

## LAWSON TAIT AND HIS CONTRIBUTIONS TO ABDOMINAL SURGERY

BY JOHN HARVEY KELLOGG, M.D., (GUEST), BATTLE CREEK, MICH.

I HAVE chosen as the subject of this address, Lawson Tait, at a period when he was at the very summit of his marvelously successful and useful career.

While opinions may differ concerning the status of Lawson Tait's work, I am sure all will agree that he was a man of superior intelligence, perhaps a genius, an independent thinker, an innovator. In fact, I think his natural disposition was to avoid the beaten path if he could find another as good or better. He was most prolific in new ideas and new methods, and never satisfied with his technic so long as it lacked anything of the perfection which he conceived to be possible.

I had an opportunity to become acquainted with Tait while serving as his pupil for five months during the early part of 1889, during which time I was his only assistant aside from his nurses and Mr. Teichelmann, his anesthetist. I assisted both in his private work at The Crescent, at the Women's Hospital at Sparkhill, and at his dispensary. I usually accompanied him on trips to various places to perform surgical operations and on visits to London to attend the sessions of the British Gynecological Association and other medical meetings, and so had a fairly good chance to become somewhat intimately acquainted with him.

As he sat in an easy chair in his little office at The Crescent, Birmingham, where I first met him, he looked very impressive. He had the appearance of being a very large man. His head was massive. He wore a number eight hat; his shoulders were broad, and his chest thick. A great head of thick hair, inclined to curl, with his thick, short neck and his strong facial features, gave him a leonine look. But the impression of greatness was lessened when he stood up, for his legs were short, so that his standing height was a little below the average.

I was pleased to find that notwithstanding Mr. Tait's somewhat formidable appearance his manner was kindly though abrupt. His ordinary speaking voice was pleasant, almost musical, in tone. He spoke rapidly, incisively, using as few words as necessary to express his thoughts.

Though really a very kind-hearted man, Mr. Tait was very hot-headed and easily irritated, very opinionated, and most intolerant toward professional rivals. He was always spoiling for a fight with

actor Horsley, with whom he lunched sometimes when we ran over to London to attend a medical meeting, and whose extensive animal experimentation was well known to Mr. Tait. He frankly admitted the value of bacteriologic experimentation with animals, and I formed the opinion that as a matter of fact he only objected to animal experiments in which unnecessary pain was caused during or after the operation.

Though often imperious and dictatorial in his manner, Tait was exceedingly kind and gentle in his dealings with children and in his dispensary work treated the poor old ladies who consulted him with the greatest courtesy and consideration. He was very fond of children as well as animal pets. I think it was a matter of great grief to him that he had no child of his own. I remember on one occasion when we were waiting for a train in a little town to which Mr. Tait had been called to perform a laparotomy, as we were walking up and down the street, a little five- or six-year-old girl passed us. Mr. Tait stopped, turned around, and watched the little girl until she had finally passed out of sight down the long street, and with such a look of tenderness on his face, I felt sure he was wishing that the child were his own. He treated free of any charge many poor working girls at his private hospital, The Crescent.

Mr. Tait was educated at Edinburgh, and while a medical student he lived for several years in the house of James Y. Simpson, for whom he evidently had a very great regard. A large picture of the great Scotch obstetrician hung in his sitting-room beside his own portrait. The resemblance of the two faces was most striking. Mr. Jordan Lloyd told me that it was currently reported and generally believed that Mr. Tait was a natural son of Simpson, although Mr. Tait told me one day when we were walking home from the city market, where he loved to go after finishing his morning's work, that his father was a blacksmith. When one of his assistants asked him about the appearance of James Y. Simpson, he pulled a lock of hair across his forehead and said, "There, you see him."

When Tait left Edinburgh, on finishing his medical training there, he was fully resolved never to perform the operation of opening the abdomen. Syme, one of his teachers and one of the greatest surgeons of his day, had abandoned the operation as utterly useless. He was led to do this by the fact that the operation in the hands of Edinburgh surgeons had proved most unsuccessful. Of the 30 operations performed by Edinburgh surgeons within the preceding few years not a single patient had survived. The operation was forbidden in Kings College Hospital. At the time I was with him, however, Tait had performed considerably more than 1000 operations, and he informed me that he had a record of 116 cases in succession without a death. His success was unrivalled and naturally created great interest in Europe

After in the *American Journal of the Medical Sciences* and his operation soon became a recognized procedure in this country.

Tait was an epicure, or perhaps I should say a gourmand. No food was too rich for him or too highly flavored. He must have had an extraordinarily vigorous stomach to enable him to dispose of the great quantities of food and wines which he consumed at dinner. To his gross eating habits may perhaps be attributed his premature death at the age of sixty-five. He had previously been operated upon for a renal calculus, and one of his last medical papers was entitled, "The History of a Sore Kidney."

Lawson Tait was an ardent advocate of various reforms in medical education and ridiculed some of the methods in common use at his time and still perhaps too much in vogue. In an address he said, "I remember that we had to learn that the direction of the anterior cornu of the fourth ventricle of the brain ran a course which was backwards, outwards, downwards, forwards, and inwards, and we were enabled in the most improper way to remember these important facts by the word, 'bodfi.' Has 'bodfi' ever served any of you at the bedside? Is there any considerable condition of human accident or ailment in which 'bodfi' could assist you to relieve your patient?"

He insisted upon the importance of training the hands in the use of tools as a necessary part of surgical education. He said of the medical student's program, "I would set him so many hours in the week into the shop of the village carpenter; and I would have him trained to use a saw, a chisel, a plane, and a skew so that he should be able to make a long splint if need be, as well as to put it on. And into the blacksmith's shop he should go, until he knew how to strike properly with a hammer."

Tait himself had served time at the lathe, the bench, and the forge, doubtless, as a young boy in his father's blacksmith shop.

As an operator Tait was not dashing or showy; he was quick, neat, accurate, and efficient. His fingers were short and thick but wonderfully deft. As I stood opposite him at the operating table and watched his hands, I was fascinated by the precision, dexterity and rapidity with which each step of the operation was executed—not one false motion. He did everything himself. He helped himself to sponges and instruments; he caught every bleeding vessel, and tied every ligature. The assistant rarely had a chance to do anything except to hold a pair of forceps while he tied the pedicle, and was seldom allowed to put a finger in the wound.

Tait's dexterity in operating has perhaps seldom been excelled, though that debonair surgeon, Jimmy Wood, the star operator in Bellevue Hospital when I was a student there, used to cut off legs in thirty seconds, and the famous Liston could amputate a thigh in



twenty seconds. Martin did a double pycosalpinx in eight minutes and Doyle did vaginal hysterectomies in two minutes.

McKay says Tait repaired perineums in five minutes. If this is so, he must have changed his method, for I often timed him, and seldom saw him devote more than three minutes to a perineum, and on one occasion saw him begin and complete the operation in just a minute and a half. With his coat off, sleeves rolled up, and wearing a big mackintosh apron, he stepped to the side of the bed, seized the patient, placed her crosswise on the bed with her hips at the edge, the nurse holding each limb. With a pair of tissue forceps in one hand and a pair of scissors in the other, he dropped upon his knees and with a few quick movements dissected the vaginal flap, made a deep cut on each side, seized a long-handled Peaslee needle and pulled through three or four silkworm-gut sutures so placed as to secure good coaptation of the raw surfaces. The whole operation was over in little more time than it takes to describe it.

Tait used no germicides or antiseptics of any sort but was exceedingly clean. If his hands became at any time soiled with a virulently infectious fluid, he declined to operate for several days after, as he had found from experience that soap and water and even the antiseptics then in use were not sufficient to guarantee safety. Instruments and ligatures were boiled, and sponges were soaked in a one per cent carbolic lotion and then put in a bag and hung up to dry. Only boiled water was used at operations. The hands were prepared by simply scrubbing with soap and water, but the scrubbing was not very thoroughly done.

In operating for removal of the appendages Tait rarely made an incision more than two or two and a half inches long. The incision was just large enough to allow the insertion of two fingers. This he learned from Baker Brown. He opened the abdomen a little to one side of the median line, taking care to avoid cutting the fibers of the rectus, a point he got from A. McKenzie Edwards, a medical lecturer in Edinburgh. He seldom saw the ovaries or appendages until after they were drawn out through the abdominal wound. His left forefinger was so highly educated that it gave him much more information than his eyes could have given him concerning the pathology with which he had to deal. He did not hesitate to use much force in breaking up adhesions and sometimes tore into the intestines. When on the occurrence of such an accident I felt somewhat dubious concerning the patient's recovery, Mr. Tait laughed at my fears and remarked, "I have torn the intestine more than 30 times and have often seen feces pouring out of the drainage tube like meat out of a sausage grinder, but they got well just the same."

Though in the early eighties Tait had opposed the use of the drainage tube, referring to it as a "seton in the peritoneal cavity" and likely

to give rise to peritonitis, he had become by 1889 an ardent advocate of the drainage tube and never opened the abdomen without introducing a glass tube for drainage.

He opposed the carbolic acid spray of Lister, and said, "It is by no means either a simple or a safe proceeding."

On one occasion, when I asked him his views respecting Pasteur's discoveries, he declared that germs were harmless, that he would be willing to use a mass of germs in place of a sponge, if they were only dry. He thought the chief danger to be the collection of fluid in the abdomen. He aimed to overcome this by three methods: (1) purging the patient before operation; (2) drainage, and (3) withholding liquids for two days after operation.

Tait's remarks about germs and Lister's methods often left me with the impression that his opposition to antiseptic methods was in large part due to his hatred of Lister and Spence Wells. One experience in particular suggested this explanation of his obstinate opposition to antiseptics. He was at that time still treating hysterectomy stumps extraperitoneally. In many cases the tumors were very large, and the great mass of dead tissue left outside was soon in an advanced state of decay, so that his wards were often redolent with odors characteristic of the slaughterhouse. I asked him one day why he did not permit the use of iodoform or carbolic acid or some other antiseptic. He said, "I can't endure the smell of the stuff. I won't have it around." I have never encountered any antiseptic which could compare in pungent malodorousness with the odor of decomposing flesh which often pervaded the wards at The Crescent. Some little time afterward he began the use of boracic acid, insisting, however, that he did not use it for antiseptic purposes but merely to keep the wound dry.

Tait closed the abdominal wound with three or four through and through sutures of very coarse silk. When I asked what percentage of his cases developed hernia, he replied that he had never had hernia in a single case. Shortly after, he operated upon an American woman who had a very large bleeding fibroid and on my advice had come to Birmingham to be operated upon by Tait. He did not remove the tumor, thinking it safer to remove the appendages, as the patient was quite feeble. I timed the operation, which was completed in exactly seven minutes. Within the next year and a half both pedicle ligatures worked out, one through the vagina and the other through the abdominal wall. A year or two later I spent more than an hour dealing with a multisacculated hernia which developed in the abdominal wound.

Postoperative hernia must have been of frequent occurrence in those days. More than twenty-five years ago I operated for hernia on a patient from whom Thomas Keith had removed an ovarian

tumor thirty years before, and a year or two later I did the same operation for one of Spencer Wells' patients. So I think Mr. Tait was no more unfortunate than his colleagues in this respect. With such a method of closing the abdominal wound, the frequent occurrence of hernia was inevitable.

Tait was a man of great ingenuity. He would instantly devise some novel method of dealing with a new condition or sudden emergency arising in an operation. He invented many new instruments, the general aim of which was in the direction of simplification and increased efficiency.

Mr. Tait's greatest contribution to surgery, and to abdominal surgery in particular, was his demonstration of the value of cleanliness without antiseptics and the development of a technic which eliminated many of the perils of abdominal section and reduced the mortality to such a degree as greatly to enlarge the scope and enhance the usefulness of the operation. Those of his students who followed his technic, notably Greig Smith, Moynihan and Mayo Robson in England and Joseph Price in this country, and through his leadership the Mayos and others attained great success and fame because of their low mortality and extraordinarily uniform good results.

Without doubt the great reduction in mortality which Tait attained was largely due to his adoption of Baker Brown's method of treating the pedicle by dropping it back free in the abdominal cavity instead of applying Spencer Wells' clamp and with the systematic use of the drainage tube which he had previously denounced. His success, however, in spite of his imperfect asepsis, I believe must have been, in part at least, attributable to his radical and courageous departure from the long-established method of dealing with the bowels. As late as 1883, Tait still recommended restriction of bowel activity after ovariectomy, recommending that the bowels should be confined for from ten days to two weeks after operation. A little later, however, Mr. Tait made a radical departure in his management of the bowels after abdominal section. Before the operation the patient was thoroughly purged with saline laxatives and starved for forty-eight hours. After operation, the bowels instead of being confined were moved by enema on the second morning. Thorough evacuation of the colon on the second morning after operation was a dominant feature of the after-care of his patients. Drastic measures were used when necessary to secure an evacuation, and no food was given until after the bowels moved. Tait considered this early bowel action most important. He would not administer anodynes of any sort so long as there was any hope of saving the patient. The patients sometimes suffered cruelly, but they rarely, if ever, received an anodyne drug of any sort unless they became moribund. He said, "I never give any drug unless the patient is going to die."



He regarded peritonitis as a fatal disease. When I asked him one day what he considered the essential things to be done in peritonitis following an abdominal section, he replied, "Nothing at all. The patient who has peritonitis after a surgical operation is certain to die. The time to cure peritonitis is before it begins. If the peritoneal cavity is kept well drained, peritonitis will not occur. The important thing is to keep the peritoneal cavity free from stagnant fluids. I am not afraid of germs. They cannot grow without food."

The carbolic acid spray of Lister was conscientiously employed by Spencer Wells and his followers, but Tait achieved better results without the spray than others did with it, employing otherwise the same technic. Undoubtedly the abandonment of the Spencer Wells clamp and the use of the short sterile ligature and the intraperitoneal treatment of the stump introduced by Baker Brown were the chief factors in reducing the mortality rate from the 25 per cent of Spencer Wells' first one thousand cases to less than 5 per cent in the hands of Tait, Bantock, Thornton, and Keith.

I was greatly impressed with Tait's views with reference to the importance of keeping the intestine empty and active instead of confining the bowels with opium for ten or twelve days as had formerly been the routine treatment. The important facts which had recently been brought out by Bouchard and others respecting the highly toxic character of the intestinal contents lent strong support to Tait's views. Widal, Roux, and other investigators had called attention to the readiness with which the colon bacillus becomes highly virulent and, invading the blood stream and the tissues, produces peritonitis, pleurisy, pancreatitis, pleuropneumonia, cystitis, appendicitis, hepatic abscess, and other local infections.

These investigations clearly established a definite relationship between intestinal bacteria and septic conditions in the abdomen. Roux actually produced purulent peritonitis and abscesses with pure cultures of *B. coli*.

Studies of the bacterial contents of the alimentary tract have shown that the number of bacteria is closely proportionate to the amount of food present and increases enormously when there is stasis of food remnants, particularly in the cecum and the large intestine. There is a great difference, however, in the character of the bacteria found. This is determined by the nature of the culture medium. Kendall and Herter showed that in the presence of carbohydrates, such as lactose, pathogenic organisms do not thrive, and the colon bacillus and even the bacilli of diphtheria, cholera, dysentery, and typhoid fever cease to produce toxins, while the lactic and other acids produced by the aciduric organisms which flourish in a carbohydrate medium are harmless.

The observations of Herter, Coleman, and Shaffer, Torrey and

Rettger, supplementing those of Metchnikoff, Tissier, and Distasò, have shown that the character of the intestinal flora may be changed by suitable carbohydrate feeding and that the growth of pathogenic organisms may be arrested and these dangerous organisms almost wholly eliminated from the intestinal flora by the prevention of stasis and the provision of a favorable nutrient medium. By this means not only is the menace of infection derived from the intestinal tract diminished but the load of toxins with which the body has to deal is substantially lessened, thus diminishing the danger of shock.

Carbohydrate feeding to change the intestinal flora in preparing a patient for abdominal section has the further advantage that it supplies the liver with a rich store of glycogen with which to detoxicate and destroy the heterogenous proteins and other poisonous matters, a flood of which enters the circulation after every operation involving any considerable degree of traumatism.

The elimination of dangerous bacteria by changing the intestinal flora is only an extension of Tait's idea to combat infection by making conditions such as to discourage its development. In my surgical experience, it has proved highly valuable in lowering the mortality rate.

In the light of modern developments in relation to the great rôle played by intestinal bacteria and their products in functional and organic disorders of many sorts, I have been led to look upon Tait's departure from the orthodox method of dealing with the intestine after a laparotomy as one of his most important innovations.

I will close my paper with a brief summary of Mr. Tait's leading contributions to abdominal surgery.

He was the first to remove the ovaries and fallopian tubes for relief of pelvic inflammations.

First to remove the uterine appendages for relief of bleeding fibroids.

First to operate in cases of ruptured tubal pregnancy.

First to remove gallstones by operation.

First to suggest the operation of cesarean section in cases of placenta previa.

He invented a simple method of repairing the perineum, which in his hands often yielded satisfactory results.

When Mr. Tait began his work, abdominal surgery was synonymous with ovariectomy. His inventive genius and his courage led him to extend the scope of surgery within the abdominal cavity from the ovaries to the gall bladder, and other viscera, thus making him the real father of abdominal surgery of which he was in his day the greatest master, a man of whom one of his pupils has well said, "We shall never see his like again."



## LAWSON TAIT

THE untimely death of Lawson Tait, of Birmingham, England, 30 years ago, cut short one of the most notable medical careers of the last century. That he was a genius no one can doubt who will make himself familiar with his contributions to gynecological and abdominal surgery. Though by no means the first to undertake serious operations within the abdominal cavity, he certainly did more to render abdominal section a safe and practical procedure than any other man and is fairly entitled to the honor claimed for him by Dr. William J. Mayo of being "the father of modern abdominal surgery."

Tait began his career as a laparotomist at a time when the operation of ovariectomy had been practically abandoned in England. Of the last 30 ovariectomies performed in Edinburgh, where Tait had received his medical training, not a single one had survived. The operation was actually forbidden in some of the leading London hospitals. Syme, the leading Scotch surgeon, one of Tait's teachers, to the end of his life refused to perform the operation. Tait nevertheless had the courage to

undertake it soon after he began practice in a provincial town at the age of 23, and before he was 26 he had done the operation 5 times. At his death in 1899, at the age of 54 years, he had performed several thousand abdominal sections and with a degree of success unrivaled by any other surgeon.

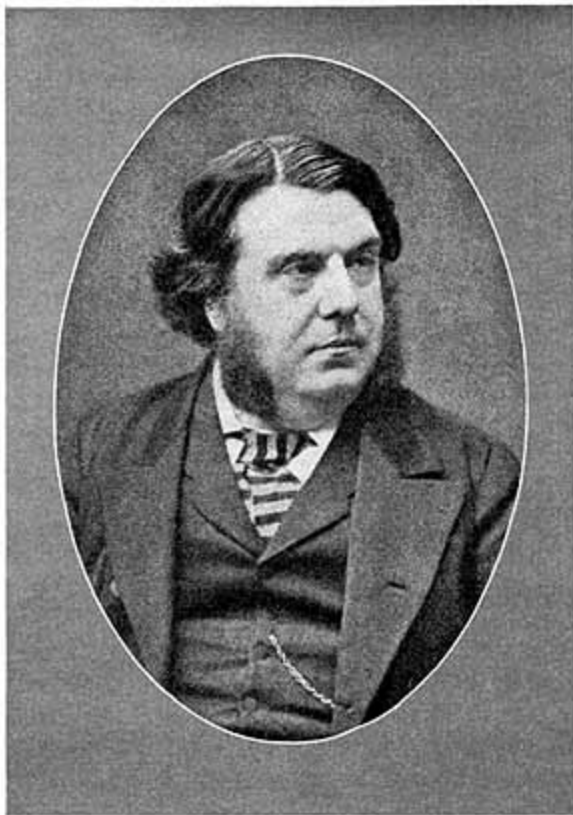
I happened to arrive in Birmingham the morning of Mr. Tait's death from uræmic coma. I had had the privilege of spending a few months with him as a pupil assistant just 10 years before. On alighting from the train I directed the cabman to drive me to The Crescent, Tait's home and private hospital. Instead of doing so the cabman handed me the morning paper, which was in mourning and bore in large black letters across the page the announcement of Mr. Tait's death. Within a few hours the whole city was in mourning, for, next to Mr. Chamberlain, Mr. Tait was unquestionably its most distinguished citizen. His fame had brought to him suffering men and women from the ends of the earth. He had many patients from the United States and Canada and from South Africa and Australia. One patient, an American, the wife of a missionary doctor, suffering greatly with an enormous ovarian tumor, came from the remote interior of Burmah, having been carried several hundred miles on the shoulders of men to reach the nearest railroad station.

My first meeting with Mr. Tait was in his little office at The Crescent. He sat alone behind a small flat topped desk with a flexible speaking tube close at hand through which he dictated to his secretary in another room. As he sat in his chair he gave one the impression of being a man of gigantic proportions. His

shoulders were very broad, his chest thick, and his large head—he wore a number 8 hat—was covered with a thick mass of dark hair which was inclined to curl. His neck was short. His strong facial features and his abundance of wavy hair gave him an almost leonine aspect. When he stood, however, the impression of greatness diminished somewhat as he was scarcely of medium height.

In manner Mr. Tait was kindly and courteous but rather short and abrupt. He had the air of a man preoccupied with intense thought. His speech was rapid and incisive, his sentences terse and pointed. He had an unusually large vocabulary and his choice of words was always the best possible. His ordinary speaking voice was pleasant, almost musical. When aroused and vexed, which often happened, he would roar like a mad bull. Tait was one of the most tender hearted men I ever met. He was gentle and delicate in his manner of dealing with patients and scrupulously careful to observe all the proprieties.

Tait had many crotchets and allowed prejudices to warp his judgment and blind his mental vision. He had a particular dislike for



LAWSON TAIT (1845-1899)

Emmett, one of the finest and sweetest of men. I could never discover any reason for this except that he disagreed with him respecting the nature of the pelvic inflammations to which Emmett had applied the term cellulitis. Tait believed the chief seat of these troubles to be the fallopian tubes, which subsequently turned out to be the truth. He carried his opposition to Emmett so far as to denounce everything he taught as error. In one case which I had previously

studied at the dispensary and in which he was preparing to repair, after his rapid fashion, a torn perineum, there was also a badly torn uterine cervix. I asked, "But, Mr. Tait, are you not going to repair the cervix before closing the perineum?" "Oh, no," he said, "I never pay any attention to Emmett's little crack."

During the several months I was with him he never once repaired a torn cervix although cases of this sort came daily under observation. I doubt if he had any other reason, than his prejudice against Dr. Emmett, for thus ignoring lesions of the cervix.

Having some years before when in Vienna

(1883) become acquainted with Billroth's pylorotomy and Woelfler's gastro-enterostomy, I one day inquired of Tait why he did not perform these operations. He at once replied, "Pylorotomy is useless because it is never done except for cancer and the cancer always returns. I never do useless operations." The operation of gastro-enterostomy he condemned in equally strong terms, declaring that it always resulted in "continuous fecal regurgitation." His attitude toward these operations illustrates one of the weak points in his character. When a prejudice was once established in his mind it was impossible to uproot it and it so blinded him that he was apparently incapable of treating the subject with intellectual fairness.

In a controversy Tait was a dangerous opponent. He was remarkably skillful in repartee and so dexterous a controversialist that he rarely failed to carry off the honors in discussions at medical meetings even when he was in the wrong. Tait enjoyed nothing better than lampooning an adversary, especially one whom he considered worthy of his mettle. On one occasion his opponent was a well known surgeon who, as his colleagues well knew, had for years been combating the inroads of Father Time by the adroit use of hair dye. In discussing Mr. Tait's paper the gentleman suggested that too much weight should not be given to his views because of the fact that he was known to be a man of very strong prejudices; whereupon Mr. Tait instantly retorted that he had only one prejudice in the world and that was against a man who dyed his hair. This savage sally quite annihilated his opponent.

Mr. Tait's animosity against some of his rivals was so great that it was hardly prudent to mention their names. On the one occasion of which I spoke to him of Spencer Wells he launched upon such a vehement outpouring of

barbed criticisms and acrid animadversions I never ventured to mention his name again.

During operations Mr. Tait rarely spoke except to utter now and then a monosyllable or two by way of direction to a nurse or the anæsthetist. At other times, however, when riding with him in his carriage, as I had often an opportunity to do, or when riding on the cars, Mr. Tait was a genial and interesting conversationalist and had apparently an inexhaustible fund of information on any subject that might be broached. Although he did not finish his university course before beginning his study of medicine, his literary work during the early years of his residence in Birmingham as editorial writer for the *Morning Post* had led him into nearly every field of human interest. He had also been a student of biology under Darwin, whom he almost deified.

Mr. Tait frequently attended the theater, which he greatly enjoyed, although he often fell asleep and sometimes snored so loudly as to create considerable disturbance. When not occupied he was in fact liable to fall asleep at any time. In riding up to London I have known him to sleep for almost the entire distance sitting bolt upright in a corner of the compartment and snoring loudly. On one such occasion when the customary fog happened to lift for a few moments, allowing the sun to illuminate his face, I managed to get a good kodak picture of him. Later he allowed me to take another picture as he was in the midst of a surgical operation, his face wearing the intense and rather savage look which it usually had while he was operating. He was very much amused when I presented him with the two pictures mounted on a card labeled "Wide Awake" and "Fast Asleep." This was his first introduction to the Eastman Kodak, then just out, and he became the possessor of one as soon as possible.



Tait was not spectacular in his methods of operating, but in his work he was remarkably quick, neat, accurate, and efficient. His hands were large, his fingers short and thick, but remarkably deft. His precise, dextrous, and rapid movements in the performance of an operation was a fascinating spectacle—never a false movement, though he did some extraordinary things. For instance, if in making an incision a spurting artery made a pause necessary for the application of a ligature, he would often catch the handle of his knife between his teeth instead of handing it to an assistant or laying it down. He did everything himself. He rarely allowed the assistant to do anything more than to hold an artery forceps or to support a large tumor while he applied ligatures to the pedicle.

To the writer's knowledge, Tait has seldom been excelled in rapidity and dexterity. Dr. "Jimmy" Wood, who was the star operator in Bellevue Hospital when I was a student there in the seventies, used to cut off legs in 30 seconds, and Liston sometimes amputated thighs in 20 seconds. Martin, the famous Berlin gynecologist, did a double salpingectomy in 8 minutes. I saw Tait do the same operation in  $7\frac{1}{2}$  minutes. I often noted the time occupied in perineal operations and seldom found it more than 3 minutes, although McKay, who followed me in Tait's service, in his excellent biography makes his time for this operation 5 minutes. On one occasion I held my watch and saw Tait begin and complete an operation for partial laceration of the perineum in just  $1\frac{1}{2}$  minutes.

His ordinary method of operating on patients at the Spark Hill Hospital was this: With his coat off, sleeves rolled up, and wearing a big apron, he stepped to the side of the bed, seized the anesthetized patient, and placed her crosswise on the bed with her hips at the edge, a nurse holding each limb. With a pair of

tissue forceps in one hand and scissors in the other, he dropped upon his knees and with a few quick snips dissected the vaginal flap, made a deep cut on either side, seized a long-handled Peaslee needle, and pulled through three or four silkworm-gut sutures so placed as to secure good coaptation of the raw surfaces. The whole operation was over in little more time than it takes to describe it.

In operating, Tait always aimed to do as little as possible. His incisions were short, never more than 2 or 2.5 inches unless a larger incision was necessary to remove a growth. His aim was to make the incision just large enough to admit his two large fingers. He said he learned this from Baker Brown. He opened the abdomen a little at one side of the median line and took care to avoid dividing the fibers of the rectus muscle. This practice he learned from A. McKenzie Edwards, one of his teachers at Edinburgh.

He was bitterly opposed to the use of the spray which at that time was in great vogue. I got the impression that his opposition to the spray and to antiseptic methods was chiefly based on his dislike of Lord Lister and Spencer Wells. He even refused to allow an application of antiseptics of any sort to the putrefying hysterectomy stumps which were in those days treated extraperitoneally. As a result, the atmosphere of his wards very often closely resembled that of a slaughterhouse. When one day I asked him to allow me to apply iodoform or carbolic acid to lessen the odor of decaying flesh, he curtly replied, "No," and added, "I cannot endure the smell of the stuff. I won't have it around." He did soon after begin the use of dry powdered boracic acid, insisting, however, that he used it only to keep the wound dry and not as an antiseptic.

Although Tait did not believe in antiseptics, he emphasized the necessity for cleanliness. This was perhaps his greatest contribu-

tion to surgery as he was really the father of surgical asepsis. He developed a technique which eliminated many of the perils of abdominal section and so materially reduced the mortality of this operation as to greatly enlarge its scope and enhance its usefulness. Men who followed his leadership in England, notably Greig Smith, Moynihan, and Mayo Robson, and in this country Joseph Price, Howard Kelly, and the Mayos, reduced the mortality rate to such a degree that the operation lost its terrors and soon came to head the list of major operations as a life saving procedure.

Though he opposed the Lister spray, Tait took the greatest care to keep his hands free from infection. If they became soiled at any time with an infectious fluid he refrained from operating for several days, having learned from experience that soap and water and even the use of the antiseptics then employed, would not always insure safety. Rubber gloves were of course not in use in those days. Instruments and ligatures were boiled. Sponges after being soaked over night in a one per cent carbolic acid solution were squeezed, put into a muslin bag, and hung up to dry. Only boiled water was used at operations.

At the time I was with him Mr. Tait boasted a record of 116 laparotomies with the same number of successive recoveries. The average mortality of the operation in this country at that time was, I believe, about 20 per cent. He attributed his success in ovariectomy to the adoption of Baker Brown's method of dropping the pedicle into the peritoneal cavity instead of treating it externally with the Spencer Wells clamp and introducing a drainage tube. Tait maintained that peritonitis was not likely to occur if the peritoneal cavity was kept dry.

Another reason for Tait's success was no doubt his radical and courageous departure

from the long established method of dealing with the bowels. As late as 1883, Tait still practiced restriction of bowel activity after ovariectomy, insisting that the bowels should be confined for from 10 days to 2 weeks after operation. A little later, however, he made a radical change in his management of the bowels. Before the operation, the patient was thoroughly purged with saline laxatives and starved for 48 hours. After operation, the bowels instead of being confined were moved by enema on the second morning. Thorough evacuation of the colon on the second morning after operation was a dominant feature of the after-care of his patients. Drastic measures were used when necessary to secure an evacuation, and no food was given until after the bowels moved.

Tait would not administer anodynes of any sort so long as there was any hope of saving the patient. The patients sometimes suffered cruelly, but they rarely, if ever, received an anodyne drug of any sort unless they became moribund. He said, "I never give any drug unless the patient is going to die."

When asked what should be done in cases of peritonitis following abdominal section, he replied: "Nothing at all. The patient who has peritonitis after a surgical operation is certain to die. The time to cure peritonitis is before it begins. If the peritoneal cavity is kept well drained, peritonitis will not occur. The important thing is to keep the peritoneal cavity free from stagnant fluids. I am not afraid of germs. They cannot grow without food."

The carbolic acid spray of Lister was conscientiously employed by Spencer Wells and his followers, but Tait achieved better results without the spray than others did with it, employing otherwise the same technique. Undoubtedly, the abandonment of the Spencer Wells clamp and the use of the short sterile

ligature and the intraperitoneal treatment of the stump introduced by Baker Brown were the chief factors in reducing the mortality rate from the 25 per cent of Spencer Wells' first one thousand cases to less than 5 per cent in the hands of Tait, Bantock, Thornton, and Keith.

Tait's views were strongly supported by the doctrine of intestinal toxæmia which Bouchard had recently brought out. Widal, Roux, and other French investigators had recently shown that in certain conditions, particularly stasis, the pathogenic bacteria always found in the colon may become highly virulent and capable of invading the blood stream and the tissues and producing pleurisy, peritonitis, hepatic abscess, pyelitis, and other grave conditions. Roux had produced peritonitis and abscesses with pure cultures of bacillus coli. Tait maintained that these organisms could not develop without a liquid culture medium, and so he not only introduced a drain in every case, but took care to prevent accumulation of liquid in the abdominal cavity by applying suction to the drainage tube at frequent intervals so as to keep the abdominal cavity as dry as possible.

Tait's departure from the orthodox method of dealing with the bowels before and after

laparotomy was doubtless one of his most important innovations. He led the way, however, in numerous departures from established methods and in undertaking new surgical procedures which have enormously increased the scope of abdominal surgery.

Tait claimed that he was the first to perform the operation for removal of the ovaries and tubes for the cure of chronic pelvic inflammation. He was first to operate for the removal of gall stones, first to operate in cases of ruptured tubal pregnancy, and the first to remove the uterine appendages for the relief of bleeding fibroids.

With his great intelligence and broad knowledge, Mr. Tait unfortunately gave no attention to personal hygiene. He was a good deal of a gourmand. He possessed an extraordinarily vigorous stomach which made no protest notwithstanding the enormous quantities of foods and wines as well as stronger liquors which he consumed at dinner. His gross eating habits were doubtless responsible for his premature death at the age of 54 after having previously submitted to an operation for removal of renal calculus.

His last medical paper was entitled "The History of a Sore Kidney," his own.

JOHN HARVEY KELLOGG.