disease, we may injure or destroy healthy portions of the brain-tissue. But what will follow? Not necessarily mental disorder or appreciable mental defect.

With the exception of certain functions arrogated by the left hemisphere, we have, for mental purposes, practically two brains; and diseases are not always on the left side. The records of our daily experience of disease and injury of the brain show that considerable portions of the brain-substance may be destroyed without great danger to mental stability. But paralysis may ensue, more or less extensive, or defects in special sense, according to the position and amount of lesion. Such risk undoubtedly exists, as well as others incident to the operation itself, as to all surgical operations. But the choice is not between this and any other mode of treatment, but between running these risks and certain death; and I have no doubt that there are many who, if they had the choice, would rather go through, if not enjoy, life, halt or hemipic, than perish miserably after years, it may be, of incessant suffering. "Ne sutor ultra crepidam," I think I hear some one say. I applaud the sentiment; but as in this matter I have had the experience of the surgeon, as well as the physiologist and the physician, I have thought that I might venture on these suggestions without appearing to go very far beyond my last.

OLEATE OF QUINIA.—Dr. Squibb, in his *Ephemeris*, considers that oleate of quinia, although it has not attracted general attention, is probably one of the most important of the oleates. From the larger quantity of quinia needed in medicine, this oleate is made as strong as possible. While a normal oleate of this alkaloid would by calculation contain about 53 per cent. of the alkaloid, it has been found impracticable to dissolve that quantity in the acid. In a series of experiments made some years ago, when this oleate was introduced, it was concluded that 25 per cent. was the best proportion. But as the quinia of the market holds some hygrometric moisture, it is better to take 26 grains of the alkaloid and 74 grains of oleic acid as the formula. The alkaloid is simply rubbed to powder, and added to the acid in a bottle. Like the other alkaloids, this dissolves so readily that, being in much larger proportion, it is liable to clog together and be slow in dissolving. But this clogging together is easily broken up by means of a glass rod, or the solution may be effected in a capsule, and the clogging be prevented by a pestle. In this way it is easily made in a few minutes. A fluid ounce of this oleate weighs about 410 grains, and, therefore, contains about 102 grains of quinia, which is equivalent to about 140 grains of the ordinary sulphate of quinia; therefore, a fluid drachm contains the equivalent of about 17 grains of the sulphate, and a minim is equivalent to a little more than a quarter of a grain. An hypodermic injection of a fluid drachm will, therefore, carry the equivalent of 17 to 18 grains of sulphate of quinia. It happens, perhaps, oftener with the administration of quinia than most other medicines, that the physician wants to save the stomach; and many conditions need quinia when the stomach will not accept it, or will not utilise it if given by the mouth. These circumstances have long indicated the hypodermic use of quinia, but up to this time no solution has been proposed that is well adapted to hypodermic use, first, because of the large dose required, and again, because of sparing solubility of available quinia salts. Hence this oleate has been sometimes used hypodermically, but with what success is unknown to the writer. The epidermic use, however, is of late not uncommon, and, since it was first proposed, occasional trustworthy testimony from private sources has led the writer to consider it an important adjunct to the more common methods of using quinia. The quantity of oleate needed here is considerable, often amounting to one or two fluid drachms. Hence it should always be applied under oiled silk or gutta-percha tissue. When put directly on the skin, a minim will require about four square inches of surface or it will run, and a fluid drachm would require about two square feet of surface, an area hardly accessible under ordinary circumstances. But two pieces of very thin fine old muslin or linen, six by nine inches, will easily hold half a fluid drachm each, and may be applied to the inside of the thighs, covered by oiled silk. This leaves the abdomen available for another similar application if desirable, and the oleate can be renewed on these places as rapidly as it is absorbed. Another good way of applying it, especially in walking cases, to get a moderate continuous effect, is to anoint the spinal tract for an inch or more on each side of the spinous processes, morning and evening, with a half fluid drachm, and cover it with a strip of oiled silk under the clothing. The writer has heard of several instances in which a ringing in the ears was speedily produced by such applications of the oleate.

INTRODUCTORY LECTURE ON THE PROVINCE OF ANATOMY.

By ALEXANDER MACALISTER, M.D., F.R.S.,

Fellow of St. John's College, and Professor of Anatomy in the University of Cambridge.

THIRTY years ago it would have been unnecessary, even for a new professor in a new place, to commence his lecture on anatomy by defining, in a somewhat apologetic strain, the position, in the medical curriculum, of the science which it is his province to teach. No one then questioned that upon a carefully taught anatomy as a foundation all sound medical teaching should be based.

Within the last few years, many changes have taken place; the range of medical study has widened, new subjects have been imported, and new branches of older subjects have largely developed; while the student is expected to master this increased curriculum in the same period as that which was formerly thought necessary for a much more limited course.

The consequences of these changes are obvious. Many of the new subjects, from their very novelty, from the attractiveness of their method, the skill of their teachers, as well as their intrinsic importance, now claim a large share of the student's attention; and to provide the time necessary for their study, there is a growing tendency to curtail that spent in the pursuit of other subjects, each teacher setting forth his own science as that of primary importance.

In this conflict of opinion, the relative positions of the sciences fundamental to the medical course is liable to be misunderstood; the older and less attractive falling into a position inferior to that which they really deserve, while at the same time the diversity of the student's occupation tends to encourage superficiality rather than thorough knowledge, so that the man who passes through the extended course in the prescribed time can rarely do more than absorb a smattering of each science.

The real solution of this difficulty, and that to which experience is fast bringing us, is the lengthening of the curriculum, so that in the additional year the balance of subjects of study can be more carefully adjusted with a due regard to their relative importance.

But we have not met together here and now to legislate as to the future arrangements of medical study, but to consider what position anatomy should occupy in your own system of studies, and how much of your time and attention you ought to give to it.

By your presence here, I assume that most of you intend to devote your lives to the study and practice of medicine or surgery. A few of you may be pursuing the subject for its own sake; some, I hope, with the prospect of being the scientific teachers of the future; but, judging from the history of Cambridge graduates in the past, I conclude that, even in this most favoured of schools, most of you wish for a kind of knowledge which you can turn to practical account; useful not merely for the intermediate ordeal of your examination, but also for your after-life of practice. If this be so, it is surely of foremost importance that you should have as perfect a knowledge as possible of the human body in health, and it is this knowledge which constitutes anatomy.

I wish you to bear in mind that anatomy is an exceedingly wide subject, one which requires to be viewed in two aspects, as an art and as a science. The art of the anatomist deals with the examination of the structure of the human body, not only of its coarser larger arrangements, recognisable by the naked eye, and separable by the knife and forceps, but also of the finer building up of the textures, the minute organisation revealed by the microscope, seen in sections, developed by reagents—in short, with the unfolding of the physical characters and relations of the component parts of the human body, including all that we now call histology, which is but one small subdivision of anatomy.

But the science of anatomy is much wider than the art. Every tissue and every organ in the body has had a history, which it is the business of the anatomist to search out and record. At some period in the life of the individual, it has begun to be, and, through many vicissitudes of time and circumstance, has attained to its adult condition. This branch of our science we call embryology; but it is simply the historical side of anatomy, essential to and inseparable from the rest of the science, to which we shall have frequent occa-

sion to refer, and without which we cannot understand the structure of the full-grown body.

But our observations on these changes in the course of growth lead us to believe that structural development has not occurred fortuitously, but proceeds along definite lines; and also that, for each change in condition, there are inducing causes, which are often discoverable by careful study. It is the business of the anatomist to seek to formulate these laws of organisation, and thereby to raise his department from a state of mere empiricism to the position of a true science. The empirical anatomist finds in the body a tangled maze of muscles, nerves, and vessels, which his art enables him to unravel, but does not help him to understand. It is for the scientific anatomist to seek for an order in the confusion, an efficient causation underlying every structural differentiation, and a clue through the maze, not only to lead him to thread his way through it, but also to help him to understand why the maze is there at all, and how it has come to be. This department of anatomy, which is known as morphology, is the portion of our science of the greatest interest to the student of biology, and to it much of our attention will be directed in the course of our systematic anatomical studies.

These several departments of anatomy are so mutually interdependent, that no boundary can be drawn isolating any of them; and no course of anatomical teaching is complete which does not comprehend not only descriptive anatomy in its narrow dissecting-room sense, but also histology, embryology, and morphology. And if, for convenience of teaching, it becomes desirable to lend a portion of the practical study of certain branches to other cognate sciences, it is not to be understood that thereby I yield one jot of the claim of anatomy to include them, but simply that, in a great school, it is needful that the amount of work should be properly proportioned among its several professors. Human anatomy is thus in itself a widely extended science, and stands in close relations to neighbouring and allied sciences. Man is an animal, and his anatomy should be regarded as a natural history monograph. He is built on the same principles as his neighbours, and in most respects he is the best primary type for us to study for the purposes of comparative anatomy. As no one type, however, suits for the demonstration of all morphological laws, and as many of the principles of animal organisation can be better understood and illustrated by the study of simpler forms, we require, therefore, to make frequent calls upon other animals to explain obscure points in human anatomy, and thus human anatomy is brought into close relations with comparative anatomy. Man is truly a microcosm, in a sense not dreamed of by Paracelsus and those philosophers who have followed him in the use of the term. In man's embryological history we read, epitomised, several chapters in the book of nature. Beginning life as a protozoon in the egg, he passes, as development proceeds, into the condition of a simple metazoon, a diblastula, and thence becoming triploblastic, we have metameric subdivision taking place, introducing a successional symmetry, and also the formation and subsequent supplanting of the notochord; and thus we learn from this one life-history alone the progression of the phenomena of life, from the state of a simple cell to that of the highest organisation in the world.

On the one side, thus, we see that human anatomy is but a branch of general morphology; on the other side, we cannot study form and structure without reference to purpose and function. The human body is a bundle of specialised parts, each plainly set apart for certain work; and we should be blind if we did not, in examining these parts, keep in mind their uses and modes of working. This is the special domain of physiology; and while, in such an immense group of sciences it is necessary that, for the convenience of teaching, the two should be separated, and taught in separate ways and by distinct teachers, yet it is obvious that the boundary-line between the two is hard to be drawn, as the points of overlap are many; and it is equally manifest that the knowledge of structure must precede the understanding of function.

Another important scientific relation of human anatomy is to the science of anthropology. The different races of mankind present to us a special case of a species being modified by the influence of physical and psychical factors; and the study of the effects of these environments on the organisation of man is one of the most interesting branches of anatomy. We shall have occasional opportunities of referring to parts of this most important subject in the course of our systematic studies; but I hope also to take an early opportunity of expounding to any of you who may be specially interested in it the anatomical basis of anthropology more systematically and in greater detail.

It has been occasionally said that it is a waste of the student's

time to spend much of it in the study of practical human anatomy, as much of the knowledge gained by the slow and laborious process of dissection speedily passes out of recollection. The same is equally true of all the fundamental sciences, and equally erroneous as a reason against their study. That it is equally true of chemistry, physiology, and physics, as of anatomy, is the experience of all. What proportion of the most brilliant of scientific students, after ten years of medical practice, could give the formulæ and history of the formation of indican and its allies; could describe the distinctive characters of Bunsen's, Regnault's, and Mayer's calorimeters; or could recount the phenomena produced by the influence of electricity on muscle, under different conditions, and describe the various apparatuses used in the demonstrations thereof? Yet who dare say that this failure of the memory is a reason why these sciences should not be fully taught and fully learned? These are the ladders whereby the student climbs into the vantage-ground whence he can survey human life and human disease; and when the mind has once travelled in a certain track, it is easy to revive the impressions received by the way, and the forgotten anatomy is far easier recalled than it was at first acquired. There is not a single fact in human anatomy the knowledge of which may not prove of practical importance to you in your after-life; and you will never regret, in future years, the time spent in dissecting-room work.

The study of structure is a necessary prelude to the understanding of function; and, so far, anatomy is the handmaiden of physiology; but we shall discover, as we proceed, that this is but one aspect, and that structure is worthy of attention for its own sake. Abernethy once said in his lectures that anatomy without physiology was like an old maid without a dowry. But, if this be true, physiology without anatomy is the dower of an unwilling bride who avails herself to the full of the Married Woman's Property Act. The two sciences are collateral and inseparable, and one has no right to dominate the other, or to say to it, "I have no need of thee," but they are so connected that there can properly be neither schism nor rivalry between them; and for your purposes as students of medicine, an extensive knowledge of both is necessary.

That this is so, it requires but little reflection to comprehend. To use a comparison trite though apposite, it is just as necessary for you to know the anatomy and physiology of man, to help you to repair a damaged human body, as it is for a watchmaker to know the mechanism of a watch before he can repair one. How little could you trust a valuable instrument for mending to a mechanic who, though he could discourse learnedly upon epicyclic, hypocyclic, or involute teeth, or the differing qualities of the sounds of internal and external contact of the escapement-teeth, had yet only a hazy and uncertain idea of the arrangement of the component wheels and pinions of which the watch is made up. So, likewise, the physician who can recite the formulæ for the bile-pigments while uncertain as to the course of the vena portæ, or he who can speak of the cardiograph while ignorant of the true levels of the openings of the heart-chambers, would be as unlikely to prove a satisfactory practitioner as one whose knowledge is of the reverse kind.

For purposes of surgery, you must study descriptive anatomy with particular care, for your knowledge is nothing if not accurate. It is useless to know the names, relations, and branches of the femoral artery, if your knowledge of the position of the vessel be vague and indeterminate. In order that knowledge may be useful, it must be graphic—such a knowledge that, with little mental effort, you can picture before your mind's eye the parts and their arrangements as you have dissected them out for yourselves, or have seen them demonstrated by others. Any form of knowledge short of this mental photography is of little use in surgery; and to help you in the formation and recollection of such pictures, it is of the utmost importance that you should try to realise the exact place of every part in your own body. You are examining, let us suppose, the heart. You see its place in the opened thorax; endeavour to realise exactly the site and level of each cavity and opening; try to picture mentally the situations and planes of the valves of your own hearts; and, having done this, you have provided yourselves with a permanent note-book, an unfailing remembrancer, immeasurably superior to the waistcoat-pocket cram-books of the period. An eminent surgeon, Murray, describing the operation of ligation of the abdominal aorta, speaks of dissecting off the aortic plexus of nerves from the vessel "with my mind at my finger-tips." This is the character of the knowledge you require for surgery, and this is the standard at which you should aim.

But it is not only to the surgeon that a minute knowledge of anatomy is of importance; the physician needs an acquaintance ne

less close and accurate, for there is scarcely a nerve-twig in the body which may not be concerned in the production of symptoms connected with, often characteristic of, diseased conditions in remote organs. Your knowledge of the anatomy of the spinal cord helps you to localise lesions therein; and your acquaintance with nervous anatomy aids you in unravelling the mysteries of referred sensations. By knowing the vascular anatomy, you can understand, and so palliate, the distal consequences of valvular disease of the heart. In short, without a knowledge of normal healthy anatomy, how can you recognise the abnormal or diseased? Without anatomy, which is the foundation and antecedent of all pathology, you will be mere empirics; like Job's friends, "physicians of contemptible trifles."

Having thus seen that the study of anatomy is of vital importance to the physician and surgeon, I desire now to speak of anatomical study in another light, as a mental discipline. The method of research pursued by the physician or surgeon in the diagnosis of disease closely resembles that whereby a naturalist studies an unknown species. The process of search for distinctive characters is the same, and success in both cases depends on the culture of the powers of observation, as well as on the judicious reasoning upon the phenomena observed. In these respects, the study of anatomy is a splendid introductory gymnasium; here you can find out facts for yourselves, you can verify every single statement, you learn to take nothing for granted, nothing on mere authority. At the outset of the student's course, it is of unspeakable value that he should begin with such a subject, in which he is brought face to face with tangible objective realities, easily grasped, easily understood. Hence the wisdom of making all students begin their course with practical anatomy; as in its pursuit, perhaps more than in any other part of the course, the faculty of observation is specially trained; besides, the exercise of the memory on things which can be seen and felt strengthens it; and, even though some of the knowledge thus acquired be transitory, yet as a drilling it is of the utmost value; indeed, I believe that a course of osteology is the most sound commencement of study in theory, as it is the most useful in practice.

This educational importance of anatomy is enhanced by the fact that while, on account of the existence of a small range of individual variation in structure, there is sufficient of novelty in the student's work to increase his interest and arouse his attention, yet the main tracks are beaten, and he has reliable light and guiding all the way, and is not in danger of being prematurely lured astray to follow the chimera of original research. Nothing is more hazardous for the junior student than to be misled into undertaking so-called original investigations before a proper foundation of knowledge is laid. It is for another, and much later period of the student's course, to embark in the search for the unknown; when he has, by a proper training in the known, acquired experience and modesty sufficient to enable both the science and himself to profit by his labours. I would warn you, at the outset of your study, of the mistake often made by students of confounding names and things. Anatomy being descriptive, is necessarily encumbered with a copious and peculiar vocabulary; over 8,000 parts of the human body have had special names affixed to them, and some groan under the burden of many synonyms. All these you might know, and yet know nothing of anatomy. Learn to understand the parts themselves; the names are of use in enabling us to refer to the realities, and are otherwise useless.

Here your professor can help you by showing you the best methods of learning and the relative importance of the several parts, thus aiding you in acquiring the knowledge necessary, with the best economy of time and labour.

An accusation has been made against anatomy, that it is a stationary science, that nothing now remains to be made out in it. Even if this were true, there would be none the less reason for your learning it, for its obvious practical applications; but it is eminently untrue. Anatomy is progressive, even human anatomy. Compare the modern handbooks of Henle, Krause, and Gegenbaur, with those of the equally great men of the preceding age, Sömmerring, Weber, and Meckel; and you will see that the former have gained on the latter as much as, or even more than, the earlier authors had advanced beyond their predecessors, such as Fabricius, Morgagni, or Winslow. Even yet there are immense gaps in our knowledge of human anatomy, where still the unknown exceeds the known; thus the whole subject of anatomical statistics is at present in a most unsatisfactory condition; and, as Professor Wenzel Gruber has shown in a recent paper, the attempts to cook statistics from data which are not always comparable, only end in making confusion worse confounded. This is eminently a place wherein a new de-

parture is required; and I have been long of opinion that this is a sphere for the co-operation of anatomists somewhat on the plan of the collective investigation of disease, so happily initiated by Professor Humphry. Then, again, we know next to nothing of the embryogeny of individual muscles; even the history of the ossification of many of the bones is as yet imperfect, as is that of the genesis of many ligaments. We know little accurately of the relative calibres of the vessels, the disposition of their valves, of the mutual relations and exact disposition of the component parts of the abdominal sympathetic. As a matter of fact, to take only one more instance, there is not a single English manual of anatomy which gives correctly the exact origins of the muscles of the forearm. In short, there is scarcely a department of anatomy which does not present to us problems as yet unsolved. Even within the last three years, we have seen a hot controversy as to the exact position of the stomach; and it is not more than ten years since, for the first time, a correct account was given of the attachments of that surgically important structure, the fascia lata of the thigh; and even in that account there are important lacunæ. And if, from the region of descriptive anatomy, we travel into that of morphology, we are at once surrounded with obscure problems—the diverse innervations of the orbital muscles, the reason for the cervical origin of the nerve to the diaphragm, and for the recurrence of the inferior laryngeal nerve, the history of the formation and causation of the great omentum, and hundreds of similar mysteries, hitherto only partially solved or still inscrutable.

With such ample scope for research before those of you who wish to devote yourselves to scientific work, there is every incentive to effort; and it should be your endeavour to master the known before venturing on the unknown, and whether you intend ultimately to pursue the path of investigation or that of practice, your preparatory course and methods are the same; there is, in your work as students, no dichotomy. I emphasise this because, in a recently published address, my friend, Professor Gairdner of Glasgow, has quoted a statement of some person in reference to the Cambridge school which would seem to imply the contrary, as if there was really any distinction between the kind of knowledge of the fundamental sciences required in the training of the practitioner and of the scientific student. True, there is an old-fashioned so-called anatomy and physiology, replete with crudities, which may yet linger in out of the way corners of medical schools, very inconsistent with a scientific morphology and physiology, equally unfit for the requirements of the modern practitioner; but I unhesitatingly deny that any branch, either of anatomy or of physiology, can be too scientific for the needs of the medical student, or that the purely scientific aspects of these sciences are necessarily divorced from their practical bearing.

A second reproach has been cast upon anatomy—that it is only a knowledge of averages. There is certainly a range of variability among human structures, and the ordinary student is only expected to learn the commonest condition of things; but far too much has been made of this as an *opprobrium anatomicum*, for there is, in every organ and system, a certain definite, easily recognised normal state, about which it is the student's business to learn, the departures from which are exceptional, often important, always along definite lines, and always pregnant with morphological lessons. Thus while, in the larger treatises, about forty-two varieties of the aortic arch and its primary branches are described, yet there is only one easily recognised condition which is typical, all the others being rare, and, when they occur, due to the persistence of conditions which are usually embryonic and transitory; so that, knowing the embryogeny of the aorta and its branches, we can at once understand every condition with which we meet. Thus the commonest of all irregularities is that in which the right subclavian is the leftmost branch of the arch, and passes behind the trachea and oesophagus, a state apparently far from the normal, yet easily enough understood when we remember the double origin of the aortic arch; for while, in the normal state, the portion of the right arch below the origin of the right subclavian is the part which obliterates and vanishes, in this variety that part persists, from the root of the right subclavian, and the portion between the right carotid and right subclavian disappears.

These deviations are thus significant finger-posts, and their careful study will well repay the anatomist, as those parts which are most variable are always those whose history has been the most complex; and we no longer label aberrant monsters, as Ruysch did of old, as forms like unto cacodæmons, but we endeavour to trace the stages whereby they have deviated from the normal.

Descriptive anatomy in many respects resembles geography, and

the degree of minuteness required depends on the purposes for which we learn it. A broad accurate knowledge of its leading features is essential as a branch of general education; but, just as the engineer or geologist requires a knowledge, as much as possible, of the territory within which he operates, so the morphologist or the practitioner requires an equally thorough knowledge of the parts with which he is concerned, for structures apparently insignificant may really be of great importance. The bands of fibrous tissue described by Cooper, Hey, and Colles, seem in normal anatomy small and obscure, yet the proper understanding of the pathology of hernia, and the proper operating for it, depend on acquaintance with these. Similarly, it may seem of trifling moment to delay to notice that little crescentic fold of pericardium, not more than one-sixth of a square inch in surface, which lies to the left of the top of the left auricle; yet a historical study shows that this minute fold is the degenerated remains of the sheath of the left superior vena cava; and thus the insignificant trifles of descriptive anatomy become frequently the beacons of morphology.

On this account, the amount of minuteness and detail in our descriptions depends on the requirements of the student, and the problems to be solved thereby. We trace with painful minuteness the fibres of the spinal cord, while we give but scanty attention to the equally complex fibres of the ilio-costalis muscle; hence also, as new problems present themselves for solution in surgery, pathology, and physiology, new calls are made on the anatomist, and new details require to be added to his treatises. For example, it is not long since a very few sentences in our anatomical text-books sufficed for the description of the brain-convolutions; and the growth of this section in the successive editions of any of our standard manuals, such as Gray, Ellis, or Quain, shows the progressing stages of the requirements of a more detailed knowledge, whereby a new chapter has been added to our descriptive anatomy.

Here, again, your professor can help you by giving, in advance of the text-books, the information needed to help in solving these problems.

We offer you two methods of anatomical instruction: that of the dissecting-room, and that of the lecture-room. In the first, you are to learn the art of the anatomist; in the second, I shall endeavour to teach the science of anatomy. In the former, you learn to cultivate your powers of observation and manipulative skill; in the latter, your memory is to be impressed and your judgment educated. In both, I shall do what I can to help you in prosecuting your studies.

We commence this day the study of the oldest of the sciences; for the first book ever written was on the anatomy of man, and the first author on Anatomy was a King; but though several thousand years have well-nigh passed since this archaic manual was composed, yet I shall be grievously disappointed if you do not find, in the course of your study, that there is still, in this oldest of subjects, a freshness and an interest wherein it is not one whit behind its newest competitor.

THE CONTAGIOUS DISEASES ACTS.—A largely attended conference of delegates of the Anti-Contagious Diseases Acts Abolition Associations was held yesterday at Birmingham, under the presidency of Professor James Stuart. Mr. Stansfeld, M.P., was present, and took part in the proceedings. The principal resolution passed called on repeal organisations by public meetings, memorials, petitions, and all other legitimate means, to assist Mr. Stansfeld and his colleagues in securing that full legislative effect should be given, at the earliest possible opportunity, to the resolution of the 20th of April last, by a measure which, while totally repealing the Contagious Diseases Acts, 1866 and 1869, should not in any way enact anything directly or indirectly authorising or permitting the compulsory examination condemned by that resolution. A form of petition to the Government was adopted, of similar effect.

THE MANAGEMENT OF HOSPITALS.—The vice-presidents of the Hospital Saturday Fund have issued a letter in which they state that the majority of the hospitals and dispensaries benefiting by the fund have expressed their willingness to concur in a scheme by which one life-governor may be appointed to any hospital receiving not less than £50, or to a dispensary receiving not less than £25. They point out that there are collectors of the fund in 3,000 workshops in London, representing an aggregate of 250,000 men, and that working men, such as have formed and managed friendly societies and other successful industrial associations, ought not to be excluded from representation upon institutions designed for the benefit of the sick poor.

BRITISH MEDICAL ASSOCIATION.

FIFTY-FIRST ANNUAL MEETING.

PROCEEDINGS OF SECTIONS.

ON PHOTOGRAPHY OF THE LARYNX AND SOFT PALATE.

Read in the Section of Anatomy and Physiology.

By LENNOX BROWNE, F.R.C.S. Edin.,

Senior Surgeon to the Central London Throat and Ear Hospital; Surgeon and Aural Surgeon to the Royal Society of Musicians.

I SHALL have the pleasure of bringing before you this morning some photographs of the larynx and of the soft palate in the act of singing. It will be as well first to glance at the section of the head by Luschka, which I am now throwing upon the screen,¹ so that we may refresh our memory as to the exact position of the various parts to be dealt with in my paper. Having briefly done this, you will see at once how enormous are the difficulties of photographing an object so hidden from view as the larynx, which is, moreover, continually moving in one way or another. As a natural consequence, although many attempts have been made to photograph the larynx, the results hitherto obtained, as you shall judge for yourselves, are not very satisfactory, and certainly do not teach much. So far as I know, of the many men who are said to have tried the experiment, only two have published any results: these are Professor Czermak of Pesth, and Dr. French of Brooklyn. Dr. Stein of Frankfurt-on-the-Main, it is true, gives, in his well-known work on *Light*, a detailed description of the process which he adopted in photographing the larynx; but, as he has not published any pictures in his profusely illustrated work, I suppose we are justified in assuming that he obtained none, or at least none to his satisfaction.

The photographs of both Czermak and French having been thrown on the screen, you will see that both leave very much to be desired. In the first, the only parts which are at all plain are the epiglottis, the vocal ligaments, and the pocket-ligaments. These two pairs of ligaments are, indeed, as compared with other lines, so remarkably sharp and clear, that one cannot doubt that the pencil of the *retoucheur* has been actively at work; and the more so, since, as you will presently see, these are just the parts most difficult to define in photography. The result, however, is, in any case, considering that the picture was taken at least twenty-five years ago, very remarkable. The photograph of Dr. French of Brooklyn, published by him in the *Archives of Laryngology*, in June of last year, is certainly not more satisfactory than that of Czermak; but I understand, and am glad to record, that Dr. French has been more successful in later attempts. He has also, I believe, succeeded in photographing the posterior nares—an achievement to priority in which he is justly entitled. And now to our own photographs: they were taken to illustrate a book entitled *Voice, Song, and Speech*, which I have just finished in MS., together with my friend, Mr. Behnke, a lecturer on vocal physiology and teacher of voice-production in London. Mr. Behnke told me that, twelve years ago, he obtained a photograph of the laryngeal image with no better illumination than that of the lime-light, and without the immense advantage of the gelatine plates of the present day. He was, therefore, sanguine of success, and we set to work accordingly. Mr. Bolas, the editor of the *Photographic News*, kindly gave us the benefit of his advice, and introduced us to three gentlemen, whose names it is impossible not here to mention, because, without their generous help and their inexhaustible resources, we could never have overcome the difficulties which continued to present themselves: and we desire here publicly to acknowledge our deepest obligation to them all. Mr. H. T. Wood, the accomplished Secretary of the Society of Arts, placed at our disposal the laboratory of the Society, combining a photographic studio with dynamo-electric machinery, and personally assisted us

¹ In the demonstrations at Liverpool, all illustrations were shown by means of a dissolving magic lantern, with oxyhydrogen illumination, and Mr. Emil Behnke sang the various notes indicated in the photographs, each time they were exhibited.