

TRADER (J.W.)

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REPORT

— ON THE —

Progress of Surgery

— BY —

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PROGRESS OF SURGERY.

Read before the Missouri State Medical Society by JOHN W. TRADER, M. D.

If our duty ceased with the mere detail of the absolute and mediate progress of surgery within the last twelve months, there would be no occasion for detaining you to-night. The progress of all science is slow, and new ideas, like the fresh minted coins, are not often seen in the busy fluctuating affairs of men. But whether we may have new truths to present, or old ones to resurrect, if the result is beneficial to the race, we will have accomplished all the practical good likely to be derived from the progress of any science. We claim, in some departments of philosophy, great scientific advancement, even in the space of one year. If the researches of a Tyndal, Agassiz and Proctor have developed new truths out of the familiar objects around us, other minds, no less active, have grappled with problems as abstruse, and our own profession can boast an advancement no less prolific of good in general results.

We shall divide our subject into, first, radical changes in regard to operative procedures, and secondly, radical changes in regard to views held in pathological anatomy and histology.

There have been no changes or advancement in surgical science in the last decade, calculated to arrest the attention of the profession more than the plan announced by Carl Esmarch, of Denmark, to insure bloodless operations. And whatever may be said concerning the antiquity of the idea, certain it is, that no one has ever succeeded in establishing for it a place in the



list of surgical procedures until now. Stroy Meyer and Langenbeck, it is said, practiced it twenty years ago, and more recently an Italian surgeon named Silvestri; yet our literature fails to give anything more than a passing notice.

“The plan recently introduced by Esmarch for preventing hemorrhage during operations, and introduced into England by Mr. McCormack, consists in an elastic bandage some two inches wide and four or five yards long, that is applied to the limb beginning at the toes or fingers and extending beyond the point of operation; sufficient tension is used to completely compress the blood vessels. A strong rubber band or tube is now firmly applied immediately above the bandage and securely fastened; the bandage is then removed and the limb may now be operated upon without the loss of blood. Upon this plan many operations have been performed in the London hospitals—including excisions of the knee and elbow joints, amputations and the removal of dead bone; and in one case amputation was performed for gangrene of the foot, the precaution being taken of beginning the application of the elastic bandage several inches above the mortified part. No ill effects of any kind have hitherto been observed from the use of this contrivance. Although the duration of the operation has varied from a few minutes to a half an hour, and even more, during the whole of which time the circulation has been completely arrested, no evidence has been afforded of the formation of emboli or thrombi in any of the cases.” [*Abstract from London Lancet.*] It is not advisable to apply the bandage over suppurating or inflamed surfaces when we have reason to suspect the presence of septic properties as

we thereby risk, not only the danger of blood poisoning, but also the possibility of detaching small clots from the inflamed blood vessels producing embolism, or destructive inflammation of the part.

This plan has been tried by numerous surgeons and universally well spoken of and will, no doubt, be generally adopted in all operations of the extremities, in patients exsanguined and those bearing the loss of blood badly. Billroth tried it in fourteen cases; two extensive operations on necrosis of tibia; three resections and extirpations of bone in the foot; two resections of the elbow joint; two Chopart's amputations; four amputations of the thigh, and one disarticulation of the hip joint. "Eleven of these cases were completely cured," says the report, "or approaching cure when the author wrote. Three cases died; the case of disarticulation of the femur and two amputations of the thigh."

Dr. Menzel, of Trieste, reports a successful removal of a large nodulated tumor on the inside of the upper part of the thigh, in a patient sixty-five years old, in which Esmarch's method was adopted. The femoral artery and vein ran through its centre. The artery and vein were tied at both ends of the tumor which was then removed, also a smaller tumor adhering to the periosteum. The operation lasted three-quarters of an hour and not a drop of blood was lost.

Professor Esmarch had employed the plan suggested by himself, in eighty-seven cases up to last August. "Of these, twenty-one were cases of amputation and disarticulation, eight were cases of excision, thirteen of removal of necrosed bone, five of operation for the removal of tumors. Of the eighty-seven patients, four only died. The amputation wounds generally healed

by the first intention, with scarcely any traumatic fever. In no instance have there been any indications of local disturbance of the circulation as the result of the compression."

Dr. Eve, of Nashville, Tennessee, reports four cases—two amputations of the thigh, one for necrosed tibia, and one for the removal of large sequestra from the tibia; in all of which Esmarch's method for the prevention of hemorrhage was adopted. The success was complete; all the cases recovering. The Doctor is quite enthusiastic in his support of this new method, and says, in the sequel of his report, that "Esmarch's bloodless operation is a decided success, and marks an advance step in practical surgery."

Five successful cases of amputation are reported from Bellevue Hospital—four amputations of the leg, and one of the arm. Esmarch's method was adopted in all the cases, and all made a speedy recovery. Not only is the loss of blood prevented by the above method, but the surgeon is better able to see and detect the extent of the injury, and in the case of necrosis, to minutely examine the diseased bone without being blinded by the continuous flow of blood, and necessarily compelled to rely in a great measure upon the sense of touch.

The transfusion of blood, from one person to another, is receiving a new impulse. Prof. Fordyce Barker, at a stated meeting of the New York Academy of Medicine, gives a detailed account of this operation from the days of Sir Christopher Wren to the present time, and from the success attending the operation, taking into account the imperfect mechanism employed, and the fact that the knowledge of thrombus and em-

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bolism did not exist, we might say that the results obtained would certainly justify further effort in this field of experiment. It appears that arterial blood, passed from one animal to another by direct connection, always gave favorable results. Now, if some system could be adopted in which blood might be made to pass into the veins of an exsanguined and exhausted system, without in any way coming in contact with the external air or gases, a favorable result, in cases not altogether hopeless, might universally ensue.

In the 57 cases tabulated by Dr. Martin, in 1861, 45 recovered. In all these cases transfusion was resorted to on account of post-partum hemorrhage.

Since this time, Prof. Nussbaum, of Munich, performed the operation for exhaustion from disease, with recovery.

Prof. Esmarch, in the same year, performed the operation in a case of profuse hemorrhage after amputation, using calf's blood, but the operation was unsuccessful.

The same year, Dr. Flint performed the operation in New Orleans, but without complete success. In 1862, the operation was performed in Stuttgart for an alarming hemorrhage, following abortion, with success. In 1868, J. Braxton Hicks, in Guy's Hospital Reports, proposed, in order to prevent the tendency to coagulation, to mix with the blood a solution of phosphate of soda, three grains to a pint of water, and of this solution, one part to three of blood was employed. Six cases were operated upon, all unsuccessfully. In 1871, Belina reported seven cases of transfusion of defibrinated blood for flooding after abortion, all seven cases recovering. Dr. Higginson, of Liverpool, reported 13

cases, ten in obstetric practice. The blood was not defibrinated. Four recoveries followed the operation. Dr. Ringland, of Dublin, reported one successful case. Six cases are reported in New York City, all unsuccessful.

Of the above 37 cases last mentioned, 14 recovered. We must not fail to take into consideration the fact that many of the above cases, or probably a large majority of them, were hopeless.

The simplest, and at the same time the most efficient, instrument introduced for the operation of transfusion, is that of Dr. Aveling's, of Chelsea Hospital (referred to in Dr. Barker's essay above quoted), and which is fully described and illustrated in the April number of the *New York Medical Record*, page 190.

The subject of water dressing is also receiving renewed attention, and deservedly too, from the profession throughout the country. The practice, so highly recommended some years ago, of cold water irrigation as a surgical dressing, has been fairly tested by the American surgeons during our late civil war. When judiciously applied, all who have used it in gun-shot and other injuries, can testify to its great value. But the plan suggested now is not cold water irrigation, but warm water immersion. As illustrative of the method alluded to, I will give a typical case taken from a communication of Prof. Frank H. Hamilton to the *Richmond and Louisville Medical Journal*. In Case I, in the table, "excision of joint of great toe for valgus was performed, removing three-quarters of an inch of the distal end of the metatarsal bone. * * * The wound was quite large, and the incisions laid open the bottom of the foot. * * * No dressings were ap-

plied, and soon after the operation was completed, the foot was placed in the water-bath at a temperature of about 90° F. The bath was continued, with only occasional interruptions at night, fourteen days, and from this time, and whenever the foot was taken from the bath, the wound was kept wet with linen cloths saturated with water and overlaid with oil-silk. No attempt was ever made to draw the parts together, or to hasten the granulations by other means than the use of water. During the progress of the case, it was observed that the foot became gradually œdematous, but the œdema was not accompanied with pain, tenderness, redness, or other signs of inflammation. The œdema declined rapidly after removal from the bath; the toe gradually and spontaneously took its natural position, and at the end of four or five weeks the wound was closed, the toe still retaining the power of flexion and extension, and the deformity being entirely removed." Nine cases with favorable results are reported, in all of which the warm bath or warm fomentations were used, and "in no case where this plan was adopted was there any acute phlegmonous inflammation, or gangrene extending beyond the parts primarily affected, or did pyæmia or septicæmia occur." In one case only did suppuration take place, and that was after the limb had been removed from the bath. From the results attending these cases, we are certainly justified in using warm water dressings in severe injuries and after surgical operations. I might add, from my own experience and observation, that I have known great good to result from a change from cold to warm applications, and all of us are familiar with the power of the warm bran and yeast poultice in subduing inflammatory action, and in arresting traumatic gangrene.

Within the last year a plan has been suggested for the removal of tumors and for the cure of fistula in ano, etc., by Mr. Dittel, of Vienna. The method as introduced into England by Sir Henry Thompson consists of an elastic ligature. The mode of procedure is thus detailed in a case operated upon in the University College Hospital. "The patient was a robust and healthy looking woman. Chloroform having been administered, Sir Henry drew the mamma forward from off the pectoral muscle and then, with a large, strong, and slightly curved Liston's needle, transfixed the submammary tissue. Through the eye, near the point of the needle, a long piece of very elastic India rubber tubing, about the thickness of a stout whipcord, together with a large silk ligature, was passed. The elastic ligature was then divided, and the needle withdrawn. Each half of the elastic ligature was tied very tightly, so as to embrace one half of the mamma, inclusive of the skin. In fastening the elastic ligature a piece of silk ligature was placed at right angles to the elastic between the skin and the knot and while the single knot was tightly drawn, the silk was tied around it to prevent its slipping. A double knot was then made, and this was secured by again tying the silk around the elastic. The long silk which had been passed with the elastic tubing through the submammary tissues was then removed. The purpose of passing this was precautionary, in order that another piece of elastic might be drawn along the same track in the event of either half of that which was first passed breaking. Another precaution very necessary to be taken is to hold the elastic firmly at the time of dividing it, and while withdrawing the needle, otherwise the contractility

of the tubing will cause its disappearance through the track made by the needle. The time likely to ensue before the entire separation of the breast, is eight or nine days. The pain excited during any portion of this time is remarkably slight, sometimes a little pain is suffered for a day or two. In the case of the patient now referred to, there was no pain after the first twenty minutes from the time of recovery from the chloroform, and the suffering during this brief period was not at all severe."

Prof. Dittel claims to have operated in this way over 200 times, and in some instances in the removal of limbs. The advantages claimed for the elastic ligature are, (1) that it does away with the necessity of a cutting operation, and all the horror and distress which the idea of such excites in the minds of many patients; and (2) it is attended by less risk of pyæmia.

In regard to the value of this procedure there are conflicting opinions. In relieving fistula in ano, and in some forms of hemorrhoids, it will certainly be of much service. But in removing large masses, or in amputations, it is not likely to ever be brought into general use. Mr. John Erichsen, in a letter to the *Medical Times and Gazette*, characterises the use of Prof. Dittel's elastic ligature as simply a return to medieval barbarism.

Another idea being elaborated within the last year, is that of removing fluids and gases from the shut cavities by pneumatic aspiration. It has generally been considered unsafe to open cavities, particularly those lined by serous membranes, and in effusions into the pleural cavity, when every symptom tells us that the rapidly accumulating fluid is impinging upon important viscera

yet we hesitate to operate from the fact that we dread to perform paracentesis upon the thorax.

In the perfected apparatus of Dr. Dieulafoy we have a means of relieving these intrathoracic effusions by an operation simple and, at the same time, comparatively harmless. Not only the pleural cavity, but the pericardium, the bladder, the stomach, and the intestines, may be relieved in the same way. In strangulated hernia we may be enabled to reduce the tumor, after the ordinary means fail, by withdrawing the fluid from the sack by aspiration, or the accumulating gases from the bowel, relieving the tension and stricture caused thereby. The plan of the instrument is simple and easy of construction, yet I would not advise the improvising of a Davidson syringe, as some do, from the fact that the valves are always defective and may allow the escape of fluid and air back as well as forth. The air pump of the common cupping apparatus will better answer the purpose, and the point of a hypodermic syringe, with a foot of small size elastic tubing, will enable any one to meet an emergency. The best valve is oil-silk or thin rubber firmly bound to the valve seat by a small silk ligature.

In the second division of the subject, I should have been pleased to more fully enter into the details of pathological anatomy, but my time will only permit me to note the direction of the advances made, and being made, in this very interesting science. It is upon our knowledge in this branch of physic that we must at last rely for all important progress in surgery, and in fact, all diseased action.

What the telescope is doing to advance our knowledge of astronomy—the microscope is doing in pathol-

ogy. By it we are gradually becoming familiar with the occult laws or forces relating to progressive and retrograde metamorphosis. By it the molecule and its atom may be studied and their relation to, and power over all organized life, measurably comprehended.

Histology is comparatively young. Three hundred years backward witnessed its birth. Ideas came forward in their crude state, views regarding diseased action were vague and constantly changing. Now new truths are being brought to light and old systems followed out to their logical and natural sequence. But a few years ago we hailed with delight the apparently stable doctrine of cellular pathology, and looked upon the histological discoveries of this investigator with as much interest as ever attached to scientific discovery. No man labored more faithfully or effectually than Virchow, to overthrow the doctrine of dyscrasia that had entangled so many. "But now that the brilliant superstructure of the cellular pathology has been shaken to its very foundation," as asserted by Mr. Woodward in his lecture on cancerous tumors, "nevertheless, we cannot cease to look upon the man and his works with admiration and respect." And, although not himself arriving at truth, he unquestionably traveled in the right direction; and the interest he has so successfully awakened, not only in Europe, but in our own country, may prove the *prodromus* that will lead us on to its certain discovery.

The pathology of morbid growths, for instance, becomes of peculiar and practical interest to our profession, when we consider the alarming fatality produced by them, and the little known of their pathological structure and relation to surrounding parts. The cen-

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sus of 1870 gives us 2,301 deaths from cancer in males, and 3,923 in females, making a total of 6,224 annually in the United States alone. The time may not yet have "arrived for any one to tell why cancer originated or how they can be prevented or cured," yet the time is certainly opportune for us to bend our energies in this direction, and contribute something, if possible, to aid in the solution of this difficult problem. Our duties do not stop here. The whole field of pathological research lies before us, and all the collateral sciences are accompanying us hither or else bidding us on to desirable goals. Mechanism is ready with her crafty devices. The experimenters in the natural sciences are all ready for an interchange of thought. Air, earth and sky extends to us prolific aid, and—

"No pent up systems should contract our powers,
While the whole boundless universe is ours."

I cannot better conclude this essay than by adopting the language of one of the patriarchs of medicine, who was anxious, as every true lover of our art, that surgery should be rescued from the empiric whose only attraction or commendation was the vaunted *eclat* of his procedures when compromising the very life, perhaps, of the being entrusted to his care. I give this closing paragraph, not only because it accords with my own views, but because it accords also with the most advanced interest of my profession, and the feelings of suffering humanity.

Says Prof. Godman: "The difference between a surgeon and a mere operator may be estimated by contrasting them. The *surgeon* inquires into the causes, and removes the consequences of constitutional or local disease; the *operator* inquires into the willingness of

his patient to submit, and resorts to the knife. The *surgeon* relies on the restoration of the healthy actions by regimen and medicine; the *operator* relies on himself, and cuts off the diseased part. The *surgeon*, reflecting on the comfort and feeling of his patient, uniformly endeavors to save him from pain and deformity; the *operator* considers his own immediate advantage and the notoriety he may acquire, regardless of other considerations. The *surgeon* reluctantly decides upon the employment of instruments; the *operator* delays no longer than to give his knife a keen edge. The surgeon is governed by the principles of the science; the operator most generally by the principle of interest. One is distinguished by the numbers he has saved from mutilation and restored to usefulness; the other by number of cripples he has successfully made. The surgeon is an honor to his profession, and a benefactor of mankind; the mere operator renders the profession odious, and is one of the greatest curses to which mankind, among their manifold miseries, are exposed."

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