

TABLE II—*continued.*

Case.	Type.	Alkalinity.	Alkalinity.	
MELANCHOLIA.				
1	Acute Mel.	1'662	1'662	Mitral disease chronic rheumatism.
2	"	1'59	1'48	
3	"	1'662	1'731	
4	"	1'731	1'662	
5	"	1'59	1'59	
6	"	1'59	1'59	
7	"	1'662	1'731	
8	"	1'662	1'662	
9	Chronic Mel.	1'662	1'662	
10	"	1'59	1'662	

(¹) Prepared for the Autumn Meeting of the South Eastern Division, held at Chiswick House, October 29th, 1902.

The Abnormalities of the Palate as Stigmata of Degeneracy. By E. H. HARRISSON, M.B., B.C., B.A.(Cantab),
Acting Assistant Medical Officer, Claybury Asylum.

THE study of, in many cases trivial, bodily variations and deformities has for many years attracted much attention from a large field of workers, and in no part of this sphere has this study been more elaborated than in that including the criminal and the lunatic. As examples of these studies may be mentioned the numerous papers which have been written, giving copious and precise details concerning the anatomical configuration, the complexion, the shape of the ear, nose, etc., and the physiological eccentricities in certain types of criminal. Of these variations and deformities none have been more thoroughly studied, and at the same time been the subject of more discussion and difference of opinion, than those connected with the shape, size, and general development of the palate.

Owing to the exceptional opportunities enjoyed by the author at Claybury during the past few months, it has been possible for him to add a further contribution to this subject which, owing to difference of method, etc., has, in his opinion,

enabled him to throw more light on the subject. In this connection he wishes to express his deep gratitude to Dr. Robert Jones, of Claybury, for his kindness in allowing him to make full use of the ample material in the asylum, and also for his valuable advice.

Very many authors have written on the abnormalities of the palate. Some thirty years ago Dr. Down⁽¹⁾ appears to have first called attention to the existence of a narrow palate in idiots, his observations being founded on a study of 200 cases.

A little later Dr. Norman W. Kingsley, an American dentist, examined the palates of 200 of the idiots on Randall's Island. He differed in his conclusions from Dr. Down, and even on continuing his investigation he only found that from 5 to 10 *per cent.* of the patients suffered from any reasonable degree of palatal abnormality. He concluded that the palates of idiots did not differ to any appreciable extent from those of the ordinary patients who came to him for treatment. The conclusions drawn by these observers seem to have been arrived at by simple naked-eye inspection only, and it is probable that their contrary conclusions are due to this cause, as without some system of measurement it must be difficult or impossible to obtain data which can serve for the formation of reliable statistics. It is the experience of the writer that even after careful and repeated examination of casts it is no easy matter to locate a doubtful case in any of the coarsely defined types of palate, and consequently it is easy to understand how different persons, when examining palates in living individuals, may arrive at almost opposite conclusions. In Dr. Talbot's opinion measurements are necessary for the formation of accurate statistics, but he considers that they do not adequately give the shape or contour of the palate, but only its size.

Dr. Walter Channing⁽²⁾ found great difficulty in discriminating the palates of idiots from those of school children, which he had taken as his standard of the normal. His conclusions are as follows :

1. Two fifths of the palates of idiots are of fairly good shape.
2. Palates of normal individuals may be deformed.
3. In the idiot it is a difference in degree and not in kind.
4. In either case it shows irregular development anatomically.

5. Palates of average children and idiots under eight years of age probably do not, in the majority of cases, markedly differ.

6. There is no form of palate peculiar to idiocy.

7. The statement that a V-shaped or other variety of palate is a "stigma of degeneracy" remains to be proved.

Dr. Claye Shaw, in a paper in the *Journal of Mental Science* in 1876, came to the following conclusions :

1. There is no necessary connection between a high palate and the degree of mental capacity of the individual. Some idiots have the flattest and most symmetrical palates, whilst many with strong individuality of character have highly arched palates.

2. There is a general relation between the shape of the palate and that of the skull as to length and breadth.

3. A narrow pterygoid width is invariably associated with a high palate, as is also a narrow skull.

4. The width at the first molars is almost invariably less than or equal to the inter-ptyergoid width, and is only very rarely greater.

5. The arching of the palate has nothing to do, as regards height, with premature synostosis of the skull base.

6. The differences in the palatal measurements of various mouths are so slight and so various that it is difficult to see of what service a palatal investigation can be in affording a clue to the mental faculties.

Dr. Ireland, in *The Mental Affections of Children*, 1898, page 53, gives such names as "saddle-shaped, vaulted, keel-shaped, lambdoid" to the palates of genitous idiots. He states no actual reasons for this, but appears to have gained a general impression that palates of this kind exist in idiots of this variety. He is, as a whole, strongly inclined to think that these palates are especially common in idiots, and he thinks "that this deformity is extremely rare with people of ordinary intelligence" (page 53).

Dr. Clouston⁽⁸⁾ refers to this subject in *The Neuroses of Development* (1891). He regards a change in the normal shape of the hard palate as a very interesting and, in his opinion, "very important morphological accompaniment of many of the developmental neuroses. . . . The importance of this change consists, not in any direct effects of the palate bad or good, but in the indication as to brain constitution which it

affords." Dr. Clouston thought his assumptions amply borne out by some investigations he made on 604 of the general population, 286 criminals, 761 persons with acquired insanity, 44 epileptics, 171 persons with adolescent insanity, and 169 idiots and imbeciles. He was enabled to proceed in this rapid manner because he "thought it impossible to express the differences and agreements in size and shape of a series of irregular ovoid cavities, like the hollow of the palate in different cases, by lines across or round special parts of them. . . . After very careful consideration he considered that the simplest and the best way was to adopt a classification that most of them (the palates) seemed to him to fall into naturally." He divided them into three groups, of the "typical," the "neurotic," and the "deformed."

Other writers, as for example, Talbot,⁽⁴⁾ Peterson,⁽⁵⁾ and Charon,⁽⁶⁾ hold more or less similar views to those of Clouston and Langdon Down.

The above references to previous writers on the subject sufficiently explain the present state of opinion on this subject, and the writer will now proceed to describe his own investigations.

The method he has adopted for the preparation of casts of the palate employed during the research will first be referred to, and this will be followed by a description of the types of patients made use of, and of the general method adopted.

A classification of palates will then be given, and this will be followed by a tabulated account of his results and conclusions. It may be added here that the author began this research without any preconceived ideas as to the conclusions at which he might arrive; and the work, though carried out on perhaps rather narrow lines, should be, if anything, more trustworthy on this account.

The relatively small number of patients made use of is, he hopes, more than compensated for by the extreme care with which the examination of each has been conducted, in spite of the difficulties which have arisen owing to the mental condition of the subjects.

Owing to the impossibility of accurately measuring the palate in a living individual, it was necessary to take plaster-of-Paris casts of the upper jaw and palate of the patients, upon which the subject matter of this thesis is based.

The method of obtaining the casts is that used by dentists

and the instruments and materials required are: Impression trays of various sizes, Godiva composition, and fine plaster of Paris.

The patient is placed in a dentist's chair, and an impression tray is chosen which fits the teeth and palate. The tray being selected, it is filled with the Godiva composition, which has been previously softened by immersion in hot water, and the impression of the teeth and palate is taken. Great care must be exercised in order that the surface of the composition is smooth, and that the tray is inserted carefully without injuring or indenting the composition. The surface of the filled tray must be held parallel to the plane of the cutting edges of the teeth, and then the tray must be pressed firmly and evenly upwards until the teeth are buried and the composition bulges backwards over the tray below the soft palate. It is kept in this position without releasing the pressure until the composition is set firm and hard, which result usually occurs in from two to three minutes, and then with gentle to-and-fro movements the tray is loosened and removed from the mouth.

From the above description it will be seen that in order to obtain a satisfactory impression it is necessary to gain the complete confidence of the patient, and this is naturally extremely difficult when the operator happens to be dealing with insane patients. Consequently several failures were met with, but by dint of perseverance impressions were satisfactorily obtained from no less than fifty-six patients. After an impression has been obtained the tray and composition are carefully and thoroughly washed. A mixture of plaster of Paris is then made and poured slowly into the wet composition, care being taken that the plaster flows to the bottom of every tooth impression and covers the palate evenly. A pedestal is then made and the whole is inverted on it and left for half an hour in order to ensure complete hardness of the plaster. The tray, composition, and plaster are then placed in boiling water until the composition is again softened, when the tray is pulled steadily away, and the remaining composition is afterwards removed from the plaster cast with the fingers, beginning at the teeth and ending in the middle of the palate.

Having given the method by which the casts were obtained, it is necessary to say a few words about the patients and how they were chosen.

As complete development of the palate and teeth does not

occur until the age of 22 to 25 years is reached, and after the age of 40 senile changes begin to make their appearance, it was considered necessary and expedient that the patients should be between the ages of 25 and 40 years, and therefore patients between those ages were chosen. Secondly, the case-books were gone through *seriatim* for this purpose, and each case was chosen within these limits in all instances where a family history had been taken. Thirdly, only males were used, as it was found that they were not so troublesome as females, and were more easily persuaded to submit to the necessary operations.

It will thus be seen that the cases under consideration include all varieties of insane patients, the only guide to selection being the existence of a family history and an age of from 25 to 40 years (this being entirely irrespective of the shape or size of the palate).

Careful examination of the fifty-six casts resulting in confusion only, it was found absolutely necessary to classify them by actual measurements. The excellent system of measurement suggested by Dr. Goodall⁽⁷⁾ was found to be much too long and tedious for the purposes of the present investigation. After much labour had been expended in careful comparison of the different types, it was found that the following three measurements were in all probability the most useful:—(1) The transverse diameter was taken between the outer edges of the second molar teeth; (2) the depth of the palate was taken at the level of the second molar teeth, measuring from their cutting edges; and (3) the depth of the palate was also taken at the level of the first bicuspid teeth, again from their cutting edges.

Having taken these measurements, it was found necessary to obtain the average measurements of the palates of a number of normal individuals. The same measurements were consequently made on twenty-one skulls chosen from the museum of the London Hospital. The skulls were those of Europeans and Americans, and were of about the average size and shape of that of an ordinary well-developed man.

The measurements so taken were found to vary slightly, namely, the transverse diameters at the level of the second molar teeth varied between 68 mm. and 54 mm., and the average of the twenty-one was 60 mm. The depth at the level

of the second molar teeth varied between 25 mm. and 17 mm., the average being 20 mm. The depth at the level of the first bicuspid teeth varied between 16 mm. and 12 mm., the average being $13\frac{1}{2}$ mm.

Now, in comparing the depth of palates taken from dried skulls with that of casts of palates taken from living individuals, the thickness of the soft parts, namely, the muco-periosteum, must be taken into consideration, and for obtaining this thickness the muco-periosteum was stripped from half of the palates of some patients in the *post-mortem* room of the Claybury Asylum, and was found to average 2 mm.; therefore the average depth of the normal palate at the level of the second molar teeth must be taken as 18 mm., and that at the level of the first bicuspid teeth as $11\frac{1}{2}$ mm.

The measurements of the casts of the palates varied considerably in all diameters, and from a consideration of the figures it was seen that the palates may be divided roughly into four different types, namely, (1) the high narrow; (2) the high broad; (3) the low narrow; and (4) the low broad.

On examining the casts from a general point of view it was soon seen that some palates slope gradually upwards from the incisor teeth to the highest point, whilst others slope more abruptly; and in determining with some degree of accuracy the amount of the slope, the depth at the level of the first bicuspid teeth was found to be of considerable importance. On comparing the measurements of the casts at this level with those of the skulls, it was found that palates can still further be divided into (1) those with a gradual slope backwards from the incisor teeth; (2) those which slope backwards more abruptly; and (3) those with a normal slope backwards. Hence the types of palates found in the fifty-six insane patients examined become twelve in number.

Other differences were observed in a small number of the casts, namely, a few were seen to be oblique or asymmetrical, and others were found to have small projections (*tori*) (one or more in number) along the median line.

Now, in considering the question of abnormalities of the palate as stigmata of degeneracy, the evidence afforded by the plaster casts may best be taken by a consideration of the different types found in order: firstly, with regard to the number of patients with palates of each particular type;

secondly, with regard to the mental condition of such patients ; thirdly, with regard to the number of such patients who are married ; and fourthly, with regard to the number of such patients who have a distinct family history of insanity. In connection with this last consideration it must be stated that in the majority of cases the family history is not very accurate in all details, and only deals with the more gross and obvious forms of mental disease, which, in most cases, have ended fatally. It is common knowledge that very often it is extremely difficult to obtain a complete family history owing to the ignorance and wilfulness of the friends, who refuse to admit that a relative was in an asylum for a certain time and recovered.

Before referring *seriatim* to the different types of palate, and classifying the various patients according to their mental condition, it is desirable to shortly, in order to avoid confusion, define the different words employed for the latter purpose. Two different uses are made of the word "amentia,"⁽⁶⁾ which is employed in the phrases "ordinary amentia," and "high-grade amentia." The former of these is used to indicate the mental condition of patients who are congenitally feeble-minded, but who are not idiots or very low imbeciles, neither of which classes of patient has been employed during the present investigation. The latter term, namely, "high-grade amentia," refers to cases of insanity which have not from birth shown distinct feeble-mindedness, but where, at maturity, this is present to some extent, and is associated with various insane habits, and with an absence of a tendency to develop dementia. These patients thus possess a somewhat slighter degree of degeneracy than do the former. The remaining patients have been grouped under the terms "chronic insanity with dementia," "dementia of the third grade," and "dementia paralytica." The first of these phrases is employed to indicate the mental condition of patients who are suffering from any of the ordinary varieties of mental disease, but who have developed little more than clinically appreciable dementia or secondary feeble-mindedness. The second refers to the mental condition of that large class of patients who may be conveniently grouped under the term "chronic lunatic." They show any of the very numerous common symptom-complexes of mental disease in association with a well-marked degree of dementia. This class of patient, like the preceding, is in a stationary mental condition, and it

might perhaps with advantage be noted here that practically all the cases used during the present investigation are in a fairly stationary mental condition, this having been thought desirable in order to enable a reasonably accurate diagnosis to be made for the purpose of classification. In order that this intention might be carried out without any sorting out of cases, the patients were chosen from the earlier admissions, the later case-records not being used. The third of the terms employed, namely, "dementia paralytica," is synonymous with the term "general paralysis of the insane." There is only one patient of this kind, and he is a very chronic case with slowly progressive dementia.

The different types of palate will now be considered *seriatim*—

1. Of the *high narrow palate* which slopes suddenly from the incisor teeth, there are seven examples. Of these, three belong to patients suffering from dementia of the third grade, two belong to patients suffering from chronic insanity with dementia, and two to patients suffering from high-grade amentia. Two of the above patients are married, and hereditary insanity existed in one case.

2. Of the *high narrow palate* which slopes gradually backwards from the incisor teeth, there are two examples. Of these, one belongs to a patient suffering from ordinary amentia, and the other to a patient suffering from chronic insanity with dementia. Neither of the above patients is married, and hereditary insanity exists in one of them.

3. Of the *high narrow palate* with a normal slope backwards from the incisor teeth, there are two examples. Of these, one belongs to a patient suffering from high-grade amentia, and the other to a patient suffering from dementia of the third grade. Neither of the above patients is married, and there is hereditary insanity in one case.

4. Of the *high broad palate* which slopes suddenly backwards from the incisor teeth, there are four examples. Of these, two belong to patients suffering from dementia of the third grade, one from chronic insanity with dementia, and one from dementia paralytica. One of the above patients is married, and there is hereditary insanity in one case.

5. Of the *high broad palate* which slopes gradually backwards from the incisor teeth, there are seven examples. Of

these, four belong to patients suffering from dementia of the third grade, one from chronic insanity with dementia, one from high-grade amentia, and one from ordinary amentia. One of the above patients is married, and hereditary insanity exists in four cases.

6. Of the *high broad palate* with a normal slope backwards from the incisor teeth, there are five examples. Of these, one belongs to a patient suffering from dementia of the third grade, two from chronic insanity with dementia, and two from high-grade amentia. Two of the above patients are married, and hereditary insanity exists in three cases.

7. Of the *low narrow palate* which slopes backwards from the incisor teeth suddenly, there are five examples. Of these, three belong to patients suffering from dementia of the third grade, one from ordinary amentia, and one from high-grade amentia. Two of the above patients are married, and there is hereditary insanity in two cases.

8. Of the *low narrow palate* which slopes backwards gradually from the incisor teeth, there are five examples. Of these, four belong to patients suffering from dementia of the third grade, and one from ordinary amentia. One of the above patients is married, and hereditary insanity exists in two cases.

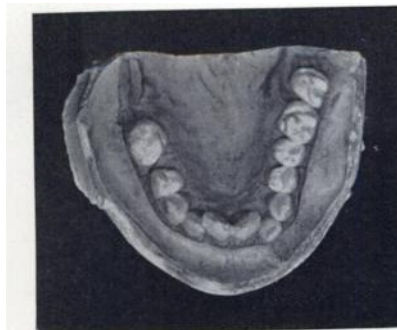
9. Of the *low narrow palate* with a normal slope backwards from the incisor teeth, there are four examples. Of these, one belongs to a patient suffering from dementia of the third grade, two from chronic insanity with dementia, and one from ordinary amentia. None of the above patients is married, and hereditary insanity exists in four cases.

10. Of the *low broad palate* which slopes backwards suddenly from the incisor teeth, there are three examples. Of these, one belongs to a patient suffering from dementia of the third grade, one from chronic insanity with dementia, and one from ordinary amentia. None of the above patients is married, and hereditary insanity exists in two cases.

11. Of the *low broad palate* which slopes backwards gradually from the incisor teeth, there are four examples. Of these, two belong to patients suffering from chronic insanity with dementia, and two from high-grade amentia. Three of the above patients are married, and hereditary insanity exists in three cases.



No. 20.—High, narrow, deep in front.



No. 50.—Low, narrow, deep in front.



No. 48.—High, narrow, average in front.



No. 13.—Low, narrow, average in front.



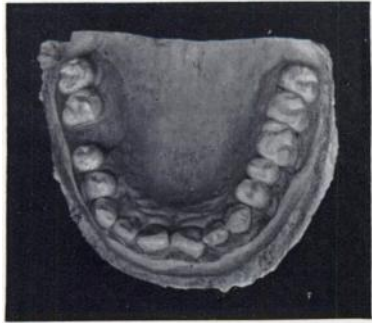
No. 8.—High, narrow, shallow in front.



No. 17.—Low, narrow, shallow in front.

To illustrate Dr. HARRISSON'S paper.

Bale and Danielsson, Ltd.



No. 9.—High, broad, deep in front.



No. 47.—Low, broad, deep in front.



No. 38.—High, broad, average in front.



No. 40.—Low, broad, average in front.



No. 1.—High, broad, shallow in front.



No. 10.—Low, broad, shallow in front.

To illustrate Dr. HARRISSON'S paper.

Ede and Danielson, Ltd.

12. Of the *low broad palate* with a normal slope backwards from the incisor teeth, there are eight examples. Of these, four belong to patients suffering from dementia of the third grade, two from chronic insanity with dementia, one from high-grade amentia, and one from ordinary amentia. One of the above patients is married, and hereditary insanity exists in six cases.

Having examined the palates *seriatim*, and considered the patients to whom they belong with regard to their mental condition, family history, and civil state, it is interesting and instructive to note that of the thirty patients with marked heredity there are nineteen with broad palates and eleven with narrow palates. There are eleven with high palates and nineteen with low palates, measuring at the level of the second molar teeth ; and there are six deep at the first bicuspid, fourteen average at the first bicuspid, and ten shallow at the first bicuspid. Therefore, in the casts of fifty-six patients chosen indiscriminately, the type of palate most commonly found with *well-marked heredity* is the *low broad palate, which is shallow or of the average depth at the first bicuspid*. With regard to civil state, the married patients with low palates are seven in number, and those with high palates are six in number ; and the commonest type amongst these is the low broad palate which is of the average depth at the first bicuspid.

The *mental condition* of the fifty-six patients will now be referred to. There are seven patients suffering from *ordinary amentia*, of which

I	has	a	palate	of	the	type	<i>high narrow, shallow in front.</i>
I	"	"	"	"	"	<i>broad</i>	"
I	"	"	"	"	"	<i>low narrow, deep</i>	"
I	"	"	"	"	"	<i>average</i>	"
I	"	"	"	"	"	<i>shallow</i>	"
I	"	"	"	"	"	<i>broad, deep</i>	"
I	"	"	"	"	"	<i>average</i>	"

and therefore the type of palate most commonly found in patients suffering from *ordinary amentia* is the *low narrow palate which is shallow in front*.

There are ten patients suffering from *high-grade amentia*, of which

2	have	palates	of	the	type	<i>high narrow, deep in front.</i>
I	"	"	"	"	"	<i>average</i>

2 have palates of the type *high broad, deep in front.*

I	"	"	"	"	"	<i>shallow</i>	"
I	"	"	"	"	<i>low narrow,</i>	<i>deep</i>	"
I	"	"	"	"	<i>broad,</i>	<i>average</i>	"
2	"	"	"	"	"	<i>shallow</i>	"

and therefore the type of palate most commonly found in the *high-grade aments* of the series is the *high broad palate which is of the average depth in front.*

There are fourteen patients suffering from *chronic insanity with dementia*, of which

2 have palates of the type *high narrow, deep in front.*

I	"	"	"	"	"	<i>shallow</i>	"
I	"	"	"	"	<i>broad,</i>	<i>deep</i>	"
2	"	"	"	"	"	<i>average</i>	"
I	"	"	"	"	"	<i>shallow</i>	"
2	"	"	"	"	<i>low narrow,</i>	<i>average</i>	"
I	"	"	"	"	<i>broad,</i>	<i>deep</i>	"
2	"	"	"	"	"	<i>average</i>	"
2	"	"	"	"	"	<i>shallow</i>	"

and therefore the type of palate most commonly found in the patients suffering from *chronic insanity with dementia* is either *high or low broad of average depth in front.*

There are twenty-four patients suffering from *dementia of the third grade*, of which

3 have palates of the type *high narrow, deep in front.*

I	"	"	"	"	"	<i>average</i>	"
2	"	"	"	"	<i>broad,</i>	<i>deep</i>	"
I	"	"	"	"	"	<i>average</i>	"
4	"	"	"	"	"	<i>shallow</i>	"
3	"	"	"	"	<i>low narrow,</i>	<i>deep</i>	"
I	"	"	"	"	"	<i>average</i>	"
4	"	"	"	"	"	<i>shallow</i>	"
I	"	"	"	"	<i>broad</i>	<i>deep</i>	"
4	"	"	"	"	"	<i>average</i>	"

and therefore the type of palate most commonly found in the patients suffering from *dementia of the third grade* is the *low broad or low narrow which is deep in front.*

There is one patient suffering from *dementia paralytica*, and the type of palate in this case is the *high broad palate which is deep in front.*

Certain very interesting and important conclusions are at

once obvious on examination of the preceding remarks and tables. As has been stated, in the patients whose family histories show a gross hereditary taint of insanity the type of palate which is most common *is the low broad palate, which is shallow or of the average depth at the first bicuspid.*

It is known that mental disease is more obviously hereditary as its degree is more marked. For example, the very highest degree of heredity is seen in the case of idiots and severe imbeciles; the degree is less in adolescent cases and in ordinary chronic lunatics of the maniacal or delusional types, and it is still less in toxic and other cases who either recover or pass on into dementia. Lastly, there are many mild and, in many instances, recoverable cases in which the symptoms are very slightly beyond a permissible degree of eccentricity, and in which the only traceable heredity is seen in similar but less severe eccentricity in the case of near relatives. Under these circumstances the fact cited above regarding the type of palate which has been found during this investigation to occur most commonly in cases with a gross heredity of insanity is of importance, as this type of palate should be approximately that found in the most degenerate group of patient. A study of the above tables shows that this is the case. In the ordinary aments the type of palate is a low narrow one which is shallow in front; in the high-grade aments it is high and broad, and of average depth in front; in the cases of chronic insanity with dementia it is either high broad or low broad, and of average depth in front; and, finally, in the cases of dementia of the third grade it is low broad or low narrow and deep in front.

Hence, the palate of insane heredity is essentially a palate which is shallow or, at any rate, of the average depth in front, whatever its other characteristics may be.

A large proportion of the palates, however, are not of this type, as many are deep in front, and especially those of the cases of dementia of the third grade; and it is consequently necessary to suggest a cause for this variety of deformity. The most probable is a *general physical degeneracy*, associated in many cases with defective dental development, with rickets, scurvy, or congenital syphilis, etc. This is supported by the fact that such palates are not uncommonly seen in the "weakling" or in the youngest member of an otherwise healthy

family with no definite hereditary history of mental disease, and in persons of this type who show no signs of mental aberration. It also commonly occurs in the children of persons of alcoholic habits, or who suffer from phthisis or other similar "diathetic diseases."

The conclusions drawn during the present investigation may be briefly summed up as follows :

1. Abnormalities of the palate are common in the insane.
2. These abnormalities may be roughly classified into two large groups, of which the former contains the palate of the hereditary psychopath and the latter the palate of the general degenerate.
3. The former palate is variable in its general type, but as a whole is shallow, or, at any rate, of the average depth in front.
4. The latter palate is also variable in its general type, but is in the main characterised by an increased depth at the level of first bicuspid.

Tables showing Measurements of the Palates in their several Types.

No. of patient.	Transverse diameter.	Depth at and molars.	Depth at 1st bicuspid.
HIGH, NARROW, DEEP IN FRONT.			
6	52 mm.	24 mm.	15 mm.
20	55 mm.	21 mm.	20 mm.
21	58½ mm.	22 mm.	17 mm.
22	58½ mm.	20 mm.	19 mm.
29	55 mm.	22 mm.	15 mm.
37	53 mm.	20 mm.	15 mm.
51	59 mm.	22 mm.	20 mm.
HIGH, NARROW, AVERAGE IN FRONT.			
32	50 mm.	20 mm.	13 mm.
48	52 mm.	22 mm.	13 mm.
HIGH, NARROW, SHALLOW IN FRONT.			
2	54 mm.	23 mm.	10 mm.
8	56 mm.	22 mm.	12 mm.
HIGH, BROAD, DEEP IN FRONT.			
9	65 mm.	21 mm.	19 mm.
35	65½ mm.	24 mm.	19 mm.
44	60 mm.	23 mm.	20 mm.
55	62 mm.	20 mm.	16 mm.

No. of patient.	Transverse diameter.	Depth at 2nd molars.	Depth at 1st bicuspids.
HIGH, BROAD, AVERAGE IN FRONT.			
14	61½ mm.	21 mm.	14 mm.
38	70 mm.	25 mm.	13 mm.
42	62 mm.	21 mm.	13 mm.
52	67 mm.	23 mm.	14 mm.
53	61 mm.	22 mm.	13 mm.
HIGH, BROAD, SHALLOW IN FRONT.			
1	65 mm.	25 mm.	10 mm.
5	61 mm.	25 mm.	11 mm.
15	62½ mm.	21 mm.	9 mm.
25	62 mm.	24½ mm.	11 mm.
26	64 mm.	21 mm.	11 mm.
45	60 mm.	20 mm.	10 mm.
54	60 mm.	23 mm.	10 mm.
LOW, NARROW, DEEP IN FRONT.			
16	55 mm.	17 mm.	19 mm.
19	57 mm.	15 mm.	17 mm.
27	53½ mm.	15 mm.	18 mm.
49	58 mm.	18 mm.	15 mm.
50	53 mm.	16 mm.	15 mm.
LOW, NARROW, AVERAGE IN FRONT.			
7	57½ mm.	17 mm.	13 mm.
13	55 mm.	16 mm.	12 mm.
41	50 mm.	14 mm.	14 mm.
56	48½ mm.	16 mm.	13 mm.
LOW, NARROW, SHALLOW IN FRONT.			
4	51 mm.	19 mm.	9 mm.
17	52½ mm.	12 mm.	10 mm.
18	52½ mm.	12 mm.	10 mm.
23	58½ mm.	19½ mm.	10 mm.
24	54 mm.	18 mm.	11 mm.
LOW, BROAD, DEEP IN FRONT.			
28	60 mm.	18 mm.	16 mm.
43	60 mm.	15 mm.	16 mm.
47	59 mm.	17 mm.	20 mm.
LOW, BROAD, AVERAGE IN FRONT.			
3	63½ mm.	18 mm.	13 mm.
12	63 mm.	18 mm.	14 mm.
30	61 mm.	17½ mm.	13 mm.
31	59½ mm.	15 mm.	12 mm.
34	62 mm.	18 mm.	12 mm.
36	63 mm.	18 mm.	12 mm.
39	63 mm.	17 mm.	13 mm.
40	66 mm.	18 mm.	13 mm.
LOW, BROAD, SHALLOW IN FRONT.			
10	60 mm.	17 mm.	9 mm.
11	60 mm.	17 mm.	10 mm.
33	62 mm.	17 mm.	11 mm.
46	61 mm.	15 mm.	11 mm.

(¹) Langdon-Down, "On some of the Mental Affections of Childhood and Youth," *Journal of Mental Science*, 1887.—(²) Walter Channing, *Journal of Mental Science*, 1897, p. 72.—(³) Clouston, *Neuroses of Development*, 1891, pp. 42—45.—(⁴) Talbot, *Irregularities of the Teeth and their Treatment*, Philadelphia, 1890.—(⁵) Peterson, "The Stigmata of Degeneration," *States Hospital Bulletin*, 1896, vol. i, No. 3.—(⁶) Charon, *Thèse de Paris*, 1891.—(⁷) Goodall, *Journal of Mental Science*, October, 1897.—(⁸) Bolton, *On the Histological Basis of Amentia and Dementia* (in press).

Insanity from Hasheesh.(¹) By JOHN WARNOCK, M.D.,
Medical Director Egyptian Hospital for the Insane, Cairo.

BEFORE describing this disease as it occurs in Egypt at the present day, let me give a few historical notes of the use of *Cannabis Indica*, of which hasheesh is the local preparation. For this, and much other information contained in this paper, I am indebted to the report of the Indian Hemp Drugs Commission of 1893. This valuable report was drawn up by a committee appointed by the Government of India, and in its pages a very full account of the use of hemp drugs in India is to be found. Unfortunately it appears that no lunacy expert sat on the Commission, and in my opinion its findings as to the relations between hemp drugs and insanity are not conclusive.

Mr. Grierson quotes references to hemp drugs in Sanskrit literature as early as 1400 B.C., *i.e.* 3300 years ago, or about the time of Rameses I in Egypt. In the tenth century of the Christian era, hemp drugs are mentioned as having medicinal properties.

In the *Makhzan-el-Adwiya*, *Cannabis Indica* seeds are spoken of as "stimulant and sedative, imparting first a great heat and then a considerable refrigerant effect. The leaves make a good snuff for deterring the brain; the juice of the leaves, applied to the head as a wash, removes dandruff and vermin; drops of the juice thrown into the ear allay pain and destroy worms and insects. It checks diarrhoea, is useful in gonorrhoea, restrains the seminal secretions, and is diuretic." As to evil effects, the writer says:—"Afterwards the sedative effects begin to preside; the spirits sink, the vision darkens, and weakness and madness, melancholy, fearfulness, dropsy, and such like distempers are the sequel, while the seminal secretions