for much kind and valuable assistance to Professor Symington of Belfast, to Dr. Milligan, Professor Delépine and Dr. Knowles Renshaw of Manchester, to Dr. W. Glegg of Birmingham, and lastly to Dr. Reginald Nichol of Manchester, who has shown much accuracy and skill in connection with the illustrations.

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PACHYDERMIA LARYNGIS.

A Summary of a Lantern Demonstration giving the Results of a Research delivered before the British Laryngological, Rhinological, and Otological Association, May 13, 1904.

By Jobson Horne, M.D.,

Surgeon to the Metropolitan Ear, Nose, and Throat Hospital; late Ernest Hart Memorial Scientific Research Scholar.

Dr. Jobson Horne said that as the little time left at their disposal did not permit of a paper being read, he would, after a few prefatory remarks, demonstrate upon the screen preparations in illustration of the points he wished to bring under their notice. The morbid change in the larynx they were about to consider was first described and brought into clinical prominence by Virchow in 1887. Since then many typical cases had been recorded. In spite, however, of the close attention paid within recent years to the larynx, one might say, without fear of contradiction, that clinicians had been able to add but little to Virchow's description. On the contrary, from the discussions on cases that had been brought forward from time to time, it would seem that some confusion had arisen through a lack of proper appreciation by clinical observers of the pathogenesis of the morbid condition.

The essential feature of pachydermia laryngis consisted in a hyperplasia of the epithelium, and certain changes in the subepithelial tissues. To the naked eye this hyperplasia might be (1) diffuse, affecting the vocal processes, the adjacent portion of the cords, the interarytenoid region, the ventricular bands, and at times the epiglottis. It was then spoken of as *pachydermia laryngis diffusa*. Preparations were shown in illustration of this.

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Or the hyperplasia might be (2) more circumscribed and pronounced in places, more commonly about the vocal processes, and more rarely in the interarytenoid space, the heaped up epithelium forming warty excrescences; it was then spoken of as *pachydermia verrucosa laryngis*. This was also demonstrated by lantern photographs of macroscopic preparations.

In drawing the above distinction, it was important, Dr. Horne said, to bear in mind that the pathogenesis of the two varieties was essentially the same. Under the microscope, he had always found the warty form associated with the diffuse, so that he regarded the former as only one of degree.

Dr. Horne next described in detail the changes that occurred in the subepithelial tissues.

Speaking of the ætiology, he said it was commonly stated to be in some degree uncertain, and that the affection was usually, if not always, due to excess in alcohol or tobacco, and improper use of the voice. Whilst fully admitting that indiscretions in diet and hygiene were important factors, he thought this teaching of the ætiology was fallacious, since it overlooked the fact, as shown by his investigations, that the causes which governed the development of the morbid process were rather to be found in the entire organism than in the larynx itself.

The hyperplasia was occasioned by an irritant exciting, as it is said, the formative power of the cells. The irritant might be infective or traumatic in nature. Syphilis and tuberculosis must be reckoned amongst the more important of the exciting factors in pachydermia laryngis. The term "idiopathic pachydermia" had been suggested to distinguish the so-called primary affection, or that associated with "chronic catarrh," of the larynx, from that accompanied by syphilis and tuberculosis. In the so-called primary cases, or "idiopathic pachydermia," he had, clinically and in the *post-mortem* room, not uncommonly met with evidence of chronic interstitial nephritis, and he exhibited specimens removed from such subjects. He was, therefore, inclined to regard the pachydermatous changes in such cases as part of a general fibrosis, and the term "idiopathic" as inadequate.

Faulty voice production, it was conceivable, might occasion a primary pachydermia. Photographs of the larynx in a living subject whilst producing the singing voice in a strained and faulty manner were shown on the screen. The superficial vessels, owing to the determination of blood to the surface of the cords, were seen tortuous to a degree, almost amounting to varicosity. This local congestion if often repeated would act as an irritant, and the pro-

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liferation of the minute capillaries and vascular elements—previously demonstrated in photographs of microscopic sections—would ensue. And yet how frequently one met with faulty voice production, and how comparatively seldom with pachydermia of the larynx of sufficient degree to be clinically observed. Dr. Horne regarded the transgressions in diet and in hygiene of the voice which so frequently accompanied faulty voice production as more material factors in the etiology than the transgressions of natural limits of normal voice registers.

On the whole, therefore, he was of the opinion that the epidermoidal changes described by Virchow were more than "skin deep," and that in the majority of cases it was as illogical to regard pachydermia as a local or idiopathic condition as it would be to speak of jaundice as a disease. By restricting one's views to the larynx, one might often fail to make use of the clue to the diagnosis of a more serious dyscrasia, and to the correct treatment of the laryngeal lesion itself.

Dr. Horne proceeded to the demonstration of the gross lesions to be observed in the advanced cases and to a consideration of the symptomatology they occasioned. In the warty stage, he said, the appearance presented *in the mirror* was very characteristic. From one vocal process projected a broad-based excrescence which on phonation was received into a pouch or depression on the other vocal process. This clinical phenomenon was pathognomonic, so much so as liable to be regarded as the begin-all and the end-all of pachydermia laryngis. Huskiness was the main symptom. The amount of huskiness was often very slight, and far less than one might have expected in the presence of such hyperplastic changes at the vocal processes. In fact, the slightness of the vocal symptom had always been a matter for clinical comment and surprise. Different explanations had been offered. Virchow in 1887 described the occurrence of symmetrical oval swellings in the region of the vocal processes, the centre of each swelling being slightly depressed; this depression he attributed to the firmer fixation of the mucous membrane to the connective tissue at this spot. Fraenkel, writing in 1889, did not accept this explanation of the depression, but attributed it to pressure exerted by the tumour of one cord upon the corresponding tumour of the other cord. Semon,[1] writing in 1897, was of the same opinion as Fraenkel, namely, that this unilateral crateriform depression was probably the result of pressure by the opposite elevation, and not of the firmer fixation of the mucous membrane to the connective tissue at this spot, as Virchow

[1] "A System of Medicine," by Professor Clifford Allbutt, vol. iv, p. 790.

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believed; for if the latter were correct, the depression would not be invariably *unilateral*.

With a view of arriving at a solution of this difference of opinion, Dr. Horne had investigated the point in both its pathological and clinical aspects. The results of the investigation were communicated to the British Medical Association at Portsmouth in 1899. The following is a brief summary of the results:

Firstly, in all the specimens examined the depression or pouch was found to be *bilateral;* it was usually more marked on one side than the other, but it was present on both cords.

Secondly, in no case did the pouch or depression, when examined by the microscope in serial sections, present evidence of pressure or attrition. On the contrary, a greater degree of hyperplasia was found. The theory of the formation of the depression by pressure was therefore not supported by histological evidence.

Thirdly, there was histological evidence to show that at certain spots the mucous membrane below the vocal process was, as described by Virchow, more intimately adherent to the underlying cartilage.

The following is the explanation of the whole question offered by Dr. Horne:

1. In the *normal* larynx a line formed by a fold of mucous membrane starts from behind the vocal process of each cord, and takes a crescentic course, passing downwards and forwards, running immediately below the process and parallel to the middle third of the cord. The line is most marked at the vocal process and then thins off. It is more apparent in the male sex. The mucous membrane immediately above and below this fold is more intimately adherent, hence the fold. The fold itself may be duplicated, and occasionally may be so marked as to suggest in the image a second cord.

The vocal process may be looked upon as a *point d'appui*, and this fold represents, and may be conveniently spoken of, as a line of traction.

2. In pachydermia laryngis the changes in the region of the vocal process—as observed at an autopsy—are symmetrical and bilateral.

3. When, in the later stage of pachydermia, a warty growth appears in the region of the vocal processes it is not strictly a neoplasm. It is only a localised hyperplasia, or exaggeration of a pre-existent structure, viz. the fold or line of mucous membrane already referred to as a line of traction.

4. The mucous membrane immediately above and below the

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part of the fold that has become exaggerated is more intimately adherent, hence the furrow or depression. In this way there is formed at least one depression on each cord. For this reason the unilateral theory of the pouch cannot stand.

5. These furrows and excrescences about the vocal processes being developed at symmetrical spots and in the same plane, presumably would interfere with the apposition of the cords and the production of voice; but, clinically, this apposition is not interfered with—at least, not sufficiently to prevent phonation. The solution of this difficulty rests in the following observation.

6. By the time the warty condition about the vocal processes is established *the cords are not both on the same plane.* An alteration in the plane of the cords at once explains the preservation of voice. One cord has only to be on a slightly higher plane than its fellow to permit of a dovetailing of the excrescences and depressions. This dovetailing may be spoken of as a *vertical adaptation of the cords.*

The alteration in the plane of the cords was demonstrated by Dr. Horne in macroscopic and microscopic preparations of larynges affected with pachydermia. In the former the larynx had been hardened without being opened, and showed the cords in the same position as in the cadaver from which the specimen had been obtained. In the latter the larynx had been prepared in a similar manner, and then set in hard paraffin, so that a series of vertical sections cut at right angles to the vocal processes presented the relative positions occupied by the cords.

SOCIETIES' PROCEEDINGS.

PROCEEDINGS OF THE OTOLOGICAL SOCIETY OF THE UNITED KINGDOM.

Seventeenth Ordinary Meeting, held in the Hall of the Faculty of Physicians and Surgeons, 242 St. Vincent Street, Glasgow, on Saturday, May 21, 1904.

The President, Dr. Thomas Barr, *in the Chair.*

The President said: My first and most pleasant duty, speaking for my Glasgow colleagues and myself, is to offer you all a most hearty welcome to Glasgow. We have looked forward to this visit of the Otological Society of the United Kingdom with the greatest interest, and we are highly gratified to see so many

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