Time will not allow me to refer further to this ingenious theory, which still requires the proof that such shocks as those of the heart can liberate gases from the compounds that exist in the blood. In my opinion, Fleischl v. Marxow exaggerates the importance of the shock, while he underestimates the evidence of the spectroscope, which always shows the spectrum of oxyhæmoglobin even in arterial blood drawn from the neighbourhood of the heart, and kept from contact with the air. Nor can I accept his statement that the force of the stroke of the heart is practically the same in all classes of warm-blooded animals, and one can hardly imagine that the feeble stroke of the left ventricle of a mouse would be sufficient to liberate the oxygen from the oxyhæmoglobin of its blood. Further it may be urged that the conditions of the experiments with the syringe are very unlike those of the circulation, more especially in the fact that the walls of the syringe are rigid, while those of the heart and vessels are yielding and elastic. Again, when an organ is supplied with a solution of oxyhæmoglobin from a pressure bottle, by a process of transfusion, the tissues will reduce the oxyhæmoglobin, and take up the oxygen without any kind of percussion action being brought into play.

Physiologists, however, cannot but treat with the greatest respect the experiments and reasoning of a physicist so able as Fleischl v. Marxow is known to be, and the theory will be thoroughly tested in every detail. I may be allowed to contribute an expression of deep interest in this brilliant speculation, and to say that I entirely agree with its author in accepting the suggestions of teleology in the investigations of such problems. While the rigid investigation of facts is no doubt one of the great methods of science, we must not forget that by asking questions as to the use or value of a particular physiological arrangement, we may obtain light as to the road along which investigations are to be pursued. This is the guiding star of Fleischl v. Marxow's speculation, and it has led him and other physiologists to scrutinise anew the theories of respiration now in vogue.

In this address we have had abundant evidence of the fact that physiology, in the solution of some of her problems, depends entirely upon the methods of chemistry and physics. The air-pump, the special advantages of the mercurial air-pump, the methods devised for collecting and analysing the gases of the blood, the spectroscope, have all contributed important facts to our knowledge of respiration. The narrative placed before you also illustrates in a striking manner the relation of modern physiology to the physiology of our forefathers. The latter were engaged in observing and explaining the more obvious phenomena, whilst the modern physiologists are pushing their researches further, and are endeavouring to study the hidden phenomena, which, like a second order, lie behind these. I need scarcely add that even the results of modern research are not to be regarded as final. Although we see a little further and more clearly than those who went before, there is still uncertainty as to fact and obscurity as to explanation in most departments of physiological science, and not least as regards the function of respiration. Enough has been said to show that in the study of respiratory mechanisms we meet with numerous examples of the same wonderful adaptation of organic structure to physical conditions as may be traced in the mechanism of the eye and of the ear. The structure of a lung or of a gill is just as much adapted for the play of the physical laws regulating gases as the retina is tuned to the vibrations of the ether, or as the organ of Corti responds sympathetically to the waves of musical tone.

List of Experiments in illustration of the Lecture.

1. Appearance of blood after having been shaken with carbonic acid.
2. Appearance of blood after having been shaken with hydrogen.
3. Appearance of blood after having been shaken with nitrogen.
4. Appearance of blood after having been shaken with oxygen.
5. *Fac-simile* model of Leeuwenhoek's syringe, by which gases were first demonstrated in the blood.
6. Absorption of ammonia by water.
7. Gases escaping from water in Torricellian vacuum.
8. Gases escaping from blood in Torricellian vacuum.
9. Spectrum of oxyhæmoglobin shown by electric light.
10. Spectrum of reduced hæmoglobin; the reduction effected by ammonium sulphide.
11. Spectrum of oxyhæmoglobin changing into that of reduced hæmoglobin by heating blood *in vacuo*.
12. Demonstration of a new gas pump for the physiological lecture table (Figs. 1, 2, and 3).

13. Demonstration of the use of Pflüger's gas-pump.
14. Collection of blood-gases and demonstration of the existence of carbonic acid and of oxygen.
15. Method, by use of thermo-electric piles with galvanometer, of observing thermal changes attending formation of oxyhæmoglobin.
16. Demonstration of Fleischl v. Marxow's experiments, not with a syringe, but with the fluid in a Torricellian vacuum so arranged as to receive a shock.

AN ADDRESS

DELIVERED AT THE OPENING OF

THE SECTION OF SURGERY.

At the Annual Meeting of the British Medical Association, held in Glasgow, August, 1888.

BY PROFESSOR GEORGE BUCHANAN,

Professor of Clinical Surgery in the University of Glasgow; Surgeon to the Western Infirmary; President of the Section.

THE TENDENCY OF MODERN SURGERY.

In welcoming the members of the Surgical Section to this great meeting, my first duty is to express my sense of the honour conferred on me by my appointment as President of the Section. I attribute it in no small degree to the fact that I hold the position of Professor of Clinical Surgery in this University, and it will be my earnest endeavour so to preside over your meetings as to conduce to your comfort and to the value of the large number of valuable contributions which are offered by the members. The position I now occupy I regard not only as an honourable one as a member of the Association, but personally I feel it as the fulfilment of hopes I indulged in long ago, in the early days of my professional career; for it may interest some of you, and especially those who were formerly students in Glasgow, to know that I am the first person who ever in Glasgow adopted the practice of surgery to the exclusion of all the other branches of medicine. Shortly after my return from the Crimea I devoted my whole time to the teaching of anatomy and the practice of surgery, which no one had ever done before. The professor of surgery of that day engaged in general and even midwifery practice, and the preceding professor was better known by his work on midwifery than by his surgical writings. Many of my compeers declared that it would be a great risk in Glasgow to endeavour to make a livelihood by surgery alone; but I adhered to my resolution, and soon afterwards was joined by Sir Joseph (then Mr.) Lister, who was appointed professor of surgery in 1860, and by Sir (then Dr.) G. H. B. Macleod, who began to teach surgery about the same time. So that the practice of surgery is now adopted by others who have obtained hospital appointments—I think to the advantage of the profession and the medical school.

Departing from this personal matter, no one who has had so long an experience as I have had can fail to be struck with the rapid strides with which the science and practice of surgery has advanced. My early years as a student are associated with the introduction of anæsthetics, for I was the first person in Scotland who was made insensible to pain by the inhalation of ether—an experiment I performed on myself. From that date to this the development of surgical pathology and practical surgery has been enormous. In the year 1874, when I was appointed professor of clinical surgery, I gave an address containing a *résumé* of the surgical advances within my own experience, and possibly this might have been a suitable occasion to continue the review up to the present day; but it is not the part of the President of a Section to occupy time in that manner, especially in presence of such an *embarras de richesses* as our programme contains. I shall content myself with stating that quite recently I got my former address reprinted for the use of my students, and those members who desire may have a copy for perusal at some leisure time. But, while my inclination coincides with the hint I got from the President of the Council and the President of the Association, I shall in a few sentences express what I conceive to be the tendency of modern surgery—that is, within the last thirty years. I think that period more than any previous one has been characterised by scientific research, and has profited by the investigations of pathological histology.

It may seem a little late in the day to refer to antiseptic surgery as one of the advances of the present time, but it is not out of place to do so in this University, where the principle was first enunciated, nor at this meeting where Sir Joseph Lister was expected to be present. It was while he held the chair of surgery here, from 1860 to 1869, that he made those observations by which the germ theory of putrefaction was established, and which culminated in the antiseptic treatment of wounds. Many have been the varieties of the substances used as antiseptic dressings, and many the methods of using them; some things at one time considered essential are now discarded; but the experiments and observations on which the system was founded are among the most ingenious and convincing of any in recent times.

The discovery in the later part of the period, which perhaps has caused most interest, is that of the bacillus of tubercle, not only because it shows the germ origin of a disease long believed to be constitutional, but because it betokens the probably similar origin of many allied affections, such as syphilis, cancer, etc. Of course a bacillus can only live in a suitable pabulum supplied by a peculiar constitution, so that it is to be considered only as an exciting cause acting on a predisposed part; still it is a newly discovered element of the pathological state, which must be taken into account in prophylactic as well as curative measures.

In pathological histology the researches into the local beginnings of cancer have greatly cleared the way for a more precise etiology than formerly; still it must be admitted that that dread disease still baffles the most skilful, both as to its origin and progress.

Recent events, which were and are of interest to us all, demonstrate to us how difficult is the diagnosis of malignant disease, even when discharges from the diseased surface are available for microscopic examination. How much more so when no histological examination is available till after the removal of the growth.

In operative surgery the advance has been no less remarkable. Operations on the head, chest, and abdomen are now daily practised, which twenty years ago would have been deemed unjustifiable. May I take the liberty, from my experience and from the position in which you have placed me, of saying that in some of these the limit of prudence has been reached, if not exceeded? Especially in cases of malignant disease, where it can be recognised, the utmost caution is required in determining for or against operation. And in this view it is not out of place to commend to your careful attention the views discussed by Mr. Butlin in his recent book *On the Operative Surgery of Malignant Disease*.

Gentlemen, I do not wish to take up your time with any further remarks. The executive of the Surgical Section co-operating with me have chosen, as the subject of general discussion, first, a surgical subject involving much interest to the physician as well as the surgeon—the operative treatment of suppurations in the chest. The other is more purely a surgical question—the operative surgery of club-foot. I trust that both of these subjects will afford ground for interchange of ideas between those who have experience of them. We have other papers of great value, and perhaps you will allow me to refer to one which vividly recalls to us that, though for practical purposes practitioners of medicine are divided into physicians and surgeons, yet the subject itself is one and indivisible. I allude to the paper to be read in the Surgical Section by the distinguished President of the Royal College of Physicians of London.

Before beginning the business of the Section I wish to call the attention of the members to the opportunity they have of examining the Pathological Museum bequeathed to this University by Dr. William Hunter, the brother of the still more celebrated John Hunter. Unfortunately, the circumstances of this University have not enabled the Senate to appropriate a place to this collection worthy of its value or of its founder; but though the room is not very easily accessible, they are sufficiently well seen to prove of interest to all who desire to see the starting-point of the great Hunterian collection in the College of Surgeons, London. I have also to state, on behalf of my fellow-surgeons in the Western and Royal Infirmarys, that every facility will be given to members to visit these institutions. The regular visit hour is 9 A.M., but arrangements can easily be made for admission at other hours. I have now to declare the Section open.

THE Italian Society of Obstetrics and Gynaecology will hold its fourth meeting at Naples from September 3rd to 8th.

AN ADDRESS

DELIVERED AT THE OPENING OF

THE SECTION OF OBSTETRIC MEDICINE,

At the Annual Meeting of the British Medical Association held in Glasgow, August, 1888.

By THOMAS MORE MADDEN M.D., F.R.C.S. Ed.,

President of the Section; Obstetric Physician to the Mater Misericordiae Hospital, Dublin; Ex-President of the Obstetric Section, Royal Academy of Medicine; Physician to St. Joseph's Hospital for Sick Children; Formerly Examiner in Obstetrics and Gynaecology at the Queen's University, etc.

RECENT PROGRESS IN OBSTETRICS AND GYNÆCOLOGY.

GENTLEMEN,—I gratefully appreciate the honour of my election to the Presidency of this important section of the British Medical Association, which I regard as a compliment to the Dublin School of Midwifery, with which I have been long connected, rather than as one offered to an individual otherwise so unqualified for the distinction as myself. I must therefore trust to your continued indulgence for condonance of any shortcomings observable in my attempt to discharge the duties now entrusted to me.

The present meeting of the Association should, I think, be especially valued by the members of this Section: for it is to Scotland and to the genius of her sons that the twin sciences of obstetrics and gynaecology, which we are here met to cultivate, owe their earliest development in Great Britain; and to a large extent their recent progress is traceable to the same source.

Long before there was any systematic teaching of midwifery, either in Dublin or in London, and fully twenty years before the foundation in the former city of the great maternity hospital (on the staff of which I served my apprenticeship to the obstetric art), a Professorship of Midwifery was in 1725 established in the University of Edinburgh. And I have had in my possession the ancient manuscript notes of the obstetric course delivered there in 1756 by Professor Young, as well as of the lectures of Dr. Hamilton, by whom he was succeeded. From that time the obstetric teaching of the Scottish schools has come down in an unbroken continuity of excellence to our own day, and its character has been amply maintained by the reputation of their alumni. Thus it was to William Smellie, a native of Lanarkshire, that our professional forefathers owed a *System of Midwifery* which was as far in advance of any that had preceded it as the obstetric science of these last twenty years of the nineteenth century has progressed beyond that taught by Smellie in 1752. To the same writer is more especially due the credit of the first real improvement on Chamberlen's original forceps, as well as directions for using that instrument, as he said, "on rational and mechanical principles," which even yet might be studied with some advantage by modern obstetricians.

It was in this country also that the mind of William Hunter received its early training in that obstetric art which he afterwards so successfully cultivated and practised in London, and of which he there became the most distinguished of all its older British teachers. Nor even in this brief retrospect can it be forgotten that in the city wherein we are now assembled, modern intra-peritoneal gynaecological surgery was first anticipated in 1701, by Dr. Houstoun, in the curative treatment of an ovarian tumour by abdominal section. Moreover, a century later it was to another Caledonian surgeon, Mr. Lizars, of Edinburgh, whose early ovariectomy cases were published in 1825, that the revival, although in a very different and improved form, of Houstoun's first laparotomy operation is mainly due. I shall not follow further the long history of the obligations of our art to the older Scottish school, or pause to offer my humble tribute of respect to the memory of the late Sir James Simpson, whose name should be recalled as long as suffering seeks relief in anaesthesia, and as long as obstetrics and gynaecology are cultivated. Nor need I here refer to the services to our branch of medicine of Dr. Matthews Duncan, who, at the last meeting of the Association in Edinburgh, filled the position which, *longo intervallo*, I now for a brief space occupy; or allude to the well-recognised obstetric or gynaecological work of Dr. Leishman and Dr. Keith, and that