followed this idea in assuming that the irritant effects are due to the decomposition of the emboli which plug the vessels. Lanceraux thought the poisoning was caused by an alteration in the connective tissue of the valves themselves, and not by disintegration of the vegetations alone. Virchow noticed that the valvular deposits contained fine closely-packed granules, which were insoluble in potash, acetic and hydrochloric acids, but were dissolved in chloroform. He considered them to be of a fatty nature.

Professor Winge was the first one (1869) to advance the theory that these granules are living organisms, and he called the disease mycosis endocardii. This same view was taken by Professor Heiberg, of Christiana, who sent specimens to Virchow for examination. With further study Virchow, Klebs, Koster, and a number of other Germans have given their approval to this theory, and they say that the organisms found are micrococci, vibriones, bacteria, and leptothrix filaments. Some of these observers believe that the germs are the essence of the disease. Heiberg inclines to the germ side of the question, but he allows that cases of ulcerative endocarditis present themselves wherein no parasites can be detected. Eberth thinks that the bacteria are introduced into the blood from without, and become aggregated into a sticky mass, which adheres to the surface of the cardiac valves. Here they multiply rapidly, and, dropping off, are distributed to all parts of the body. On the other hand, some writers repudiate the germ theory with great vigor, and claim that the parasites, if present, are merely the accidents of the disease. Hiller says that bacteria and leptothrix are constantly present in the healthy mouth, and if they are so dangerous we ought to be poisoned all the time. He thinks the granules described are merely detritus.

Examining a case of ulcerative endocarditis after death, one finds one or more of the valves and portions of the endocardium covered with patches of vegetations and ulcerations. These patches are generally small in area, and may be on either side, and in any one of the four chambers of the heart. Of course, when the disease is limited to the right side of heart the brunt of the embolic explosion comes upon the lungs, which usually contain scattered abscesses. The liver is pale and flabby. The spleen is soft and pulpy. The kidneys present cloudy swelling, and hæmorrhages may be seen in any or all of the chief organs and tissues. Dr. Hall Curtis¹ reports a case where small spots of superficial gangrene formed on the right leg from minute emboli in the skin.

Little can be said in regard to the treatment of this formidable disease. Nearly all the cases reported have been fatal, and some were rapidly so. I have seen one doubtful case of recovery described, but it seems as if our chief consolation in this disease will be the satisfaction of having detected its presence before it was revealed by the autopsy.

— On the first day of the American Medical Association, by request of Dr. Gross, the rules were suspended to allow Dr. Gross to make a motion for the establishment of a section of dentistry. The motion was seconded by Drs. Sayre and N. S. Davis, and was adopted without a negative. The section is to be in working order at the next annual session.

¹ Boston Medical and Surgical Journal, May 13, 1880.

THE NECESSITY OF THE LONG NOZZLE IN MAKING INTRA-UTERINE INJECTIONS AFTER CONFINEMENT.²

BY EDWARD JACOB FORSTER, M. D., CHARLESTOWN, MASS.

IN cases where there remains in the uterus after confinement any clots, portions of the placenta or membranes, which by undergoing decomposition may be the source of septicæmia, the use of the common vaginal tube or nozzle sold with the ordinary bulb injection syringe has, I am convinced by observation, been the cause of giving general practitioners a false sense of security, that by their use, they were doing all that was necessary to disinfect the uterine cavity and combat the tendency to septicæmia. Such a tube should never be used unless the point is made to enter the os, and is carried well up to the fundus. A neglect to thus reach the fundus may be and is the cause of fatal consequences, as two of the cases which I report this evening will, I think, clearly show.

The Davidson Rubber Company have made a tube twenty-seven centimetres long (about ten and one half inches), resembling the ordinary one except in length and the direction of the openings; the latter is only eleven centimetres (or four and one half inches). They have also, at the suggestion of Dr. Wm. L. Richardson, made a tube (here represented) of the same

length as the first, that is, twenty-seven centimetres, in which the openings are so pierced that the stream is recurrent and the holes make a spiral turn about the tube, and thus wash thoroughly every part.

Some of these have been made which have at the end which joins the rubber tubing a joint so that they can be turned while *in situ* without at the same time turning the bulb.

One of these long nozzles should be in every obstetrician's bag.

In certain positions of the uterus the joint cannot be used. The tubes are made of block tin, and can be bent to any reasonable extent deemed necessary. Tubes of a poorer quality are made of lead nickel plated, and when bent the plating cracks off.

CASE I. While at dinner on the evening of Monday, the 18th October, 1880, I was called suddenly, in the absence of the family physician, to Mrs. X., thirty-four years of age, primipara, who was supposed to be at full term. I found her lying upon the bed, dressed, unconscious, with head thrown back, eyes protruding, and violently convulsed.

Ether was immediately given, and the following history obtained: The waters had broken five days before; the amount of urine passed during the last few days had been notably diminished; the patient having had severe headaches, had just before the convulsive seizure complained of great pain in the head.

An examination per vaginam showed the cervical neck patulous, but otherwise as in the eighth month. Assistance was asked for, and Drs. J. G. Dearborn and R. A. Blood responded.

The necessity of emptying the uterus of its burden, and thus relieving the kidneys of the mechanical pressure under which they were attempting to perform

² Read before the Obstetrical Society of Boston, March 12, 1881.

their function, was acknowledged by all present, and the induction of labor by manual dilatation was agreed to. Dr. Dearborn took charge of the anæsthetic, and Dr. Blood and myself undertook the dilation, working alternately.

The vagina offered the most resistance, for when the whole hand had reached the os it was easy work to dilate it. After deliberation it was decided to complete the delivery by the forceps.

I applied one blade, but a sudden crick in my shoulder prevented me from passing the second. So the application was finished by Dr. Blood, who locked and passed them to me, but before attempting delivery the physician who had been engaged to attend the case made his appearance, and I immediately offered them to him. Taking the forceps he at once extracted a rather small female, the cord pulsating strongly. All attempts made by the family physician to resuscitate the child failed. After giving him the history of the case up to the time of his arrival, I left the patient in his hands.

I learned, accidentally, that on Wednesday, two days after delivery, the patient had a chill.

Four and a half days after delivery I was called about four o'clock in the morning by the husband, asking me to see the case in consultation, saying that the attendant had given an unfavorable prognosis.

I found the patient delirious, pulse 104, full and strong, abdomen tympanitic and tender over the fundus which was high up. The skin was said to have a yellowish tint which, however, did not appear in the gaslight. There had been diarrhœa, for which opium had been given; the temperature was 102° F., and had never reached a higher figure.

Quinine and stimulants in large doses, with antiseptic injections every three hours, I think, had been the treatment pursued. The time for an injection being at hand I asked and was accorded permission to see one given; the nurse gave the injection with a fountain syringe, the common vaginal nozzle being used, the proximal end not passing the vulva. The nurse, in answer to my query if she always gave the injections and in that manner, replied in the affirmative.

Retiring with the attendant I agreed to the quinine and stimulants, and suggested that he give the injections himself, passing the tube well up, to which suggestion he acquiesced.

Later in the same day I was requested to see the case again and meet Dr. William L. Richardson at 11.15 A. M.

At that hour the attending physician, Dr. Richardson, and myself were present. The patient's condition was much the same as in the early morning. On examination Dr. Richardson found the perinæum had been ruptured and stitched but the wound appeared well. The cervix was found to be torn in two places and the cavity of the uterus filled with old clots and decomposing *débris* of a very offensive character. The physician informed us that three hours before he had thoroughly cleansed the uterus.

Upon retiring to the parlor Dr. Richardson advised a thorough syringing and cleansing of the uterine cavity, a continuance of the brandy and quinine, and thought that the diarrhœa was an effort of nature to eliminate the poison and should not be checked. He gave an unfavorable prognosis.

At about six P. M. I was informed that the attendant had been dismissed and was asked to take charge of

the case. After some hesitation I assented, and soon after had Drs. Richardson and Blood in consultation.

We at once thoroughly washed the uterine cavity, the first returning fluid being very offensive and containing putrescent matter. The catheter was also passed, but, owing to the eyes of the instrument becoming clogged with diphtheritic membrane, several attempts were necessary before a tablespoonful of urine was obtained. The patient was soon unable to take stimulants, the temperature rose rapidly, and death ensued at 11.15 P. M.

An examination of the urine showed it to be highly albuminous, and every field examined was filled with coarsely granular and fatty casts and blood cells.

CASE II. On the 27th of November, 1880, I was called to a neighboring town to see in consultation Mrs. Y., twenty-six years of age, primipara, who a week before had been delivered of a female child after an easy and natural labor.

When seen the patient was unconscious, pulse too rapid to be counted, temperature 102° F. No tympanites. The nurse remarked that the lochia had less odor than usual, no offensiveness having been noticed. Three days after the confinement the attending physician noticed the uterus much enlarged and informed the nurse that in all probability some clots would shortly come away. Stimulants were being given but sparingly, a tablespoonful of brandy only in the twenty-four hours.

A daily antiseptic injection had been given by the nurse with the ordinary nozzle, and no offensive odor had been noticed.

Making a vaginal examination I found the cervix torn and my finger covered with the most offensive fluid I have ever encountered.

Using the long nozzle which I have described, I brought away large quantities of the same offensive matter, and continued the injections until the returning fluid had no longer any odor but that of the carbolic acid which it contained. Hypodermic injections of brandy were given, notably strengthening the pulse for a few moments. The case, however, soon terminated fatally.

In contradistinction to the foregoing unfortunate cases the following is reported.

CASE III. In the evening of the 9th of December, 1880, I was called in consultation to see Mrs. Z., multipara. The patient was a stout Irishwoman. An examination showed the head engaged in the superior strait, the face to pubes, the cord prolapsed, and the anterior lip well down. She could not be made to assume the face and knee position, and all efforts to return the cord were unavailing.

Ether was absolutely refused. The forceps had repeatedly been applied and as often slipped. At a second visit, an hour or more later, after much urging, consent was obtained to administer ether, and I at once took charge of the anæsthetic.

In one of the attempts to extract the child the forceps again slipped, and the cord was broken in two. The head was finally brought down, and with it there appeared at the vulva what the attending physician who first saw it thought to be the congested urethra and meatus, which had prolapsed; examination showed it to be the greater portion of the anterior lip, all but separated from the uterus, lying antero-posteriorly in the vagina, and resembling in size, shape, and color, a small Bologna sausage.

Antiseptic injections with the long nozzle were given at once and continued; the anterior lip sloughed off in a few days, the patient making a good recovery, with scarcely an untoward symptom.

While Cases I. and II. are reported to show that the common vaginal tube gave a false sense of security, there are other points which are open to adverse criticism.

The use of forceps in such cases as No. I. was formerly taught, but latterly authorities advise delivery by turning as preferable in rendering the accidents mentioned less likely to recur. In the light of my experience in this case I should, under similar circumstances, practice turning.

The importance of recognizing some slight lacerations of the perinæum, as insisted upon by Dr. G. H. Lyman, and the necessity of operating at the earliest possible moment, should cause an early examination of and attention to such injuries.

In regard to the checking of the diarrhœa by opium, Dr. Armstrong, writing of Puerperal Fever in 1819, says that he found a diarrhœa coming on in the first stage sometimes carried off the disease; on the contrary, costiveness was always an unfavorable circumstance.

In Case II. the sudden enlargement of the uterus on the third day, which the attending physician rightly interpreted to be due to a clot, should at the same time have suggested the necessity of at once removing it.

In both cases the injections were at first given by the nurses, an operation which should only have been done by the physician.

Dr. Edward W. Jenks, in his article on Intra-Uterine Injections for Septicæmia,¹ gives his opinion strongly upon this point, saying:—

"The administration of these injections ought never to be intrusted to a nurse or inexperienced assistant, but should invariably be given by the accoucheur himself, with as much carefulness and attention to every detail as he would exercise in the performance of a surgical operation."

In the discussion which followed the reading of his paper, Dr. Fordyce Barker, speaking of these injections, said "they should never be trusted to a nurse," and Dr. T. G. Thomas added that he never intrusted this delicate duty to one.

The principal objections to using these injections after confinement are:—

I. The alleged danger of air being made to enter the uterine sinuses.

II. The alleged danger of the fluid entering the peritoneal cavity through the open Fallopian tubes.

In regard to the first, if the tube is filled with the antiseptic fluid this accident cannot happen. In regard to the second objection, the tubes or nozzles here described lessen the danger of forcing fluid through the Fallopian tubes, the direction of the openings being reversed from those in the ordinary vaginal one.

In using this tube for vaginal injections in the non-puerperal state, this distal opening is again dangerous, as fluid may unintentionally be forced into the uterine cavity. At the suggestion of physicians the company have discontinued making the central aperture.

In using intra-uterine injections in the treatment of septicæmia, and of their value I am thoroughly convinced, we cannot do better than bear in mind the following precautions given by Dr. Jenks:—

¹ Volume IV. of the Transactions of the American Gynecological Society.

"(a.) The mouth and neck of the uterus should be well dilated, and a free outlet insured for the injected fluid.

"(b.) Air must not be admitted with the injection.

"(c.) The fluid should be injected slowly, and without much force.

"(d.) The fluid used for injection ought not to be of a lower than the normal temperature of the body."

22 MONUMENT SQUARE, CHARLESTOWN DISTRICT, }
BOSTON, 12 March, 1881.

RECENT PROGRESS IN PATHOLOGY AND PATHOLOGICAL ANATOMY.

E. G. CUTLER, M. D.

CHANGES OF THE SALIVARY GLANDS IN HYDROPHOBIA.

THOUGH the infective character of the saliva in hydrophobia is well known, there have been hitherto no positive descriptions of the changes met with in the salivary glands of animals affected with this disease. It is stated, indeed, that the glands are found to be in a hyperæmic condition, though Bruckmüller contradicts this statement. The observation of Nepveu² throws a little light on this subject. He found a tolerably extensive small-celled infiltration of the interstitial tissue in the salivary glands of a boy seventeen years old, who died of hydrophobia. Elsenberg³ gives the chief results of his investigations undertaken on twelve dogs and two human beings affected with the disease.

In the dog he found the greatest change in the submaxillary and sublingual glands. The former was slightly enlarged, presented a smooth surface on section, with here and there indistinct acinous structure, and had a grayish-red color. Examined with the microscope there was a considerable infiltration of the interstitial tissue, with small cells having one or several nuclei, and resembling precisely the colorless corpuscles of the blood. This infiltration was greatest about the excretory ducts and veins of medium calibre in the hilus of the acinus; it diminished gradually towards the periphery, and at the hilus of the gland it was entirely absent. At times the infiltration of the acinus assumed such dimensions as to represent microscopically a collection of pus. The infiltration in the interacinous tissue was very much less.

The fixed cells of the interstitial tissue were slightly enlarged, swollen up, without a trace of division.

The blood-vessels, particularly the small veins and capillaries, were much dilated, and the blood filling them contained a large number of white corpuscles lying both irregularly distributed amongst the red corpuscles and also next the wall of the vessel.

The epithelium of the alveoli of the submaxillary gland as well as the crescent-shaped cells (Lunulæ Gionuzzi) also did not remain unchanged. The contents of the secretory cells first became slightly granular instead of consisting of a transparent, slimy mass, the granular mass gradually increased, while at the same time the circumference of the cell diminished one third. The nucleus became rounder, increased in size, and its former peripheral position became a more central one. Such cells were readily stained by pikro-

² Gazette Médicale de Paris, 1873, No. 47.

³ Centralblatt für die medicinischen Wissenschaften, March 26, 1881.