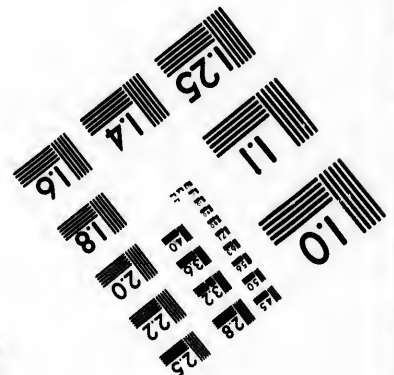
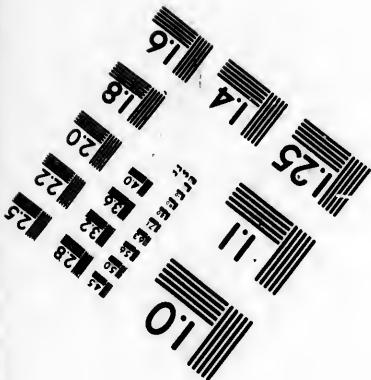
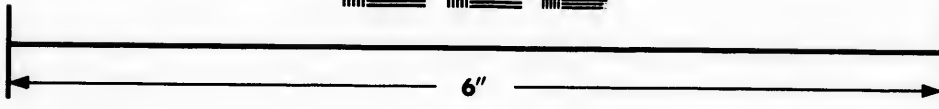
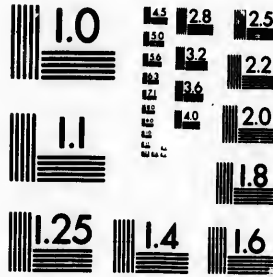


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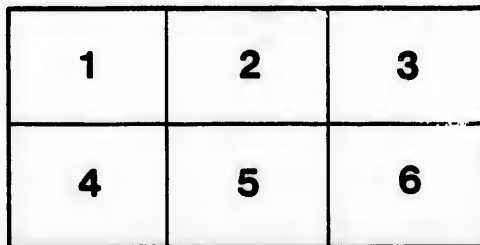
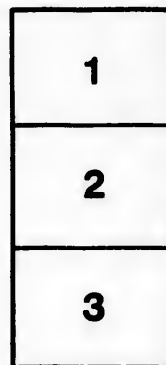
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YESTERDAY AND TO-DAY.

BY

FRANCIS J. SHEPHERD, M.D.,

Professor of Anatomy, McGill University ; Surgeon to the Montreal General
Hospital.

Reprinted from the Montreal Medical Journal, April, 1899.

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YESTERDAY AND TO-DAY.

AN ADDRESS TO THE UNDERGRADUATES' MEDICAL SOCIETY, JUNE, 1898.

BY

FRANCIS J. SHEPHERD, M.D.,

Professor of Anatomy, McGill University ; Senior Surgeon to the Montreal General Hospital.

I have thought for some time about various subjects on which to address you this evening ; some dry and heavy, others light and airy ; and I concluded, after due consideration, that you had enough of sermons preached to you during your course, and enough advice to last you for some years after graduation. The more frivolous forms of address, I considered, were ill suited to the dignity and traditions of these college halls ; so, to make my address instructive as well as entertaining, I decided to give you a short account of what the Medical Student saw twenty-five or more years ago, and to compare his opportunities and advantages with those so richly accorded to you, Medical Students of the last decade of the Nineteenth Century. I am not so sure, however, that you have so great an advantage over the men who were educated here twenty-five to thirty years ago. In the first place, they had not so much to learn and had more time for clinical work in the hospitals, for, outside of the dissecting-room, the hospitals were the only laboratories they possessed ; even practical chemistry, at that time, was not taught. Again, although you have many methods and instruments to aid in diagnosis, such as clinical thermometers and temperature records, cystoscopes, double barrelled stethoscopes, instruments and methods for estimating the proportion of white and red corpuscles in the blood, bivalve specula, urinometers, laryngoscopes, the typhoid reaction of blood, centrifugal machines, sphygmographs, fluoroscopes, X ray apparatus, and many other novelties which it would be wasting time to mention ; still, it seems to me, that the older men trusted less to mechanical means of as-

sistance, (instruments), and more to their own natural powers of observation; in surgery especially, diagnosis was a much more accurate accomplishment than at present. Now, the fashion, especially in abdominal disease, is to "get in and find out;" then, symptoms and conditions were observed more clearly. There were no temperature charts then, and the pulse was more depended on to indicate the condition of the patient, while great attention, also, was given to the expression of the face and the posture of the individual; the appearances of the excreta, too, were closely examined. As an instance of the exercise of these powers of observation I should like to read you an extract from the work of the celebrated Galen.* (Quotation read). One no longer wonders at the great success of Galen when one sees to what good use he put his eyes and how easily he could deduce truths from very slight premises, though his methods were somewhat similar to those employed by the successful quack to-day.

Now, in regard to the pulse, the ancients thought that the arteries contained the vital spirits which were invisible air, for the arteries always appeared empty after death. Galen was the first to show, by tying the carotid in the horse in two places, that the intervening portion contained blood after death. Galen wrote a book on the pulse. He says, "First learn the natural pulse, then appreciate swiftness and slowness, hardness and softness of the coats of the arteries; then notice the intervals, observe equality and inequality." He then discusses the difference of the pulses of men and women, old and young, with the effects of sleep, of baths, of wine, of mental emotions, and of pain, concluding with a description of the pulse in various diseases. At this time and till long after the pulse was not counted; it is only within a hundred years that the second hand of a watch was used to count the pulse. In the 15th century the pulse was estimated by a water clock. Galileo tested the swing of the great lamp in the Cathedral at Pisa, (from which he got his idea of the pendulum) with his own pulse, which led to the isochronism of the pendulum being discovered. This led to the production of an instrument called the "pulsilog", now long forgotten. It consisted of a scale of inches and a cord with a movable weight marked with a transverse line. The number of beats of the pulse corresponding to a given length was calculated by direct experiment depending on the isochronism of the pendulum. Thus a pulse would be spoken of, not by the number of beats, but of so many inches. (Lecture by Dr. Norman Motte, Lancet, Dec. 4, 1897.)

* The quotation, which was rather lengthy, described how Galen astonished his friend Glaucio by making a diagnosis of an obscure disease merely by observing the surroundings of the patient and his appearance; and he not only told the patient, who was a physician, what he had, but also what he thought he had, and what medicine he had taken. Of course this was to illustrate the advantages of cultivating powers of observation and making deductions from these observations.

I fear I have wandered somewhat from my subject but I hope I have not been tedious. It is interesting to one like myself, who has watched the various changes in the practice of Medicine and Surgery brought about by the wonderful discoveries of the last twenty-five years, to observe in what a matter of fact way you accept the existing conditions, such as asepsis, anaesthesia, arrest of hæmorrhage, the knowledge of the various causes of septic infection, the action of antitoxins, etc., as if this knowledge had always existed, and look upon such things, not as great discoveries or novelties, but much in the way the laity regard the telephone and telegraph, and the electric light and steam engine. To one who has lived before these things it seems very marvellous. Why, when I was a student, it was a rare thing to see a patient recover after an amputation of the leg, rare to see recovery after compound fracture of the leg, unless the leg was quickly amputated, a rare thing to see a recovery after an operation for empyema, and then this operation consisted of the introduction of a trocar, rare to see a recovery after operation for strangulated hernia. Intentional opening of the abdomen was never even suggested except for the occasional operation on an ovarian tumour and then the patient nearly always died. Abdominal surgery was called by the great Ferguson, abominable surgery. Secondary hæmorrhage was common, because ligatures were never cut short but the ends were left hanging out of the wound and after a few days pulled at each visit of the surgeon to see if they would come away, and when they did very often a gush of blood came too and the wound had to be reopened and the artery secured for a second time. It was looked upon as a very serious matter if a vein was accidentally wounded; its closure was attempted by plugging the wound with muscle or fat, but pressure was what was most relied upon; a ligature was never placed upon a vein, this would have been looked upon as murder. The cause of pyæmia was not known and it was confounded with rheumatism. We spoke of "laudable" pus and expected to see it in every wound. Healing by first intention was looked upon as a miracle. We knew nothing then of germs or sepsis or antisepsis, but operated with dirty instruments and septic hands on septic parts and wore, as a rule, coats which had for years been baptized with the blood of the surgeon's victims. Some operations performed with celerity were very successful, such as removal of tumours in the neck, and of stone from the bladder. Our operations, in those days, consisted chiefly in the amputation of limbs and the ligation of arteries. Very little other operative work was done. Excision of joints was just coming in when I commenced to study, the late Professor Fenwick being the pioneer of that work on this continent. Cancers of the breast and other parts were not operated on until they were so evident that any one could tell what they were, and operative procedures, undertaken then, were

invariably of no use because too late. What a change now in our procedure.

Perhaps in surgery the most marvellous modern discovery after anaesthesia, which has rendered the extraordinary modern operations possible, is the knowledge that sepsis is due to the distinct and definite action of certain well-known micro-organisms, and when this action is suspended or these germs are killed or prevented from entering the wound, healing takes place without any difficulty. In medicine, the proved relationship of micro-organisms to some of the most virulent forms of infectious or contagious disease, has been well established and many methods have been devised for destroying these without in any way injuring the person in whose body they are multiplying. Another remarkable discovery, which is so recent that most of you remember its inception, is the rendering of the individual immune by the injection of some antitoxin. Not so many years ago our only hope in diphtheria was tracheotomy when the worst came to the worst, and this was only palliative. In most severe epidemics of diphtheria, 40 to 50 per cent. died. Now, under antitoxin the records at the Civic Hospital last year gave a death rate of only 8 per cent., and it would have been less had the cases been brought earlier. It is hoped the scope of these antitoxins before many years will be much extended: it is used successfully now in tetanus and rabies.

Another remarkable recent discovery which seems almost a fairy tale, is the knowledge of the influence of internal secretions of certain ductless glands, as the thyroid and thymus, suprarenal capsules and pituitary gland, upon metabolic processes. Any one who has seen an idiotic Cretin or a patient with Myxœdema restored to intelligence and health will have some idea of the scope of this method of treatment. The knowledge that a subject that has bled to death still has in his body enough blood to have supported life if it only could have circulated, has been known to us less than twenty years. What prevented the circulation of the blood was diminished blood pressure. Now, in consequence of this discovery, we do not inject blood, but fluid sufficient to raise the blood-pressure to its former height. Saline solution, a teaspoonful of salt in a pint of hot water, is the simple solution used, and the solution need not be injected even into the veins, but if it is injected in the subscapular or submammary cellular tissue, it does equally well. Wooldridge has shown that when a patient recovered after transfusion of blood it meant that the transfusion had failed, the blood having escaped into the cellular tissue outside the circulation, whilst when transfusion was mechanically successful, it was fatal. Injection of saline has saved many lives even when injected into the rectum or left to be absorbed in the peritoneum. This knowledge of the efficacy of saline solution has come to us from the experiments of the physiologists.

Many other novelties and wonders are daily being made known, such as serum therapy, etc. What the future will bring forth one cannot say, but if the next twenty-five years are as rich in discoveries and the practical applications thereof, you will have much to interest you in your future careers. At the beginning of this century, medical men thought they had reached the end of their advancement, and, in fact, Boyer, after the French war, said "Surgery seems to have attained the highest degree of perfection of which it is capable." How false his estimate was, the record of advance since then has fully shown. Cordorcet at the end of the last century, when being hunted to death by a vindictive council was nearer the mark when he said that improvement in the practice of medicine must in the end put a period to transmissible or contagious diseases, and he goes on to say that death will be nothing more than the effect either of extraordinary accidents or of the slow and gradual decay of the vital powers. At the time this was written, small-pox devastated the nation, and there was hardly a person, high or low, not marked with the disease. Jenner's discovery has altered this, and on the same lines many other improvements have been introduced and the virulence of epidemics much abated. It has been prophesied that in the future there will be but little work for the surgeon except to attend to accidents, for the three conditions which call for surgical interference are, general sepsis, tubercle, and cancer; and it is asserted that in the near future a toxin will be discovered which will as surely destroy the micro-organisms of these affections as now those of diphtheria and tetanus are destroyed. If the future of surgery is so bright, what about the past? Before the discovery of anæsthesia, surgery had a very limited scope, but anæsthesia paved the way for the brilliant results achieved by modern aseptic surgery, which without anæsthesia would have been impossible. I have heard many of the surgeons, who practiced before the discovery of anæsthesia in 1847, tell of the horrors of the operating room: rapidity of operation was their one aim. Surgeons with ordinary bowels of compassion dreaded the coming operation as much as did the patient. Abernethy said he felt as if he were going to be hanged. Liston lay awake in mental anxiety the night before, and Cheselden turned sick at the thought of the pain he was going to inflict. Some one, speaking of the patient, said "his progress might be traced by frightful yellings, or, at least, by sobs of deep distress, and occasionally a number of stout assistants were scarcely sufficient to prevent a self effected rescue and escape." Nelson, when his arm was amputated after the action of Tene-riffe, manifested his usual courage and firmness, yet so painfully did the coldness of the surgeon's knife affect him, that, when going into action at the famous battle of the Nile, he gave standing orders that the amputating knives should be left in hot water.

In the Dublin Hospital Reports for 1827, I came across the narrative of a case of excision of the knee by Mr. Crampton, afterwards Sir Philip Crampton and Surgeon-General of the Forces. He describes the patient, a girl, coming into the operating room with great fortitude and even cheerfulness, but, on the instant the knife was applied to the skin she became so ungovernable that four strong assistants could, with the utmost difficulty retain her upon the table. "The removal of the extremity of the femur was a work of great difficulty and danger as when the knife was passing between the bone and popliteal artery no entreaty could induce the poor girl, whom terror seemed to have deprived of her reason, to remain one moment at rest. She struggled so violently with both limbs that it was with a degree of labour and anxiety I had never before experienced that I at length succeeded in passing the edge of the knife round the condyles posteriorly thus detaching the divided end of the femur." It is interesting to know that the patient recovered and had a useful leg. "I could walk long distances without discomfort," she said, and a year after she was able to stand or walk the length of a day."

An interesting account is given of a medical friend of Sir James Y. Simpson who was so unfortunate as to lose a limb by amputation. Here is his pathetic description :-—"The operation was a more tedious one than some which involve much greater mutilation. It necessitated cruel cutting through inflamed and morbidly sensitive parts, and could not be despatched by a few strokes of the knife. Of the agony it occasioned, I will say nothing. Suffering so great as I underwent cannot be expressed in words, and thus fortunately cannot be recalled. The particular pangs are now forgotten; but the blank whirlwind of emotion, the horror of great darkness, and the sense of desertion by God and man, bordering close upon despair, which swept through my mind and overwhelmed my heart, I can never forget however gladly I would do so. During the operation, in spite of the pain it occasioned, my senses were preternaturally acute, as I have been told they generally are in patients under such circumstances. I watched all that the surgeon did with fascinated intensity. I still recall with unwelcome vividness the spreading out of the instruments, the twisting of the tourniquet, the first incision, the fingering of the sawed bone, the sponge pressed on the flap, the tying of the blood-vessels, the stitching of the skin, and the bloody dismembered limb lying on the floor. Those are not pleasant remembrances. For a long time they haunted me, and even now they are easily resuscitated; and though they cannot bring back the suffering attending the events which gave them a place in my memory, they can occasion a suffering of their own, and be the cause of a disquiet which favours neither mental nor bodily

"health." * Of course all this occurred before my time, but it is only fifty years ago that such experiences were common.

The condition of our hospitals has much improved since my student days. The small, narrow, dark, and ill-smelling wards have given place to large, spacious, well-ventilated apartments, presided over by a young woman of pleasant appearance smartly dressed in washable garments, and assisted by two or three more like her, who take accurate observations of the temperature, pulse and respiration, and put them on a chart so that he who runs may read. In my day, age and frowsiness seemed the chief attributes of the nurse, who was ill-educated and was often made more unattractive by the vinous odour of her breath. Cleanliness was not a feature either of the nurse, the ward, or the patient, each one did as best pleased her, and her "langwidge" was "frequent and painful and free." If the day-nurse was bad, the night-nurse was worse, and as a *solatium* to help her to bear the burthen of the night, the stimulants which were then freely prescribed for patients, to make up, perhaps, for the lessened tone due to purging and sepsis, often found their way down her throat. One nurse had charge of several wards on different flats, and if a patient was violent, or even delirious, he was strapped down to his bed. This has occurred since I was on the staff of the hospital, before the introduction of the modern training school for nurses. I remember on one occasion, having operated on a man for strangulated hernia, and, there being no one to restrain him, the patient got out of bed and sat out on the back gallery, then he helped himself to tap-water and drank milk which was at the bed-side of other patients and also ate bread. I found this out accidentally from another patient and complained about it, so next night, when I went down, I found my patient gagged and strapped hand and foot to the bed to prevent him from misbehaving again. The man got a pneumonia of which he died. Armies of rats frequently disported themselves about the wards and picked up stray scraps left by the patients and sometimes attacked the patients themselves. This is all now changed, and the modern hospital is something to be proud of though it errs perhaps on the side of luxury. The beautiful rows of spotless beds, the shining dustless floor, the fresh air, the order and freedom from sadness, in fact, the universal cheerfulness (especially in surgical wards) of the patients, and last but not least, the nurses of whom I have already spoken. The operating rooms nowadays are palatial marble halls where formerly they were shambles, furnished with pulleys for reducing dislocations, reeking with odours and adorned with the blood-stained and blood-soaked table. In a celebrated hospital I saw in Dublin the operating room was built over a cess-pool. When I was in Vienna in 1874 and 1875, antiseptic surgery, which I had seen under Lister in Edinburgh, had not yet penetrated so far and the mor-

* The Semi-Centennial of Anæsthesia, Boston, 1887.

tality was appalling. I never saw a case of strangulated hernia recover after operation. The great Billroth presided over the chief surgical clinic and his mortality was quite as great as his neighbours. In England there had always been more or less attention to cleanliness, and the results of English surgery were fairly good, so that they were on this account much slower to take up antiseptic surgery, feeling quite satisfied with their results. In Germany and Austria, the change from septic to antiseptic surgery worked a miracle, from being laggards in the surgical field, the Germans became leaders and many of the triumphs of modern surgery are due to the good work of the Germans. They were not satisfied with the modest little steam boiler of Lister, but went to extremes, and had a ten horse-power boiler in a special room adjoining the operating room, and from it poured out volumes of antiseptic spray till the operators, patient, and assistants were wet to the skin and the atmosphere was worse than a London fog. Soon men found out that quite as good results were obtained by irrigation so the cry was "*fort mit dem spray*", and the boilers became obsolete. Now there was a Niagara of antiseptic solutions, the operator and his assistants waded about the operating room in long rubber boots. Visitors who had no boots got on chairs and watched the deluge of antiseptic lotions which played continually on the patient and on the floor. Soon it was found that this was doing too much and Aseptic Surgery came in, deluging with antiseptics was abandoned, and dry dressings were adopted, with aseptic and sterilized materials and the patients did quite as well. The tendency to-day is to simplify methods and to abolish the elaborate antiseptic ritual which succeeded to the days of dirty surgery. What the next new fad will be, I cannot say, but owing to our increasing knowledge of bacteria and their influence on the tissues our methods are becoming much modified. As was said of Mrs Mapp, a celebrated quack, who flourished in the last century :—

"In physick as well as in fashion we find,"

"The newest has always the run with mankind."

Byron has said,

"Thus saith the preacher. Naught beneath the sun
Is new, yet still from change to change, we run.
What varied wonders tempt us as they pass,
The cow-pox, tractors, galvanism, gas,
In turn appear, to make the vulgar stare,
Till the swollen bubble bursts, and all is air."

So far I have spoken only of the hospitals, our college teaching, except in the Practice of Medicine and Surgery was most elementary. Our anatomy was a farce. I never, as a student, dissected the pharynx, the thorax, or the abdomen. We used to toss up as to who should take out the intestines and the abdominal organs. The anatomy of hernia and lithotomy together with the arteries of the extremities comprised all the surgical anatomy. The anatomy of the convolutions of the brain was

unknown, and as for the course of the fibres in the brain and the spinal cord, they were a mystery. Physiology was not much better. The college possessed *one* microscope and I remember well waiting my turn for over an hour to see the circulation of the blood in the frog's foot. Sometimes, towards the end of the session, we had a day when we took turns to look at about a dozen imported microscopic slides of the various tissues.

In my student days and for some time afterwards, the cause and origin of phthisis created much dispute and acrimonious discussion. The discovery of the tubercle bacillus by Koch, followed by experiments with tuberculin soon cleared the atmosphere and settled the question of the origin of the disease and its contagiousness. Koch's discovery was followed by many others, and new fields of investigation were opened and much light thrown upon the cause of disease. Of course this phase went to extremes and everybody was discovering bacilli. One was discovered in old age, another in fracture of the leg and so on, but the knowledge of the bacillary origin of disease affords us some hope that in time to come remedies may be found which will abolish certain troubles which at present afflict the human animal and others. *Materia Medica* was of the most ancient character, though dragon's teeth, powdered skull and mummy were not in the list of drugs. Still we heard a good deal about musk and castoreum, antimony and ipecac, cassia and squills, tragacanth and gum acacia, coccus and Spanish fly. Now we have firms of manufacturing druggists who not only put up beautiful preparations of various drugs in a portable and palatable form, but they kindly tell us what to use them for, and how to use them. We shall soon have our drugs given in the streets perhaps from "penny-in-the-slot" machines. We had some very good bedside teaching from men like the late Dr. Howard who was a born clinical teacher. We spent considerable time in the hospitals picking up what crusts we could from the attending physicians, and making out the rest for ourselves. The clinical examinations, like the clinic, were conducted in the hospital, I admit, but certainly not at the bedside. Now, all this is changed, and any one who wishes practical instruction in any subject is able to get it in well equipped laboratories. Your opportunities are great, Gentlemen, and see that you take proper advantage of them. Much is in the womb of the future, great discoveries by which disease will be arrested, much diminished, or abolished altogether, are in the air. We are in a progressive age, and one which is teeming with interest. God grant that our brains will keep pace with what it is necessary to learn, so that we may not be left behind in the rapid march of science. I trust that this great University will retain its place in the van which it has gained by hard work and perseverance, and that it will never lag behind. In the hands of the younger generation, your hands, Gentlemen, is the lamp of scientific

progress. See that you keep it brightly burning and never let it run out of oil of research and careful observation.

Now as to medical education, I am a strong advocate of a five years course, but believe the fifth year should be devoted to practical work only, not to lectures. Owing to the faulty preliminary education of most students, much time is wasted at first in learning how to learn, and then owing to the fact that their powers of observation have never been cultivated, they have to learn how to observe for themselves and not through the medium of others. I find that many students do not know the meaning of words, and they have only a parrot knowledge of their subjects, a truly deplorable state of affairs. Learn less but learn that well. The fault of modern education is that it attempts too much. Numberless subjects are dipped into, not mastered, and all the new methods and subjects are much elaborated whilst the old are comparatively neglected. It is my opinion, that although every one should have a laboratory training, it is possible to have too much even of this ; that the true laboratory of the medical student in his final years is the hospital, and hospital should be attended without the fear of a coming examination before one's eyes, and without the tediousness of always attending lectures. The performing of large and important operations in the public theatre is not profitable to the student, nor should didactic lectures be given in the operating theatre, with the patient in bed for a text, be considered clinical lectures. It is most difficult to teach, clinically, large classes, hence, these should be divided up, and a number of men appointed to give tutorial instruction at the bedside. In surgery, the students in rotation could be made actual helpers, should sew up wounds, tie ligatures, etc.,-under the direction of the chief or his assistants. The out-door service should be made use of. I hear now it is much neglected because of want of time. This should not be, for it is a most important service, and the knowledge gained there is of inestimable benefit to the young practitioner and furnishes the class of cases he is likely to see the most of. Besides, in the out-door clinics the instruction is truly clinical and practical. I think you are over examined and fear you consider examinations are the end of all things. Alas ! When you have got through them, the first step only has been taken, and there are many more precipitous heights yet to climb. One will begin to make progress when he realises how very little he knows of any subject. To seek knowledge for its own sake and not merely to pass examinations or for what it will bring in dollars and cents, is one of the things to be expected at the coming millenium, but endeavour to do this as nearly as you can.

"Happy is the man that findeth wisdom and the man that getteth understanding, for the merchandise of it is better than the merchandise of silver and the gain thereof than pure gold."

