The temperature was slightly subnormal. The clinical picture was one of collapse.

**Treatment.**—The patient was given one-half ounce of whiskey and 1/40 grain of strychnin hypodermically. Hot water bottles and blankets were applied to the body. A thorough rectal irrigation of about a gallon and a half of saline solution was employed at once. As a result, the burning pain in the rectum and abdomen was ameliorated, the pulse became stronger, the temperature returned to normal in about one hour and the mind cleared.

**Later Symptoms.**—Three and one-half hours later violent retching and vomiting set in. The vomited matter was dark green, of offensive odor, alkaline in reaction, and free from mucus and showed the presence of blood both microscopically and by the benzidin test. Diarrhea associated with violent tenesmus kept the patient on the bedpan almost continually for the next twenty-four hours. The stools were dark red in color of a syrupy consistency, had the odor of formaldehyde and contained pus blood, shreds of intestinal mucous membrane, fibrin and mucus in large quantities. The lips and tongue were dry and parched, thirst was excessive, the skin was dry, harsh and wrinkled, and later covered with a cold perspiration. The eyes were dull and the patient suffered from severe headache and the flushed face and a slight redness of the skin was present. After this initial fall, the temperature, pulse and respiration gradually rose till setting, when, eighteen hours after the injection, the temperature rose rapidly to 104.2 F., pulse to 176, and respirations 36.

A hypodermoclysis was given and it effectually restored the lowered body fluids, and tided the patient over the period of reaction. As the patient had not voided urine she was catheterized and two ounces of urine loaded with albumin, casts, and blood were obtained. For the next twenty-four hours there was almost complete anuria, the bladder being empty. The small amount of urine obtained contained albumin, blood, and casts.

**Blood.**—The blood examination which was normal prior to this accident, showed four hours later a leucocytosis of 30,600; polymorphonuclears, 94 per cent.; lymphocytes, 4 per cent.; large mononuclears, 2 per cent.; eosinophiles, 1 per cent. The red cell count was reduced to a little over 3,000,000; the hemoglobin to 65 per cent.; the coagulation time was two and one-half minutes.

**Subsequent History.**—October 28: The temperature came down to 100 F.; the pulse ranged from 120 to 130, and the respirations were 24. The vomiting and diarrhea, although considerably less, continued; the vomitus and movements still contained blood. The patient was extremely weak and was covered with a cold perspiration; the urine was still scanty.

October 29: The general condition of the patient was much better; the temperature was normal, the pulse was still 120, and the respirations were 24. The occasional vomiting was free from blood and the diarrhea had ceased. She retained some nourishment and voided considerable urine. The right arm and hand became numb and painful, with considerable loss of muscular power.

October 30: The patient felt very comfortable, the vomiting and diarrhea ceased, and she was able to retain considerable nourishment. The temperature and respirations were normal and the pulse, though accelerated, was regular and strong.

From now on the patient gradually and steadily improved, all the symptoms subsided, the rapid pulse being the last thing to disappear. Her alimentary and urinary tracts cleared up completely; she gained in weight, and was discharged on Nov. 9, 1907 perfectly well.

So far as we can find only four cases of formalin poisoning are reported in literature, and of these four only one case occurred in this country. This case was in India and was reported by Charles Bock. An imbecile, aged 26, swallowed from one to three ounces of a 4 per cent. solution of formaldehyde. The gastric irritation was severe and he died thirty-two hours later of cardiac depression. The autopsy showed the gastric mucosa to be highly inflamed and its wall was necrotic, dark, tough and cut like old leather.

Kluber reported a case in which a man drank an unknown quantity of formalin in mineral water; the chief symptoms were similar to those of acute alcoholic intoxication; recovery was complete.

Geriach, in 1902, reported a case with similar symptoms with recovery which followed the swallowing of from 2 to 2½ ounces of 35 per cent. solution of formalin.

A case corresponding very closely to ours was reported by Zorn. The patient, a man, recovered after drinking half an ounce of a 40 per cent. solution of formaldehyde. The chief symptoms came from irritation of the alimentary tract and kidneys; they were retching, vomiting, vertigo, dyspnea and a burning pain in mouth and stomach; there was diarrhea with violent tenesmus; the secretion of urine was suppressed for twenty-four hours. Recovery was complete in four days.

In conclusion we would state that the determination of the presence of formalin poisoning is made by the odor of formalin in the vomitus and stools and by the following simple tests: Urine plus ammoniated silver nitrate gives a black color. Solution to be tested plus an equal volume of 40 per cent. caustic potash which contains 5 per cent. resorcin gives a red color.

Finally we might add that from the four cases reported in the literature and our own that the symptoms of formalin poisoning, when taken into the alimentary tract, are variable; that the predominating symptoms are severe irritation of the gastrointestinal tract and kidneys with cardiac depression. The cause of death is usually from the latter. As no antidote for this poison has yet been found, the most rational treatment is to wash out the stomach and intestines with salt solution, both immediately after the poison has been taken and at suitable intervals thereafter; for Zorn has determined that the poison is excreted there. To combat the cardiac depression active stimulation should be given. Hypodermoclysis or saline infusions are needed to raise the blood pressure and to replenish the fluids of the body, which are tremendously depleted by the hydragogue effect of vomiting and diarrhea. If recovery occurs it is usually complete and permanent.

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**FRACTURE OF PELVIS IN HIGH FORCEPS DELIVERY**

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The comparative rarity of contracted pelvis outside of large centers of population is frequently the cause of lack of routine methods of examination of obstetric patients by the general practitioner. In the south, extreme deformities are exceedingly rare, and slight abnormalities may easily exist undetected. Many physicians in this part of the country state that they have never seen a case in which they considered symphyseotomy or a Cesarean section necessary or indicated.

The following case is reported as illustrative of these conditions and also because of the rarity of fracture of the pelvis occurring in forceps delivery:

**Patient.**—Mrs. B., aged 20, was a well-nourished primipara, of average height and weight, and with a good family history.

**History.**—Labor pains commenced Sept. 27, 1908, at September 29, at 9 p.m., I saw her in consultation with Drs. W. DeLay and W. P. Harkin. Axis-traction forceps had been applied four hours previously without avail.
Examination.—The head appeared to be of normal dimensions; the occiput presented in L. O. I. A. position, and was unengaged at the brim. The surroundings were very unhygienic and no measurements were taken, though the antero-posterior diameter seemed shortened.

Delivery.—Simpson long forcesps were applied and delivery was effected in an hour without undue force in the extraction. A feeling of crepitation was experienced while the head was descending, but it made no special impression at the time. The fetus was normal in appearance but was stillborn; its weight was eight pounds. There was a small perineal tear which was repaired. After a thorough examination there was discovered a separation at the symphysis about 1.5 cm. wide. The urethra was torn and displaced to the right with consequent partial incontinence of urine. There was a fracture of the right ascending ramus of the ischium about 3 cm. below the symphysis. The measurement between the anterior-superior spines of the ilium was 25 cm. in the relaxed condition.

Subsequent History.—The hips were bandaged. The patient had a septic temperature for a month and finally an abscess developed between the layers of the abdominal muscles on the left side, just above Poupart’s ligament. It was opened and drained, but a sinus persisted. The factured bone united promptly, but about the end of the second month septic pneumonia developed and the woman died Dec. 29, 1908, three months after delivery.

The pubic separation remained, notwithstanding the efforts at bandaging. The fracture was evidently produced by the passage of the head through the outlet, showing that even after a symphysiectomy the possibility of a fracture should be borne in mind in cases of contracted pelvis.

A DEVICE FOR MEASURING FLEXION DEFORMITY IN HIP-JOINT DISEASE
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As the increase or decrease of deformity in this disease is a most helpful guide to the efficiency of treatment, an accurate and easy method of measurement is demanded. It is probably true that months of treatment might often be avoided by the early recognition of an increasing deformity. Failure to appreciate the value of studying the slight variations in the signs of a joint disease has been responsible, probably, for the retention of such gross mechanical treatment as the gypsum cast, with an unwarranted faith that air and eggs will accomplish the rest.

We already have a sufficiently accurate method in the one worked out by Kingsley,1 but as it necessitates the use of a reference table it is difficult of application.

The device herewith presented transfers this table from the printed page to one side of a tape measure. Instead of reading one side of a triangle in inches and then referring to the table for the degrees of the angle opposite, the degrees of the angle can be read directly from the tape.

Kingsley’s table consists of the computations of the angles subtended by a series of perpendiculars in right-angled triangles, the hypotenuse of which is constant. With the patient on the examining table, the leg on the diseased side is held in its position of greatest extension, as indicated by the lumbar spine. A hypotenuse of twenty-four inches is measured from the table, opposite the joint, in the line of the limb, and from its end a perpendicular is dropped to the table and measured. By referring to Kingsley’s tabulation the angle at the hip may be found.

Attaching a plumb-bob to a tape line, I measured inches from the tip of the bob and marked each with the angle which such a perpendicular would subtend in a right-angled triangle with a hypotenuse of twenty-four inches. In using this tape some one holds the leg in the deformed position. Twenty-four inches are measured along the leg and the plumb-tape dropped to the table. The angle of flexion is read directly from the tape.

THE USE OF ATROPIN SULPHATE IN ANESTHETIZING BIRDS FOR SURGICAL EXPERIMENTS*
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In 1907 an investigation was begun in this laboratory on the physiology of reproduction in the domestic fowl. It was the plan of this investigation to use in the main experimental surgical methods in the analysis of the problems involved. Such experiments were begun in the fall of 1907. Much of the detailed technic involved in these experiments had to be worked out ad hoc, both with reference to the character of the problems studied and to the nature of the material itself.

At the beginning of our operative work on birds a great deal of difficulty was experienced in the matter of anesthesia. Such a difficulty had not been foreseen and for a time greatly hindered the progress of the work. It is difficult for one who has been accustomed to the behavior of mammals under anesthesia to realize how differently birds behave under similar treatment. At the outset of the work chloroform was used as an anesthetic. After a number of birds had been killed on the table by the action of the chloroform it seemed clear that some change in the technic must be made. Resort was next had to ether. Better results were obtained, but still a great deal of difficulty was experienced.

The difficulty which we have found to be inherent in anesthetizing the domestic fowl may be stated briefly in this way: If any anesthetic is pushed to the point at which the bird is in satisfactory condition for operative procedure, in about nine cases out of ten the bird will die on the table from the effects of the anesthesia before the operation, if extensive, can be completed. If, on the other hand, the anesthetic is given less freely the bird does not lose its reflex excitability. Every time a cut is made or a nerve is pinched with the forceps the bird will struggle. Our experience in anesthetizing birds, which has now covered a large number of individuals, leads us to believe that the only middle ground between these two extremes is afforded by those cases (unfortunately too few) in which the individual idio-


*From the Biological Laboratory of the Maine Agricultural Experiment Station.