drank it all. She made one exclamation and almost instantly fell to the floor, and became unconscious at once. She had very severe tetanic convulsions, her face became dusky, and she died in about twelve minutes, notwithstanding medical attendance was immediately at hand and her stomach was washed out. From certain peculiarities attending the case, the district attorney decided that an autopsy should be performed.

Autopsy.—One hour after death. She was well developed and nourished. Face slightly cyanosed, moderate post-mortem discoloration. The lips, tongue, and mouth were slightly eroded and a very faint odor of prussic acid could be obtained. The pupils were widely dilated. The mouth and nostrils were frothy. When the cranial, thoracic and abdominal cavities were opened, a distinct odor of prussic acid was noticeable.

The mucous membrane of the stomach and the upper part of the small intestines were bright red in color, swollen, intensely injected; the lower part of the small intestines was not remarkable. There was a moderate engorgement of the brain, liver, kidneys and spleen. The lungs were much engorged and edematous and there were numerous subpleural ecchymoses. The heart was not remarkable. The blood was everywhere very fluid and a striking characteristic of it was its cherry-red color and marked odor of prussic acid; a few cubic centimetres of it in a stoppered bottle retained this color perfectly for several months.

The stomach contents were examined by Professor Kinnicutt and prussic acid was found. The blood gave the reactions also for prussic acid. The spectroscopic examination gave only the absorption bands of oxyhemoglobin.

CASE III. Acute hemorrhagic pancreatitis.—Male, laborer, twenty-nine years of age, drove into Worcester from a neighboring town with a friend and both drank heavily during the afternoon. When returning in the evening the deceased fell out of the wagon and was left behind by the roadside. An acquaintance found him and picked him up. He supposed that he was "dead drunk," and when he reached his home, left him in the wagon in a shed, as it was warm weather. He found him dead in the morning.

The autopsy showed him to be a well-built man. There were a few abrasions on the forehead and both cheeks and nose, presumably caused by his fall. No marks upon the rest of the body. The interesting condition was found in the pancreas. Upon opening the lesser omental cavity, there appeared an extensive blood clot occupying the site of the pancreas. It wholly covered and infiltrated it, and here and there were seen areas of fat necrosis. There was clotted blood in the pancreatic duct. No ruptured vessel could be found, nor was there any rupture of any muscle or other organs. All the organs of the body were normal, though slightly engorged. The stomach showed a considerable degree of injection, as did the small intestines. There was a moderate degree of atheroma of the large blood-vessels.

Whether this pancreatic hemorrhage was due to alcohol or trauma, or both, I am undecided. Possibly neither. It is an interesting pathological condition as a factor in sudden deaths.

CASE IV. Peculiar death from a blow upon the head.—Male, fourteen years of age, was struck on the back of the head near the occipital protuberance by the wheel of a boy's express cart, thrown at him

in anger by an older boy. He received a horizontal scalp wound about one inch in length, but was not rendered unconscious. He was out of doors during the greater part of the next three days, but did not feel well. He vomited several times and the evening of the fourth day became suddenly ill and delirious, dying the following morning.

The autopsy showed an infected scalp wound, a considerable diffused hemorrhage over the surfaces of the lobes of the cerebellum, with infiltration into it, and an acute purulent meningitis. There was no fracture of the skull. The meningitis was caused by the streptococcus pyogenes and staphylococcus aureus.

This case shows how symptoms may be delayed in a fatal head injury. His assailant was indicted for manslaughter, but he was put on probation by the court.

CASE V. Death from an unknown cause.—Male, thirty-five years of age, farm laborer, came into Worcester and had a few drinks of beer. A few hours later he was found dead on the floor in a bath-room in a house of questionable reputation. They stated that as he was passing along the street he was taken with severe abdominal pain, vomiting and diarrhea; he was taken in and died a few moments later. He certainly vomited all over the bath-room.

The autopsy was made two hours later. He was of unusual muscular development. Aside from a slight hyperemia of the lining membrane of the stomach and small intestines and the abdominal viscera, everything was normal in appearance. All the organs and stomach contents were subjected to a chemical examination by Professor Kinnicutt. Everything that could be thought of was searched for, but with the exception of a slight trace of alcohol, nothing was found. The only possible reason for death that could be given was that in some way the Brazil nuts which he had been eating were the cause. Particles of these nuts were found partially digested in the stomach, but chemical examination threw no light upon it. Careful cultures and microscopical sections were made from every organ, and from the nervous system, but the results were negative. The autopsy was done in a well-equipped hospital morgue; every possible pains was taken with it, as its puzzling character was realized at the time. The spinal cord was removed, the pulmonary artery examined *in situ*, the arteries of the brain examined carefully. The alimentary tract was examined from the tongue to the anus, but no lesions were found.

It is decidedly interesting for the strong negative character which it has; yet interesting and instructive as it may be, it is of such a kind that one is better than many as far as our medico-legal pride is concerned. This case certainly had the appearance and history of that of a strong irritant poison.

AN ANALYSIS OF THE CASES OF ECLAMPSIA OCCURRING AT THE BOSTON LYING-IN HOSPITAL DURING THE LAST FIFTEEN YEARS.¹

BY F. S. NEWELL, M.D., BOSTON.

DURING the period since 1885 there have been admitted to the Boston Lying-in Hospital 90 cases of so-called eclampsia. I say so-called advisedly, because in 11 of the cases no convulsions occurred, and as the

¹ Read by invitation at a meeting of the Obstetrical Society of Boston, May 17, 1899.

synonym for eclampsia is "puerperal convulsions," it is evident that, although the picture is in other respects typical, they must be placed in another class, and I shall consider them later as cases of threatened or aborted eclampsia.

In all, then, we have 79 cases of true eclampsia treated in the hospital during a period in which 6,700 deliveries took place, an average of 11.7 to the thousand. These figures do not show the true relative frequency of the disease, as is shown by the statistics reported by Knapp from the Prague clinic, which give 22 cases in 4,480 deliveries, or 4.9 to the thousand. This is to be explained by the fact that many cases are received in the hospital for treatment after treatment outside has proved of no avail, and also that the majority of cases seen in the Out-patient Department are referred to the hospital for treatment.

Of the 79 cases 57 or 72.2 per cent. were primiparae, and 22 or 27.8 per cent. multiparae. This corresponds very closely with other observations, Knapp's figures being 72.7 per cent. primiparae, and 27.3 per cent. multiparae, while Schreiber's statistics, taken from the Vienna clinic, show 79.5 per cent. primiparae and 20.5 per cent. multiparae.

Cases of eclampsia are divided into three classes: ante-, inter- and post-partum. There is marked discrepancy between the statistics of different observers as to the relative frequency of the three forms. For instance, Löhlein gives the relative frequency of ante-partum eclampsia as 4.7 per cent, while Olhausen, on the other hand, found it to be 40 per cent. In our series 32, or 40.5 per cent., had convulsions before the advent of labor. In 22, or 27.8 per cent., the convulsions began during labor, while in 25, or 31.7 per cent., the convulsions came on after labor was completed. This is interesting in the light of Maygrier's observation that "even in rare cases convulsive attacks may appear for the first time after delivery is completed"; while in our series nearly one-third of the cases had no convulsions until after delivery. This shows how misleading conclusions based on a comparatively small number of cases are apt to be.

Etiology.—The etiology of eclampsia is at present only conjectured. From time to time the discovery of a specific organism has been reported, but later investigations have failed to substantiate the discoveries.

The cases of general infection, in which organisms have been cultivated from the blood and organs must be merely coincidental, or else we must believe that eclampsia is a symptom complex and not a definite disease, and that it may be caused by several organisms, as observers generally differ as to the organism found. For example, Councilman reports a case in which there was a general pneumococcus infection, while the organism described by Gerdes was a bacillus. The modern idea is that eclampsia is the result of a toxemia, arising from some cause at present unknown, which by the inflammation it produces causes deficient excretion and a consequent accumulation of toxins in the blood. All the excretory organs are affected and not the kidneys only, as was formerly thought.

The failure of excretion is most evident in the kidneys and it is only natural that for a long time they should have been regarded as the cause of the disease, but the lesions found in them at autopsy are slighter than those found in the liver, and apparently of later date, consisting of cloudy swelling, and a more or less

marked glomerulo-nephritis, while in the liver are seen numerous areas of coagulation necrosis, into which hemorrhage has taken place. These changes in the liver are considered by Schmorl, who has done the latest and most thorough work on the pathology of the disease, as pathognomonic of eclampsia.

Of our series three cases came to autopsy, and the results are in perfect accord with what Schmorl found, but they give us no clue to the cause of the disease beyond the fact that they correspond closely with the changes found in other toxemias.

Various factors have been supposed by different observers to have some share in the etiology. Lusk says that the disease is more apt to develop in (1) protracted labors; (2) multiple pregnancies, and (3) elderly primiparae.

Thirty-two of our cases were taken with convulsions before the advent of labor. The average length of labor for the remaining 47 was 21.9 hours. The longest labor was one hundred and twenty-five hours, and there were four others over fifty hours in length, while the shortest primiparous labor was two hours and fifty minutes.

An equal number of normal primiparous and multiparous labors, taken at random from the records, gives an average length of 15.2 hours. If we omit the five cases in which labor was over fifty hours long we find that the average for the two classes is practically the same, and the conclusion is obvious, that only a small proportion of cases are affected at all by the length of labor.

The effect of multiple pregnancies in causing eclampsia seems to be much more marked. During the period covered by this paper there have been 63 twin births in the hospital, and among these six cases of eclampsia developed, or about one in ten.

In regard to the statement that elderly primiparae are more prone to the disease than younger women, the records show that of the 57 primiparae only six were over thirty, and that the average age was 22.5 years. Knapp and Schreiber both say that their cases were for the most part young, Schreiber reporting 109 out of 113 as under thirty.

Symptoms.—It is a general rule that attacks of eclampsia are preceded by prodromal symptoms, which in a certain number of cases give sufficient warning, so that with proper treatment the attack may be aborted. Lusk says that the majority of cases, though not all, have premonitory symptoms, while Thomason, writing more recently, says, "Rarely are convulsions unheralded. In the vast majority of cases there were prodromal symptoms." In our cases, on the other hand, the record states positively that there were no prodromal symptoms in 21 cases, and in five others no history of symptoms was obtained, so that in one-third of the 79 cases there were either no subjective symptoms or they were too slight to attract notice. It must be remembered, however, that most of these cases were not under observation until eclampsia had developed, cases not being admitted to the hospital until the advent of labor, or in case of emergency. The urine had not been examined up to the time of their admission, and they belong to a class of women who are not observant of their symptoms at any time, so that warning symptoms may have been present and passed unheeded. Of the 53 patients who gave a history of symptoms, 37 complained of frontal headache, either as the only symptom, or

combined with others; 33 had vomiting; 19 had epigastric pain; five had been noticed by their friends as being more stupid than usual; five complained of blurring of vision or blindness for some days previous to the attack, while several others complained of it just before the convulsions appeared; three patients had twitching, and one was delirious for twenty-four hours before the graver symptoms appeared; one patient had jaundice. These symptoms were complained of as having been present for from an hour or two before the attack up to three months. Twenty-three had more or less edema at the time of entrance, usually of the feet and ankles. In only 10 cases was edema of the face and hands noticed at entrance, though in six cases it developed after delivery. Edema of the lungs was present in one case at entrance.

Examination of the urine showed albumin in all except two of our cases, varying in amount from a very slight trace up to two per cent. or even more. Blood and casts were found in almost all the cases, but were occasionally absent. In two of the 79 cases there was no albumin in the urine and the sediment was normal. The urea was quantitated in so few cases that the results are of no value, but in those few cases it was diminished. Examination of the urine at the time of discharge gave these results: In 14 cases there was no albumin in the urine at discharge. In 20 cases no record of the condition at discharge was made. The other cases showed albumin varying from a slight trace up to one-eighth per cent., with nothing abnormal in the sediment. One case showed one-half per cent. albumin, with blood and casts in the sediment, and was referred to the Massachusetts General Hospital for treatment. The blood and casts disappeared in the majority of cases by the fifth day. In only one case did they persist as long as the fourteenth day.

Convulsive attacks, usually epileptiform in character, are the chief diagnostic signs of the disease. The patient may never recover from the first convulsion, or she may recover after many severe attacks. The 58 cases in our series who recovered averaged six convulsions each; 12 had only one convulsion; one patient recovered after twenty-five convulsions.

The 21 fatal cases averaged 11.9 convulsions each, one patient having forty-six attacks. Twenty-one of the 79 cases died, a mortality of 26.5 per cent. This compares very favorably with the statistics of other maternity hospitals, which vary all the way from Schreiber's mortality of 20 per cent. in 137 cases to those of Pajot, which give 50 per cent. mortality.

Of 32 ante-partum cases 10 died, a mortality of 31.2 per cent.; of 22 inter-partum cases six, or 27.2 per cent.; and of 25 post-partum cases five, or 20 per cent., died. This shows that the prognosis of post-partum eclampsia is rather more favorable than in the other two forms.

Of the 57 primiparae 12 died, or 21 per cent., which is about the same as Schreiber found in his series, as 19.8 per cent. of his primiparae died. On the other hand, his mortality among multiparae was 22 per cent. as against 41 per cent. in our series. Of the patients who had no premonitory symptoms three died, two of them having had only two convulsions each, or less than the average for those who recovered.

The prognosis in a given case must always be a serious one. We have no standard to guide us in the individual case. If marked prodromal symptoms are

present the prognosis is somewhat worse than if they are absent.

The number of convulsions is not a sure guide to the gravity of the case, as in our series patients died after one convulsion, and recovered after twenty-five; but in the main it may be said that the more convulsions the patient has the worse the prognosis. The urine gives us no information as to the probable outcome of the case, as there seem to be no differences in its characteristics whether the patients die or recover. Possibly a systematic examination for urea might show something, but the quantitative test for urea was not made a sufficient number of times in these cases to form any conclusion as to its value. The prognosis is also better in those cases which have been under observation and treatment from the first than in those in whom treatment is begun later, and also is slightly better in primiparae.

Of the cases in this series one had had eclampsia with her first child, and survived both attacks, while a second had a recurrence during a subsequent labor and died. In one case the convulsions ceased on the second day, under treatment, and the patient seemed out of danger on the fourth day, but the convulsions recurred on the fifth day, and she died on the seventh day. Another patient relapsed on the fourth day after having been without symptoms for twenty-four hours, but made a good recovery. These two cases show how guarded a prognosis must be given in any case even though the patient seems to be doing well.

Treatment.—The treatment has been along the same general lines in all cases, with minor differences according to the different services in which the cases occurred. In the main, the treatment has been to empty the uterus as rapidly as the conditions of the cervix, etc., permit, and the encouragement of all excretions, the object being to secure as rapid an elimination of the toxins as possible.

I have one general criticism to make in regard to the treatment, and that is, that the disease seems to have been treated in many cases at the expense of the patient, and that stimulation has been too often neglected, in spite of the fact that the general treatment is markedly depressant in its effect. After making a careful study of the records it seems evident to me that shock after operative delivery has played a considerable part in the death-rate, and I should urge most strongly the application of the same principles after operative delivery that we employ after a severe surgical operation. It seems to me that it is along this line that we can do the most to reduce the mortality, especially if we employ prophylactic measures instead of waiting for the symptoms of shock to develop.

There are a few special points about the results of treatment that deserve mention:

Pilocarpine was used in the treatment of 56 cases, five of whom died of pulmonary edema, which illustrates the danger of giving that drug to unconscious patients.

Morphia was used in two cases to control the convulsions. One-fourth-grain doses were given in both cases, and repeated once after a two-hour interval. Both patients developed alarming symptoms after the second dose, the respirations dropped below 10 and cyanosis appeared. The treatment was promptly suspended and both recovered. Veit, who is the chief advocate of this method of treatment, recommends

one-half-grain doses after each convulsion until the convulsions cease. It may be that both of these cases had a special idiosyncrasy for opium, but after seeing these cases I should hesitate about the use of morphia in any but the smallest doses, and should be very careful about repeating it. It seems to me that the physiological action of morphia is practically the opposite of what we are trying to effect by our other treatment, and in this disease of lessened excretions the danger of cumulative action in case of repeated doses becomes much increased.

Saline infusion was tried in eight cases, four of which died. Two were *in extremis* at the time of infusion and were only given one pint each, so that the treatment was not given a fair trial. Of the six cases in which the treatment was thoroughly carried out four seemed hopeless, and the infusion was tried as a last resort; two of the patients made good recoveries. A third reacted well to the treatment and seemed to be convalescing, but relapsed on the fifth day and died on the seventh day. The fourth case did not react at all. In the two other cases the infusion was given as part of the routine treatment, and both made good recoveries. The fact that out of four seemingly hopeless cases two recovered would seem to indicate that this treatment is worthy of careful trial, but the data in regard to it are too slight to show anything definite. Saline infusion acts in three different ways in these cases: First, as a cardiac stimulant it lessens the liability to shock very markedly; in the second place, it acts as a stimulant to the various secretions and aids materially in the excretion of toxins, as is shown by the fact that the excretion of urine comes up much more rapidly in the cases which have been infused than in those which have not; and, thirdly, it serves to dilute the toxins in the blood, and in this way lessens the irritation caused by them during excretion. For these reasons it seems to me the most rational treatment to adopt in all cases as a routine measure, and in suitable cases it may be combined with venesection with great advantage.

In 26 out of 64 ante- and inter-partum cases the convulsions ceased as soon as the uterus was emptied, which points to the value of immediate delivery as a therapeutic measure. Two cases were treated expectantly and recovered without resort to operative delivery; one of these miscarried a month after leaving the hospital, and one went to full term and was delivered of a living child. Neither case showed any signs of eclampsia during or after labor. While in 26 cases delivery ended the trouble, on the other hand the convulsions began after labor in 25 cases. The mortality among the latter class of cases was distinctly less than in the other two classes, so that it may be fairly claimed that emptying of the uterus is of marked benefit to a large proportion of cases, especially when adequate measures are adopted to guard against shock.

Operative delivery was resorted to in 49 out of 56 ante- and inter-partum cases, with 16 deaths. Four died of edema of the lungs, so that only in 12 can the operation be said to have played any part, and I feel that shock was the most important element in these. Twenty-five children were stillborn or died a few hours after birth. Twenty-seven versions were done and 10 children saved. Of the others nine were less than seven months, and were either stillborn or died in a few minutes; four were between seven and eight months; two craniotomies were done, the children be-

ing already dead; only two children were lost who were not premature or dead at the time of operation; 20 children were delivered with forceps, four of whom were still-born; four children were born dead after normal labors, one being macerated, the mother having had severe symptoms for two weeks before convulsions developed, labor coming on with the attack; three women miscarried before the fifth month.

In the 25 post-partum cases three children were lost. One of these was between six and seven months, the mother having had severe symptoms for ten days. One was stillborn, with forceps, after a hard labor, and one died of convulsions on the second day. One child developed convulsions on the second day, and had over twenty in the next forty-eight hours, but recovered.

Of the cases of threatened eclampsia little need be said. Barring the convulsions they presented no differences from the others. They had the same symptoms, and the urine showed the same changes, but under appropriate treatment they recovered without having convulsions. In five of the 11 the symptoms first appeared during labor, but were relieved by prompt emptying of the uterus.

Clinical Department.

A CASE OF UTERINE FIBROID.¹

BY GEORGE H. WASHBURN, M.D., BOSTON.

Miss X., age twenty-six; sent by Dr. Faunce. Seen first on March 15, 1899, when she gave the following history: Menstruation began at twelve years. Was regular till 1890; after that somewhat irregular but nothing special till the spring of 1897, when the menstruation was more frequent, sometimes coming every two or three weeks. The quantity each time, however, was not excessive until December, 1897, when she had a hemorrhage lasting ten days and passed many large clots. She was then cured by some physician and then had no flow whatever till July, 1898. This first catamenia was normal but afterwards the intervals were irregular and there was flowing and considerable pain. In January, 1899, flowed for three weeks, large clots and severe pain. Then followed a period of eight days without any flow. Then there was a return of the profuse flowing, lasting until a week ago. Bowels regular, appetite poor, digestion fair, some gas, micturition about normal.

The patient when first seen by me was very pale, the skin a pasty white and the lips almost colorless. There was some complaint of a fulness in the bowels. She was easily tired on exertion. The body was plump, and she had the appearance of one who had been exsanguinated by some accident. The flow had been absent only a few days, but she was apprehensive of its return. Vaginal examination revealed an open os, with a large mass pressing down as if to force itself through; the surface smooth and evenly rounded. With the other hand on the abdomen the tumor was felt as an evenly rounded mass, not very hard, rising almost to the umbilicus. The feeling was almost that of a pregnant uterus at five months.

¹ Read before the Obstetrical Society of Boston, April 19, 1898.