surgeons,

are founded upon the results of the careful examination of upwards of 2000 cases, and may, therefore, be relied on with some degree of confidence.

Age having been pronounced by the Crown lawyers, whose opinion has been sought upon the subject, to be the primary object of inquiry, in granting a certificate of qualification for factory labour, and the development of the teeth having been shown to be the best criterion of age, to be obtained from the physical characters, the question presents itself, what are the appearances of the mouth at the particular age contemplated in the Factories Regulation Act?

The Act has provided that no child shall be employed in cotton, woollen, and flax mills under nine years of age, and that no child under thirteen years of age shall work in those mills more than nine hours in any one day, or more than 48 hours in any one week. These, then, are the ages to which the attention of the certifying surgeon is to be directed, and the following would appear to be the developments proper to those periods:—

* See "The Teeth a Test of Age, considered, with reference to the Factory Children," by Edwin Saunders, Lecturer on the Anatomy and Diseases of the Teeth, &c. &c. Renshaw, 356, Strand.

Developments of Nine Years of Age.	Incisor.		Cuspid.	Bicuspid.		Molar.	
	Central.	Lateral.		Anterior.	Posterior.	Anterior.	Posterior.
Normal.....	4	4	....	....	....	4	—
Deviations.... {	4	3	....	....	....	4	—
	4	2	....	....	....	4	—
Minimum {	4	....	....	....	....	4	—
	3	2	....	....	....	4	—

It need scarcely be observed, that in the foregoing table the second or permanent teeth only are regarded. It may frequently happen that these present themselves in an unusual position, the corresponding teeth of the first set being still retained. This, however, will not affect the examination, since it is not the absolute number of teeth contained in the mouth, but only the number of the second set, which may be in a more or less advanced stage of development, on which reliance is to be placed. In the first line of the table the full developments of the ninth year are recorded. In this case the four incisor teeth of the permanent set in each row have succeeded to the places of those of the first, and from the consentaneous growth and expansion of the maxillary bones, no retardation or mal-position will be observed. From this, however, although observation has shown it to be of more frequent occurrence than any other, there are many deviations. The first of these is where the lateral incisor, from deficient development of the maxillary bone, is crowded and pressed upon, so as to prevent its eruption from the gum. This may occur in either the upper or under row, or both; in either case it should be reckoned as present, and its absence attributed to some mechanical obstruction retarding its progress, provided its fellow be freely developed. Occasionally, but rarely, the lateral incisors are altogether wanting, and still more seldom one of the central incisors (in the upper row) is absent. In the latter case, provided the lateral incisors should have made their appearance, the absent tooth should be reckoned as present. These

cases, however, which should be regarded as the minimum developments of this age, occur but rarely (in about the proportion of 7 per cent.), so that unless a child exhibit unequivocally the general aspect and strength it cannot be considered as being of nine years of age. Thus, then, the examination of the teeth at the age of nine years is exceedingly simple, virtually resolving itself, indeed, into the observation of the eight teeth situated in the anterior part of the mouth; the incisors,—for the molar teeth, although they are recorded in the table, need scarcely be regarded,—being the earliest of the permanent teeth which are developed, and generally making their appearance between the sixth and seventh year.

The developments at thirteen years of age appear somewhat more complex; the examination at this age, however, will be found to be equally simple, for it fortunately happens that the ages contemplated in the Factories Regulation Act, are those which of all others are best characterised by the developments of the teeth, and are best adapted for examination. Both epochs are well marked by the appearance of important teeth; the first by the development of the incisor and first molar teeth, the second by that of the cuspid and second molar; the intervening period being occupied in the development of the bicuspid teeth, which are subject to much greater irregularity in the time and order of their eruption, the age is of consequence much less distinctly indicated. At thirteen years of age the following teeth will have made their appearance:—

Developments of Thirteen Years of Age.	Incisor.		Cuspid.	Bicuspid.		Molar.	
	Central.	Lateral.		Anterior.	Posterior.	Anterior.	Posterior.
Normal.....	4	4	4	4	4	4	4
Deviations.... {	4	4	....	4	2	4	3
	4	4	1	4	1	4	2
Minimum.....	4	4	4	4	3	4	—

The most important teeth to be observed at this period are the cuspid, or canine, and the second molar, the seventh tooth from the centre of the mouth. The intermediate class, the bicuspid, when the process of denition proceeds normally, will have made their appearance, but they are subject to much variation, and need not be particularly regarded. The more frequent deviations will be found to occur in the second molar teeth, one or more, and in some instances the whole of which will not have made their appearance.

In these cases, if the cuspid teeth be freely developed, and the child present the ordinary physical appearances belonging to the age, it may be considered as having attained its thirteenth year, because occasionally, though rarely (such cases bearing a proportion of scarcely more than 2 per cent.), this deviation is encountered. More frequently one or more of the second molar teeth may be observed just emerging from the gums, but in comparatively few cases will the whole be found fully developed, an appearance which belongs to the fourteenth year. More rarely still the cuspid teeth will be deficient; in these cases which are, however, seldom encountered, the decision must depend upon the degree of development of the second molar teeth, if these are present, as the period of their eruption is subsequent to that of the cuspid teeth, and provided the physical appearances coincide, the child may be presumed to have attained its thirteenth year. The minimum developments of this age are where one of the cuspid only, and two of the second molar teeth, are present, and *vice versa*, or where the whole of the second molar teeth are absent.

Thus, then, the examination at this period is sufficiently simple, the observation being confined to the cuspid and second molar teeth. The former being large prominent teeth, and situated at the angle of the lips, are easily recognised, and the latter may be distinguished with the utmost facility from the circumstance of their being the seventh teeth from the centre of the mouth.

The question, however, is often asked what are the characteristic differences between the teeth of the first and those of the second set? It cannot be denied that this is a subject of the first importance, since the most serious and irreparable mischief may arise from malpractice resulting from the want of a distinct and definite diagnosis.

The characteristic differences between the first and second set of teeth are of three kinds,—

First. Difference of size.

Second. Difference of form and configuration.

Third. The degree of abrasion which they have suffered.

The first and most obvious distinction be-

tween the temporary and permanent teeth is the difference of size, the former being little more than half that of the latter. This may be well observed in cases where little expansion of the maxillary bones has taken place at the time of shedding. Normally or where consentaneous growth has proceeded in the containing and contained parts, where the jaw has become developed in due proportion, a considerable interval may be observed between the temporary teeth at this period; the teeth will no longer be in apposition, but separated more or less from each other, so that when their successors make their appearance only the corresponding teeth of the temporary set are displaced, the greater width of the new teeth being compensated by the intervening space; where, however, the growth of the jaw and the development of the teeth have not been consentaneous, the new teeth being impeded in its progress, will make its appearance in an unusual position, requiring the additional removal of neighbouring teeth. Thus, to afford sufficient space for the central incisor of the permanent set, will be frequently necessary to remove not only the corresponding tooth of the first set but also the lateral incisor; in ordinary cases, however, no such interference will be necessary, or even justifiable; but whether the removal of the lateral incisor be necessary or not, a considerable difference of size will generally be observable between the teeth of the first and those of the second set in favour of the latter. This, however, is not invariably the case; occasionally cases present themselves in which little difference in this respect exists, and from their being discoloured and disguised by an accumulation of tartar, it may be exceedingly difficult, relying solely upon the difference of size, to determine to which set they belong. An additional characteristic must then be sought, and this will readily present itself.

Second. The differences of form and configuration. The teeth most likely to be mistaken as belonging to the first set, are the first permanent molars, which, except to an experienced eye, are sometimes with difficulty distinguished from the second temporary teeth of that class; these, indeed, make their appearance in a situation posterior to the temporary molars, and therefore being superadded to the first set, and thus constituting the sixth tooth from the centre of the mouth, may in this manner be distinguished. But it frequently happens that one or more of the molar teeth of the first set may have been removed, and in such cases if enumeration be solely relied on, the judgment will be erroneous, or at least uncertain. The difference of size will also be a feeble auxiliary, for although the first molar tooth of the permanent set is the largest of all the teeth, yet the difference of size between it and the second temporary

molar will afford but little confidence in determining its character. In such cases the form and configuration become a most valuable criterion, and one of the most striking characteristic distinctions of this kind is the abrupt termination of the enamel on the neck of the tooth. On the permanent teeth the enamel, becoming gradually thinner as it ascends, terminates in an almost imperceptible line, and the exact boundary can scarcely be traced where this beautiful structure ceases to invest the bone of the tooth. The temporary teeth, however, present a very different appearance; on them the enamel, instead of being shaded off, as it were, as it approaches that portion of the tooth which is embraced by the gum, and which is termed the neck, continues of a uniform thickness, or nearly so, and ceases abruptly, forming a protuberant ridge immediately below the gum. There are other differences of form which will suggest themselves to those who are familiar with the subject; but there is probably none which is so well defined and so constant as that which has just been pointed out. This distinction may be observed equally in all the different classes of teeth, and is generally well marked in the incisors. Whatever may be the variations in the breadth of these teeth there is uniformly a great difference in the length, and therefore in cases in which the permanent incisors are developed only to the same extent as the temporary teeth of that class, while this ridge, marking the termination of the enamel, may be observed on the latter, a continuous even surface will be presented by the former, the whole of the crown of the tooth (the portions covered with enamel) not having emerged from the gum. Should the crown, however, have become fully developed, the difference may still be observed in so marked a manner on passing the finger nail over the tooth upwards, from the cutting edge, as to preclude doubt, or the possibility of mistake.

Another obvious and striking distinction, however, is to be found in

Third, The degree of abrasion which the teeth have suffered. This is more strikingly exhibited in the teeth situated in the anterior part of the mouth, but it belongs in a greater or less degree to all. It is obvious that teeth which have been fulfilling their functions for a period of from six to seven years, must have undergone some alteration, in form and appearance, from abrasion. The cutting edge of the newly-formed tooth will be completely invested with enamel, and will present a serrated or notched appearance, which in a short time becomes obliterated and worn down; at the time of shedding, however, the enamel has been entirely removed by abrasion from the edge, which appears thick and broad, with a dark line of bone included between the two layers of enamel investing the anterior and

posterior surface of the tooth. Such an edge will be readily distinguished from the round, tapering, pearly edge of the newly-formed tooth. A similar deterioration occurs in the cuspid teeth, the points of which become worn down so that they may be still more readily distinguished than the incisors. The attrition of mastication does not, however, appear to produce an equal deterioration in the form of the crowns of the molar teeth, so that with respect to these teeth the most obvious and certain diagnosis will be found in the abrupt termination of the enamel at the neck.

Such are the most striking and palpable distinctions between the first and second sets of teeth; in addition to which may be mentioned, as an auxiliary, the relative position which they occupy in the mouth. Thus the temporary set, consisting of twenty in number, the first molar tooth of that set will be the fourth from the centre of the mouth; the second will in like manner be the fifth. This, then, will constitute the last of the temporary set, and will complete the number of twenty, which the child possesses up to the age of six or seven years, when a new molar tooth may be seen emerging from the gum, without displacing any of the temporary teeth, immediately behind the last molar of that set. This, which is the first molar tooth of the second set, will be the sixth from the centre of the mouth: from this period, therefore, to the age of thirteen or fourteen years (when the second permanent molar becomes developed), the child possesses twenty-four teeth. With respect to the diagnosis between the first and the second molar teeth of the permanent set, with which, when the examination is made with the view of arriving at a knowledge of age, it is of the utmost importance to be familiar, it has been already observed, that its distance from the centre of the mouth will generally determine the question. It may happen, however, that the first permanent molar has been removed, and the second has advanced nearly to the place which it occupied, and is in a forward state of development. The difference of form must, in such cases, be relied on. In the upper row the second may be distinguished from the first molar tooth, by its presenting on its inner, or palatine side, a round protuberant surface, and by its being marked on the crown by a triangular depression, while the first molar is of a square, or rather of a rhomboidal figure, divided by a cruciform furrow into four or five tubercles. In the lower row these distinctions do not obtain, and the difference of form between them is less strongly marked. As in the upper row, however, the first molar is larger than the second, and generally has the appearance of being divided into four prominences, with a small wedge driven into the external half of the transverse division. The second

is simply divided into four protuberances by a crucial line, or depression.

With these simple and obvious distinctions, with which any one may soon render himself familiar by a little practical application, almost the possibility of error will be precluded in the prosecution of this interesting and important subject.

The following is the result of an examination of the accuracy and value of the test, made Feb. 10, 1838, in the London Orphan Asylum, at Clapton:—

The total number of children examined was 307; of these there were 36 of nine years of age, and 48 of thirteen years of age. Of the former 28 were boys and 8 girls; of the latter 39 were boys and 9 girls. Of the 36 children of nine years of age, 30 would have been passed as being fully nine years of age, on an examination of their teeth, and 6 rejected. The real age of one of these was doubtful, and 3 would have passed by their height and general appearance. Of the 48 of thirteen years of age, 42 would have passed by their dental developments; 6 would have been rejected. Five of these were more than 4 feet 3½ inches in height, and the other, though short, had the general appearance of thirteen years of age, and was muscular. There were 5 girls, said to be under twelve years of age, who had the dental development of thirteen years; 2 of these were subsequently found to be nearly 13, and there is a possibility of error in the actual age of the remaining 3. There were 15 boys between 11½ and 12 years old, who presented the dental developments of 13 years, but there were 20 more whose developments were regular. The variations in height were very great, ranging in the 30 of nine years, who presented normal dental developments, from 3 feet 7 inches to 4 feet 1 inch.

TREATMENT OF SMALL-POX.

To the Editor of THE LANCET.

SIR:—May I beg the favour, through the medium of your excellent Journal, to make further report of the successful progress of a practice which I advocated in a contemporary journal in 1836, and which practice I am led to believe, originated with myself.* I am, Sir, your very obedient servant,

JOHN LANGLEY.

36, Tottenham-street,
June 15, 1838.

* The practice of opening small-pox pustules has long been employed by M. Serres, of La Pitie. It was also extensively tried in some of the military hospitals of this country about fifteen years ago.—
ED. L.

At the present time, when I regret to observe in this district, that that baneful disease, small-pox, has been and is still existing to a considerable extent, any mode of practice which has for its object and effect the amelioration of suffering, &c., ought to be freely promulgated. Since my publication of the following mode of practice, very many cases of small-pox have fallen under my treatment, and of those in which the pustules have by puncture and incision been evacuated, I have every reason to be satisfied that the desirable objects above alluded to have been invariably attained. In almost every case of small-pox where, from the malignity of its character, height of attendant inflammatory fever, and confluent nature of eruption, serious consequences are to be apprehended, upon the pustules acquiring a full and prominent vesicular character, before the lymph assumes its purulent appearance, I puncture with a lancet the most depending part of the inferior edge of the pustule, thereby leaving a perfect superficial covering of cuticle, obviating in a great degree the tendency to irritation resulting from the ingress of atmospheric air into the collapsed cyst, the superjacent cuticle falling as a plaster upon the secreting surface. The expression of relief afforded to the sufferer by this operation is most grateful, and may be somewhat adequately estimated by those who have experienced the comfort of having the contents of a whitlow evacuated. The desquamating process is not only facilitated, but greatly expedited, as in the course of three or four days, you have an extensive desquamation, occurring almost simultaneously over the whole surface, leaving discolouration, but seldom any depressions; and in cases where, for the sake of experiment, I have thus proceeded with one superior extremity, and neglected the other, the difference of result has been most manifest. The removal of the distressing tension, pervading so extensive a surface; and pressing upon such sensitive and irritable tissues, cannot fail to give the rationale of the relief afforded, and also the fair presumption, that the cerebral irritation and consequent fever resulting from such painful condition, must be greatly modified, if not altogether obviated, independently of removing from the inflamed and abraded surfaces an immense quantity of morbid secretion, the reabsorption of which, to a certain extent, may be reasonably inferred. If, from a prejudice, which oft ignorantly prevails, of interfering with the natural course of naturally incidental diseases, certain persons might not grant the propriety of opening all the cysts (which, by-the-by, is no trifling task) surely they will make trial of the practice upon those parts, the preservation of which is so desirable.