A Lecture

ON

REMOVAL OF THE CONTENTS OF THE ANTERIOR TRIANGLE OF THE NECK IN CASES OF MALIGNANT DISEASE OF THE TONGUE.

Delivered at St. Bartholomew's Hospital.

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[DEDICATED TO PROFESSOR POIRIER OF PARIS.]

GENTLEMEN,—When the French physicians and surgeons visited London in the course of October, 1904, Professor Poirier wrote to ask whether, if I performed an operation on the tongue, he might be present. It so happened that on the Wednesday morning of that week I had to operate upon a gentleman for the removal of some disease—not malignant disease—in which I had to make a considerable dissection and remodel the tongue, and to perform a preliminary laryngotomy. Professor Poirier was present, and with him Professor Cunéo and Professor Faure, distinguished members of the Paris Faculty of Medicine. They expressed themselves as very interested, and they wanted to know what happened about the laryngotomy wound, and what about the healing of the tongue. It chanced that I had a patient in the nursing home, on whom, within a fortnight, I had performed an operation for the removal of the tongue preceded by laryngotomy, and I had taken out, a few days later, the contents of the anterior triangle of the neck, and I took these gentlemen to the patient's room. They saw what was left by the laryngotomy—a very small scar; but Professor Poirier's attention was particularly directed to the scars of the just-recently-healed wound in the neck, and I noticed at once that he took a great deal more interest in that than he had done in the operation on the tongue or the preliminary laryngotomy. He saw the large scars, and he said to me, "Do you always perform that operation for the removal of the glands in cases of cancer of the tongue?" I said, "Yes." And he said, "Is it generally done?" I said, "I do not think it is at present, but that has been my own operation for a long time past." Professor Poirier has, you must know, studied and published an admirable description of the lymphatics of the tongue, amongst his other anatomical works, and he was pleased to find that the operation was such as he himself would approve.

He asked me if I had published an account of this operation, and I said I had given a clinical lecture at this hospital on it about six years ago, and the lecture was published, if I remembered rightly, in the BRITISH MEDICAL JOURNAL of that time. I thought I had described the operation in detail, and said I would send him a copy of the JOURNAL of that

date. But when I came to look up the report of the lecture I found that, so far from giving a detailed description, I had only given an outline of it. I had then been performing it for about two years, and I had apparently not made up my mind as to the best method of performing it; and more than that, I was not at that date so confident as I am now of the desirability of performing so large an operation as a routine measure in all cases of cancer of the tongue, whether the glands are enlarged or not. I found I had promised to give a lecture upon the same subject at a later period to this class, and to describe the operation in detail, and also to tell what I could of the results of such operations. I do not know that I should even now have selected this particular subject for this particular lecture but for two circumstances. In the first place, I was recently present at an operation for the removal of affected glands in the neck secondary to a successful operation for the removal of cancer of the tongue. I found that

the method of performing the operation was such as I should have used myself eight or ten years ago, but such as I have not used for the last eight years at least. The glands were cut down upon, and were removed as they were found to be enlarged, and any smaller glands which were discovered when the incision had been made were taken away, but there was no attempt at methodical removal.

The other circumstance was a case of very great interest, one of the most interesting cases I have ever seen in tongue surgery, which has occurred also within the last few weeks. I venture to tell it to you in detail, because it has a considerable bearing on the necessity of performing this operation in all cases of cancer of the tongue.

About four years ago I was asked by a surgeon to see a gentleman who had two little plaques on the under surface of his tongue on one side, just under the border; and one of these was a little thicker than the other. I did not like the look of it, and I felt sure that at some time or other it would become the seat of cancer, as surely as one can foretell such a result. I advised that the case should be put upon treatment for a month, and if, at the end of that time, these plaques were not completely well, they should be cut out and the edges of the wound brought together, and I felt justified in guaranteeing that within five or six days of the operation the wound would be well, because wounds of the tongue heal very quickly. Neither the surgeon nor the

patient were much inclined to an operation. I saw the patient at intervals during the winter, from November to February, when the plaque which I had suspected had become thicker, and a little sore had formed in the centre. I was informed that this had happened on previous occasions, and that too much weight need not be attached to it. Nevertheless, I felt quite sure now that not only was the disease likely at some time to become cancerous, but I felt sure that it was on the border-line of cancer, although I hoped it had not passed it. In February, after mature consideration, the patient allowed me to operate. I cut out, by a very small operation indeed, these plaques of thickened tongue, and, as usual, I had sections cut of the disease. When

Fig. 1.—Showing the situation of the groups of glands, and the incisions: (1) submental group, (2) submaxillary, (3) parotid, (4) carotid group, particularly the gland over the bulb of the carotid. A chain of glands extends down to the apex of the triangle and must be removed. (From a drawing by Dr. Leonard Mark.)

I came to examine them I felt quite sure in my own mind that this had already become epithelioma. And as I have seen so large a number of patients die with affection of the lymphatic glands after most successful removal of malignant disease of the tongue, even in the early stages, I did my best at that time to urge the necessity of removing all the contents of the anterior triangle. However, I was over-ruled in this matter, and was told that I should be quite sure to see the patient at intervals of six weeks or two months, and that the supervision of a surgeon would be given to him as far as would be necessary. I was obliged to content myself with that. I did see that man from time to time, and when he ceased to come I used to meet him occasionally while I was riding or walking, and he seemed to be in the rudest and best of health. It was not until October of this year (1904)—that is to say three years and eight months after the operation on his tongue—that his family medical man came and said he had a lump under the sterno-mastoid muscle, that he had had it since the previous June, and he wished me to see him to give an opinion as to the nature of it. He said he had been in June to consult the surgeon who first called me in, but that he had been transferred by him to his family attendant, who had been attending him ever since. I said, "Did not he tell you about the operation?" He said: "No; and not only that, but he took the greatest trouble to conceal from me the fact that he had ever had anything the matter with his mouth. The portion of tongue which had been removed was so small, that I did not suspect he had had an operation for malignant disease." There was a great mass of malignant disease at the angle of the jaw in the parotid region, adherent to almost everything except the spine. It had involved the muscle to a considerable extent, and I removed it by an extensive operation, which lasted about three hours, in which I removed the contents of the anterior triangle, including a great piece of internal jugular vein, the sheath of the internal carotid artery, of the pneumogastric nerve, and almost all the contents of the posterior triangle. In the posterior triangle there were two or three enlarged cancerous glands. I was greatly interested in this case, because the patient's first observation of the enlargement of the glands was in June of this year (1904), that is to say, three years and four months after the removal of what you might consider a trivial condition of epithelioma, if such an expression is ever permissible in regard to epithelioma of the tongue. I cannot recollect any instance in which affection of the glands has been deferred for more than two years after the successful removal of cancer of the tongue; and if I had been asked at the end of two and a half years whether the cancer was likely to recur in the glands I should have said it was most unlikely, and that that man might be considered to be perfectly safe.

I took the slides of the original little cancer of the tongue to Dr. Bashford, who is Director of the Cancer Research, and to Dr. Murray, his assistant, who is a most accomplished microscopist. I thought I would like to see whether they held the same opinion of the microscopical characters of the primary disease as I had done. I took down also

the slides of the disease of the gland which had just been made. I did not relate any more of the case than to say, "I want your opinion as to whether this is epithelioma of the tongue or not." I told them what the condition of the tongue was, but I did not say it related to a patient who had been operated upon between three and four years previously. They examined the slide. One said, "I do not know, but I think that it is epithelioma." The other examined it and said, "Yes, I think that is the very earliest condition of epithelioma. It is very early indeed."

I said, "Now I want to ask you a question. Perhaps you do not understand what a surgeon may have to do under these circumstances. Am I to say to that patient 'You must have the contents of the anterior triangle removed'? It is a big operation, and lasts one hour and twenty minutes, perhaps one hour and a half, and will lay him up for a fortnight or longer, and it is not entirely devoid

of danger, though I do not think he would be likely to die of it." This strikes them from a new point of view. They are accustomed to specimens and microscopic slides, but not as they directly affect the lives and estates of citizens. One said, "I scarcely think we are called on to express an opinion on that question." The other said: "If it were mine I would have my glands taken out; I would not have one gland left." Then I told them the whole story, and showed the slide of the gland recently removed; it is typical epithelioma, just like a squamous-celled epithelioma of the tongue. I am the more impressed with this case because, if I had ventured to use it as a case of cancer of the tongue in which there was no local recurrence after operation, and the slide had been submitted to pathological examination, some, if not many, persons would have thought I was stretching the licence of statistics very far in claiming such a case as epithelioma.

Well, gentlemen, these two circumstances led me to select to-day for my lecture the subject of operation for removal, not of the glands of the neck, mind, but of the contents of the anterior triangle of the neck, on the same lines as nowadays we clear out the contents of the axilla in a case of cancer of the breast. I have been in the habit of performing this operation for some years, and have reduced it to a sort of routine. Before I describe

the details of it I would draw your attention to the groups of glands. Here is the diagram which I used in this theatre six years ago, which shows the situation, from a clinical point of view, where glands are likely to be found diseased. Here is the submental group; here the submaxillary group, for the most part beneath or embedded in the salivary gland; but, remember, one gland lies in the subcutaneous tissue over the salivary gland, and you may sometimes draw it up over the border of the jaw. Here is the inferior carotid group, and there is one gland particularly which is shown just above the bifurcation, on the bulb of the carotid before it divides into internal and external carotid. And here is a very important group which I call, for my own purpose, the parotid group, which is really the superior carotid group. It lies deep down behind the angle of the jaw, rather more behind the vessels than in front,

Fig. 2. — Showing the flaps turned back. (From a drawing by Dr. Leonard Mark.)

between the vessels and the parotid gland. In order to remove it properly it is almost always necessary to cut away a portion of the parotid salivary gland itself. In cancer of the forepart of the tongue and the tip the submental group is most likely to be affected; in cancer on the border of the tongue further back, the submaxillary group is liable to be affected; in cancer still further back, the parotid group. And either directly or through one or other of these three groups the gland about the bifurcation of the carotid becomes affected, and is often the first gland to be felt by the patient, because it is not hidden deep down under the jaw as the others are. Unfortunately, you cannot rely upon only one group of glands being affected by cancer of a particular part of the tongue. A very small cancer of the tongue about the middle of the border, or even right at the tip, may affect all these groups of glands. So it comes to this—that to remove the glands of the neck with success after an operation for cancer of the tongue, you must be prepared to remove all those groups of glands. The operation is performed thus: A long incision is made from the mastoid process or just below it to the sterno-clavicular joint, along the anterior border of the sterno-mastoid muscle. Another incision is carried from the symphysis menti, across the side of the neck to meet the first incision about the upper border of the thyroid cartilage. It is nearly at a right angle to the first incision. That divides the skin into two large triangular flaps—a lower with its apex backwards which is turned forwards, an upper flap with its apex downwards which is turned up over the jaw. These flaps should be of skin alone or of very little more than skin, because, in addition to the gland over the submaxillary salivary gland, there is another gland in the submental region, which also lies in the subcutaneous fat. The dissection begins at the lowest part, and the sterno-cleido-mastoid muscle is drawn a little back. Its border is cleaned so that the muscle is bare. The dissection is carried down in front of it until the great vessels are exposed. The tissues between the sterno-mastoid and the muscles attached to the larynx, which contain a long chain of glands, are raised from below upwards off the great vessels, which are left quite bare at the bottom of the wound. The muscles are cleaned of fascia and fat; the dissection is carried up along the line of the vessels, and quite close to the vessels themselves, otherwise glands will be left behind. It is carried deep down around the vessels, in front and behind, particularly between the parotid gland and the vessels. The digastric triangle is completely cleared out, including the submaxillary salivary gland, and the muscles are left quite bare. The submental region is treated in like manner, and search is made between the genio-hyoid muscles, lest a gland there should be overlooked. A very clean dissection can be made in about one hour and twenty minutes to one hour and three-quarters. The internal jugular vein and the carotid arteries are exposed for many inches of their course. But it is not a difficult operation. A considerable number of vessels must be tied, and I advise you most strongly to take up and clamp and tie every vessel you possibly can before you divide it. If you do not you will have considerable bleeding from the veins in the

neck and from arteries like the lingual and the facial—a matter of considerable importance, particularly in old people.

After the dissection is over the remaining vessels are tied, the wound is cleansed of blood, a long strip of gauze is thrust up beneath the jaw in the submaxillary triangle, and another is placed between the parotid gland and the vessels, and the ends of both these pieces are carried out at the lowest part of the wound. This is done to check the oozing of blood, which is sure to occur afterwards, because in this situation pressure cannot be applied on the outside to arrest the hæmorrhage. In addition, a drainage tube is inserted by the side of the gauze to carry off the blood-stained serum, and saliva, for gauze more often acts as a plug than as a drain. On the day following the operation these strips of gauze are taken out. The tube is left in, because very often for a good many days there takes place a considerable flow,

not merely of serum, but of saliva, owing to the fact that the parotid gland is almost invariably wounded. From the cut surface of the parotid saliva oozes for some days, and at first, when that happened in my operations, I was troubled, because I thought I should establish a salivary fistula. My impression now is that it would be very difficult to do so. The wound is almost always healed within three weeks of the time the operation was performed, and often it is well in nine or ten days. In this operation for the removal of the contents of the anterior triangle, the contents mean the lymphatic glands, the submaxillary salivary gland, fat, connective tissue, a portion of the omohyoid muscle, the platysma muscle, quantities of veins, small and large, sometimes a great piece of the internal jugular vein if the glands are adherent to it, sometimes a portion of the external carotid artery. I tell you plainly that I think it ought to be done in every case of cancer of the tongue, where the disease is limited to one side of the tongue, unless there is some strong contraindication. Now comes the important question as to when it should be done. I need scarcely say that if this operation could be performed at the same time as the operation on the tongue, there would be great advantages. In the first place the patient would not have to look forward, after the first operation, to a second. Again, the operation might be performed after Kocher's method, re-

Fig. 3.—The dissection from below upwards. (From a drawing by Dr. Leonard Mark.)

moving the tongue through the neck, first tying the lingual or the external carotid artery. But there are also disadvantages which, to my mind, outweigh the advantages. The double operation is too much for old people and for bad subjects. The wound becomes septic throughout. The patient is not able to take food by the mouth with comfort for several or many days, and may therefore sink from exhaustion if matters go badly. In proof of the greater danger of the double operation at a single sitting, take my own experience.

I began to perform this operation in December, 1895. Between that time and three years ago* I performed it on 28 people. In 15 cases I performed the two operations at two separate sittings, and in 13 cases both were performed at a

* I have not included the operations of the last three years, because I could not speak of the final results.

single sitting. In the first series of 15, only 1 died of the operation; of the second series, 13, 3 died of the operation. That is, less than 7 per cent. on the first series, and more than 23 per cent. on the second series. Of course, these percentages must be modified by admitting that some of the cases in which the two operations were performed at a single sitting were exceptionally severe, because the glands were badly affected and required immediate removal.

Both in public and in private practice I adopt the practice of performing the operation on the tongue first, for that is what the patient comes about—he wants the operation performed on his tongue, and often he does not trouble about the glands at all. Even if his glands are enlarged, he thinks that, as soon as the disease has gone from his mouth, it is only necessary to paint his neck with that popular material, tincture of iodine. Therefore, he does not desire an operation on the neck. I used to allow the patients to leave the hospital or nursing home, and at the end of a month from the first operation they were to come back for the operation on the neck. I am sorry to say that many shirked the second operation. Unless the glands were very obviously enlarged, they would not undergo it. Therefore I could not do what I believed to be right and desirable for these people. And I was quite in despair until at length I hit upon a course which seemed to meet the difficulty. I operate on the tongue first, and as soon as the patient is fit for the second operation I perform it. By "fit for the second operation" I mean this: that he should be able to take his food quite comfortably by the mouth; liquid food in sufficient quantity to enable him to fight through the second operation. At the end of a few days the wound in the mouth is usually so far healed that it is far less liable to infect the wound in the neck than if the cancer of the mouth were removed at the same time as the glands in the neck. I now operate at the end of about nine days; that is the average time. And I do not tell the patient, as a rule, that he will have to undergo a second operation; I say to the friends, "I shall begin this operation on Tuesday, and about Thursday week I shall hope to complete it." They are quite satisfied and content that I should do anything I think proper, provided the patient recovers, and the best has been done for him; and I assure you that the two operations, even in men of 70 years of age and over, are recovered from perfectly well in about three weeks. I have come to the conclusion that this is the most prudent course, and should be pursued as a routine practice. Of course, the routine must be broken from time to time for special reasons.

Now for results. I began to perform the operation for the complete removal of the contents of the anterior triangle of the neck in December, 1895, or January, 1896. Between that period and December, 1901, there were twenty-eight of these operations; and, in order to make the issues as simple as possible, I will merely take the number of persons who died of affection of the glands without recurrence in the mouth and the number of successful cases—that is, of persons who were alive and well three or more years after the operation, or who

died of some other disease than cancer more than three years after the operation:

Twenty-eight Cases of Removal of the Contents of the Anterior Triangle of the Neck from January, 1896, to December, 1901.

Died of affection of glands without recurrence in the mouth	...	...	...	...	4
Successful cases	...	...	...	...	10

Compare with these the results of the old operation, in which glands which could be felt to be enlarged were taken out, but no more than this was done. Up to January, 1896, I performed this operation thirty-one times:

Thirty-one Cases of Removal of Enlarged Glands before January, 1896.

Died of affection of glands without recurrence in the mouth	...	...	...	...	8
Successful cases	...	...	...	...	5

Again, take another series of cases to compare with the first series. Between January, 1896, and December, 1901, I operated on thirty-four patients for the removal of cancer of the tongue without removing the glands in the neck:

Thirty-four Cases of Removal of Cancer of the Tongue without Removal of the Glands between January, 1896, and December, 1901.

Died of affection of the glands without recurrence in the mouth	...	...	...	...	9
Successful cases	...	...	...	...	9

It will be seen at a glance that by far the most successful results are those which were procured by the removal of the contents of the anterior triangle. But the mere statement of numbers does not tell everything. Allowance has to be made for certain conditions which were present or which were absent in each of these three series of cases. In the first series there were 18 patients in whom the glands were perceptible to touch at the time they were removed, 7 in whom they were not perceptible, and 3 of whom there was no note on this important point. By far the best results were obtained in the 7 cases in which the glands were not perceptible to touch. For 4 of these patients are amongst the 10 successful cases. Of course, in the second series the glands were perceptible in every one of the 31 patients, and that was why they were removed. So far from thinking the results bad, I am surprised to find they are so good. For it is quite a remarkable circumstance that five persons, under such conditions, should have been cured by so incomplete an operation.

In more than 1 of these 5 cases the glands were proved by microscopical examination to contain epithelioma. Yet 1 of these patients was alive and well nearly twenty years after the operation.

Probably no corrections are required in the third series of 34 cases. For if, on the one hand, it may be said that these 34 cases comprise the lightest and most favourable of all the cases (which is, of course, quite true), there were, on the other hand, some of them in which the glands were not removed, because they were beyond reach of removal, and the operation on the tongue was merely palliative.

There are two or three matters to which particular reference must be made. In the first place, with regard to the necessity for the removal of the submaxillary salivary gland. The

Fig. 4.—The condition of the triangle when the dissection is completed. The omohyoid anterior belly is sometimes removed, sometimes drawn aside, while the deep vessels are cleaned. (From a drawing by Dr. Leonard Mark.)

removal of that gland increases the severity of the operation, and there is a deep depression left under the jaw, which is slightly disfiguring; and in removing it some of the fibres of the facial nerve which go up to the angle of the mouth are sometimes cut, so that control of that angle of the mouth may be slightly affected. About three years ago it occurred to me that I might turn up the submaxillary salivary gland from below, and clear out the contents of the submaxillary triangle from beneath it, and the gland or glands which lie embedded in the salivary gland, then lay the salivary gland back in its place once more. I did that in three instances and those cases gave me the greatest anxiety. One of the patients is dead, and I think he died from having had his salivary gland left, because, a year after the operation, he came back with a big mass growing from the lower part of the gland almost into the pharynx. And although I made a very large operation for the removal of it he died of recurrence of the disease a few months afterwards. In both the other cases I have been disappointed at the result from what may be termed a cosmetic point of view; the gland bulges a little, and there is a prominence instead of a depression. I think the patients are safe, because it is some time since I operated on them. I do not recommend you to take this course, for the advantages are not nearly great enough to justify the risk.

You will see that four of the first series of twenty-eight patients died of affection of the glands without recurrence in the month, which seems a large number after removal of the contents of the anterior triangle. But, in two of them, the glandular disease was so extensive that there was rapid recurrence in the neck itself. In the other two unusual events occurred, and I direct your attention to these particularly. In one of the patients, although the primary disease was but a kind of button quite on the border of the tongue, and apparently not going far into the tongue, and although I removed it and the glands on that side successfully so that it never recurred in the tongue or in the glands on that side, he died of diseased glands on the other side of the neck. And that occurred about a year after the first operations. It grew very rapidly. I tried to remove the disease, but it was absolutely inoperable. You must take into account that in a certain number of cases—I cannot give you an idea of the proportion, but I think it must be small—the patient is liable, even with disease limited to one border of the tongue, to affection of the glands on the other side of the neck. And this has led certain surgeons to recommend—though I do not think it has been done in this country—that the glands on both sides of the neck should be removed in every case of cancer of the tongue. I have not got to that stage yet. I doubt if I shall ever do so. I have removed the glands of the neck on both sides for cancer of the tongue, but not when the tongue cancer was limited to one side. I do not think at the present time circumstances warrant so large an operation as that, and I do not think the patients would submit to it.

The remaining patient died of disease of the glands of the posterior triangle of the neck, and again the question arises, Is it necessary, or desirable, to remove the contents of the posterior triangle of the neck when the contents of the anterior triangle are removed? I reply that experience has not taught me that this is necessary in the ordinary cases. That patient was the first person on whom I performed this operation of clearing out the anterior triangle. He had a bad cancer far back in his tongue, implicating the anterior half arch of the palate, and with that a great cancerous gland under the mastoid muscle, in the parotid region; and I performed a large operation on the tongue and glands at one sitting; I fully expected that in a few months he would have recurrence of the disease. But to my great surprise he remained well for a year and a half, when he came to show me an enlargement of the glands in the posterior triangle, which he had recently discovered. I attempted to remove them, but they were matted in with nerves and vessels, and it was impossible. I made use of that experience in the case which I related at the beginning of the lecture. There was a large mass breaking down at the angle of the jaw beneath the sterno-mastoid muscle; I therefore cleared out the contents of the posterior triangle, where I found absolutely malignant glands. I think where the disease of the glands is only slight and not adherent, and where they are not badly diseased in the parotid region you need not remove the contents of the posterior triangle; but if there is severe glandular disease in the parotid region, and beneath the sterno-mastoid, I feel sure you should not be content with removal of the contents of the anterior triangle, but should remove also the contents of the posterior triangle down to the brachial plexus.

I have, naturally, been speaking of disease on only one side of the tongue. If the disease is in the middle line, as it sometimes is, or if it has spread from one side to the other, I am sorry to say you will have to take your courage into your hands, and remove the contents of the triangle on both sides of the neck. I have done so on several occasions, and the patients have made very good recoveries. That is an absolute necessity if you want to save your patient from recurrence and death from the disease.

And now let me finally say that I am only giving you what I believe to be the best advice, on my experience, up to this time. It is possible I may have to modify my opinions on some of these points, but I am not likely to modify them in the direction of making a smaller operation than I have demonstrated to-day. I advise you, in every case of cancer of the tongue, even in the very earliest period, to recommend your patient most strongly to have not only the disease of the tongue removed, but if the disease is on one side to have the anterior triangle completely dissected out, and if the disease of the tongue is in the middle line to have the contents of both triangles taken out.

REFERENCE.

1 BRITISH MEDICAL JOURNAL, 1898, 1, 541.

ON THE THALAMUS.*

By GUSTAV MANN, M.D. EDIN., B.Sc. OXON.,
Oxford.

For some years I have been teaching that the central nervous system may be divided into two regions—one lying in front and the other lying behind the plane of the posterior commissure. The anterior or cephalic portion is the thalamus, while the posterior or caudal segment forms the cord. The central nervous system consists therefore, according to my view, of a thalamic and a post-thalamic division.

Fig. 1.

- A.—The central nervous system, consisting of a thalamic, T, and a post-thalamic, C, portion. The plane of the posterior commissure is indicated by 8.
- B.—1, The olfactory mucous membrane; 2, the olfactory bulb; 3, the olfactory tract; 4, thalamus; 5, the two pineal eyes; 6, the optic cup; 7, the layer of rods and cones; 8, the plane of the posterior commissure; 9, the red nucleus; 10, a spinal ganglion; 11, a motor nucleus; 12, cord; 13, the rubrospinal tract. (For simplicity's sake decussations have not been represented.)

* Read in the Section of Anatomy at the annual meeting of the British Medical Association, Oxford, July, 1904.