

**Introductory lecture ... at the opening of the session 1875-76 of the
Edinburgh Royal Veterinary College, 27th October 1875 / by John G.
McKendrick, M.D., F.R.S.E.**

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INTRODUCTORY LECTURE

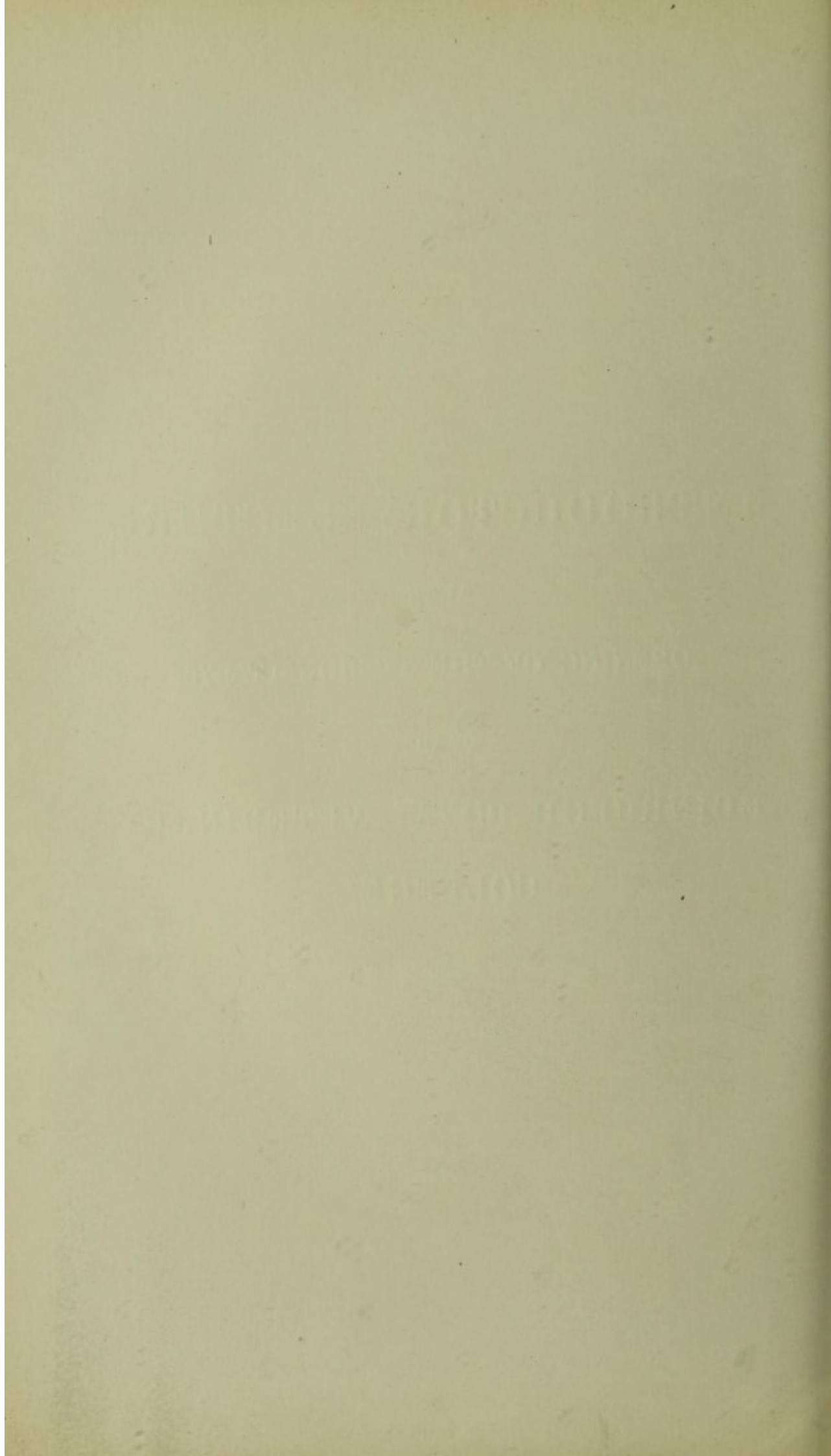
AT THE

OPENING OF THE SESSION 1875-76

OF THE

EDINBURGH ROYAL VETERINARY

COLLEGE.



INTRODUCTORY LECTURE

BY

JOHN G. M'KENDRICK, M.D., F.R.S.E.

LECTURER ON THE INSTITUTES OF MEDICINE OR PHYSIOLOGY

AT

THE OPENING OF THE SESSION 1875-76

OF THE

EDINBURGH ROYAL VETERINARY COLLEGE

27TH OCTOBER 1875

"Sans les animaux la nature de l'homme serait encore plus incompréhensi."

BUFFON.

EDINBURGH

PRINTED BY R. & R. CLARK

1875

INTRODUCTION

JOHN A. HARRINGTON, M.D., F.R.S.E.

OF THE ROYAL VETERINARY COLLEGE, LONDON

THE HISTORY OF THE VETERINARY ART

OF THE

ROYAL VETERINARY COLLEGE, LONDON

THE HISTORY OF THE

ROYAL VETERINARY COLLEGE, LONDON

EDITED BY

JOHN A. HARRINGTON, M.D., F.R.S.E.

1876

INTRODUCTORY LECTURE.

MY LORD PROVOST AND GENTLEMEN,

WE have assembled here to-day to begin another Session of the Edinburgh Veterinary College. Fifty-five years ago the late Professor Dick delivered a course of lectures on Veterinary Medicine and Surgery in the Freemasons' Hall, Niddry Street, and then inaugurated what may be regarded as the commencement of this College.

At that time there was no institution for the education of Veterinary Practitioners in Scotland. Indeed, it may be safely asserted that the Veterinary art was then at a very low ebb in this country. When Mr. Dick began to lecture, he did so under very different auspices from those under which we are now gathered together. It was his ambition to raise the Veterinary art in Scotland, and he commenced lecturing with no recognition from the authorities of the day, and probably with only few appliances. By his indomitable energy, clearness of intellect, and fertility of resource, he succeeded in founding the institution with which we are connected. Students assembled to it from all parts of the world, and many who are now occupying responsible positions in the exercise of their art received their early training from William Dick and the staff of efficient teachers he gathered about him. By his Will, Professor Dick constituted the Lord Provost and Town-Council of Edinburgh trustees, and made arrangements by which the Institution would be upheld for the promotion of the Veterinary art in all time coming.

This is the reason why we are here to-day in this municipal chamber, with the Lord Provost of the city and the members of the Town-Council present not only in their official capacity, but also as a token of their personal appreciation of the value of this Institution to the general community.

The founder of this College was a man of great natural ability, energy, and perseverance, and I would strongly recommend all students to study his life and character. They will there see what one man can accomplish who has clear aims, a spirit of self-sacrifice, and the power to go on even in the face of what may appear to be overwhelming difficulties. From an early period of his life, William Dick formed the idea of improving the Veterinary art in Scotland. His clear intelligence saw how deficient the practitioners of the day were. They were ignorant of the most elementary knowledge of the structure and functions of the domestic animals; while their treatment of disease was often not only of no use, but absolutely injurious. He saw distinctly that more knowledge and training were required; and soon after finishing his own education he determined to establish permanently an institution for the education of Veterinary Surgeons. This he did gradually, but throughout his long life it was the one leading motive which guided him in all his actions. He had a strong personal love of animals, and an appreciation of the beauty of animal form. The sight of disease and suffering in the domestic animals excited within him feelings of compassion and a desire to relieve them by any means that science and art could suggest. He was therefore an enthusiast in his profession, and his enthusiasm enabled him to carry through the great work of founding this College. With all this enthusiasm, however, his practical sense appreciated the commercial value of animals, and he saw that improvements in the Veterinary art increased the wealth of the community. No one can read his biography without observing the liberal

spirit which actuated him. He did not found this College as a commercial speculation, but from the high motive of benefiting the Veterinary profession. Money was not to him the greatest desideratum in this life. He spent it freely, sometimes at a great sacrifice to his own personal comfort, if it secured the object he had in view. But while he scattered he increased. Ability in his profession brought a just reward, and notwithstanding his great efforts to improve the art, even by much direct expenditure, he left behind him not a little to carry onward the work in which the best of his thoughts and energies had been spent during life.

And now, Gentlemen, in something of the same spirit let us commence the winter's work. Once more the end of autumn has arrived, with its dull leaden skies, muddy streets, and whirling leaves. There is much in this season of the year fitted to awaken feelings of despondency if these feelings be indulged ; but, on the other hand, in the present state of our social habits, it is the time when we receive the summons to mental work. The period of sensuous enjoyment, of warmth, sunlight, long summer days, and intellectual inactivity, has gone for another year ; and while nature, so to speak, is entering upon her winter sleep, the mind of man is called upon to awake to renewed labour. Most of the important intellectual work of the world is apparently done in winter. Just as climate affects what is produced by the mind of man in different countries, so even in the same region of the earth the variations of the seasons so far determine the character of our mental work. No doubt even winter has its own charms, and its own kinds of physical recreation, but for us it is really the period of mental labour. We have assembled after the holiday rest full of hope and vigour, and we trust with the desire to learn as much as we can during the coming winter.

It is scarcely necessary to impress upon you and on the

public the value of the Veterinary profession. It has the charge of the health and well-being of many millions of animals, which constitute a large portion of the wealth of the nation. It is called upon not only to treat the diseases to which they are liable, but also to ascertain the cause of all disease, more especially of those epidemics which ravage our flocks and herds. It thus includes, not only Veterinary medicine and surgery, but also the hygiene of the domestic animals. It deals not only with the cause and consequences of disease, but also with its prevention. Disease amongst our domestic animals always represents a certain pecuniary loss. This loss has to be borne, not only by the rich, but also by the poor. For example, any disease which either lessens the number or depreciates the quality of those animals furnishing food to the community, increases the price of meat, and consequently puts it out of the power of many to obtain it. Probably at no past period of the history of our country has the value of stock been so great as at present. All varieties of domestic animals have increased greatly in value. Both those which effect labour, and those which produce food, have reached prices hitherto unknown. It therefore becomes a matter of the greatest importance to every member of the community, that Veterinary Surgeons, who are the advisers of the public in these matters, should be thoroughly educated and prepared for their work. In addition to these considerations, there is also the duty we owe to all animals of promoting their health and well-being, and relieving them of suffering and pain.

The Veterinary profession in this country has not yet attained to the position to which it ought to aspire, and which it occupies in Continental nations. Fifty years ago it was represented only by the country farrier, who had no correct knowledge of anatomy or medicine, but who trusted to nostrums of repute, of the composition of which he was often quite ignorant. Since that time great improvements have been

effected, and Veterinary Students now receive a fair elementary training in the various sciences on which the art is founded. There is still, however, much to be done in this direction.

There is no reason why the Veterinary Practitioner should not receive the same careful education as those who engage in the treatment of disease in the human being. There is a popular idea that the Veterinary Surgeon does not require to be so well informed as he who deals with the ailments of man. This idea probably arises from the higher value attached to human life. But if we attempt to treat disease at all, the kind of work to be done in both departments of practice is essentially of the same nature. The structure and functions of the bodies of domestic animals are much the same as in the human being. The diseases to which both are liable present remarkable similarities. The medicines which are found to be useful in the one usually produce beneficial effects in the other. It may be asserted also that the diagnosis and treatment of diseases in the common animals is even a more difficult accomplishment than the same kind of work in man, inasmuch as the patients of the Veterinary Practitioner can give no direct information regarding their feelings. In this respect practice among the domestic animals resembles the treatment of children, who cannot tell the physician how they feel, nor assist him in detecting the disease from which they suffer.

In treating the dumb animal, the practitioner must therefore depend on objective symptoms. He must have cultivated the practice of rapid and accurate observation. He must collect his information by a careful physical examination of the parts supposed to be the seat of the disease; and he must call to his aid all the appliances and instruments—such as the stethoscope, microscope, and thermometer—which are now used in modern medicine.

Consideration of these facts will at once show the necessity of having our Veterinary Practitioners thoroughly edu-

cated men. They ought to be conversant, equally with students of medicine, with those sciences on which the art of medicine is founded ; and they ought to have equally good opportunities of acquiring a practical knowledge of the profession. So long as they have an inferior training to the student of human medicine, so long will they occupy an inferior position in public estimation. It is satisfactory, however, to be able to say that, year by year, defects in the education, both elementary and professional, of our Veterinary Students, are being remedied. A superior class of men now study the profession and adopt it as the work of their lives.

Notwithstanding these improvements, however, I have no hesitation in saying that the present curriculum of study is far from being satisfactory, and must be regarded as being in a transitionary state. In the first place, the preliminary examination in general education is somewhat deficient. Students are often not so well acquainted with the elements of a good middle-class English education as they ought to be. In the next place, too much has to be done in the time allotted to professional study. Within two years from the time of entering the College, the student is expected to have acquired an elementary knowledge of chemistry, botany, the anatomy of the domestic animals, physiology, pathology, *materia medica*, and Veterinary medicine and surgery. In addition to this, he endeavours to acquire a practical knowledge of disease and its treatment, by the examination of sick animals, and also he must be familiar with all the operations practised in Veterinary surgery. Much the same course of study occupies the student of medicine for at least four years. It is evident, therefore, that the Veterinary student must either work more diligently, or have a more elementary knowledge, than the student of medicine.

The truth probably is, that the average student of Veter-

inary medicine is, on the whole, more industrious than the average student of human medicine. But, notwithstanding all the industry of the former, it is almost impossible for him to acquire so much information as the latter.

Nothing has surprised me more, or given me greater gratification, during my connection with the Veterinary College, than the industry and diligence of a majority of the students. I have been astonished at the amount of information they have acquired during the short period of two years. Still, although this fact reflects great credit upon the student, it is by no means an excuse for the present system. There is little doubt that much of the information acquired is crude and unfit for practical use. It has been obtained by dint of persistent attendance upon lectures, reading of text-books, and committing hosts of facts to the memory. Much of it has no practical bearing, because it has not been obtained in a practical way.

If this be the case, it is evident that the number of subjects must be restricted, or the time of study increased. Adoption of the former alternative without doubt would produce inefficiency, because the men would be deficient in education; while adoption of the latter would cause increased expenditure by the parents or guardians of those who enter on the profession. It may be safely asserted that the public will not be contented with inefficiency. Those who employ large numbers of valuable horses, our great stock-keepers, cattle-breeders, and farmers, are quite alive to the importance of having thoroughly educated men as Veterinary Surgeons, and they are willing to pay well for efficiency where it can be got. If so, it appears to me quite evident that if our Veterinary students occupied a longer time in acquiring professional knowledge, and consequently spent more money, they would be entitled to charge higher fees from those who employ them professionally in after life. Thus, no doubt, matters would ultimately right themselves.

The public desire efficiency, and they are willing to pay for it. Efficiency cannot be thoroughly acquired by the present restricted time for education ; it therefore will soon become necessary to increase the length of the curriculum from two to three or four years. No doubt, to a certain extent, this will be a hardship on the less wealthy class of students ; but, ultimately, it could not fail in elevating the Veterinary profession, both as regards its general usefulness and its social position.

Before leaving the subject of education, let me address a few words to the students here present, regarding the curriculum of this College. You have come here for the purpose of acquiring a knowledge of the principles and practice of the Veterinary art. You will be led through a very attractive, but at the same time arduous, course of study. It will comprehend, in the first place, the Anatomy or structure of the domestic animals. This subject is to be acquired chiefly in the dissecting-room. Practical familiarity with the various organs and with the framework of the body is required. Lectures, however clear and demonstrative, text-books, however ably written, will not give this kind of knowledge. You must dissect, and see, and handle. In the next place, Physiology will claim your regard. The name of this course in our Universities is the "Institutes of Medicine." Just as we speak of the Institutes of Law, or the Institutes of Theology, so we use this term. By the Institutes of Medicine we mean those facts and principles on which the art of medicine is founded. It includes a description of the work done in the economy by every tissue, fluid, and organ, and the harmonious action of the whole. Without this knowledge no one can either detect or treat disease in a scientific way. Your attention will also be directed to Chemistry, a knowledge of which is necessary for understanding many of the actions happening in the living body with reference to air, water, and

food, and without which you could not skilfully use the various remedies employed in the treatment of disease. Having obtained an acquaintance with Anatomy, Physiology, and Chemistry, you will then advance a step in your studies. You will at this stage begin to see the practical bearing, in the detection and treatment of disease, of all your previous labours. In the first place, the phenomena of disease will be described to you. This is the province of Pathology. Disease naturally suggests remedies. The physical and chemical characters of remedies form the department known as *Materia Medica*; while the physiological action of remedies and their application in disease is included under Therapeutics. Lastly, you will have to study the various medical and surgical affections in all the domestic animals, both in the systematic course of lectures, and more especially by the practical examination of the diseased animal. In addition to all this, you will require to be instructed in the special pathology of cattle, a very important branch which will form the subject of a separate course of lectures by the Principal; in the practical detection and management of all the diseases of the foot of the horse; in Veterinary Obstetrics; in the use of the microscope, thermometer, and stethoscope in the detection of disease; and in what may be termed Veterinary Jurisprudence, or the relation of the law of the land to domestic animals as defined by Acts of Parliament and Orders of the Privy Council. Such is the course of study to be followed. It demands earnestness, diligence, and for its successful accomplishment, a dash of enthusiasm, without which little can be done in any department of life.

A Veterinary College, like every other establishment for the higher education of professional persons, has two functions to perform—1st, It must teach students; and 2^d, It must strive to advance the science and art with which it is

connected. To discharge only one of these functions is to do only half of its work. This view of the matter leads me to speak of an aspect of the Veterinary profession which is only now beginning to attract attention.

In the earlier days of Veterinary science, and even now, it has been indebted for valuable assistance to those connected with the sister branch of human medicine. As men valued their own lives more than the lives of their beasts, the diagnosis and treatment of human diseases have occupied the attention of mankind from the earliest times; consequently the arts of medicine and surgery, with regard to the human being, had a definite existence long before they were thought of as bearing on those animals with which the comfort and happiness of men are so intimately associated. But a period of our civilisation arrived when the Veterinary art became, as it were, a separate branch of study—a period dating back in this country little more than one hundred years. This new department of the healing art has depended for its progress not a little on the labours of those engaged in the department of human medicine.

The Veterinary student has often had to acquire his information from lecturers engaged in teaching the medical student; and, even at the present time, at all events in this country, men teach certain subjects in our Veterinary schools who were trained in schools of medicine, and who cannot be supposed to have, without special study, intimate acquaintance with our domestic animals. Until quite recent times, also, the examiners for diplomas in the Veterinary art were usually medical men. The time, I think, has now arrived when the Veterinary profession, more especially at its educational establishments, can repay with tenfold interest what it has received from the kindred branch of medicine.

I need scarcely say that nearly all the knowledge which we at present possess, regarding many of the processes occur-

ring in the living body, has been obtained by observation on the lower animals. Without the frog, the pigeon, the rabbit, and the dog, we would have known very little indeed regarding the functions of our own bodies. Observations made on these humbler animals have given us information regarding the functions of almost every organ of the body, and of the muscular and nervous systems. Knowledge of this kind is the foundation of the medical art; without it, we could have no right conception of many of the phenomena of disease. Disease is simply a disturbance of the normal functions of the various tissues and organs which form the body. It is impossible to understand these disturbances until we have ascertained what the normal functions are; and this knowledge, as I have said, has been derived from many of the humbler animals. It may be safely said that nine-tenths of the facts taught in a course of lectures on the physiology of the human being have been thus acquired. So much as regards physiology. Let us now inquire how the matter stands with reference to pathology.

The changes occurring in organs and tissues visible to the naked eye or by means of the microscope constitute what is usually known as Pathological Anatomy. Pathology, again, is the department of medical science which describes the phenomena occurring in living tissues and organs which are the seat of disease. Its province, strictly speaking, is not to tell how the organs look to the naked eye after death, or even what is revealed by the microscope, but to describe the changes in function which produce these appearances which we say are diseased. Pathological anatomy is now a department of knowledge possessing an immense number of well-ascertained facts. Many thousands of *post-mortem* examinations have been made in our public hospitals by skilful persons and under the eyes of critical observers; and the size, form, naked-eye appearances, and even the micro-

scopical structure of diseased organs, have been carefully recorded. It may be confidently asserted that little more, except with regard to microscopical structure, has to be done in this direction. With regard, however, to the *causes* of these morbid appearances, and the history of the processes which precede these pathological effects, comparatively little has been ascertained. The human pathologist usually sees the organ after disease has done its worst ; but he has rarely any opportunity of watching the processes by which the organ has been impaired or destroyed. Here, of course, I allude to the graver diseases which tend to destroy life. There are numerous minor ailments, both in man and in the domestic animals, which occupy the attention of practitioners in the daily routine of their professional life. In these pain may be relieved or recovery accelerated, but they tend to recovery without the use of any remedies. It is not therefore a matter of such importance to investigate these thoroughly. It is true that in the wards of the public hospital the patient labouring under a serious malady may have been under the care of a skilful physician who has recorded all the signs and symptoms of the disease ; but even he often sees the disease after it has passed into a stage when little can be done except to alleviate the sufferings of the patient. Regarding the earlier stages of the disease, during which only minute alterations of the tissues are taking place, we know little. The reason of this is quite obvious. Men rarely apply to the physician for assistance until graver diseases have been well established. This is especially true of those who enter our hospitals or infirmaries. Not unfrequently, diseases originate without the manifestation of symptoms calculated to arouse feelings of anxiety ; consequently the patient does not present himself until morbid changes have occurred which are almost, in the present state of knowledge, beyond the powers of the healing art.

A very slight consideration will show that a knowledge of

the preliminary stages of diseased action is necessary to carry out any mode of treatment by which we may hope absolutely to cure the disease. It is almost impossible to expect this kind of knowledge from observations on the human being in our present state of civilisation. For example, how little do we know regarding the origin of tubercle, cancer, or of the mode of action of those poisons which produce the various fevers. It is true there is an enormous amount of information regarding each of these scourges of the human race, but the essential nature and properties of the predisposition or virus which causes each is still in the region of dim uncertainty and speculation. While this is the case, so far as remedial treatment is concerned, the efforts of the physician are directed towards the prolongation of life and the relief of suffering.

Our knowledge of the influence of drugs in the treatment of disease is also unsatisfactory. Many alter symptoms and relieve suffering, and so far have a curative effect ; but the exact action of any one, more especially in diseased conditions, has by no means been accurately ascertained. It is next to impossible for the practitioner in human medicine to ascertain precisely the action of various remedies. Hereditary predisposition, social influences, and even personal considerations, may often prevent him from arriving at the exact value of any supposed remedy he may administer. It is impossible for him also to vary the conditions both of the disease and of the remedy, without subjecting the patient to discomfort or inconvenience, and consequently of risking his own professional reputation. I do not forget that valuable therapeutic inquiries may be made on large numbers of men in as nearly as possible the same conditions, but these must be preceded by careful preliminary researches on animals.

Now it appears to me that Veterinary medicine may render signal service to human medicine by meeting some of

the difficulties just alluded to. This can more especially be done in connection with an institution where students assemble for instruction. Here examples of disease among the domestic animals may be met with at all stages. Morbid processes occurring in these present much the same characteristics as in the human being. Inflammation, the development of tubercle and cancer, the action of the various poisons which cause fevers and other zymotic diseases, follow much the same course in these animals as in men. It is therefore in our power artificially to produce certain of these diseases, to watch them from their origin, to trace their development, to note the changes and symptoms which they produce, and also to observe the effects of various counteracting agents. Thus only can we arrive at correct knowledge concerning these maladies, and of the remedies to be applied.

The lower animals are so much under the influence of man that it is possible so to modify their conditions during a state of disease as to enable us to get at a proper method of treatment. Imagine a series of animals suffering from foot-and-mouth disease. They may be killed to arrest the spread of the contagion. But may they not be placed in different stalls, and subjected to various remedies under various conditions? If we obtained any clue to the nature of the disease, may we not inoculate fresh animals, and study the action of the virus in these, so as to clear away doubts, and arrive at the truth? New discoveries have usually a wider range and influence than at first anticipated. We may therefore expect that exact knowledge regarding the cause, natural history, and rational treatment of even one contagious disease among the lower animals would throw a flood of light on similar maladies in the human being.

I feel that I am here approaching ground which may be regarded as somewhat dangerous. The mind of a not uninfluential section of the public is at present excited re-

garding the question of whether we have any right or not to perform any experiments upon the living animal. I shall not enter upon this controversy, except to point out that there can be little or no advance in either Physiology or Pathology, without having recourse to this method of investigation. Those who are satisfied to leave things as they are, who refuse to use our domestic animals even for the purposes of nutrition, and who are willing to bear all the pain and suffering which deficient knowledge either cannot prevent or is unable to relieve, occupy a defensible position, with this proviso, that they are in consistency bound to accept none of the aids which modern medicine can give. Others have doubts regarding the authority of man over the lower animals, so far as experiments are concerned. They do not hesitate to use them as beasts of burden, or for supplying food. They slaughter them for the so-called pleasure of sport, which is really a compound of the savage instinct which led our forefathers to the chase to procure food, and of the mental excitement caused by entire change of scene and thought. I willingly exonerate every sportsman from the charge of having any gratification in the sufferings of the animal he has wounded, but it is none the less true that he has inflicted pain in the pursuit of his own gratification. Men kill animals without compunction when of no further use, but they hesitate to submit them to any experimental investigation which may even have for its object the discovery of natural or morbid processes occurring in the body. With such a class of objectors I confess I have no sympathy. As one has not an opportunity often of speaking publicly on such a matter, I beg to protest against the statement often made that this kind of work must necessarily make a man cruel and hard-hearted. Engaged in thoughtlessly, and with no sense of responsibility, it may have this effect ; but if one keeps in view the great end of all his work—the cure of disease,

the relief of suffering, and the discovery of truth—it cannot have any such influence. Nor will I allow that such work is incompatible with a great love for animals and an intense apprehension of their individual peculiarities. I can understand a physiologist having the most intimate personal friendship with his dog, loving it, and receiving tenfold the amount of affection in return. The public must not imagine physiologists to be cold, hard-hearted men, having no sympathy with pain, any more than the surgeon who hesitates not to exercise his art even through suffering. I hold personally that, under certain restrictions imposed by ordinary human feeling and common sense, we may inflict pain on the lower animals, and even deprive them of life, provided the result is likely to be for the welfare of the human race. This mode of inquiry has been adopted in the past history of physiology, and in quite recent times it has been applied to the investigation of disease.

During the last few years, a department of inquiry, termed Experimental Pathology, has been established in various parts of the Continent. The object is artificially to establish diseased actions, and to observe these under various conditions. By this method we may hope to obtain an insight into the *origin* of such diseases as pulmonary consumption, of cancer, and of the various fevers, which destroy in Great Britain alone more than half a million of people annually. The same class of diseases, more especially those of the latter group, cut off tens of thousands of our domestic animals. Surely it is worth sacrificing many animals if by this means some knowledge could be attained by which we may arrest the ravages of these fearful maladies. By the mere observance of cases of disease, by the most elaborate *post-mortem* and microscopical examinations, little more can be done than to arrive at a knowledge of a physiological explanation of symptoms and of the effects seen after death. Only by care-

ful experimental inquiry, conducted on the same principles as in any other objective science, conjoined with the results arrived at by observations of diseased animals and the facts ascertained by careful *post-mortem* examinations, can we hope to gain a knowledge of the cause and earlier stages of these maladies ; and only when we have done so can we found any rational treatment which may either prevent them or quickly arrest their progress.

Such inquiries may be conveniently carried on in connection with a Veterinary school. No doubt an institution like ours is primarily intended for the tuition of students, but it should also do its part in the advancement of science. Each teacher must labour in his own department to add to the sum of human knowledge. We must not only be teachers, but investigators ; not only guides along well-trodden paths, but pioneers into unknown territory. We have great opportunities for the observation of diseased processes and of diseased products. Not a week passes without many examples of disease among the lower animals being submitted for the observation of the students. Our Principal is indefatigable in his endeavours to procure specimens from all quarters, and he is an enthusiast in this kind of work. We have also many conveniences for research, and with energy and concentration of effort much may be done. On the Continent teachers in connection with Veterinary schools have contributed many valuable researches to physiological and pathological science. Why should we not do so also ? By carrying on original research we may hope to discover new truths of high practical importance, inasmuch as they bear on the conservation of health and the cure of disease. Thus also credit will be reflected on the school with which we are connected. The present is not the time to slumber and to be satisfied with rule-of-thumb practice. Teachers and pupils must combine in the great work of advancing science ; and we may be

assured that science, though often severe, exacting, and contrary to all our preconceived opinions, will ultimately repay all her votaries, and add to the comfort and happiness of both man and the lower animals.

As an example of the kind of investigations which might be carried on in connection with a Veterinary College, let me allude to the systematic study of the intimate pathology of the morbid infections now being carried on at the Brown Institute, London, under the superintendence of Professor Burdon Sanderson. This Institution is for the cure of diseased animals, and for the furtherance of any work having this end in view. The results have been embodied in a series of papers, published in the reports of the medical officer of the Privy Council. As is well known, certain diseases are remarkably contagious. No better example of this could be given than what is termed foot-and-mouth disease, now very prevalent in this country. Contagion has always been supposed to consist of matter of some kind or other capable of being communicated through the air or by direct contact. It is evident that the identification of the infective matter peculiar to each contagious disease, and the changes which it effects when introduced into the living body, would be valuable both for the prevention and the probable cure of the disease.

The first distinct information regarding the identification of contagia was recorded by Dr. Lionel Beale of London so recently as 1865, when he drew attention to the existence in the fluids and tissues of animals which had died of Rinderpest, of innumerable minute organic particles. These particles Dr. Burdon Sanderson soon afterwards showed to be the true matters of contagium. He pointed out that the animal juices might be separated from them and thus rendered non-infective. Professor Chauveau, of the Veterinary School, Lyons (one of the ablest physiologists of the present day), demon-

strated the existence of similar particles in vaccine lymph, and showed that on the introduction of these successful vaccination depended. About the same time Hallier, Professor of Botany in Jena, announced the discovery of numerous varieties of minute organisms in various kinds of disease. The appearance of Hallier's communications excited great attention among men of science, and not a few of his statements have been refuted. The particles discovered in various diseases are found to be living organisms, capable of multiplying with enormous rapidity, and of exciting changes in living tissues. They resemble some of those which are engaged in the ordinary processes of fermentation and putrefaction.

Following up this line of research, Dr. Burdon Sanderson has recently made important contributions to a history of the contagia and morbid processes of diphtheria, erysipelas, relapsing fever, and of the splenic fever (*Milzbrand* of the Germans); while Dr. Klein, the assistant Professor at the Brown Institute, has identified and described the effects of the contagium-particles of the *variola ovina* or sheep-pox.

It appears to me that these researches indicate a line of inquiry likely to lead to great results. It is work which ought to be prosecuted with all diligence. Every contagious disease among the domestic animals must be thoroughly examined. Where can this be better done than in connection with a Veterinary College, provided with proper arrangements for keeping diseased animals, on which both before and after death careful observations may be made? No doubt there are practical difficulties to be met and overcome. Animals suffering from contagious maladies cannot be brought to the building of the College, but it would not be difficult to maintain suitable accommodation for them in an isolated building beyond the confines of the city. Here the investigator might work with all needful appliances. Certainly

such a scheme would involve expenditure of money, but it would be well expended by the discovery of facts in the history of disease of the highest practical importance. We can never hope to take efficient action regarding the prevention or the cure of contagious diseases until more is known regarding their intimate nature. When accurate knowledge of this kind has been arrived at, precautions may be taken which will effectually stamp out the disease. Many will probably consider such a state of matters to be Utopian, but the march of scientific discovery is bringing us daily nearer to it.

It may appear to some that I have extolled too highly the value of experimental research in the advancement of the art, and attached too little importance to the kind of knowledge derived from practical experience. I wish especially to guard myself against being thus misunderstood. No doubt every Veterinary Surgeon, by intelligent observation and record of the facts which come before him in his daily work, and by scientific generalisations from such experience, acquires knowledge useful to himself and perhaps to others. This kind of information is invaluable, and every man who acquires it and records it adds to the sum of professional efficiency in the country. But what I wish to point out in this Address is (1) that there are departments of research into the nature and treatment of disease which can be most effectually entered upon in connection with such an institution as a Veterinary College; and (2) that the results to be anticipated from such work would be of value not merely to Veterinary but also to Human Medicine and Hygiene.

We begin the present session with one change in our staff of teachers. Professor Dewar has now become Jacksonian Professor of Chemistry in the University of Cambridge, a high position in the world of science which his genius and untiring energy have gained for him. Much as we regret losing

him, we rejoice in his well-deserved promotion. In such a position I have no doubt he will continue to advance science in the manner which has been his aim and chief happiness throughout life. The chair of Chemistry has been filled by the appointment of Dr. Aitken, whose scholarly training and experience as a teacher of Chemistry are well known. Let us hope that the *genius loci* of the laboratory which has guided Professor Dewar in so much valuable work there may now exercise the same influence on Dr. Aitken.

In conclusion, may we not anticipate that the session on which we have now entered will be one characterised by efficient teaching, diligent study, and earnestness of purpose? Without these, failure is inevitable; with these, success is certain.

