

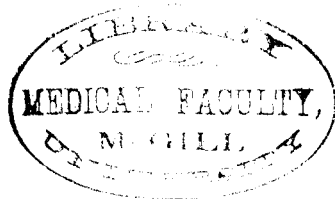
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MEDICAL MONTHLY

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EDITED BY
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VOL. XIV.

TORONTO, JANUARY, 1900.

No. 1.

Original Articles

No paper published, or to be published elsewhere as original, will be accepted in this department.

AN ERUPTIVE PLAGUE.*

BY DR. JOHN COVENTRY, WINDSOR, ONT.

It is not an exaggeration to say, that no disease appearing on this continent during the current year has so perplexed and baffled medical men who have come in contact with it, as the one to which I will call your attention.

It has resulted in a greater diversity of opinion than a religious dogma, and more acrimonious discussion than the subject of osteopathy.

It has made its appearance at different points in Canada, in nearly every State of the Union, and Mexico is now being overrun by it.

It is pronounced smallpox by some, chickenpox by others, and there are many who think it is a hybrid of these diseases, and right here is where the trouble begins. Without going into the pathology and a long description of the symptoms of these diseases, or of differential points in their diagnosis, I would say that nearly all the cases in this outbreak resemble mild cases of varioloid and very mild at that.

During the past two years thousands of these cases have been reported and the mortality has been less than the mortality of

* Read before the Windsor Medical Association, November 13th, 1899.

whooping-cough. In fifteen months 2,022 cases were reported in the State of Ohio alone, with only thirty deaths. During the months of July and August there were 955 cases in twenty-two States, with only six deaths. There has been thirty-one cases in Windsor and vicinity, with only one death, and he died from an intercurrent disease. In Detroit there have been reported 228 suspected cases in the statistical year, and no deaths. Shortly after my attention was called to some cases in Walkerville, a family moved to Windsor from the infected locality, and the mother developed the disease a few days afterwards. I consulted with Dr. Hoare who is health officer of Sandwich East as well as Walkerville. We concluded to drop the scientific side of the question as to the exact nature of the disease, and to act under the powers conferred on us by the Public Health Act, and removed all persons suffering from the disease to the Isolation hospital in Windsor, thoroughly disinfecting all suspected premises, and vaccinated all parties exposed so far as we had information. There was in all four cases from Windsor, one from Walkerville, and fifteen cases from Sandwich East sent to hospital, and eleven cases had the disease in Sandwich East not sent to hospital, making a total of thirty-one cases from the month of May to the month of September.

It is with unfeigned pleasure that I wish here to pay a tribute to the good sense and good nature of all those people who consented to leave home, deprive themselves of liberty, and submit to the inconvenience of an isolation hospital.

In view of the fact that there was a large number of visitors quartered in the city at the time (the Christian Endeavor Society) we refused to give the facts to the press, and it was not until the patients were discharged and told the reporters where they had been, that it was heralded with "scare" headlines that a number of people were confined with a mysterious disease, when as a matter of fact there was not a single patient left in the hospital. Thus ended the outbreak as far as Windsor, Walkerville and Sandwich East were concerned.

Although I was sceptical at first as to the real nature of it, I soon became satisfied that the disease was an attenuated form of smallpox, so benign in character, that it was only feebly contagious and was easily controlled by the precautions taken.

The disease was always ushered in by fever more or less severe. Some had backache, some had not. Some vomited, some did not. The eruption appeared all at once on some patients, in others there was a succession of crops. All were papular in the first stage, becoming vesicular two days afterwards. Some aborted at this stage and dried up, others became semi-pustular, marked at the apex with a small dark point, and there was no umbilication, but dried up like cases of mild varioloid.

Some had the "shotty" feeling of smallpox, but in 90 per cent. this symptom was absent. In some, the eruption appeared on the fauces, and in others, the mouth and throat were not involved. I saw no case where the cutis vera was affected, and no pits were left. In no case was there any secondary fever. Adults had a more severe eruption than children, and infants recovered at the vesicular stage, the vesicle blackening and drying up, the crust falling off from the seventh to the tenth day.

None of the cases had ever been vaccinated, and the disease did not attack those having thick skins and dark complexions more severely than it did thin skins and fair complexions. Vaccinated persons coming in contact with it did not contract the disease, and children vaccinated in the house where the disease was discovered, escaped it.

The outbreak was easily traced to the case of a young man coming to Walkerville from Cleveland at a time when that city was confessedly unable to cope with the epidemic. An eruption broke out on him and no doctor saw him. He slept in a hay loft and his friends carried him provisions. Then, without any sanitary precautions such as bathing or disinfection, he donned Her Majesty's uniform and went to camp in London, but so far as is known did not communicate the disease to the troops, although his trail was easy to follow in Walkerville and Sandwich East.

Hundreds of places in the United States and Mexico have had similar experiences with this vague outbreak, and in proportion as they neglected or adopted stringent measures to stamp it out, have they been successful or otherwise.

It is not the well-marked cases of yellow fever, cholera, smallpox, typhoid or scarlet fever or diphtheria from which epidemics spring, but it is the mild insidious forms of these diseases that escape detection in their early stages. Although some of the first cases of these diseases run a mild course, they seem to gather momentum as they go, and sometimes end with a fearful mortality.

I submit that in the cases under discussion, variola and varicella, a differential diagnosis is well-nigh impossible. A severe case of chickenpox and a mild case of smallpox or varioloid are as nearly alike as two peas, and I confess I am unable to tell the one from the other sometimes. In the stage of incubation or in the earliest stages of the eruption these exceptional cases will puzzle the most experienced diagnostician, for up to a certain point there is no pathognomonic symptom to draw the line at. Later on—when perhaps it may be too late—the diagnosis can be made, but with this counterfeit variety it can only be made absolute after watching the case for a few days.

There are some thirty or forty cases in the county at present, all said to be very mild, but smallpox is a winter disease, and the

chances are that before spring it may have assumed its ordinary type. Unless stringent measures are taken to stamp it out, it will bring sorrow to many homes, close up channels of business in the county, and subject us to a quarantine by our neighbors.

In personal consultation with the medical health officers who have seen it, and over the telephone, I have been advising them to urge on their Boards of Health to take active measures, and report the facts to the Provincial Board of Health, but they seem to have been dominated by their local boards, who are nearly in every case, more anxious to conceal contagious disease than to stamp it out.

The Provincial Board has sent an officer to report, and houses are placarded, but inmates of some of the houses still mingle with the public, and any one curious enough to desire a look at the patient can gratify the wish by walking in.

Now to cut a long story short, what are we going to do about it? Would to God we could rid the country of other diseases so easily. Vaccination and revaccination will wipe it out as surely and completely as sulphur will cure itch, and only for the ignorant hobo, and the conceited egotist who sets up his opinion against the consensus of all scientific demonstration, there would be no such disease as smallpox in the land. So I say: Vaccinate, vaccinate, vaccinate, isolate and disinfect. Vaccination is the greatest panacea of the age. It is a hundred years old, and has saved a million lives, or more.

I would like to go into the differential diagnosis between smallpox, varioloid, measles, scarlet fever, chickenpox, syphilis and impetigo, but it would make this introductory paper too lengthy. The discussion will undoubtedly bring out many practical points I have overlooked.

No text-book or monograph I have ever seen has described this mongrel, but the medical and sanitary journals are full of articles such as this paper. The future author who writes on the subject will have to give a more extended description of it if he would arm the profession with the necessary knowledge for its differentiation and early diagnosis

Reports of Societies

TORONTO CLINICAL SOCIETY.

The meeting of the above Society was held in St. George's Hall, Elm Street, January 4th, 1900. The President, Dr. George A. Bingham, occupied the chair. Fellows present: Drs. Aikins, King, Peters, Orr, Greig, Oldright, Boyd, Spencer, Ryerson, Fenton, Lehman, Bruce, McCollum, Anderson, McIlwraith, Thistle, Hamilton, Pepler, Macdonald, Fotheringham, Parsons, Small, Britton, Thorburn, Rudolf and Elliott.

Visitors: Drs. Campbell and Dean of the Toronto General Hospital house staff.

A grant of \$25.00 from the funds of the society was ordered to be paid Dr. Ryerson for Red Cross work in South Africa.

Dr. GEORGE A. PETERS showed the half of a knitting needle which he had extracted from the pelvic cavity of a woman, and related the facts in connection with the case. The woman had sat upon the needle and it entered the right buttock four or five inches and broke off at the entrance. In its passage it had grazed the tuber ischii of that side. It was thought at first to take skiagraph of the buttock, but this was abandoned as Dr. King thought that the needle would not show. She was sent out of the hospital for a week and ordered to return if troubled ensued. In a week's time she presented herself again, and on examination the surgeon thought he could feel the needle. Under anesthesia, it was removed through the vagina. It was on the lateral plane of the pelvis lying on the tuber ischii. The manoeuvres were minutely described for its removal after the incision had been made in the vaginal wall, the upper end being grasped with forceps and so extracted.

SYPHILIS OF CRANIUM.

Dr. WM. OLDRIGHT presented a patient, a man of fifty-four years, with a very large syphilitic ulceration on the vertex, about four inches in diameter, with irregular outline. In early life the man used a good deal of alcohol, and became syphilized about twenty-five years ago. At the onset of the present lesion he suffered from headache, but beyond that there were no other symptoms. He does not seem to have had secondary symptoms, such as rash and falling out of hair. In November, 1897, he had a fall and cut the scalp, which did not heal very well, there being a little eruption in it. In August, 1898, it commenced to discharge, and he came under Dr. Oldright's care one year later, at which time there was a considerable necrotic area showing through the scalp. There was then a breach of continuity of the scalp of about three inches in diameter, and the bone underneath was corrugated

and black, and you could see pulsation in the pus from the brain beneath. Shortly after the meeting of the Canada Medical Association the surgeon operated, cutting through both tables of the skull. About two by two and one-half inches was removed, and underneath found the dura covered with granulation tissue. Since that operation Dr. Oldright has removed at times portions of the bone, without anesthesia, which gives him no pain, but a very unpleasant sensation in the ears. A probe can be passed in about two inches posteriorly. In places the necrosis only seems to have extended as far as the outer plate. Underneath there is living, bleeding bone, but at other places both tables are cut through; and there is a place where the little finger can be inserted between the dura and the skull. New bone has formed in the granulation tissue. When the bone was first removed it was suggested that a dressing of HCl and pepsin be put on, as it was thought that this might contribute to digestion of portions of the bone. The patient has had thirty-five grains of pot. iodide three times a day. This treatment is continued for ten or twelve days and then stopped for two or three days. In the intervals the bichloride is administered. Bichloride applications are now being used externally.

Discussion.—Dr. BERTRAM SPENCER spoke of a case similar to this with necrosis of the frontal bone which had occurred many years ago in the service of Dr. Grasett in the Toronto General Hospital. In that case the whole of the frontal bone three and one-half inches across came away and was removed by simply lifting it up with a probe, without any operative procedures. He thought many other applications were far better than the bichloride, as they would destroy the smell much better. He said he had found that in administering iodide of potash that it was far better borne if given in Vichy water. We should be careful in pronouncing a case of syphilis cured, as we see from Dr. Oldright's case that the patient was treated for six months, and at the end of that time pronounced cured.

Dr. RYERSON spoke of having seen many cases of syphilis deformans at the hospital at Netley shortly after a shipload of soldiers had arrived from India. In that country, since the revocation of the Contagious Diseases' Act, syphilis was something frightful.

Dr. BINGHAM asked as to the dosage of iodide of potash. Was it not true, when the rash appears upon the body, that you have then reached the limit of efficacy, or do you push it still further.

Dr. SPENCER stated that he had always found that giving the stomach a rest at that time was exceedingly beneficial, and that when given with Vichy water it agreed with the stomach better.

Dr. OLDRIGHT stated that one reason for operating was that pus might burrow between the dura mater and the skull, eventually setting up general infection. The course of the trouble

will be very much shortened by removing all the necrosed bone possible. With regard to the administration of the iodide of potash he commenced with twelve grains, gradually increasing it to thirty-five, and the man's appetite was very much better during that time than before. He stated he did not sympathize with the Contagious Diseases' Act referred to ; medical societies should not throw their weight towards licensing prostitution.

CARDIAC ANEURISM.

Dr. W. B. THISTLE presented this specimen and recited the condition present. These aneurisms occur in two varieties : the acute and chronic, the former being the more uncommon. In the chronic forms there is very often the history of syphilis. The great majority of these aneurisms are situated near the apex of the heart, nearly always at the end of the left ventricle. Calcareous degeneration sometimes quite common, and in this marked. In one reported case the aneurism had to be cut through with a saw. This aneurism occurred in the ventricular septum extending up into the auricular septum, so that it was partly in both septa. It was about two inches in length, and an inch in breadth. It occurred in a married woman, aged thirty-three years, who had never been pregnant, had no previous illness, had never been syphilized, although the husband was drunken and worthless. The parents and brothers and sisters were perfectly well. She was admitted to the hospital suffering from weakness, shortness of breath and marked pallor, there being no symptoms directed towards the heart such as palpitation. She had edema beneath the eyes ; the pulse rapid, but regular. Examination of the heart revealed a double aortic murmur, traceable up into the neck and down along the sternum. Water hammer pulse was very distinct, and throbbing of the great vessels of the neck. There was also capillary pulsation, very distinctly seen in the patient's finger-nails. A harsh systolic thrill was noticed. Apex was displaced somewhat to the left. Later on at the apex there was a systolic murmur traceable to the left, and still later a presystolic murmur, accompanied by a very pronounced thrill. Enlargement and tenderness of the spleen, and later a somewhat indistinct pericardial friction sound detected. At the autopsy pericarditis, corresponding to the friction during life, was noticed. There was some fluid in the abdomen. Examination of the urine during life revealed nothing at first. Later on it contained very much albumen, and blood, and casts in great number. The diagnosis of the case was malignant endocarditis. There was nothing showing the case to be embolical. Death occurred from uremic convulsions after seven weeks in the hospital. The autopsy showed this aneurism in connection with the aortic valve. The clot turned out left a smooth wall with a great deal of calcareous deposit

about the opening. The mitral valve showed nothing abnormal, contrary to expectation.

ENDOCARDITIS OF THE RIGHT HEART.

Dr. THISTLE also showed this specimen. The case was one of chronic endocarditis occurring in a rheumatic little girl aged twelve. It is an interesting specimen, because all four valves show marked changes; very pronounced mitral, and just as pronounced tricuspid, with distinct vegetations on the aortic, and also on the pulmonary valve; and, particularly interesting when the specimen was recent, there seemed to be very distinct, a little tuft on each segment of the pulmonary valve. This is an extremely rare condition. Some authors say you never get endocarditis affecting the pulmonary valve.

TUBERCULAR TESTICLE.

Dr. H. A. BRUCE showed this specimen, which he had removed that morning. The condition began in the epididymis, with a sinus opening through the scrotum discharging pus. The patient is a young married man of twenty-six years, and has had some enlargement of both testicles about a year, although the sinus had only existed for four weeks. He had one on the left, and also one on the right side. The left one led to the globus major, and the right one led to the globus minor of the corresponding testicle. The disease was in both testicles. On examination per rectum the left seminal vesicle was found enlarged. The left testicle was removed entire with the cord up to the external abdominal ring. The right was removed only in part—not the body—as the patient was particularly anxious to have a portion of the organ left. Later on the remaining portion of the right testicle will have to be removed.

EXTRAORDINARY CASE OF CANCER.

Dr. Wm. BRITTON related the history of this case, and Dr. Anderson described the pathologic specimen. It occurred in a corpulent woman of fifty-seven years of age. She first came under the doctor's attention in July of last year, with edema of the left ankle, and a portion of the leg as far as the calf. In the absence of local causes it was considered that there was pressure higher up. On examination vaginally a hard nodular mass was found filling the pelvis almost completely. A portion of the uterus could not be made out at all, nor either ovary or tube. There was some irritability of the bladder, but no special difficulty with the rectum. This was singular as posterior to the body of the uterus the tumor was very great. With the finger in the rectum the tumor could be pressed forward, the intestine patent to a certain extent. Assisted by Dr. Temple, Dr. Britton made an exploratory incision, with the vain hope that the tumor might possibly be a multiple fibroid, though holding suspicions of malignancy. The

cavity of the uterus was not enlarged to any degree, perhaps one-third larger than normal. The os uteri was up near the vaginal wall in front. On opening the abdomen a great deal of ascitic fluid welled up, and it was noticed that the omentum was very much thickened and congested, and slightly rough. There was nothing special to be observed, so far as the tumor was concerned, except that it filled the pelvis completely, and in places firmly adherent to near-by structures. This was as far as the operation was proceeded with, the wound being stitched up in the ordinary way. For five days union progressed favorably when something was noticed to be wrong. Serous fluid was oozing through three or four stitch holes, and also from the upper part of the wound. In the five days this fluid had accumulated with marvellous rapidity. It forced the wound apart and continued about two weeks, and then ceased. Healing then took place by granulation. The vomiting after the anesthesia was extreme, and there was a good deal of vomiting at intervals. During the last week of life vomiting became almost incessant. At the autopsy performed by Dr. Anderson, it was found that the tumor had nothing whatever to do with the uterus, but arose from the left ovary. The left ovary was there, but very much atrophied; the tube could not be found. The whole peritoneum, both parietal and that covering the abdominal walls, was studded with little elevations about the size of a millet seed, covering the broad ligaments; the whole surface of the tumor superiorly and every portion of the peritoneum was found covered with these. They were most numerous over the stomach, and the mesentery as well as the colon. The cardiac orifice of the stomach was perfectly normal. In front of the pylorus there was a great deal of thickening of the peritoneum. Posterior to the pylorus there was a nodule the size of a walnut, coarse and greyish in structure, having the appearance of scirrhus cancer.

In discussing the pathologic condition of the specimen, Dr. Anderson stated that the little elevations on the peritoneum had now entirely disappeared. The condition was a papillomatous ovarian cyst, and was described minutely by Dr. Anderson, who stated that microscopically both ovaries show cancer.

ECLAMPSIA.

Dr. K. MCILWRAITH reported two cases of eclampsia in primiparæ, aged nineteen and twenty-four years respectively. Treatment with morphia, calomel and salines was described.

Dr. PEPLER spoke of using pilocarpine in one of his cases with resulting death. In two, veratrum viride had acted admirably.

Dr. BRITTON thought venesection was the proper remedy in sthenic cases.

GEORGE ELLIOTT,
Recording Secretary.

Special Selections.

**ETHERIZATION—THE MEANS WHEREBY THE QUANTITY
WAS REDUCED FROM ONE THOUSAND TO ONE
HUNDRED GRAMS PER HOUR: WITH ESPECIAL
REFERENCE TO THE POSITION OF THE
HEAD AS AFFECTING RESPIRATION.***

BY A. ERNEST GALLANT, M.D.

Formerly Anesthetist to the Roosevelt Hospital, Gynecological Division; and (as Interne) to the New York Cancer Hospital, the Sloane Maternity Hospital, New York, and the St. Joseph's Hospital, Patterson, N. J.

It has been very gratifying to note the number of excellent articles which have brought before the profession the need of well-trained anesthetists. Every practitioner, at one time or another, is sure to be unpleasantly brought face to face with this truth, and to realize that he has leaned upon a broken reed.

Never can the writer forget the time when, as a second-year man, he was called upon for the first time to administer an anesthetic. Without advice, without training, without even a fair knowledge of the action of the poisonous drug, yet anxious and willing to learn the art, it was with much trepidation he accepted the "towel cone" and at the command of the "house" poured on and crowded the ether—"blind leading the blind." In Roosevelt Hospital it was then a daily practice to use 1,000 gm. or more per hour. Much was wasted, and the patients were literally "drowned" in ether, and must have experienced a corresponding degree of shock. The last annual report of this hospital announces the appointment of an "official anesthetist," and I hope that under his tuition much of this reckless waste and woeful extravagance will be done away with.

While on this subject of trained anesthetists, it may not be out of place to state that not only every undergraduate medical student and every hospital interne, but every nurse in training should be drilled in the practical details of anesthesia. Every surgeon, every gynecologist, every obstetrician—aye, every general practitioner—can recall the time when he has found it necessary to call upon the nurse to "hold the cone" or to give chloroform. Have we any right to jeopardize the lives of our patients in this reckless fashion?

Methinks I hear, in one loud acclaim, "No! No!"

Professor Macewen, at the Royal Infirmary, Glasgow, requires his own students to pass a written examination, to give evidence

* Read before the Harlem Medical Association, October 9, 1899.

as to their thorough acquaintance with the physiological actions upon the human being of the principal anesthetic agents, as to the manner in which fatal issues arise, and how these may be averted. Then each is required to administer, under the eye of a competent teacher, an anesthetic to patients on at least twelve occasions. If the candidate proves worthy in both examinations, he is granted a certificate of proficiency in anesthesia.

How often we hear, in cruel jest, "The operation was a great success, but the patient died." Was this melancholy result due to the anesthetic, *per se*, or to unskilful administration?

Successful anesthesia depends upon: (1) The preparation of the patient; (2) the administration of the anesthetic; (3) the early recognition of and means for overcoming accidents during anesthesia; (4) the after-care of the patient.

THE PREPARATION OF THE PATIENT.

The preparation of the patient cannot be thoroughly accomplished in less than a week, to afford time to ascertain the real condition of the (*a*) kidneys; to evacuate entirely the (*b*) intestinal tract, and give the bowels at least twelve hours' rest just before operation, to minimize painful peristalsis, which so often follows handling of the abdominal viscera. The (*c*) food must depend largely on the activity of digestion, and the general condition of the patient. Food and liquid exhibited twelve to twenty hours before anesthesia is sometimes vomited in an wholly undigested state; digestion being at a standstill, probably owing to nervous anticipation and dread of operation. (*d*) A good night's rest is without doubt one of the best means of fortifying a patient against subsequent shock, and can often be induced by a hot ammonia bath, followed by a rub-down with weak alcohol. Too little attention is paid to the observation of the (*e*) character of the pulse and action of the heart before operation, by which to compare its work during anesthesia and after the operation is over, and this neglect leads to unnecessary stimulation and over-driving a heart which is doing its average best.

ADMINISTERING THE ANESTHETIC.

The choice of anesthetic must depend largely on the judgment and inclination of the surgeon, and the result of the study of the kidney, heart, and lungs of the patient. Nitrous oxide has now a well-established place as the most agreeable and safe anesthetic for diagnostic examinations and minor operations, and in the practice of the writer has replaced all others for curettage, circumcision, excision of cysts, reduction of dislocations or fractures, etc. It will no doubt surprise many to learn that in the hands of one familiar with its use its action can be continued from one-half to

one hour. For rapid and pleasant induction of anesthesia, preceding ether, it stands as an ideal drug. The complete apparatus including cylinder, bag, and inhaler is put up in a box weighing thirty-five to forty pounds, which can be carried in the hand. The empty cylinders can be exchanged for full ones, without other expense than the cost of the gas.

Ether.—The inhalation of ether is made disagreeable only by those who brutally insist on the so-called "rapid" method, accomplished by crowding the cone tightly over the face, and holding it there, in spite of the most strenuous efforts of the patient to secure a comfortable inspiration. It would be a pleasure to the writer to anesthetize such an "enthusiast" after his own plan, as the only means of teaching the error of his way.

The cone.—The aim of every anesthetist is to induce and maintain a uniform degree of anesthesia with a minimum quantity of ether, and avoid nausea, vomiting, and shock. After many experiments with the various forms of cones, the best results have been obtained by a modified Allis' inhaler.

1. The rubber sheath has been made extra long, eight and one-half inches, (*a*) to increase the air space above, and the nose space below; and (*b*) by folding in the upper edges we prevent the escape of ether, and administer it in a more concentrated form.

2. Fold a piece of gauze, four to eight thicknesses, over the end of the metal frame, and invert it into the sheath, so that the diaphragm will lie just above the nose; this prevents ether from splashing through into the nose or mouth of the patient.

3. Into the cavity thus formed, place three-quarters of a yard of gauze, bunched up like a handkerchief. Absorbent cotton and sea-sponges have a great affinity for aqueous vapor, soon become saturated with moisture from the breath, and fail to take up the ether poured thereon. Coarse meshed gauze, on the other hand, when loosely placed in the cone, allows the warm breath to act upon the cold ether, raises the temperature of the inhaled air more nearly to the normal, is less irritating to the pulmonary mucous membrane and reduces the liability to post-operative bronchitis.

4. Through the open top, ether in drachm doses can be added at frequent intervals, without removing the cone. The free admixture of air guards against over-saturation; the gauze diaphragm prevents vomiting into the cone; in prolonged operations, the loose gauze can be readily replaced, and, last but not least, the tedious lacing of the frame is avoided.

"Surgical degree."—"The object of anesthesia is to suspend the action of the centres which have to do with sensation and motion, while leaving the respiratory and cardiac centres intact." In other words, the degree of anesthesia must be profound enough to abolish sensation with relaxation of the voluntary muscles, generally

designated the "surgical degree." In abdominal operations it is essential that the recti be relaxed.

Position on table.—It will be found much more convenient for the anesthetist to etherize his patient upon the operating-table. Having removed false teeth, finger-rings, and ear-rings, place the patient in the dorsal position upon the table, with a pillow under the head—not under the shoulders—just thick enough to raise it to a comfortable level.

Deep breathing.—As but few persons are accustomed to the effort involved in fully inflating the lungs, it is well, before bringing the cone near the face, to insist on a few minutes' practice in "taking long breaths." Saturate the gauze in the cone with ether, and, in order to reassure the patient of its harmlessness and to illustrate how it must be done, place it close to your own face, and take a long, deep inspiration.

Self-administration.—Hand the cone to the patient, and encourage him to bring it nearer and nearer to his face. If he complains that it is too strong, repeat the suggestion of Dr. George F. Shrady, to "blow it away," thereby insuring full expiration and inspiration, and rapid saturation of the blood with ether. In two or three minutes the hands will begin to relax their hold on the cone, when it must be taken up by the administrator and adjusted closely to the face. Fold in the top of the cone to increase the amount inspired. By applying his nose to a corner of the cone, the anesthetist can estimate the quantity of ether still in the cone.

Position of the anesthetist.—At this stage, sit down at the head of the table, resting your elbows one on either side of the patient's head, to prevent swaying from side to side. A struggling patient can be pinned to the table if an assistant will place one hand on each arm just above the elbow, and throw her whole weight thereon. If two assistants are at hand, station one on each side of the table; let them place one hand on the patient's shoulder, the other grasping the humerus just above the elbow, and weight him to the table. In this position it is impossible for the patient to reach the cone, raise his body, or slide off the table. Struggling will hasten the desired end.

ACCIDENTS DURING ANESTHESIA.

Prophylaxis.—By thoroughly emptying the bowels of feces, we can minimize fermentation and abdominal distention, and avoid distressing pressure on the heart and lungs. The ingestion daily of from two to three quarts of water (a glassful every two hours) will have an excellent effect on the kidneys and intestinal tract, and also tend to raise blood-pressure.

Heart.—From our ante-anesthesia observations of the pulse—radial and temporal—and the color of the skin, we are able to

note any change in the action of the heart. By pinching the lobe of either ear, the refilling of the capillaries and return to normal redness affords reliable means of determining the condition and activity of the circulation.

Heart stimulants.—A small dose of morphine (gr. $\frac{1}{12}$ or $\frac{1}{8}$) hypodermatically, fifteen to twenty minutes immediately preceding etherization, will have a quieting effect on respiration, stimulate the heart's action, and unlike larger doses (gr. $\frac{1}{4}$ to $\frac{1}{2}$) will lessen post-operative nausea and vomiting and diminish the quantity of ether necessary to maintain anesthesia. Heart weakness may be met by the hypodermatic use of strychnine (gr. $\frac{1}{30}$), tincture digitalis (℥ x.-xx.), or brandy. Loss of blood or shock from prolonged operation must be overcome through enemata of hot (120° – 130° F.) saline solution (℥ i. to O i.), to which may be added two to four ounces of brandy. The effect of such an injection will be almost marvellous. Saline infusion during an operation or at its close, before consciousness has been restored, has done excellent service under similar circumstances.

Respiration.—The most troublesome and annoying feature during anesthesia is the action of respiration. When the cone is gradually brought near the face by the patient himself, little difficulty is experienced, but as soon as the mask is fitted over the nose and chin, and the air fully charged with ether, a choking sensation occurs, and the patient will struggle violently to remove the cone. At no time is better judgment needed than at this stage. Raise the cone, allow the patient to take a full inspiration, and then quietly replace it with the injunction to "blow it away." From this time on the cone should not be removed from the face until the "surgical degree" has been reached.

Stertor.—Our knowledge of the conditions which cause stertor or noisy breathing have been greatly amplified by the work of Robert L. Bowles, M.D., F.R.C.P. London.* Therein he tells us: "It is well known that the cavity of the pharynx, having a fixed boundary only posteriorly, may have its capacity materially affected by the ever-changing position of its sides, of the soft palate, the tongue, and the larynx. The tongue, being attached to the lower jaw by its mucous membrane and its muscles, has its relations with the surrounding parts altered as the mouth is opened or closed. With the mouth closed, the horizontal portion or body of the jaw forms nearly a right angle with the spinal column, from which the symphysis is then at its greatest distance. When the mouth is opened by the dropping of the jaw, the symphysis describes the arc of a circle and approaches more nearly to the spine, where the posterior wall of the pharynx is attached. The tongue, having its

* "Stertor, Apoplexy, and the Management of the Apoplectic State." Wood's "Medical and Surgical Monographs," Vol. ix., No. 3, September, 1891.

chief attachment to the symphysis, would consequently be drawn away from the pharynx in the former case, and allowed to rest in contact with it in the latter. This, if not true in every case, is at least true in some. When the mouth was opened and the subject on its back, the road to the larynx was completely obliterated, in consequence of the tongue resting in contact with the vault of the pharynx, but the obstruction could be removed by hooking the tongue forward. When the mouth was closed, the tongue was lifted from the pharynx, leaving ample breathing space. But even with the mouth closed, if the chin was much bent on the sternum, the base of the tongue was almost in contact with the back of the pharynx. The dissections, besides demonstrating the respective positions of the tongue with the open and closed mouth, suggest the necessity of caution being used in raising the head with pillows; for if the head be bent too much forward on the chest, the tongue may lie in dangerous proximity to the pharynx even when the mouth is closed."

Varieties of stertor.—"The deep vibrating snore of sleep with the mouth closed depends upon the tongue pressing the velum palati upward and backward, thus narrowing the opening between the nose and the pharynx, the velum vibrating as the air rushes through. Sometimes, when the mouth is partially open, the soft palate drops upon the tongue, and vibrates as the air rushes between it and the tongue." To either of these noises in which the soft palate is concerned Bowles proposes the name "palatine stertor." The harsh, sharp, husky noise, occurring in apoplexy (or anesthesia) with the mouth wide open, always arises low down in the pharynx, and depends upon the narrowing of the passage between its posterior wall and the base of the tongue, and as it arises solely in the pharynx, he has given it the name of "pharyngeal stertor." "There is another variety of stertor which may be named 'mucous stertor,' as it depends upon the presence of mucus in the bronchial tube. Of these three different varieties, that which is named 'pharyngeal' is by far the most dangerous, for the greater the paralysis (relaxation) the more effectually does the tongue block up the passage, and each inspiration only adds to the obstruction by sucking the tongue lower down into the pharynx. Its danger is, however, not due alone to the gradual impediment it offers to respiration, but also to the fact that at any moment this impediment may become absolute and cause death by suffocation. We may observe this in the snoring sleeper, who, after drawing several inspirations with evident effort, at last comes to a sudden check from having been gagged by the tongue falling back. This will rouse him from his stupor, and he will then sleep on quietly until the same thing recurs from his deepening sleep."

Position of the head to prevent or overcome stertor.—To prevent

mucus collecting in the bronchial tubes, and to stop "mucous stertor," turn the patient's head to one or the other side, and allow the saliva and mucus to run out at the corner of the mouth. From the foregoing we learn that in order to prevent "pharyngeal stertor" the head must lie in such a position as will not bend the neck too far back or approximate the jaw too near to the sternum. Knowing that pharyngeal stertor is due to the too close approximation of the paralyzed tongue upon the posterior pharyngeal wall—really against the cervical vertebræ—by adjusting the head a little higher or a little lower we can afford relief. Turning the head to one side will in some instances give relief. In others it is necessary to lift the jaw well up, not in the usual barbarous fashion, but by embracing the chin in the hollow of the hand, being careful not to bend the head backward and so arch the cervical vertebræ forward, for by so doing we increase rather than relieve the difficulty. When, during the administration of an anesthetic, especially chloroform, the patient suddenly ceases breathing and becomes deadly pale, the jaw drops and the tongue touches the teeth, we may be sure the tongue is at fault. To Dr. H. A. Hare, of Philadelphia,* we owe the proof by demonstration, that in order to open the larynx and give free entrance to air the tongue must be pulled upward toward the nose. This can be accomplished by the use of forceps, a hook tenaculum, or, better still, by running the finger well down the dorsum of the tongue and pressing it forward toward the teeth, when a deep inspiration will result, and the patient will breathe naturally.

Cyanosis.—A deep purplish darkening of the face, and the escape of dark blood from the field of operation, indicate that the patient is not inhaling enough oxygen; really a condition of temporary asphyxia from accumulated mucus, foreign body in the trachea, or obstruction by the tongue, and which can be readily relieved by removing the cause. Cyanosis is most often met with in stout, short, thick-necked people, and necessitates a more careful adjustment of the head, and close attention to the general condition.

Vomiting.—The precautions given as to food and diet must be observed, and anesthesia maintained at the "surgical degree" to prevent vomiting. If efforts at vomiting do occur during etherization, turn the head to one side, wipe out the mouth, and, during the interim, crowd the ether so as to dull the vomiting centre and prevent its recurrence. Inhalation into the larynx or trachea of solid particles of food is almost positively fatal.

Artificial respiration.—Failure of respiration demands the application of artificial respiration. While Sylvester's method is the most popular, unless the tongue is held "well forward toward the

* Therapeutic Gazette, 1895, vol. ii., p. 83.

nose," no air can enter the lungs. Marshall Hall's method affords the most natural means, as in the side position the tongue falls forward, mucus runs out of the side of the mouth, and respiration is unimpeded. Oxygen by inhalation, as a stimulant to the heart and respiration is of great benefit in plethoric, short-necked people, who seldom breathe well during anesthesia. Oxygen may be applied directly to the mouth, to the nose, or introduced beneath the cone.

AFTER-CARE.

Without enumerating the ordinary measures, there are four points wherein the writer differs from the usual procedure in the care of patients recovering from anesthesia, viz.:

1. *Hot water.*—Ever since a celiotomy patient, under my care, sat up in bed two hours after operation, emptied the contents of a hot-water bag into her stomach, and recovered, it has been my practice to give hot water *ad libitum* as soon as the patient is conscious enough to ask for a drink. It allays gastric irritability, quenches thirst, and if vomited really washes out the stomach. Its early use also has a good effect on the kidneys and intestines.

2. *Nourishment.*—Milk, with or without lime-water, is given as soon as the stomach is quiescent. Starvation does not strengthen a weak heart, nor aid recovery from loss of blood or shock.

3. *Position of the patient.*—As soon as the dorsal decubitus becomes at all irksome, turn the patient on the side, and a restful sleep will follow.

4.—Intestinal distention or paresis usually begins during the latter part of the first day, and soon becomes a source of great discomfort. If not relieved by high enemata, at once resort to friction along the colon; beginning at the right iliac fossa, pass the hand up the ascending, across the transverse, and down the descending colon, slowly repeating this manœuvre for fifteen or twenty minutes.* This will result in free discharge of gas from the rectum, give immediate relief, assure us that there are no intestinal kinks, and that the bowels will move whenever it is deemed desirable.

RECENT ADVANCES IN THE STUDY OF TUBERCULOSIS.

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The ancient belief in the hereditary transmission of tuberculosis, based upon the common observation of its occurrence in successive generations of affected families, has, since the demonstration of the specific bacillus, been accounted for by two distinct theories.

* See Mathew's Medical Quarterly, vol. iii., July 18, 1896.

The first theory assumes that the patient inherits a certain predisposition, or favorable soil, which, when exposed, receives and propagates the bacillus with extraordinary readiness.

The second theory is based upon the supposition that the bacillus of tuberculosis is-itself inherited by the children of tuberculous parents, either through the mother by infection of the ovum or the placenta, or from the father by seminal infection.

The inheritance of the bacilli themselves is supported by a number of facts. In the first place, seminal infection causes such hereditary infectious diseases as pebrine in the silk worm, syphilis and solitary tubercles of the brain in man. Some cases of joint and bone tuberculosis can hardly be accounted for except by actual parental transmission of the germ.

Tubercle bacilli have been demonstrated in the testicles and semen of men and animals. Nakarai (8) has found these germs in the healthy testicles and seminal vesicles of tuberculous persons and was able to infect animals with tuberculosis by means of the semen and testicular juice of these cases. Tuberculous lesions have also been found in the fetus and new-born offspring of human beings and of animals. The inheritance of tubercle bacilli has also been caused in the young of female rabbits, guinea-pigs and mice artificially infected with these bacilli, and chickens hatched from eggs inoculated with the tubercle bacillus have died of tuberculosis.

G. Hauser (1) who has published a very thorough study on the subject of the inheritance of tuberculosis, and who has carefully reviewed all of the cases bearing on this subject, came to the following conclusions :

Although he believes that tuberculosis can be inherited from the mother in man and animals, especially through the placental circulation, he has not yet found a single convincing case of inheritance of the bacilli from the father, notwithstanding the fact that tubercle bacilli have frequently been found in the semen. Gärtner also failed to find any proof of this theory. He inoculated the testes of rabbits and guinea-pigs with tubercle bacilli, but failed to find any cases of tuberculosis in the offspring. Binghi (9) also introduced tubercle bacilli into the testicles of guinea pigs, but their offspring did not develop the disease. Inherited tuberculosis from the mother only occurs in ten per cent. of the children, even when the maternal infections are severe and fatal.

Hauser does not think that the evidence which he has collected lends very great support to the so-called bacillary inheritance of tuberculosis. In the first place, while the occurrence of tuberculosis in the offspring from tuberculous mothers can be explained, the equal prevalence of a so-called inherited tuberculosis from the male parent remains unsupported and unexplained by experiments on animals. Even in severe tuberculosis of the mother the trans-

ference of tubercle bacilli to the offspring has been demonstrated in a much smaller percentage of cases than the actual occurrence of tuberculosis in the children of tuberculous mothers.

In the second place, in fetal and congenital tuberculosis the lesions are almost always found in the liver and portal lymph glands, while primary tuberculosis of the liver in later life is very rare, and primary lymphatic tuberculosis usually affects the glands of the neck.

In the third place, tuberculosis frequently skips an entire generation, and Hauser does not think that this is sufficiently explained by Baumgarten's assumption that the inherited bacilli may remain latent for a generation or two, only to manifest themselves in the second or third series of descendants.

The study of pebrine, and the infection of fowls' and birds' eggs with bacilli, cannot logically be regarded as analogous to the infection of mammals, since the embryonic development is not the same.

If we can account for primary lymphatic, joint and cerebral tuberculosis only by inheritance of the bacilli, then we must also believe that many cases of primary brain abscess, osteomyelitis and epidemic cerebro-spinal meningitis are due to intrauterine infection. Then, too, so-called inherited tuberculosis often does not make its appearance until after puberty, and we must assume that the tissues show a greater resistance towards these special germs during a period when they are most susceptible to other bacteria.

Believing that former opinions on this subject had been formed upon observations or experiments made on severe general and fatal cases, while problems of inheritance more frequently involve the transmission of tuberculosis from mild or localized cases, this investigator endeavored to reproduce the existing conditions as nearly as possible by a series of experiments upon rabbits and guinea-pigs. In order to localize the disease, he injected a very dilute suspension of tubercle bacilli into the apex of the rabbit's lungs, thus producing a disease limited to the lungs. In guinea-pigs the same result was obtained by injecting the bacilli into the pleural cavity. Both male and female animals were inoculated, and after they had developed tuberculosis they were allowed to breed, in order to see whether any tuberculous offspring would result. Twelve rabbits were produced from parents both of whom were tuberculous, fourteen guinea-pigs were produced by healthy mothers from tuberculous fathers, and four guinea pigs were born of tuberculous mothers by healthy fathers.

Eight of these thirty animals died in from one to sixty-three days, but neither by anatomical nor bacteriological methods could any traces of tuberculosis be found. The other twenty-two animals lived from four to thirty-two months without showing any

signs of tuberculous infection, although careful autopsies were made of every animal. This painstaking investigation did not demonstrate a single instance of hereditary tuberculosis.

In order to further test Baumgarten's theory that the bacilli may remain latent for a generation and break out afresh in the third generation, he bred a portion of the stock raised from the animals originally inoculated. The animals thus produced represented the second generation from tuberculous parents, but not one of them developed tuberculosis.

Although inherited tuberculosis may occur, it has not been proven to be a frequent method of transmission of the disease. Certainly both the arguments advanced by Hauser and the consideration of the recorded cases and experiments are against Baumgarten's extreme views, that most serious cases of tuberculosis are caused by a direct inheritance of the bacilli, while the inhalation or swallowing of tubercle bacilli causes tuberculosis which usually heals and gives little trouble.

While cases of actual hereditary transmission are probably rare, the special susceptibility of the tissues towards tubercle bacilli is a condition which can be inherited just as various other characteristics—strength, size, features, resisting power and various mental and physical idiosyncracies—are inherited.

Certain persons or families are thus more easily infected with tuberculosis than others, but the infectious agent is almost invariably introduced from without.

THE INHALATION OF INFECTED AIR.

Although it had long been held that many cases of tuberculosis occurred through the inhalation of air containing the germs of consumption, yet it has taken a long series of experiments to give this idea proper scientific support and correct scientific statements.

Neisser (5) proved that dried tubercle bacilli can be transported from place to place in mild currents of air. By first mixing the bacilli with sterilized fine dust, and then directing a gentle current of air upon this mixture, the living germs were carried to distant points. He concluded that dried tubercle bacilli can be held for some time in the suspended dust of ordinary rooms. This observation gave wide currency to the idea that dried sputum was the most dangerous source of infection. Following this, a number of attempts were made to produce tuberculosis in animals by the inhalation of dried tubercle bacilli and tuberculous sputum, but these attempts usually failed unless the respiratory organs were previously injured by mechanical or chemical means, or unless the finely-powered dust was blown into the animals' faces by a very strong current of air.

Koch produced tuberculosis in rabbits, guinea-pigs and mice by causing them to inhale a watery suspension of the bacilli, and Gerhardt (6) and Lachscheimer obtained similar results in guinea-pigs by causing them to inhale a fine mist of tuberculous sputum from a spraying bottle.

It will be seen, however, that the material used in these experiments was in a moist condition, and in Gerhardt's experiments, particularly, the germs were in a very favorable condition, having come directly from the sputum of tuberculous patients.

These experiments have probably given a proper direction to the rest of the work on this subject, and the experimental evidence at present all points to virulent tubercle bacilli coming rather directly from tuberculous patients as the chief source of danger to healthy persons.

C. Flugge (2) has performed a number of experiments, which throw a great deal of light upon the process of lung infection by infected air. This investigator has shown that fluids impregnated with bacteria can be divided into minute drops by means of a spray, and that these drops will float about in the air for about five hours, being very easily wafted about by very mild currents of air. He experimented in a room by directing currents of air on the finely-divided spray of a fluid containing the bacillus prodigiosus, and he found that, even after six or seven hours, mild currents of air could be made to deposit these germs in agar plates in all parts of the room. He considers the fine spray containing moist germs, which a tuberculous patient throws out in coughing, speaking or sneezing, as the most important source of infection to exposed persons, as the bacilli are then fresh and virulent. These experiments and conclusions have been confirmed by other observers.

Engelman (3) placed glass slides at various distances from tuberculous patients and then caused them to cough gently. He found that he could stain tubercle bacilli on slides at a distance of one meter from the patient. He worked with eight different patients.

Heymann (11) repeated these experiments, and measured the tiny drops after they had fallen on the slides. Their average diameter was about thirty-five micromillimeters, and under the microscope they consisted of mucous, pus cells, epithelial cells and many tubercle bacilli.

Weismayr caused a number of persons to rinse out their mouths with fluid cultures of the bacillus prodigiosus, and then to cough. He found that in the quiet air of a closed room germs were thus projected forward for a distance of four meters, while if a door was opened and shut they spread two meters behind and to the side of the person coughing. Spitting also distributed the germs for some distance.

Hubener (4) repeated these experiments, and found that loud talking, sneezing and coughing, would project these germs, often as many as 500 being found in agar plates five meters from the operator. By placing a mask over the mouth and nose it was found that the germs were arrested, all the plates being found sterile.

ANTITUBERCULOUS SERUM.

The discovery by Koch of tuberculin, a toxic product of the bacillus of tuberculosis at once set many investigators to searching for some antidote to this poison. Although the use of Koch's tuberculin has not been of benefit in the treatment of consumption, yet its injection into large animals has produced an antitoxic serum, which, it is claimed, prolongs the lives of inoculated animals.

The old crude tuberculin was simply a glycerin extract of six-weeks-old fluid cultures of the tubercle bacillus, evaporated to one-tenth of its original bulk, but Koch has recently refined this product by reducing the bacilli to fragments in a mortar and then centrifugalizing the sediment. This sediment is called T. R., and has a powerful effect upon animals, causing a rise of temperature if they are tuberculous.

De Schweinitz (7) has recently isolated two interesting substances from the tubercle bacillus. One he calls a temperature-reducing acid, which he obtains in ether or alcohol solutions from a special liquid medium. This acid separates from the solution in needle-like crystals, and when injected into guinea-pigs it causes the typical coagulation necrosis of tuberculosis. It has the formula of an acid of the fatty series called teraconic acid.

The second substance, or fever-producing principle, is an albuminoid, which is extracted from the bacilli by hot water after removal of the previously mentioned acid principle. This substance causes in guinea-pigs and calves the rise of temperature typical of tuberculosis. These are the important products of the tubercle bacillus so far discovered.

Koch (12) found, after a long series of experiments, that his refined product from the tubercle bacillus would, if used in small doses, exert an immunizing effect in experimental tuberculosis of guinea-pigs.

De Schweinitz has also performed a number of experiments confirming this result. He used cultures of the tubercle bacillus which had been attenuated by prolonged growth of about twenty generations on artificial culture media, but he found that the guinea-pigs would not usually develop tuberculosis. He then protected four guinea-pigs by the inoculation of an attenuated culture, and in about two months he inoculated them with a virulent

culture directly from a tuberculous gland. These animals were all well at the end of four months, while the five control animals simply injected with the virulent culture all died of tuberculosis in about six weeks.

Maffucci and Di Vestra (13) have lately endeavored to produce an antitoxic serum which would also act as a prophylactic against experimental tuberculosis. They used either old bacilli or organisms killed by exposure to 100° C., or by formalin, and injected these in gradually-increasing doses into four sheep and four calves (.2 to 5 grams). Although they inoculated a large number of guinea-pigs with a mixture of one part of tubercle bacilli to ten of the serum, all of the animals died of tuberculosis. Rabbits gave similar results. They concluded that they had been unable to produce a serum which had any effect upon experimental tuberculosis.

Nieman of Berlin has produced a serum by injecting goats with tuberculin, and he claims that 1.5 cc. of this goat serum will protect 30-day tuberculous guinea-pigs against double the fatal dose of tuberculin, and he even claims to have cured experimental tuberculosis of guinea-pigs.

De Schweinitz (7) has produced an antituberculous serum which has apparently achieved some good results. This serum was used in combination with general hygienic and climatic treatment, and although somewhat promising, leaves much to be desired. This serum is prepared by abstracting the contents of the tubercle bacillus by active agitation in a milk-shake machine with a special solvent.

This germ extract is injected into the tissues of horses. This is continued, and the dose increased until the serum of the horse is found to possess some peculiar properties. It prevents the tuberculin reaction in tuberculous guinea-pigs, and also prolongs the lives of healthy animals when subsequently infected with the germs of tuberculosis. This product was used on human beings at Dr. Trudeau's sanitarium in thirty-four cases, and thirty of these cases showed improvement, decrease of cough, expectoration, fever and bacilli, and a few were apparently cured. Other observers have had similar results, but numerous cases were not benefited by this treatment.

SANITARIUM TREATMENT.

At the recent Congress for the Control of Tuberculosis, held at Berlin, all the discussions led towards and culminated in a hearty endorsement of the hygienic-dietetic or sanitarium treatment of consumption. Von Leyden said that the fight against tuberculosis is primarily a campaign of popular education, and hoped that the discussions would receive the widest possible publicity. He alluded to the noteworthy development of the sanitarium idea

during recent years in Germany, England, Austria, France, Russia, America, Spain, Switzerland and Sweden. Landesrat Meyer spoke of the great value of the hygienic-dietetic treatment of tuberculosis in sanatoria. Private philanthropy is by no means adequate to so great a problem as tuberculosis presents, but must be supplemented by municipal and State support. Next after the humanitarian aspect of the subject he placed the economic burdens laid upon society in the large contributions made by tuberculosis to the dependent classes, and the material losses devolving upon employers of labor, upon sickness and age-insurers and trades-unions, through prolonged invalidism and reduced earning power.

Friedeberg said that in industrial occupations nearly half the mortality and more than half the invalidism was due to tuberculosis. Before the introduction of the hygienic-dietetic treatment the maintenance of a tuberculous patient cost annually from 700 to 2400 marks. Consumptives are seldom financially able to make a struggle against their malady, and must, when scattered among the homes of the people, be supported at excessive cost.

Schmieden spoke of the construction of sanatoria, saying that they should be protected from high winds and should have the greatest possible exposure to the sun. No factories emitting smoke, dust or odors should be in the vicinity. Each bed should have air space of at least thirty cubic meters, and one or two meters of floor space between beds. A well-equipped laboratory should be attached to every sanitarium.

Schultzen, after describing sanatoria on the pavilion plan, said that the total cost of maintaining a 110-bed sanitarium of this sort would be about three marks per bed per diem.

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—*Maryland Med. Jour.*

HOME MODIFICATION OF COWS' MILK FOR INFANT FEEDING.

Henry Dwight Chapin (*N. Y. Med. Jour.* Nov. 4, 1899) says that in the modification of cows' milk for infant feeding, our aims should be a fairly accurate method of obtaining proper percentages and a method of reducing the ingredients as nearly as possible to their condition as found in woman's milk. Regarding the former desideratum, the fault to be found with the schemes hitherto recommended is that they are beyond the reach of ordinary people under ordinary conditions; and the aim of the present paper is to present at once a method not too complicated and sufficiently accurate.

The writer has investigated the conditions of the milk trade in New York with great pains. There seems to be a fair grade of uniformity in the milk supplied by the better dealers, many of whom guarantee their milk to run at least 4 per cent of fat. Generally the milk is obtained by the dealers from companies that buy direct from farmers and dairies, the latter, however, being under careful inspection and control by the companies. For shipment, milk should be aerated, strained and cooled to 45° F., aeration removing the gases, and cooling checking the development of lactic acid germs. Milk bottled in this manner and kept at a temperature of 45° F., should keep for sixty hours.

Van Slyke has found, after many investigations, that the percentage of casein increases in a nearly constant ratio with the increase in the percentage of fat. It is also found that the percentage of fat in the milk of a mixed herd rarely falls below 3 or exceeds 5½ per cent; so that it is safe to assume 4 per cent as a general average. When milk is bottled in the country and kept cool for a number of hours before delivery, it is practically subjected to the "deep-setting" process, and forms a layer of cream from three to four inches thick, whose percentage of fat decreases inversely as the depth. Various tests were made, which showed that handling and transportation of the milk subsequent to proper bottling and cooling disturbed the cream very little, so that we may assume that when the bottle is delivered to the consumer the "deep-setting" process has practically taken place; and that unless the creamy layer is distinct the bottling has not been done in the country, a circumstance which also increases the danger of contamination.

The writer's advice takes advantage of this natural separation of the milk; it consists of a dipper, cylindrical in shape, and of small enough diameter to fit the mouth of any milk-bottle; the dipper is filled for the first time with a spoon to avoid an overflow from the bottle; the successive ounces are then removed by simply

letting the dipper down into the bottle. Now the proteids nearly equal the fats up to $4\frac{1}{2}$ per cent., therefore a 12 per cent. cream would contain about three times as much fat as proteid, an 8 per cent. about twice as much, and so on; so that almost any desired percentages can be obtained by using creams that contain the desired ratio between fat and proteid. The problem consists merely in mixing the rich top milk with the poor bottom milk in such a way as to reduce the percentage of fat to the desired point. Practically, 12 and 8 per cent. creams are found to be the most useful; practically, also, it is found impossible to completely separate all the fat from a quart of milk; therefore when we wish to have three times as much fat as proteids, we get a 12 per cent. fat cream by taking the first nine ounces of cream and mixing it together, with the result that we possess a fluid containing 12 per cent. fat, 4 per cent. proteid, and 5 per cent. sugar; a basis for any food containing fat three times the proteids, the following formula being used:

Dilution of 12 per cent. cream—12 per cent. divided by desired percentage of fat. *Fluid ounces 12 per cent. cream*—desired fluid ounces food divided by dilution. *Sugar*—desired fluid ounces food divided by twenty. *Diluent*—desired fluid ounces food minus fluid ounces 12 per cent. cream. Suppose we wish a 24-ounce mixture containing 3 per cent. fat, 1 per cent. proteid, and 6 per cent. sugar; we find by this formula that the cream must be diluted four times, that we take 6 fluid ounces of it, and add one and one-fifth ounces of sugar and 18 ounces of diluent. If we wish the fat twice the proteid, we take the first sixteen dipperfuls from the bottle, with a resulting fluid that contains 8 per cent. fat, 4 per cent. proteid, and 5 per cent. sugar. If we wish forty ounces of a 4-7-2 milk, by applying the same formula we find that the cream must be diluted twice, and that twenty ounces of it must be taken, together with 2 ounces of sugar and 20 ounces of diluent.

Such a modification is believed to be sufficiently accurate; the strength of the milk can be easily varied by directing the number of ounces to be dipped out of the bottled milk. Regarding the sugar, as food made by diluting the cream four times will contain about 1 per cent. sugar, and by diluting twice about 2 per cent. sugar, it is perceived that it is necessary to add 5 per cent. more, or one-twentieth the number of ounces of food. A heaping dipperful of granulated sugar weighs an ounce, a dipperful and a half of milk-sugar approximately the same.

We now come to the second point: to get the milk into the same physical condition as mother's milk. It is well known that the quantity of casein coagulable by acids is greater in cow's milk than in human milk; we must, however, not confuse its precipitation by an acid with its coagulation with rennet. The latter changes

casein into a semi-fibrous mass that has a strong tendency to contract and harden, especially on the outside; its action is much accelerated by lactic acid, and fails entirely in the absence of salts of lime. Therefore dialyzed milk, or boiled or Pasteurized milk, in which the albumen is coagulated and seems to envelop the lime salts, does not coagulate well with rennet; on the addition of lime water and a little salt, however, rennet again acts with ease, and this appears to be the beneficial effect of lime water than neutralization of the lactic acid by its feeble alkalinity.

With plain gruels and milk, rennet forms rather gelatinous curds; acted upon by iodine they become blue, but on being broken open the blue is seen not to extend into their interior, while the absence of yellow coloration shows that the proteids are unacted upon. If now the starch be dextrinized, a curd is formed that falls easily apart and which is colored yellow with iodine, showing that a larger surface of proteids has been exposed. The reason is that in the dextrinized gruel much of the starch has been converted into soluble sugar, leaving the gruel largely composed of the cell-walls of the cereal; the cellulose being very flocculent tends to prevent contraction of the curd, which, from the little adhesive material present, tends to fall apart very easily. Another advantage, theoretical at least, is that dextrin promotes the secretion of pepsin, while fermenting starch might completely derange digestion; inasmuch as trypsin is totally inhibited by even .05 per cent. of lactic acid. For dextrinizing the starch of the chosen cereal most of the commercial malt extracts are sufficiently active; but it is better to use a preparation of the diastase itself, either one of those on the market or a decoction made at home. The latter is prepared as follows: A tablespoonful of malted barley grains is crushed, put in a cup with enough cold water to cover it, and allowed to stand over night in a refrigerator; in the morning about a tablespoonful of water can be strained off, which is ready for use and is sufficient to dextrinize a pint of gruel in ten or fifteen minutes. —*Am. Gyn. and Obs. Jour.*

BELLADONNA IN THE BRONCHO-PNEUMONIAS OF CHILDREN. —D. A. Hodghead (*Pediatrics*, September 15, 1899), saw a baby eighteen months old, ill for three days with broncho-pneumonia. The case was serious, with coarse rales all over the chest, areas of consolidation, labored breathing, incessant cough, and rattling in the tubes which could be heard several feet away; the usual treatment, internal and external, was instituted, but at the end of thirty-six hours all the symptoms had increased in intensity, and the child was much weaker. The former medicines and poultices were

withdrawn; the child was wrapped in soft, loose clothing, water substituted for milk, one-tenth grain of calomel given every hour till the bowels moved freely; while at the alternate half hours two drops of tincture of belladonna were administered. Improvement was noted in twelve hours, and at the end of twenty-four hours the temperature had fallen to 100 and the respirations to thirty-five; the latter were deeper and less laborious, the coarse rales few, the pulse stronger, the cough less frequent, and the child slept and took nourishment. The belladonna was continued in drop doses every two or three hours till the rash was well marked over the whole body; the child made an uninterrupted recovery. A series of experiments was then begun, and the treatment carried out in twenty-five of the writer's cases and in five of other physicians. Nothing original is claimed for the calomel but the writer has been unable to find any reference to the use of belladonna in this disease. Its physiological action would seem to be what is desirable: (1) It is mildly narcotic, making the child less irritable and uncomfortable; (2) in small doses it is a heart tonic, raising arterial tension, depressing the pneumogastric and stimulating the cardiac sympathetic; (3) it is a respiratory stimulant, influencing the diaphragm and especially the accessory respiratory muscles; (4) it dilates the superficial capillaries and so relieves the congested lungs; (5) most important of all, it diminishes secretion in the bronchial tubes and pulmonary tissues, overcoming or preventing the water-logged condition of the lungs and averting the threatened asphyxia. To be effective the drug must be administered in quite large doses every hour or two hours till its effect is produced. The writer has never observed untoward symptoms, but has not found it very effective in the early stages, when the bronchial mucous membrane is dry and congested. The writer admits that thirty cases do not establish belladonna as a specific, but of these thirty cases only two died, giving a mortality of less than ten per cent.—*Am. Gyn. and Obs. Jour.*

THE ANTENATAL AND INTRANATAL FACTORS IN NEONATAL PATHOLOGY: AN ATTEMPT TO EXPLAIN THE PECULIARITIES OF THE MORBID STATES OF THE NEW-BORN.—Dr. J. W. Ballantyne (*Journal of the American Medical Association*, November 18th) gives the following summary to his interesting article on this topic: It is clearly evident that if the characters of the diseases of the new-born infant are to be understood it is essential that account be taken not only of the fact that the infant's organism has just passed through a period of traumatism and is passing through one of readjustment to meet new requirements, but also that during the nine months of intra-uterine life which

precede birth, it may have been the sphere of morbid processes which have left their impress on it. It may come into the extra-uterine environment already diseased or malformed or predisposed to some pathological development. Like pregnancy, neonatal life is an epoch which has a physiology in many respects peculiar to itself, and which borders very closely on the pathological, tending very easily to pass over into it. In a certain sense the ordinary vomiting of pregnancy is to the uncontrollable form, as the ordinary "physiological" jaundice of the new-born is to pernicious icterus neonatorum. Further, just as every woman brings with her into her pregnancy the results of her past pathological history, so the new-born infant brings with him, out of his antenatal life into his neonatal existence the effects of any morbid processes which may have attacked him in utero. In this way the pathology of pregnancy and the maladies of the new-born infant are both invested with peculiarities. The peculiarities, therefore, of neonatal diseases are not inexplicable, but are the direct outcome of the action of the antenatal and intranatal factors on the organism at this period of life.—*Medical Record.*

TREATMENT OF SHOCK.—The deadliest morbid conditions are not always associated with proximity to a hospital where experts are ever ready with special apparatus to counteract them. Again, those appliances are usually complicated and often failures. What surgery demands is the simplest method for overcoming the worst possible complications. Shock, hemorrhage, or sepsis may occur far from hospital aid, leaving the patient in the hands of a practitioner of average ability, himself far from his own surgery. Arm-to-arm transfusion of blood to counteract shock from loss of that fluid is not easily managed except by expert surgeons, and is now rejected by them as actually dangerous. Transfusion of "artificial serum" or saline solution, into the veins of the arm, as simplified by Dr. Horrocks and others, has saved many lives in hospital and surgical practice. But it is a step from which the practitioner may, for several reasons, recoil. Transfusion of saline solution into the subcutaneous tissue is much easier, and the Baltimore school finds it quite as efficient. But of late several operators have taken to the use of enemata of saline solution. At first the enema was looked on as a mere adjunct to transfusion, venous or subcutaneous. Now it seems to be considered to be as useful as the more difficult process. Lepine, of Lyons, as the result of observations, concludes that whilst subcutaneous injection of saline solutions is quite as good as intravenous injections, saline enemata are as efficient as the former. He finds that the rectal mucous membrane absorbs the solution at least as speedily as does the subcutaneous connective

tissue. What is quite as important is that, clinically, the effect of absorption by the rectum is the same, and appears just as quickly as the effect of absorption by the subcutaneous tissues. Lastly, those effects are in the case of enemata, as in the case of the less simple appliances, beneficial alike for shock, for sepsis, and for hemorrhage.—*Brit. Med. Jour.*

VALVULAR DISEASE AND LIFE ASSURANCE.—Dr. A. A. Macfarlane, of Sydney, N.S.W., in a paper published in the August number of the *Medical Examiner*, states that "valvular disease of the heart has up to the present time been considered as absolutely incompatible with the acceptance of an applicant as a satisfactory risk to life insurance, as far as I am aware, by any life insurance company in the world." Whatever may have been the custom formerly, this statement is no longer true in Great Britain, as for some years many of the offices have been willing to accept lives suffering from valvular disease of the heart, and statistics have shown that these lives have turned out very well. Dr. Macfarlane is of opinion that certain cases of valvular disease should be accepted subject to the following rule: 1. The applicant must not be over 35 years of age. 2. There must be an entire absence in the personal and family history of (a) gout, (b) alcohol, (c) and syphilis. 3. Compensation must be good. 4. The pulse full, regular, and compressible. 5. The amount of alcohol restricted to one ounce in the twenty-four hours. 6. The applicant must not be engaged in any hard manual labor." It will probably be found, however, that these rules will need to be supplemented. To begin with, they contain no reference to the particular valve defect. Aortic regurgitation is justly deemed a bar to life assurance on account of the liability to sudden death. Again, mitral stenosis is a much more serious lesion from a life-assurance point of view than mitral regurgitation. The frequency of the pulse and the length of time which should have elapsed since the apparent commencement of the murmur should also be taken into consideration. It certainly would not be wise to accept an individual with mitral regurgitation, however good the compensation was, if the attack of endocarditis, from which it originated, dated back only two or three years.—*Brit. Med.*

DEGENERATE EARLY RISING.—A year or two ago we ventured to observe that the habit of early rising, which is regarded by so many excellent elderly people as a virtue in itself, was in reality to be traced to physical and not to moral causes. To be drowsy in the evening and wakeful in the early morning is rather characteristic of age, and is probably to be attributed to the hard-

ening of the arteries and the less ready action of the vasomotor system. These remarks attracted a great deal of attention at the time, and were received with a chorus of approval from writers all over the world. It often happens that a sign of degeneration in the individual may be found crystallized as a characteristic of the body politic in China; and Mrs. Henry Clarence Paget, in an article in the *Cornhill* for September, gives a curious account of the early rising habits of the Imperial Court of China. "In spite," Mrs. Paget writes, "of the reluctant awakening of China, what has been the custom still remains so, and at 2 a.m. every morning the Halls of Audience are opened, and at 3 a.m. the Cabinet Councils are held. What Minister's ideas would not be congealed if called upon to assemble at such an unearthly hour, with the thermometer many degrees below zero? Even the Court entertainments take place at 8 a.m., and at 10 a.m. the work of the Emperor's day is over. Anything more uncomfortable can hardly be imagined, but from the Emperor down to his lowest subject, who is ground down and obliged to subsist on fare which would mean starvation to most races, the Chinese are supremely satisfied with themselves, and they see no reason for any change." Even in China it would seem that this turning of night into day is not altogether appreciated, and possibly the "reluctant awakening" to which Mrs. Paget refers may have as one of its results that the statesmen of Peking will in time get up a little later and awaken with less reluctance.—*Brit. Med Jour.*

NON-TRAUMATIC JACKSONIAN EPILEPSY SUCCESSFULLY TREATED BY TREPHINING.—*Vincent Arch. Prov. de Chir.*, July, 1899, reports a case of severe Jacksonian epilepsy in a man aged fifty-six, in which trephining and resection of a sclerosed portion of *dura mater* resulted in complete relief, which has now persisted twelve months from the date of operation. The convulsive attacks, which on two occasions caused much anxiety, first appeared in the winter of 1896 soon after an attack of influenza. When the patient was first seen by the author, in May of last year, these attacks were very frequent, as many as thirty having been observed in one day. The frequent association of aphasia with these attacks and other symptoms indicated as the probable seat of the cerebral lesion the foot of the third frontal convolution on the left side. The signal symptom was represented by the flexor muscles of the fingers. The nature of the intracranial lesion could not be made out before the operation, as there was no history of injury, and the patient, before his attack of influenza, had been free from both hereditary and acquired disease. On exposure of the *dura mater* over the anterior and interior extremity of the fissure of Rolando, this

membrane was found to be thickened, and after its removal the other membranes were seen to be swollen and edematous, and the corresponding portion of the surface of the brain was much congested. The thickened portion of *dura mater* was removed. The patient made a speedy and good recovery, and since the performance of the operation in the spring of 1898, has not only been free from any recurrence of the convulsive attacks, but has improved much in general health, and regained the full use of his mental functions, which, before the operation, had been slightly impaired.—*Brit. Med. Jour.*

THE DIAGNOSIS OF TUMORS OF THE HEAD OF THE PANCREAS.—*Zoja (Il Policlinico, August 1st, 1899)*, in an attempt to arrive at certain clinical criteria for the elucidation of the above subject, is driven to the conclusion that as far as primary carcinoma of the head of the pancreas is concerned there is no proper or constant symptomatology; the symptoms vary so much according to the position and extension of the tumor. The cases may be divided into three chief types: (1) where the tumor takes a postero inferior direction, causing compression of the vena cava, implicating the right suprarenal capsule and the retroperitoneal glands; (2) where it takes an upward direction, causing symptoms of occluded bile duct or of pyloric stenosis; (3) and (perhaps the most common) where development takes place to the right, giving rise to occluded bile or pancreatic ducts. A complete knowledge of the effects likely to be produced by the occlusion of these ducts is important. As regards individual symptoms, jaundice is by no means constant. The condition of the gall bladder affords no certain criterion. The changes which occur in the liver are either due to metastatic growths or to the effects of prolonged occlusion of bile ducts. Tumor may be felt; it depends on the situation, etc. Pain is not a constant symptom; melena or hematemesis is a fairly common termination. The author never observed glycosuria in his cases, and attaches no importance to the search for indican. There is an extensive bibliography.—*Brit. Med.*

HYDROGEN DIOXID IN SURGERY.—Dr. John Worcester in the *American Gynecological and Obstetrical Journal*, says: "The uses of hydrogen dioxid are so many and varied that the physician and surgeon feel that everyone is more or less familiar with its value. We know that it will break up pus and give less irritation than any other equally effective antiseptic, but we forget the important fact that it can be of great assistance in removing adherent dressings and prevent the tearing of tissues underneath. By raising one

corner of the dressing and letting the hydrogen dioxid drop from a sponge, or bit of absorbent cotton, or by forcing it in with a medicine dropper, or syringe, the coagulated discharges are softened and broken up, and the dressing readily and quickly removed with greater ease to the surgeon, much less pain to the patient, and little harm to the underlying tissues. The wound can then be further cleansed with hydrogen dioxid solution and the required dressing applied. In removing sutures when they are stuck down by discharges I found it of equal service; stitch abscesses rarely, if ever, occur when the sutures have been sterilized by a penetrating antiseptic like hydrogen dioxid before they are withdrawn. It has been my practice for a number of years to cleanse all ulcers of all débris with Oakland hydrogen dioxid before applying the dressings, and I find quicker healing results and less danger of irritation of surrounding tissues than from the former irritant antiseptics used."

FELEIZET: A NEW PROCEDURE IN THE TREATMENT OF FOREIGN BODIES IN THE NASAL FOSSÆ OF CHILDREN.—(*Jour. de Clin. et de Therap. Infantiles*, Vol. VI., No. 48.) Thirty-one cases of foreign bodies in the nose were seen among children ranging from four weeks to twelve years of age. The procedure, which gave excellent results in every case, consisted in forcing out the obstruction by means of a syringe of warm water applied to the opposite nostril. A syringe of a capacity of from three to five hundred grammes is used, and the injection is begun slowly and carefully in order that the Eustachian tube shall have time to close and the palate to contract. Then the force of the stream is increased, and resistance is encountered and overcome; at the same time the foreign body is either forced out of the nostril, or moved to within easy grasp by the forceps. No accident to the middle ear has ever resulted. If the diagnosis be obscure this manœuvre will readily prove the presence or absence of an obstruction, and that without the pain and danger of instrumental exploration of the nasal fossæ in young children.—*Arch. Ped.*

VALUE OF THE TUBERCULIN TEST IN THE DIAGNOSIS OF TUBERCULOSIS.—Edward O. Otis (*Jour. Amer. Med. Asso.*, October 28th) summarized an article on this subject as follows: (1) The tuberculin test indicates tuberculosis by a general reaction before it can be detected by other methods, except the X-ray, in a large majority of cases, with a dose of from five to ten mgm. of Koch's original tuberculin. (2) No injurious results occur from the use of tuberculin in these cases. (3) Proved tuberculosis in a more

or less advanced stage may fail to give the general reaction from doses of from ten to twelve mgm. (4) Syphilis gives the reaction in an undetermined proportion of cases. (5) There is a dose, undetermined, at which a non-tuberculous person may react or simulate a reaction. (6) The reaction may be deferred from six to twenty-four hours. As rules to be observed in making the test: (a) Always use the same tuberculin of a standard strength. (b) Use aseptic precautions in giving the injections. (c) Make the injections deep into the muscles of the back, arm, or leg. (d) Keep a two, three, or four hourly chart of the temperature, if possible, beginning twenty-four hours before the injection. (e) Allow several days to elapse before repeating the test. (f) In early cases depend on general reaction; in late cases, if the general health fails, carefully look for the local reaction.—*Medical Record*.

KERNIG'S SIGN IN MENINGITIS.—This subject is dealt with in the editorial article in *La Riforma Medica* July 28th, 1899. In 1884, Kernig found that in patients suffering from meningitis there was great difficulty in extending the leg when told to get out of bed; the thigh remaining flexed at right angles to the pelvis. This condition, according to the author, was almost constantly found in affections of the pia mater, and not in healthy subjects or other diseases, so that it became of value in the differential diagnosis. When the patient is lying in bed this flexion completely disappears. Kernig's observations were founded on fifteen cases of affection of the pia mater, in eight of which the diagnosis was confirmed *post mortem*. Firis, of Copenhagen, confirmed the existence of Kernig's sign in fifty-three out of sixty cases, and other observers have noticed its presence. No very satisfactory explanation of the sign has been offered.—*Brit. Med. Jour.*

ACTION OF BACTERIA ON THE PHOTOGRAPHIC PLATE.—Percy Frankland (*Centralbl. f. Bakt.*) finds that ordinary dish cultures on gelatine or agar-agar—and more especially “streak cultures”—have a distinct action upon the photographic film, even at the distance of half an inch; and that when placed in immediate contact with the film in the dark, definite pictures of the growths may be obtained. This influence, probably due to the evolution of chemical volatile substances, cannot pass through glass; in the case of phosphorescent organisms, however, a distinct action through glass is noticeable. The writer thinks that this action of bacteria on the photographic film may vary in different species, and may thus become of importance in diagnosis. It remains to be seen whether other organised structures, vegetable or animal, can exert a similar influence.—*Brit. Med. Jour.*

INFANTILE TUBERCULOSIS.—Lyder Nicolayßen (*Norsk Mag. for Lægevidensk.*, No. 10) finds that out of 4,186 children examined 8.3 per cent. were found clinically to be tuberculous. Of 184 tuberculous children treated in the Polyclinic 38.5 per cent. were scrofulous, 25.5 per cent. had osseous and articular tuberculosis, 25.5 per cent. had pulmonary phthisis, 7.6 per cent. peritonitis, and 2 per cent. meningitis. Of 83 tuberculous children treated in the pediatric service 39.7 per cent. had osseous and articular tuberculosis, 7.7 per cent. phthisis pulmonalis, 24 per cent. were scrofulous, 4.7 per cent. suffered from peritonitis, and 3.6 per cent. from meningitis. Nicolaysen concludes that infantile tuberculosis is characterized by a special localization in the glands and by the frequency of osseous and articular tuberculosis, and of cases of meningitis.—*B. M. J.*

A COMMON CAUSE OF CRYING IN THE NEW-BORN.—Thos. S. Southworth (*Arch. Ped.*, March) states that the so-called uric acid infarctions of Virchow, formed by a deposit of uric acid and urates in the straight tubules and papillæ of the kidneys in newborn infants, may be a possible source of irritation, as they remain *in situ* or are washed out by the scanty secretion of urine. Thus, it may be possible that much of the supposed pain of colic in infants, for which they have from time immemorial been dosed with fennel and other aromatic teas, may be due to these sources of irritation in the kidneys, ureters, bladder or urethra. Such being the case, boiled water is therefore indicated, and should be given to every infant at regular intervals for more reasons than one. Pending the establishment of lactation, it will dilute the urine and prevent or alleviate the discomfort.

EUDERMOL.—Under this name nicotine salicylate ($C_{10}H_{14}N_2$ $C_7H_6O_3$) is being manufactured for use in the treatment of skin diseases. It is said to contain 54 per cent. of nicotine, and is in the form of hexagonal, transparent, colorless crystals, which dissolve at a temperature of $117^{\circ}.5$ C., and are soluble in water, alcohol, etc., as also in olive oil and traumaticin. It is claimed not to cause irritation of the skin like naphthalin, naphthol, and some other preparations, nor to produce albuminuria like tar and naphthaline, or to cause the symptoms of intoxication like nicotine soap. It is also free from objection on account of its odor, and does not soil the body-linen. Eudermol is generally applied in the form of ointment, with yellow paraffinum molle as a basis; it is also used as a solution in olive oil or in traumaticin, and in the form of soap.—*Pharm. Jour.*

Issued Jan. 18, 1900,
P. H. Bryce, Secretary.

MONTHLY REPORT.

Issued by the Provincial Board of Health of Ontario for December, 1899. Showing the deaths from all causes and from Contagious Diseases in the Province, as reported to the Registrar-General by the Division Registrars throughout the Province.

YEAR.	MONTH.	Total population of province	Total municipal population reporting	Total deaths reported from all causes.	Rate per 1,000 per annum from all causes.	Scarlatina.	Diphtheria.	Rate per 1,000 per annum.	Mumps.	Rate per 1,000 per annum.	Whooping cough.	Rate per 1,000 per annum.	Typhoid.	Rate per 1,000 per annum.	Tuberculosis (Consumption).	Rate per 1,000 per annum.
1899	December	2,288,182	740 97.7%	1,843	10.0	20	42	0.09	3	0.01	6	0.02	23	0.1	157	0.8
1899	November	2,125,884 95%	610 88%	1,501	0	12	40	0.07	6	0.03	8	0.04	40	0.2	146	0.8
1899	October	2,275,000 99.6%	740 95%	1,940	10.2	8	31	0.04	4	0.02	7	0.04	83	0.5	194	1.0

YEAR.	MONTH.	Total population reporting	Total municipal population reporting	Total deaths reported.	Rate per 1,000 per annum from all causes.	Scarlatina.	Diphtheria.	Rate per 1,000 per annum.	Mumps.	Rate per 1,000 per annum.	Whooping cough.	Rate per 1,000 per annum.	Typhoid.	Rate per 1,000 per annum.	Tuberculosis.	Rate per 1,000 per annum.
1898	December	2,173,006 90%	687 91%	237	....	10	51	0.06	2	0.01	12	0.07	12	0.1	141	0.8
1898	November	2,163,415 95%	677 91%	284	....	17	59	0.09	6	0.03	6	0.03	50	0.3	146	0.8
1898	October	2,200,072 97%	707 94%	272	....	14	39	0.07	4	0.02	8	0.04	54	0.3	153	0.8

* The months in 1899, include deaths from all causes, but the other months from contagious diseases only.

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BULLETS: THEIR WOUNDS.

When one thousand Canadians are at the front participating in the wars of the British Empire against the South African Republic, and another contingent is on its way to supplement our forces there, some facts collated from the literature of the last five years on the subject of the small-arm projectiles and their destructive effects, may at the present time prove interesting if not at all practical. In 1868 a Peace Convention assembled at St. Petersburg with representatives from the leading powers of the world, and as a result of their deliberations there emanated a condemnation from that convention of the employment of explosive bullets in modern warfare, following which came a rapid abandonment of those missiles by their respective adherents.

Since that convention the bullets of the magazine rifle and the revolver have undergone considerable change, in that the diameter is lessened, the velocity is increased, a greatly augmented energy on impact produced, their constructure converted from the spheroidal to the conoidal, their core of lead, or lead and antimony, clad in a mantle, jacket, covering, or coat, of nickel, nickel-steel, or nickel, copper, and their power to kill or wound at increased distances,

even to the extent of killing at two miles away, demonstrated, and killing at shorter ranges after having passed consecutively through the bodies of two or sometimes three men. Regarding the effects of these missiles upon men, information has been gathered from the English wars on the north-western frontier of India, from wars in Chili, Greece, and, of late, in the Soudan.

In the Indian frontier wars it was found by the British soldiers that their bullets were not effective enough to disable their enemies, so a scheme was devised by filing off the anterior aspect of the jacket, thus exposing the leaden core and converting them into the soft-nosed bullet, which met the requirements of the soldiers and produced disabling effects of a powerful character. This idea was taken hold of by the governmental military authorities and, subsequently carried into effect by the manufacture of these modified bullets in the dum-dum arsenal near Calcutta. This was the origin of the now notorious dum-dum; and these bullets with their core exposed at the nose were found to expand on impact and produce great disablement in a wounded enemy.

By calibre we understand that a bullet's diameter is represented by the decimals or hundredths of an inch. For instance, a bullet having a calibre of 22 or 32 measures 22-100ths or 32-100ths of an inch respectively.

On account of the manner in which the barrels of these small arms are rifled, it was found necessary to employ the jacket of nickel or nickel-copper to prevent deformation of the missiles as they pass through the rapid twists of the rifling of the barrels, propelled as they are at a greatly increased velocity. Thus retaining their shape, and with the accompaniments stated, they are capable of great penetrating powers, as is well known.

The Mauser is the official rifle of the German nation; and it is employed by the Boers in the present South African campaign, as it is also being employed by the Filipinos against the Americans. The Lee-Netford is the official rifle of Great Britain, and is in use in South Africa. The bullets in use by the former are the Mauser bullets; by the latter the "Mark II" bullets. The English are not using the dum-dum, nor the "Mark IV" or Woolwich bullet, in the present campaign. The "Mark IV" or Woolwich bullet seems to be a modified dum-dum, as its destructive effects are similar to the dum-dum. The dum-dum bullet has been, as before stated, used by British soldiers in fighting ruthless barbarians, but has never been directed against civilized nations. The "Mark IV" or Woolwich bullet has been in use in the Soudan, and it is stated on good authority that the outcome of the battle of Omdurman might have been different had it not been for the employment of this bullet.

The calibre of the Lee-Netford or "Mark II" bullet is 0.303 that of the Mauser 0.275. The Lee-Netford is the heavier. The

Mauser has the greater velocity. At the muzzle the velocity of the Mauser is stated to be 2,345 feet per second ; at 500 yards, 1,453 feet per second ; at 1000 yards, 981 feet per second ; and at 1,500 yards, 786 feet per second. At the muzzle the Lee-Metford has a velocity of 2,000 feet per second ; at 500 yards, 1,278 feet per second ; at 1,000 yards, 934 feet per second ; and at 1,500 yards, 764 feet per second. From this it will be seen that for practical purposes the velocity in each is identical ; what velocity greater there is in the Mauser being compensated for in the Lee-Metford by the increased weight of the latter.

As these bullets are projected from the rifle's muzzle they are made to revolve in a cork-screw fashion around the axis of their own velocity ; whilst the old-fashioned, round bullet revolved on an axis at right angles to its velocity.

In studying the wounds and the destructive effects of these bullets, one has to take into consideration their momentum, their expansibility on impact, probably their cork-screw-like spin on the axis of their own projection, and, of course, the range.

Recent reports from the front go to show that the Mauser almost invariably cuts a small clean wound, which heals readily by first intention, and is not deadly unless entering a cavity with fluid contents, piercing a vital spot, or severing a large artery.

Keith and Rigby, in summing up the destructive effects of the four bullets named, find that the "Mark II," the "Mark IV," and the dum-dum bullets stand to the Mauser at the ratio of 1.7, 2, and 5.4 to 1, this result applying mostly to flesh wounds ; "the bone destroying and explosive tendencies of all, and specially of the open-nosed bullets, being unnecessarily great."

Before us on our desk, as we write these lines, lies a "Mark II" or Lee-Metford bullet, the bullet now being used by the British soldiers in South Africa. It was obtained from a man who saw service with Kitchener in the Soudan and who participated in the battle of Omdurman. He states that the British troops were supplied with these bullets there, although Professor Ogston, of Aberdeen, says, Omdurman might have been different if it had not been for the "Mark IV" bullets. Shell and all, this bullet measures just three inches in length, the bullet proper measuring one and one-eighth inches, and inserted into the shell to the extent of three-eighths of an inch.

One remarkable fact in connection with the track of these missiles through the body is that arteries, tendons, or nerves in a line with the axis of projection are cut through, but if these structures lie outside that axis, though in the destructive path of the bullet, they are merely pushed aside and left practically uninjured.

Professor Ogston and Messrs. Keith and Rigby are agreed that it matters little which bullet is used when bone is struck. At high

velocities all of these small calibred bullets when impinging on bone rid themselves of energy enough to render the limb absolutely *hors de combat*. The range for destruction of bone is longer for the English expansile bullets than for the continental, fully-mantled bullet; at closer range, the Mauser perforates. The wound of the Mauser has been compared recently to an opening the size of a goose quill through the part perforated, the wounds of exit and entrance being almost similar.

With the Manser and binoculars the Boer is said to be able to sight and kill at a range up to 3,000 yards.

News Items.

THE death of Sir James Paget, the eminent surgeon, at the age of 86 years, is announced from London, where for nearly half a century he had been one of the leaders of the profession. At the time of his death he was consulting surgeon to St. Bartholomew's Hospital, Sergeant-Surgeon to the Queen, and surgeon to the Prince of Wales. His "Lectures on Pathology" was his best literary work known in this country. Besides his skill in surgery he was known as a brilliant orator.

THE first annual report of the Toronto Orthopedic Hospital has just been issued. It gives a detailed statement of the work of that institution since its inception in July, 1898. The medical report shows the number of admissions to have been 172, discharges 156, surgical operations 174, deaths only 1, and no cases of infectious disease. Patients have been admitted from Toronto, the towns, cities and villages of Canada, and some from the United States.

AS an outcome of the inquiry into the governance of the Prince Edward Island Asylum, Dr. Blanchard, the Superintendent, has been asked for his resignation before the final report of the Commission has been handed into the Government. The doctor has been twenty-five years in the position. Dr. Victor Goodwill, a young practitioner, is likely to be appointed resident superintendent.

SURGEON-MAJOR ARTHUR WORTHINGTON, 53rd battalion, Sherbrooke, and Surgeon-Major Duff, Kingston, are to be the medical officers of the Canadian Artillery for active service in South Africa.

COMMENT by a correspondent in a Montreal daily is decidedly adverse to the system of allowing men to enter the militia without a stricter medical examination. It is stated by this correspondent that some of the men who have been drilled for years and been at the annual camps have been rejected as not being physically fit to serve on either the first or the second contingent.

IN a public lecture in Montreal, Dr. W. G. M. Byers, Assistant Ophthalmologist of the Royal Victoria Hospital, calls the attention of the Canadian Government to their laxity in regard to the admission of immigrants suffering from granular ophthalmia, and advises precautions to be taken for the prevention of the wholesale introduction of this disease into our midst.

THE Minister of the Interior will shortly put in operation a law passed at the last session of the Dominion Parliament, providing for the establishment of sanitary regulations for the benefit of the men employed on public works in the Dominion. Inspectors will be appointed for the purpose of seeing that these regulations are properly carried out.

DIPHTHERIA continues prevalent in Montreal, the civic hospital not being able to accommodate all cases seeking admission to that institution. Houses where the disease is occurring are said to be in a very unsanitary condition, and some of the physicians are blamed by the Health Department for laxity in reporting the cases promptly.

THE Pathological Society held an open meeting on the 28th ult. Drs. G. Bell, Winnipeg, and Cullen participated in the programme for the evening, the former dealing with hydatids, the later with the pathological findings in cases of uterine hemorrhage.

AT the Toronto Medical Society, on the 4th inst., a discussion on fractures of the humerus was the feature of the meeting. It was opened by Dr. Peters and taken part in by Drs. Powell, E. E. King, Small, Starr and others.

THE Ontario Government is setting itself out to clean up hotels in country towns and villages, and to have them placed in a better sanitary condition. The Travellers' Association is asked to co-operate.

THE city of Charlottetown is making a determined onslaught upon infectious diseases, and has published a set of rules for the guidance of the physicians and also the people.

DR GEORGE FIELD, Cobourg, Trinity, '94, and Dr. F. Leonard Vaux, Ottawa Trinity, '95, are going with the second Canadian Contingent to South Africa. Two other Trinity students have also enlisted.

IT is very gratifying to the trustees of the Victoria Hospital for Sick Children that their appeal for funds to wipe out the debt of \$30,000 has been met so promptly so that that end will soon be accomplished.

BEFORE the students' Medical Society of Trinity Medical College, on the evening of the 16th inst., Dr. N. A. Powell spoke on "The Early Possible Diagnosis of Pulmonary Tuberculosis."

DR. C. D. PARFITT, Trinity, '94, has resigned his position as resident physician in the Johns Hopkins Hospital, and will commence practice in this city.

LIEUT.-SURGEON G. S. RYERSON left Toronto the 16th inst., for South Africa, in the interests of Red Cross work during the progress of the war.

DR. E. H. STAFFORD, Assistant Physician Asylum for Insane, Toronto, will recuperate his health during a six months' holiday in the Bermudas.

The doctors of Victoria, B.C., have organized a medical society, the members of which promise to abstain from lodge practice permanently.

THE medical students of McGill have purchased a splendid Union Jack, for which the Faculty have provided an imposing staff.

THE new Western Hospital, Bathurst Street, was opened on the 15th ult. An enjoyable time was spent by the guests.

THE annual *billet doux* of the Registrar of the College of Physicians comes to hand this year unregistered. Why?

AMONGST other Trinity men at the front is Dr. H. S. Roberts, '96. He is Medical Officer to the garrison at Kimberley.

THE Sisters of St. Nazareth, Montreal, have opened in that city a new and spacious school for the blind.

DR. BRUCE SMITH, Hamilton Asylum, is spending a well earned holiday in Europe.

TORONTO has lately established a Home for incurable children on Avenue Road.

DR. MINNIE GOMERY, Montreal, will go out shortly to India as a medical missionary.

DR. T. S. CULLEN, Baltimore, has been in the city over the holiday season.

Physicians' Library.

Progressive Medicine. Volume IV.—A Quarterly Digest of Advances, Discoveries and Improvements in the Medical and Surgical Sciences. Edited by HOBART AMORY HARE, M.D., Professor of Therapeutics and *Materia Medica* in the Jefferson Medical College of Philadelphia. Octavo, handsomely bound in cloth, 398 pages, 51 engravings and 5 plates. Lea Brothers & Co., Philadelphia and New York.

In purpose and method *Progressive Medicine* so radically departs from the lines pursued by the customary year-books and annuals that a brief sketch of its aim and construction is of interest. While it records at length the practical advance in each branch of medicine and surgery, the personal quality of each member of its strong corps of contributors is apparent, the essays being narrative in form and the information given being the outcome of the authors' practical experience. Thus the articles may be considered as original contributions of a very practical character, in which the chaff has been winnowed from the grain and the material prepared for easy assimilation and quick application. The fourth volume presents carefully prepared and exhaustive papers upon the following subjects: Diseases of the Digestive Tract and Allied Organs, the Liver, Pancreas and Peritoneum. By Charles G. Stockton, M.D. Genito-Urinary Diseases in the Male, and Syphilis. By William T. Belfield, M.D. Fractures, Dislocations, Amputations, Surgery of the Extremities, and Orthopedics. By Joseph C. Bloodgood, M.D. Diseases of the Kidneys. By John Rose Bradford, M.D., F.R.C.P. Physiology. By Albert P. Brubaker, M.D. Anatomy. By Frederic H. Gerrish, M.D. Hygiene. By Henry B. Baker, M.D. Practical Therapeutic Referendum. By E. Q. Thornton, M.D. The rapidity with which *Progressive Medicine* has gained the widespread acceptance of the profession is the strongest endorsement of its practical value to the busy practitioner.

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Miscellaneous

THE TREATMENT OF DIGITALIS POISONING; EXPERIMENTAL INVESTIGATIONS.—Drs. J. J. Taylor and C. R. Marshall (*British Medical Journal*, November 4th) say: The treatment of digitalis poisoning must be symptomatic. We know of no antidote in any true sense of the word, to this drug. Nor do we think we shall ever know of one. Digitalis enters very slowly into the tissue metabolism; it produces distinct structural changes, and it is slowly eliminated. It therefore possesses a most unfortunate character for action of the antidote. Apparently all that we can do is to withdraw the drug if it is being given medicinally, to clear the alimentary canal of any digitalis it may contain, and increase the rapidity of elimination by diluents; to allay sickness, to reduce arterial tension when high, procure sleep if necessary, and treat every symptom as it arises. In other words, the condition must be treated as if it were, which it is, an ill understood disease. For the reduction of the arterial tension nitroglycerine, or an ally, is the best remedy; but with the low blood pressure, which is not infrequently present in digitalis poisoning, these substances are useless. In such cases small doses of alcohol, insufficient to produce vasodilatation, would probably prove of greater service.—*Medical Record*.

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TREATMENT OF CHOREA BY MASSIVE DOSES OF ARSENIC.—Del Pozo (Thèse de Paris; *Therap. Gazette*, August 15th) records thirty cases of cholera treated by massive doses of arsenic. He considers that these massive doses are far superior to treatment by antipyrin, as it is commonly employed, and states that there are two ways in which arsenic may be administered, namely, in small doses very gradually increased, and in large massive doses rapidly increased up to the point of intolerance, or, in other words, until the gastro-intestinal canal of the patient rebels, as manifested by vomiting and diarrhea. As soon as these symptoms are developed the dose is cut down day by day until one is obtained which the patient can bear. He asserts that such treatment usually produces cure within nine days, and that accident from this method is rarely met with. Four cases of arsenical neuritis are reported. Arsenical fever is rare; sometimes arsenical pigmentation occurs, but this speedily passes away as soon as the drug is stopped.—*B. M. J.*

BLOODLESS operations upon the nasal septum are now an established fact, due to the discovery of the astringent and hemostatic properties of suprarenal capsules. The rhinologist may conscientiously assure his patient that operations can be performed with little or no demonstration of blood by employing the aqueous exact of the suprarenals. An extract made by the following formula is very efficacious and has excellent keeping qualities:

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Cinnamon water	drs.	4
Camphor water (hot)	oz.	1
Distilled water (hot) q. s. ad.....	ozs.	2

Macerate for four hours, then filter. The surgeon will find this extract a great aid in all minor operations. To insure results a pure suprarenal substance should be used.

TREATMENT OF FLOATING KIDNEY.—Prof. E. Henoch (*Therapie. d. Gegenwart*, June, 1899) says that the radical operation for floating kidney undoubtedly gives brilliant results in some cases. It is, however, not entirely harmless, and the mere fixation with suture is not always of permanent value. Again, the patients are very reluctant to undergo operative intervention, and submit only when the discomfort and pain are unbearable, a condition which on the whole is very rare. For the most part, then, we try to alleviate the condition with bandages and supports. These give the patients more confidence and support, as it were, and are therefore to be recommended.—*Medical Record.*