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REMARKS AND REMINISCENCES

BY

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President

The pageant of surgery and neurology through which I have lived has been the most glorious of all time. As a young man I heard VIRCHOW, HELMHOLTZ, and LUDWIG lecture; I attended the clinics of BERGMANN, THIERSCH, and VOLKMANN; I witnessed PASTEUR and LISTER at work, and I had the great

Hospital as a student nearly all operations, and they were few in number, were followed by sepsis suppuration, cellulitis, erysipelas, septicaemia, or pyaemia. It was just before this time that some hospitals on the Continent were closed because hospital gangrene and death followed every intervention. The Hotel-Dieu in Paris, like all other hospital, became a hotbed of sepsis; and it was remarked that the

more literally true than its founders appreciated. The evils of overcrowding want of air and space, and bad sanitation made themselves felt; so that on the occasion of a

-house was also in large measure still true, especially at some places on the Continent;

Tended the sick, busiest from couch to couch
And over them triumphant Death his dart

With vows, as their chief and fi

The place that surgical intervention occupies in the treatment of disease is now quite different, and it would appear that those recently qualified are quite unable to appreciate the marvellous progress during the last fifty years. The change Lister wrought in surgery has been well described by a French surgeon (Le Dentu):

“By what miracle has the slender seedling full of sap become the vigorous tree beneath the shade of which works our restless activity, ever in search of new triumphs? ... I am one of the men of a privileged generation. I have known that deceptive surgery with more grave disasters than successes, that Surgery in fine, which saw itself reduced to laying down the knife as mortal complications fell with impartial fatality on all the operation cases in a ward.”

This striking contrast between that which is and that which was has thrown more and more into the background the conditions under which were passed the earlier days of hospital all serious suppurating wounds were transferred to No 8 block of the hospital. This block was presided over by an old nurse with several other nurses under her. This old nurse treated all cases with chlorinated soda poultices and the administration of large doses of brandh and perchloride of iron; the house-surgeon was sent for at night to make incisions. Most of the cases thus treated survived, and when the great war broke out I remembered the value of free chlorine in the treatment of septic wounds. Thus the Carrel-Dakin method of treating wounds was to me and other surgeons of my standing but the revival of an old method with the addition of a novel and striking technique.

When in 1884 I attended surgical clinics in Germany I was invariably asked practising the principles of Listerian surgery.

-Sanderson on the

tuberculous process. He maintained that, as Westminster Abbey, and from his own drawing-room when inoculated under the skin of the guinea-pig produced a tuberculous lesion, the disease could not have a specific origin. The following year Koch demonstrated the tubercle bacillus.

In 1884 I joined the first class ever formed in bacteriology in the ancient University of assistant, attired in full military uniform. The cholera and tetanus bacilli were then to the known pathogenic organisms. This was the origin and cause of my work with my friend the late Professor Shattock on the intimate pathology of malignant disease. Shattock was a microscopist of repute, and I was a bacteriologist knowing not less at that time of the subject than anyone else in England. I suppose in some way it became known that I had studied bacteriology, for I was invited to become bacteriologist to the London Water companies. My family had been decimated by malignant disease, and when I was a student I made up my mind to work at the subject, and meeting the intimate pathology of carcinoma.

Some time in the late eighties I became acquainted with the work of Theodore Cash, Professor of Pharmacology in the University of Aberdeen, by which he proved that the introduction of solution of mercury perchloride into the veins of animals saved them from death after they had become ill from the injection of a fatal dose of a pathogenic organism. During the last few years there have been several papers on the introduction of mercurial salts in solution into the veins, but I have missed all mention

-five years ago was

a similar preparation, and I used it extensively for sinuses and other cases. I met Beck is curious how men and methods in surgery are so soon forgotten, and then unwittingly an old treatment is brought forward as a new thing or a new discovery. A

should

not refuse to give modern authors due credit for their discoveries and happy imitations, it is none the less just to restore to the ancients what properly belongs to

I remember being asked by the house-physician in the early nineties to see a case in house-

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what

produced by the removal of the lateral lobe of the cerebellum in the monkey The

cerebellar abscess was successfully opened the same afternoon and the patient recovered.

Besides his pioneer work on the cerebellum RISIEN RUSSELL carried out experiments of great value with reference to the cortical representation of movements of the eyeballs and of the movements of the vocal cords. He was well known as a most successful clinical teacher of neurology.

In 1900 I was appointed assistant surgeon to the National Hospital for the Paralysed and Epileptic, Queen Square. I then came into contact for the first time with two remarkable men, HUGHLINGS JACKSON and FERRIER. I also came to know Bastian, Buzzard, Gowers, Ormerod, Howard Tooth, James Taylor, Aldren Turner, and Purves Stewart. Charles Beevor was an old friend. I do not mention Horsley as we had met previously almost every day for five years at the Brown Institution and I had been on several occasions on duty at the hospital for him before I was appointed a member of the staff. The example and fascination of the lives of the eminent men who formed the senior staff of the National Hospital when I first had the honour to become a member of that staff lighted a fire of enthusiasm and fruitful research in all those who came under their influence.

BUZZARD had served in the Crimean war and possessed an indefinable quality, difficult to express in words a certain distinction of manner and mind, which in my experience was possessed by others who had been through that war. I remember operating on a case of cerebellar abscess under his care in a large public-house close to the Thames. The results were that I was invited on the next occasion of the University boat race to witness it from the roof of the public house. Refreshments were supplied gratis!

ORMEROD was a most learned physician, and his knowledge of the literature of neurology was encyclopaedic. He was always ready to place at the disposal of others his great stores of learning. He was shy, reserved, and indeed most unwilling to claim for himself credit when it was due.

HOWARD TOOTH had a clear and brilliant intellect. He was a colleague of mine for some time in Malta during the great war. We saw cases together in the hospitals of that island, and I had many opportunities of observing his shrewdness and wisdom in the diagnosis of obscure and difficult cases of injury of the nervous system. In fact, my association with him was of great value to me. Both Ormerod and Tooth possessed charming personalities.

CHARLES BEEVOR was a delightful person. It was good for me to have known him well. He was associated with HORSLEY in much experimental work, and did not get the credit which I think was due to him. I was often an onlooker at these experiments. Horsley would stimulate the cortex or corona radiata, or internal capsule of the brain, and Beevor would call out the movements induced. The recognition of the precise movement induced by excitation of a definite area of the brain requires a mental judgement greater than the performance of the actual operation of stimulation. But no doubt Horsley shared with Beevor the recognition of the muscular movements following electrical excitation of the brain. One of the last researches undertaken by

Beevor was on the distribution of the vessels of the brain. It was a splendid and admirable contribution to neurology; but I fancy it is now scarcely known.

ALDREN TURNER was a constant worker, a good friend, a keen physician, and had been fortunate in being associated with Ferrier in some of his experiments.

PURVES STEWART was an indefatigable worker as house-physician. I do not remember ever reading more complete notes of cases than those typed by him. It was while he was house physician at the National Hospital that he and I did some

morning to the Brown Institution, where the experimental work was done, and return for breakfast.

JAMES TAYLOR was a typical Scotsman and a shrewd and wise physician. I removed from a patient of his a large arachnoid haematocele. In this case there was optic neuritis, mental disturbance, and some contralateral paralysis. These arachnoid

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Sir Prescott Hewitt discusses them. I was familiar with the literature. Especially I had been impressed with a case recorded by Hewitt in the *Lancet* for 1846. A boy, aged 8 years, received a blow on the head from a cricket ball and shortly afterwards showed signs of insanity. He had recurrent attacks of insanity with intervals of health till his death fifteen years after the injury. At the necropsy a large arachnoid cyst was found. The intermittent insanity was probably due to intermittent haemorrhage into the cyst such as we know occurs in some cases of haematocele of the tunica vaginalis, thus explaining the slow increase in the size of the tumour.

DR BASTIAN was the protagonist of spontaneous generation; he made some friendly attempts to interest me in the subject, but I was so deeply immersed in and enthusiastic over the writings of Pasteur and Lister that I was not really interested, and was wholly sceptical of the value of his experiments.

GOWERS was a difficult man for a junior surgeon to know. He was a fine teacher in the out-patient room, had published two classical volumes on diseases of the central nervous system, and a tract of the spinal cord had been discovered by him. The first case of cerebral tumour I operated on had been under his care in the wards for some months. This boy, about 14 years of age, while in the hospital became an expert thief, stealing from the patients, the nurses, the staff, and even the secretary director. The tumour was a large soft glioma, and the operation consisted in not much more than the performance of a large craniectomy—a decompression, in other words. The central mass of the tumour was very soft, and I shall always remember the enthusiasm with which HENRY HEAD at my request boiled a silver teaspoon so as to enable some of the soft centre of the growth to be ladled out of the head. The result of the operation to the patient was that he obtained great relief from the physical condition from which he suffered and was cured of his moral defect. He lived for about three years after the operation and during this time he did not steal. Head has done priceless service for neurology, and has ever set before us a standard of unflagging industry, enthusiasm, and zeal for everything he undertook.

The first meningeal spinal cord tumour was removed by Horsley from a patient of Gowers. Dr Hughlings Jackson and Sir David Ferrier were present. It was said that

down the street in which he lived. I assisted Horsley at the operation. An interesting anatomical point arose. Three laminae were removed and no tumour was seen, but remembering that the spinal roots come off from the cord higher up than their corresponding vertebrae, two more laminae were taken away, the tumour was exposed, and the operation completed without difficulty.

Horsley and I at first only had a kitchen to operate in at the National Hospital, but, following the Listerian doctrines, I do not think we ever had sepsis supervening on an operation. In those early days very few operations on the nervous system were performed probably not more than one a month, if so many.

HUGHLINGS JACKSON remains in our vision as the Socrates and Lycidas of

attendance at Moorfields Eye Hospital in early life was of supreme importance to the future progress of neurology. When I first met him he was always asking me questions which I could not answer, which disturbed me not a little; but I soon found that they were not put to confuse me but to gain information. He contributed four

1866. These papers are of extraordinary interest. They illustrate the slow unravelling of the truth with regard to the nature and cause of the optic neuritis of intracranial origin. Jackson described the association of headache, vomiting, and optic neuritis in cases of cerebral tumour, and laid great stress on the fact that when amaurosis results from disease of the brain the chief lesion is but rarely situated in the optic nervous system.

In 1865 Jackson wrote:

“It occurred to me there might be particular parts of the hemisphere disease of which produced amaurosis; just as disease of a particular part of the left hemisphere produces aphasia. I was (he says) at one time sliding into the belief that disease of the right hemisphere was very important from the point of view of optic neuritis; but I received a check in Case xii which prevented me sliding into that conclusion.”

In another place the sentence occur

unilateral paralysis and unilateral convulsions were not linked together in the mind as being likely to be caused by the same disease on the opposite side of the brain; indeed, at that time convulsions and paresis seemed to be thought of without any

on epilepsy, speech, and the diagnosis of brain tumour form for him an enduring monument.

I do not think that a decompression operation was directly performed for the relief of optic neuritis before 1890. The subsidence of the neuritis following operation for brain tumour had been noted, and this is how it came about that an operation was performed in some cases when the locality of the tumour would not be diagnosed

simply for the relief of the swelling of the optic disc. It was James Taylor who
ts relation to intracranial tumour and

Horsley had noted the subsidence of optic neuritis after trephining. From the date of
zed operation for the relief of
choked disc or optic neuritis and to prevent the onset of optic atrophy and blindness.
In this relation mention must be made of MARCUS GUNN, whose accurate
measurement of the swelling of the optic disc, phenomenal in those early days, was of
the greatest value. It was said that a description by him of the retina in disease was
equalled only by the description of a visible flower bed with its flowers and weeds of
varying size and colour.

translations, vol ix, p 159) in which craniectomy
is recommended as a cure for blindness without evident disease of the eye seems as if

disease of the yes an incision should be made in the parietal region the bone trephined
and the fluid beneath let out

The seed dropped by Hippocrates did not germinate in regard to the treatment of
amaurosis without visible ocular disease till some forty years ago.

The craniectomies performed at the present day are not greatly, if at all, in advance of
those carried out by the Hippocratic surgeons. It seems to me that with the present
knowledge of physics and mechanics a time must come as easily exposed as the
contents of the abdominal cavity are by incision of the abdominal wall; indeed, I look
forward to a future when a window in the skull will be made by the surgeon with the
like gentleness, precision, and ease that a pane of glass is fashioned by the glazier by
means of a diamond.

Decompression, as we all know, is not effectual without incision of the dura. An
investigation by Sherrington and myself man years ago showed that even after the
performance of a very large cranectomy almost a hemicranectomy, and as a
consequence the unfolding of the dura from the dminences and depressions on the
inner side of the cranial vault only a very small additional amount of fluid found its
way into the intradural cavity.

FERRIER belongs to that small group of illustrious men who re-created and re-
discovered the science of experimental neurology, lost to mankind since the times of
Galen. Ferrier was experimenting before Horsley, Beevor, or myself were students of
medicine. His first experimental paper was published in 1873, and he wrote on pain in

enfeeblement, and involuntary micturition. He diagnosed a tumour of the right frontal lobe, and a month later had the satisfaction of demonstrating to his class at the autopsy the tumour in the situation in which he had predicted that it would be found. Cruveilhier knew, as Hippocrates did, that a lesion of one side of the brain was not seldom associated with paralysis of the opposite side of the body. It is of interest to me to remember that my late friend Charles Beevor contributed a paper on involuntary micturition, an early symptom of frontal lobe disease.

HEYMAN in 1831 had under his care a girl of 13 years who had been struck on the left side of the head with a garden rake by a playfellow. The wound healed, and some months later convulsions occurred. It was noticed that tremor of the right hand occurred at the commencement of each attack. The scar over the left parietal bone was tender. The bone in this region was exposed, and a trephine 1 ¼ in. in diameter was applied. The dura beneath was discoloured. It was incised, and a yellow tumour of the meninges was removed. Completed recovery ensued. From my recollection of the eighties of last century I feel sure that if this operation had been done then by, say, Horsley or Macewen it would have been hailed as a miraculous achievement.

FRITSCH and HITZIG in 1870 marked out certain centres in the brain by means of electrical stimulation, but, as Macewen states, their force and significance were not

These were undertaken to put to experimental proof the views entertained by Hughlings Jackson. I was present, newly qualified, in the Physiological Section of the International Congress in London in 1881. There was a contest of transcendent moment to the advancement of knowledge and vital to the interests of mankind over the dog shown by Goltz and the two monkeys exhibited by Ferrier. Experimental injuries had been inflicted upon the cerebral cortex of each of these animals. The dog apparently was in a normal state; Goltz spoke of the utter folly of the view that special parts of the brain are peculiarly associated with certain functional departments. This reminded me of a lecture I had attended the previous year in which we were told that the brain functioned as a whole! One of the monkeys had characteristic cerebral

monkey showed no sign of hearing when a percussion cap was snapped in its immediate neighbourhood.

In 1883 Ferrier gave the Marshall Hall oration. He said that up to that time cerebral localisation had been absorbed like latent heat by medical science itself, as distinct from medical and surgical practice, but that the unfailing safety of experiments upon animals made it clear that similar results would soon be achieved on man himself. This forecast soon became true: Godlee removed a brain tumour in 1884.

SCHAFER contributed twenty papers of transcendent merit between 1883 and 1893. They were all papers on cerebral physiology, and it is very difficult for us to apprehend the enthusiasm, the industry, and zeal of such labours. It is said there is a rhythm in human affairs, an alternation of efflorescence, decay, and efflorescence again, but in our country, in the fruitful lives of Ferrier, Hughlings Jackson, Schaffer, Sherrington, Horsley, and Henry Head, there was no hint of decay but a continuing efflorescence, becoming brighter and brighter as the years rolled by. This, indeed, was the golden age of experimental neurology. We neurological surgeons owe an

incalculable debt to these great leaders of science, since without the knowledge gained by them there would be no neurological surgery as we understand it today.

Following on the demonstration by Ferrier of the truth of cerebral localization there ensued a tremendous activity designed to elucidate the physiology and anatomy of the nervous system. Even I had a small gamble in the same direction: stimulating the cortex and internal capsule of monkeys. In one experiment in which I was engaged, with my colleague, the late Dr Hadden, in stimulating the extreme upper part of the Rolandic cortex in the monkey, movement of both big toes was observed. On stimulating the corresponding area of the opposite Rolandic cortex no movement of either big toe occurred. I have on several occasions stimulated the brain of man, but have never seen movement of both big toes from excitation of the upper part of the Rolandic cortex on one side of the brain. Between 1884 and 1891 Horsley produced eight papers of extraordinary value, and a little later, with Clarke, another one of great

tumour which were noteworthy because the diagnosis of each case was discussed with reference to his experimental work on the brain of the monkey.

In 1881 MACEWEN gave a splendid address in Glasgow on the basis of twenty-one operations for cerebral disease and injury. The first case occurred in 1879.

KEEN published three cases in 1888, one being a large meningeal tumour successfully removed from the frontoparietal region.

to attempt any record, and to mention but a few would only be to leave others out, perhaps of still greater import. Sufficient it to add that these papers of our emeritus honorary member number more than 150. But I should like for the moment to refer to two addresses given by Sherr

and the perfection of the language of each paragraph are so clearly Sherringtonian that if these addresses had been published anonymously I could without any doubt have named the author. Take a single sentence as an example. How could words be better
nto mechanism reveals more mechanism still to

Sherrington in the experiments on which the conclusions of this paper were based. The paper was published in the *Journal of Physiology* in 1889. The result of this research has given me, as it gave the late Professor Shattock, and that splendid surgeon Marcus Beck (as he himself told me), a vision of the cellular processes, not only in a healing wound, but also in disease, which has been of incalculable value to me all my professional life. The next year (1890) a lantern demonstration of the experimental results was given in Berlin in the Pathological Section of the International Medical Congress, and in the discussion which followed a dramatic incident occurred

accepted the conclusions of Sherrington and myself with regard to the conduct and fate of the leucocyte and connective tissue cell.

I have seen it stated that Harvey was the first experimental physiologist, his great work *De Motu Cordis et Sanguinis* being published in 1618: but Galen was the first experimental neurologist. He produced aphonia by cutting the recurrent laryngeal nerve. He divided the spinal cord at different levels and removed portions of the brain, so obtaining definite results concerning the cause and seat of various paralyses. Celsus and Galen must have gained much from the learning garnered in the schools of anatomy in Alexandria in 285 B.C. under the famous teachers Erasistratus and Herophilus besides being the lineal and near descendants of the Hippocratic tradition. Celsus describes how blood effused beneath the skull causes pain and dimness of vision, and states that it should be removed by trephining. These great men must have had some idea of a blood current. They could not have been wholly ignorant of the physiology of the vascular system. How could Celsus have written *Sanguinis cursus revocetur* without having some idea of a blood current? Is it not more likely that, as

to the modern world what had

been understood, perhaps only dimly, by Celsus and Galen?

It has been said that JOHN HUNTER as physiologist and surgeon, has no equal in the annals of medicine. Even our emeritus honorary member Sir Arthur Keith could hardly improve on the description of John Hunter written by Sir William Laurence:

marble. Hunter found surgery a mere mechanic art ..

Besides Sir David Ferrier, Sir Edward Sharpey-Schafer, and Sir Charles Sherrington, we welcome tonight Sir Arthur Keith and Professor Elliot Smith. We are very proud that they all have consented to join our young society. We greatly admire the labours of Sir Arthur Keith and Professor Elliot Smith in anatomy, physiology, morphology, and anthropology. We recognise the need for the study of function as an essential part of the interpretation of anatomical structure. As an example of this truth Professor Elliot Smith writes:

The knowledge of the arrangements of the tracts in the spinal cord that has been acquired within recent years seemed at first to have been of little more than academic interest or at most of use in diagnosing lesions beyond the scope of treatment till Spiller in 1911 suggested that the knowledge could be put to the humanitarian purpose of relieving pain by cutting that part of the antero-lateral column of the spinal cord which conveys impulses provocative of pain."

In the words of the professor in his recent Thomas Vicary Lecture, we believe that the apprehension of the true significance of anatomy and its study on the right lines will raise the standard of the science and practice of surgery.

Larrey and Guthrie were the great surgeons of the Napoleonic wars. LARREY was at first a naval surgeon, and in order to reach his ship he walked from Paris to Brest. Larrey observed some important effects of injury to various regions of the brain and noted facts of importance in cerebral localisation for example, contra lateral palsy,

loss of memory, aphasia; also that when paresis is caused by a cerebellar lesion it is on the homolateral side. He relates one case of Jacksonian epilepsy which he cured by operation. He states that his cases did better when left out on the road than when shut up in churches or hospitals, whether in the heat of Egypt or during the rigours of a Polish winter.

GUTHRIE, like Larrey, was a great army surgeon before the Listerian era. Both had extensive experience of war injuries of the head. Guthrie is the historian of the surgery of the Peninsular war, and records a large number of cases. He says all depressed fractures must be operated on and that the dura must be incised to let out blood or pus.

Guthrie was a strong opponent of the mediaeval practice of repeated trephining which had survived to his time, and he quotes the following case in support of his views:

“Philip of Nassau, having been thrown from his horse, fractured his skull by striking his head against the stump of a tree. He was trephined twenty-seven times by a surgeon of Neomagen. He gave a certificate of this signed by himself; and as a proof of his complete recovery drank three of his companions to death.”

But I must end. We live in an age when the great discoveries of Morton and Simpson, of Pasteur and of Lister, and of the great experimental neurologists have been applied to surgical practice. Lister is the upper light of surgery, but there is no last finish in the path of surgical progress. We are pilgrims of surgery who have reached only the threshold of truth. It is for this young society to carry on the torch and keep it brightly burning.

