A CENTENARY OF ANAESTHESIA AND A HALF CENTURY OF X-RAYS

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The custom of commemorating great events and great personalities dates from time immemorial, and the very fact that this custom has survived throughout the ages is clear evidence of its significance and usefulness. The memory of great achievements cannot but serve as a powerful stimulus to our ambition and a strong inducement for us to greater effort.

We are commemorating today two events which have exerted a most powerful influence on the development of our craft, and which represent the seeds from which large trees have grown. I refer to the introduction of Anaesthesia and the discovery of X Rays.

ANAESTHESIA.

As in most momentous discoveries, in the discovery of Anaesthesia, there was the chance observation and the fertile soil.

On the 10th of December 1844 Dr. Horace Wells was present at a public lecture in Hartford Connecticut where laughing gas was exhibited and he saw there that a Mr. Cooly, after inhaling the gas, and whilst still under its influence struck and injured his lower limb against a bench, but he suffered no pain. It immediately occurred to him that by this means it might be possible to carry out small but painful operations, without causing suffering. He was quick to put his notion to the test, and the following day, the 11th December 1844, he obtained some laughing gas in a bag from which he took deep breaths and whilst under the influence of the gas, Dr Riggs extracted a molar tooth without any pain being felt. This was the first operation under a general Anaesthetic ever carried out. Dr Wells elated by his discovery betook himself to Boston and a demonstration was arranged before the Medical School at Massachusetts Hospital. Unfortunately the demonstration was not successful, the bag was removed too soon and the subject of their experiment — a medical student who was about to have a tooth removed — cried out in pain. As if this was a signal they had been waiting for, the audience broke out in laughs and hisses. Ridicule was heaped on Dr Wells who left in disgust and vexation.

Amongst the spectators was Dr Morton, a former pupil and partner of Dr Wells. The idea seems to have persisted in his head. Possibly with the help of Dr Jackson he conceived the idea of using the vapours of Sulphuric Ether and on the 30th of September 1846 he administered ether to a Mr Eben Frost and painlessly extracted a tooth. The 30th of September 1846 is therefore to be regarded as the birthday of General Anaesthesia. This occurred in Boston Massachusetts.

Dr Morton was more lucky than Dr Wells for he met with encouragement, from the Surgeons of the Mass. Gen. Hospital who began to use this means of killing pain during operations and, within a short time, Ether Anaesthesia became widely used.

The scene now moves to Edinburgh where Chloroform vapour was used as an anaesthetic agent for the first time on the 15th of November 1847, since then Chloroform came into general use and in Scotland it superseded almost entirely the use of ether. The discovery of Chloroform anaesthesia is associated with the name of Sir James Simpson, Professor of Midwifery in the University of Edinburgh.

Such, Gentlemen, is the story of one of the events we are commemorating today.

It is the story of a notable achievement which cer-
tainly deserves commemorating and for two reasons: The first reason is that it was the result of boldness and determination on the part of the early pioneers who had the grit and audacity, to put their speculations to the test of actual experiment, and that with astounding success. It is an achievement which in the realm of Surgery, is comparable to that of Christopher Columbus and the other explorers who sailed the unchartered seas.

The second reason, which is even stronger, is derived from a consideration of the results of the discovery.

Anaesthesia, without doubt, is one of the main pillars on which modern Surgery is built. It is true that before Lister Surgery although rendered painless was slow in advancing, but that was because it was not yet safe. After Lister Surgery became both painless and safe, and the rapid advance became possible, an advance which, with bewildering rapidity has conquered the innermost recesses of the human body.

We who are born and bred in the era of Anaesthesia, can hardly conceive what Surgery was like a hundred years ago. We can only dimly picture the terror which even after the lapse of a century still survives; how the practitioners of those days, by means of drugs and other means tried to deaden the agony of cutting the quick flesh; how the patient was forcibly held down and his struggles restrained by attendants who from long habit must have acquired a brutality we can hardly imagine; the cries as the unhappy victim felt the knife or the searing cautery, and how fainting sometimes brought relief, which too often, alas, passed on to the stage from which there is no recovery. Sometimes, the practitioners of those days were compelled to bleed the patients until they actually collapsed in order to secure the necessary muscular relaxation to reduce dislocations and to carry out other operations.

In order to overcome their limitations the Surgeons of those days acquired great manual dexterity. Thus it has been recorded of Liston, that he could amputate a limb in a minute and a half, and that Michael Angelo Grima could do a lithotomy in exactly two and a half minutes. But in spite of these prodigies of dexterity surgery was hedged in by limitations that were well nigh unsurmountable.

It was the discovery of Anaesthesia which enabled Humanity to reap the benefits of Lister's discovery and which prepared the way for the startling progress which has been achieved.

Anaesthesia itself, from its modest beginning has developed and is still developing at a tremendous rate. Today though hardly a centenarian, it has become a most vigorous and flourishing branch of our craft, a craft which even in the present day plays a most vital part in the solution of many surgical problems.

Time will only allow of a very short survey of the progress which has been achieved, but this very progress is perhaps the strongest ground for this commemoration.

Even from the way Anaesthesia was discovered its subsequent development could be predicted. Surely there is significance in the fact that Nitrous Oxide, Ether, and Chloroform were discovered and brought into use in rapid succession, all between December 1844 and November 1847 a period of less than three years.

Since these notable three years development has taken place in two directions: The search for other substances having anaesthetic properties but easier to administer or without any of the drawbacks of the original triad, has continued and as a result we have;— Cyclopropane, Avertin, and the intravenous anaesthetics Evipan, Pentothal.

At the same time the technique of administration has been elaborated and improved. Premedication was introduced, concurrent administration of oxygen, Intratrachael anaesthesia and so on until today from what is called, somewhat disparagingly, the rag and bottle we have the
complicated machines which none but the very expert can understand and handle, machines which are even capable of making any effort at breathing on the part of the patient entirely unnecessary. It is entirely due to the production of such apparatus, that a new branch of Surgery has come into being, and the Surgeon now can take liberties with the chest which hitherto he dared not attempt. This new branch is not yet fully exploited and I venture to prophesy that in a few years surgeons will tackle the esophagus with the same confidence with which we now deal with the stomach.

Anaesthesia has also developed in a different direction. Instead of attacking the sensation of pain at the place where it is perceived, that is in the brain, investigators sought to cut off painful sensations whilst they were still on their way there, or perhaps they were not allowed to start on their way at all. In this way, local, regional, and spinal anaesthesia were introduced.

**ANAESTHESIA IN MALTA.**

Before passing to the second discovery that we are commemorating today it is fitting that we should notice briefly what has been done in Malta, and here I crave your indulgence if I appear to sound my own trumpet, but I have no alternative because to have the history of the development of Anaesthesia in Malta I have to rely solely on my own memory which alas goes back to the last forty years.

When I first saw anaesthesia administered about forty years ago, Chloroform was the agent used. It was administered on a Shimblish mask which was covered with lint and a layer of oiled silk. When and by whom chloroform was first administered in Malta I have not been able to find out yet. It was the technique used by the Edinburgh school, a school whose reputation was and still is second to none. It was an excellent technique and one to which I must confess I am still partial. After I qualified in 1910 I spent a year in London and there I took out a course of Anaesthetics at the Post Graduate school of the West London Hospital and there I was introduced to Nitrous Oxide and Ether both open and closed, and to spinal anaesthesia. When I returned my position in the hospital was that of assistant to the Professor of Pathology and my private practice nil. To occupy my time and at the same time to put into practice what I had learnt I used to volunteer to give anaesthetics and thus relieve my fellow assistants who — unlike me had a private practice to attend to, and thus it came about that I eventually became a member of the operating team as anaesthetist both to my predecessor and Master Prof. Cassar and to another revered master and valued friend the late Prof. George Debono.

During this period I began to use Closed Ether with the Clover apparatus, open Ether and premedication with Morphia and Atrophine. I also used Nitrous Oxide and on one occasion I improvised an apparatus for giving gas and oxygen. It was difficult to get gas in those days and the gas once ran out before the operation was completed.

Then came the War 1914-1918 when Malta became one vast Hospital, at that time I had the privilege of working as an anaesthetist to the R.N. Hospital Birgu during the Dardanelles campaign. It was here and at this time that I began to use Spinal Anaesthesia. During that war we had the privilege of having a considerable number of eminent men, of worldwide reputation, working in the Malta Hospitals. Amongst them I remember Dr Silk of Silk's Inhaler who was senior Anaesthetist of King's College Hospital, and Dr Schafer. Many of us who were working in the Military Hospitals came under the influence of these men and several of my colleagues acquired considerable experience in the newer technique. In 1917 I was appointed M.O.H. and that severed for a short time my contact with the hospitals. In 1918 the Government of Malta, decided that the time had arrived for a specialist Anaesthetist to be appointed and Dr. Emanuel Vella, who had worked in the
The discovery of X-Rays has been exploited in another direction. The first pioneers who used the X-Rays for diagnosis, were not sufficiently aware of the powerful effect that these rays had on the tissues and they all paid the price of their enthusiasm, by prolonged suffering, mutilation and death. But their sacrifice has not been in vain. They pointed the way to further investigations as the result of which, the effects of the rays on the tissues, both healthy and diseased, came to be better understood and the rays began to be used in the treatment of disease. In addition efficient means were devised of protecting the workers themselves from danger. Thus truly it can be said of these pioneers that they gave their lives that others might be saved.

Let us commemorate, Gentlemen, these Martyrs to Science amongst whom I may be allowed to mention my own teacher Dr Ironside Bruce who died of Aplastic Anaemia caused by exposure to the Rays.

From small beginnings, X-Rays have been found useful in many diseases. The treatment of Cancer is naturally in the foreground but many other diseases have been found to derive benefit from the judicious application of the rays and in these times the treatment of disease by X-Rays, has become a distinct speciality (Radio therapeutics).

X-RAYS IN MALTA.

Very soon after this discovery, X-Rays found their way to Malta. Great credit is due to the late Prof. Thomas Agius, my teacher of Physics, who soon after the announcement of the discovery, assembled an improvised apparatus and demonstrated X-Rays to his class. He also gave a public course of lectures on electricity in which he demonstrated both the primitive X-Rays as well as the newly born wireless telegraphy.

The first X-Rays apparatus was set up in the Central Hospital about the year 1908; it was very primitive in type
and not very efficient. One of the R.M.O.S. at the hospital was detailed to do the work, for which he was allowed an extra ten pounds a year.

The original apparatus was replaced by another which Bighi Hospital had discarded, and this the beginning of a system of parsimony which has exerted its baneful influence in all the succeeding years. For reasons which to me are quite inexplicable the authorities have consistently refused to invest money either in the purchase of an apparatus or in remunerating adequately those that handle them. It is only in comparatively recent years that improvements have been made in the apparatus supplied and in the status and remuneration of the Staff. But we must confess that we have not kept abreast of modern progress, and this I am convinced, through no personal fault of the professional personnel entrusted with the work.

Recently this defect was brought to the notice of the Red Cross in England who thought it a shame that Malta after its heroic resistance should still lack adequate X-Rays facilities and they promised a first rate equipment, which I regret to say has not arrived. Further steps were taken by the Nuffield Trust who decided to train in England two Radiographers.

I feel it is unnecessary for me to enlarge on the practical applications of Radiology to all branches of Medicine without distinction because I feel I am preaching to the converted. Nowadays the value of X-Rays is recognised not only in medical circles but also by the lay public.

But it was not only in the Medical World that Rontgen’s Rays found practical application. Industry, as usual, was not slow in taking up the new discovery and exploiting its practical possibilities.

The newly discovered rays excited their influence in yet another direction. I allude to the effect the new discovery had in the department of pure physics.

At the time of Rontgen’s discovery Experimenters were engaged in their first groping attempts at elucidating the physics of the atom. Rontgen’s discovery gave the attempt a direction and pointed the way along which investigations were to be made. As a result of these researches, discoveries were made which caused physicists to change their concept of the structure of the atom. In other words, to use the words of the writer of the Editorial Article in the B.M.J. of Nov. 1945 “The discovery of X-Rays was the trigger which released the stream of great discoveries in atomic physics of which the latest offspring is the atom bomb”.

What the future holds in store for us in the realm of atomic physics it is impossible to conjecture. We have been allowed just a peep into a region of which we cannot see the boundaries and which for all we know may turn out to be a world even larger than the one in which we are accustomed to move. At the moment we can only speculate, though I cannot help a feeling of great expectations when I look at the future.

But there is one conclusion that forces itself in our minds, and this is the increasing importance that science is having in our daily lives. It has already been stated by politicians that scientists have won the war and this statement is indeed true. Let us therefore honour the Men of Science, those through whose labours, often against difficulties, apparently unsurmountable, we are able to enjoy the benefits that are in our possession today.