An Address

ON

MISTAKES IN DIAGNOSIS AND THEIR AVOIDANCE.

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I wish to thank you for the honour you have done me by asking me to read a paper before you. I do not come professing to tell you anything new, but to start a friendly discussion upon a subject that must appeal to all—"the making of mistakes and how to avoid some of them."

To err is human, and medical men are human, despite the people's high and flattering expectations. We all make mistakes, but do we always learn from them, or do we soothe ourselves by saying, "I should make the same mistake again to-morrow in a similar case"? He who believes this nonsense builds for himself a fool's paradise, and he deserves to grow no wiser. Surely we can learn how we fall and profit by our falls. We have either failed to collect or to consider judiciously all the available evidence, or we have not thought of all the possibilities, but we have allowed ourselves to be prejudiced in favour of what appears to be the obvious.

Accurate diagnosis is a jewel of price to be sought by every available means, for it is the secret of reasonable and successful treatment and of intelligent prognosis. It is only obtained as a reward of labour. Nowhere are Carlyle's words on labour more applicable than to the medical man's arduous search for accuracy in diagnosis:

"Hast thou valued patience, courage, openness to light, or readiness to own thy mistakes. In wrestling with the dim brute powers of fact thou wilt continually learn."

"Is there not in thine inmost heart a spirit of active method giving thee no rest till thou unfold it?"

How should a diagnosis be made? It must be based upon facts, and, for the proper collection of these, *orderly methods and accuracy of observation* are essential. But even facts are of little value without the *knowledge and understanding* that are necessary to interpret them aright. I propose to deal with these steps in order, and to illustrate my remarks by mentioning a few of my own mistakes, and some others.

The collection of facts is often a laborious business, demanding great patience and perseverance. It is particularly difficult to get a good history from some patients, who frequently forget to mention the most important things, because they naturally do not understand their significance. It is not always easy to obtain an accurate account of existing symptoms; for instance, a patient may be incapable of localizing an abdominal pain. The patient's account, if complete and carefully checked by cross-examination, is of the greatest value, and is usually very suggestive, indicating the lines along which the examinations are likely to be especially profitable. Yet, for one reason or another, material historical facts sometimes remain unknown until it is too late. A forearm was amputated for supposed sarcoma with spontaneous fractures of the radius and ulna. It was presented to a museum, where upon dissection the disease proved to be ununited fracture with considerable callus due to want of rest. It was found afterwards that the patient had sustained the fracture in a domestic quarrel. An x-ray examination or even an exploration would have settled the diagnosis and saved the limb.

ORDERLY METHODS.

Systematic methods of examination are of great importance, and it is only by adopting them that most dreadful catastrophes such as diabetic and uraemic coma, following operations of convenience, can be avoided. Think of a young man going into diabetic coma after the removal of a varicocele when the examination of the urine which should precede all operations would have prevented the operation. The well-known association of diabetes and

boils and carbuncles should always be borne in mind. A doctor opened a carbuncle upon the forehead of a diabetic child. An anaesthetic was given and coma supervened. The parents thought that the brain must have been wounded at the operation. A systematic examination should surely prevent gastro-jejunostomy for the vomiting of early phthisis, and the gastric crises of locomotor ataxy, yet this operation has been performed for these conditions. The same operation was nearly performed for uraemic vomiting, but the uraemic blindness brought in the ophthalmic surgeon, who saved the situation. When I was house-surgeon I sent in for operation for strangulated femoral hernia a woman who had been constipated and vomiting for three days, and had a tender, hard, irreducible swelling at the saphenous opening. The surgeon agreed, but the sister pointed out that there was early erysipelas at the ankle; the temperature was raised also.

A man, who was thought to have had influenza ten days earlier, was sent to me for cystoscopy. He walked into my consulting room. Upon systematic examination I discovered an appendicular abscess in the pelvis; the appendix was gangrenous.

So-called specialists are very apt to confine their examinations to their own especial regions, and to attribute all symptoms to diseases of these regions. A specialist upon nervous disease overlooked hip disease in a child for months, thinking the wasting of the thigh to be due to infantile paralysis. Similarly, gynaecologists often overlook subacute appendicitis, and call it ovaritis. There are others who cannot get their minds off gout, duodenal ulcer, or chronic constipation.

We sometimes fail to make a correct diagnosis because we omit to use certain methods of examination, especially some of the newer ones, which we may not appreciate at their true value or find too troublesome. Often there are difficulties of place and circumstance; it is one thing to make a diagnosis in a well equipped hospital and quite another to attempt one in a remote country cottage without modern conveniences. It is important to be open to receive information from every available source.

What a number of mistakes and incomplete diagnoses arise from not using the Roentgen rays! Think of the fractures and dislocations that have been overlooked, and the compensations that have been claimed and awarded. A young man was out shooting buck in Siam, and was accidentally shot by his companion. There were two holes, one on each side of the crest of the tibia, and it was therefore thought that the bullet had passed through the leg, and no x-ray examination was made, although the patient travelled far to an apparatus. After a great deal of misery the bullet was shown to be in the central canal of the tibia, and was removed a year later.

A number of movable kidneys have been fixed, when stones are the real cause of the pain. It should be a rule in all urinary cases to examine with the x rays before any operation is performed. All the urinary organs should be examined. Some time ago I had to remove a disorganized calculous kidney a year after an exploration for movable kidney had been made, but the kidney had not been found, and the movable tumour was said to have been the liver.

Stones were removed from the kidney of a man who soon afterwards died of uraemia. Many stones were then discovered in the opposite kidney. The x-ray examination had been limited to one side. Moreover the average total urea excretion had not been estimated in this case, so that an entirely wrong estimate had been made of the danger of the operation. Numberless mistakes have been made because the cystoscope, sigmoidoscope, laryngoscope, and ophthalmoscope have not been used at the right time.

ACCURACY OF OBSERVATION.

The power of observation is to some extent inborn, and sometimes amounts to genius, but it is partly the result of habit and education. It is one of the most valuable acquisitions for a medical man, and one that his daily work fosters. There is little doubt that a country life in childhood, and the study of the exact sciences tend to cultivate it. Without it even *systematic methods* of examination are useless. It should be our constant endeavour to become more and more accurate. A number of mistakes are made over fluctuation. An old man had a large swelling

in the left pectoral region, thought to be a sarcoma of the ribs, but deep fluctuation proved it to be a chronic abscess. Another had a swelling over the hip, which was needlessly incised, because fluctuation had been tested across instead of along the course of the muscle fibres.

It is sometimes difficult to say whether a swelling is translucent or not, and mistakes are common from using a too powerful light. An old lady with a swelling over the front of the shoulder was said to have a Marrant Baker's cyst due to osteo-arthritis of the joint. But on examination with a more reasonable light, the swelling was not translucent. Moreover the opposite shoulder also creaked. Her husband, who was an inventor with time on his hands, had ransacked the British Museum for information about Marrant Baker's cyst and its treatment, only to be referred back to his studies with special reference to lipoma. At the operation the fatty tumour was found to arise from the subsynovial tissue about the bicipital groove. This is the fourth case of the kind that I have seen, and the same mistake had been made by different observers over all of them. In using various difficult methods of examination, such as cystoscopy, beginners are apt to make a good many mistakes. A little blood clot has been mistaken for a vesical growth, and strictures of the rectum, urethra, and oesophagus have been wrongly diagnosed, because of the folding of mucous membrane and pressure of the advancing instruments in wrong directions.

These valuable methods need a certain amount of judgement in their application, and it is well to remember the late Dr. Moxon's wise hint that a microscopic examination is not the best way of telling the difference between a turnip and a swede.

Similarly, sigmoidoscopy is not the most suitable way of discovering internal piles, bleeding from which has led to the needless suspicion of growth in the lower part of the large intestine, out of the reach of the finger.

It is rarely wise to accept the results of the observations of others; it is safer to confirm them whenever possible. I was asked to operate upon a boy of about 7 years of age for intestinal obstruction. The distension of the abdomen and the bulging of the flanks were so enormous as to make it almost certain that the obstruction was low in the large intestine. Volvulus of the sigmoid colon was the only thing that could explain the extreme distension, but the boy was not nearly bad enough for this, nor did the history support it. The subcutaneous abdominal veins were greatly dilated. It was said that the rectum was normal, but on careful bimanual examination I discovered a softish enterolith which acted as a ball-valve at the upper part of the rectum. Upon pushing this back, a great amount of liquid faeces and gas escaped. It was then possible to break up the faecal mass, and to remove it in pieces. The boy was able to go home after three days, and was saved from a needless laparotomy.

Many mistakes are made in the examination of the urinary organs of women. It is too often forgotten that it is necessary to exclude a vaginal source of pathological products. Pus was repeatedly discovered in the urine of a young lady, and was associated with frequency of micturition and pain along the right ureter. The x-ray report was negative; therefore an exploration was suggested for tuberculosis of the right kidney. Later a catheter specimen was found to be normal, and a cystoscopic examination and segregation showed that both kidneys were normal; therefore I explored the abdomen, and discovered the cause of the symptoms to be cystic disease of the right ovary, whose capsule was very thick as a result of suppurative appendicitis. For want of careful examination of the back spinal caries is often overlooked for months and treated as stomach ache. Without a *wide knowledge* it is impossible to be correct, and to keep himself up to date in this respect is one of the constant difficulties of a medical man. The busier he gets in his practice, the less time he has to devote to improving his mind. Strange as it may appear, there are many members of the profession who have not yet even heard of Dr. Hertz's ingenious method of examining the stomach and intestines with bismuth and the x rays. During the last year I have come across two patients with disease of the stomach, with extreme wasting, in which the diagnosis of malignant disease had been made and a hopeless prognosis given. The bismuth method proved them to be suffering from hour-glass contraction of the stomach.

One of these Dr. Hertz kindly examined for me, and I successfully performed gastro-gastrostomy. The other one I examined by the bismuth method myself, and I have only operated on her this week. In this case there was pyloric obstruction as well, therefore Finney's operation had to be performed at the same time. The pyloric pouch was seen to be dilated on the screen, and pyloric stenosis was diagnosed. No amount of knowledge will avail without a proper understanding of the significance of the facts discovered, and without an imagination capable of suggesting all the possible solutions, and a judgement capable of deciding upon the most probable. It sometimes requires a very comprehensive mind to keep conscious of all the facts and possibilities of a difficult case, and in such cases it is always a wise plan to write down the most important points and things to be considered. One of the most helpful principles in diagnosis is that of exclusion of the improbable from the list of possible, and thus to select the most probable. Beyond this we often cannot go. It is very important to consider all the available evidence, and to decide which facts are material. In spite of our efforts there are many cases in which we are unable to arrive at a definite diagnosis. This is especially true in certain urgent abdominal conditions. In many of these an absolute diagnosis is often not essential. What is really important is to be able to decide without delay whether an exploration is, or is not, advisable. If we wait until we have made an absolute diagnosis we will lose a great many lives. The same is true of many subacute and chronic abdominal diseases. It is especially true of early malignant diseases of the stomach and intestine.

Lightning diagnosis, although it may be very fascinating and brilliantly successful in some cases, is bound to lead to error in many others. It is always wise to put it to the test of a cooler judgement soundly based upon all the available facts. The following is a glaring example of a mistake arising out of excessive hurry. A child was seen sucking a curling pin, and a little while afterwards was found crying, and the pin was missing. The mother thought that the child had swallowed it, and hurried him off to the cottage hospital. There the abdomen was opened and the stomach examined, but the pin was not found. Three days later the pin was discovered in the patient's cot at home. Fortunately the child recovered. As a contrast, a triumph of more careful methods may be mentioned. An elderly woman was considered by two physicians and a surgeon to be suffering from malignant disease, probably affecting the gall bladder. She was very ill, sallow, and wasted. The shape of the swelling suggested to me that of the lower pole of the kidney and its distended pelvis, but the urine was said to be normal. Upon microscopic examination, however, pus cells were found in a centrifugalized deposit. Cystoscopic examination showed slight chronic cystitis, and no urine could be seen issuing from the right ureter. Segregation confirmed this. Pyonephrosis was therefore diagnosed. Radiography did not discover any stone, and the tuberculin tests were negative. Therefore some form of valvular obstruction was considered to be the most probable cause. At the operation the upper part of the ureter and the pelvis were folded like a concertina by old periureteral adhesions, and the junction of the ureter and the pelvis was valvular. The kidney was hopelessly disorganized, and was successfully removed. At one spot in front the kidney had perforated and had become adherent to the parietal muscles just below the liver. The resulting induration had previously been regarded as evidence of spreading malignant disease.

At a sale on behalf of the Children's Union of the Waifs and Strays Society, opened on December 6th by Princess Christian, it was stated that the society now has 20,000 members and supports five homes for crippled children. They are situated in Surrey, Yorkshire, and Lancashire.

At the forty-seventh annual meeting of the Surgical Aid Society, on December 6th, it was stated that the income of the society had increased from £24,498 to £30,498, a growth of nearly 24 per cent., which was all the more satisfactory in view of the general financial depression which had prevailed during the year. The number of surgical appliances supplied by the society also showed some increase, numbering some 40,000, as compared with little over 39,000 in the previous twelve months.