As the value of the induction of scopolamine-morphine narcosis in women in labour has been a good deal debated of late in the medical press, it may be of interest to give the results of observations recently made on 104 cases at the Maternity Hospital, Edinburgh.

The drugs were given in each case with a view to the production of a painless labour by inducing a peculiar light degree of narcosis, to which Gauss gave the name of twilight sleep. In this condition, when perfectly induced, there is both amnesia or loss of memory of present events, and analgesia or freedom from pain.

As the result of our observations we heartily endorse Gauss’ claims as to the merits of twilight sleep. We found that in nearly every case the narcosis reduced the pain and shock of childbirth, and in 50 per cent. of cases entirely abolished both, as well as erasing from consciousness all memory of the lying-in process. Indeed, in many cases after delivery, instead of being exhausted in consequence of pain and shock, the mother seemed rather to have been stimulated and even exhilarated by the experience. The child itself is occasionally born in a state of twilight sleep, a condition sometimes so closely simulating white asphyxia as to create alarm in the inexperienced, but this condition soon passes off and usually requires no treatment whatever.

As a routine practice, before putting any patient under the influence of scopolamine-morphine, we first obtained her history and then made a thorough examination of her condition. We examined her heart, lungs, and kidneys, took her pelvic measurement, noted the presentation and position of the child, the state of the os, the condition of the foetal heart, and finally registered the mother’s pulse and temperature. We then put her under the best possible conditions for the induction of twilight sleep. She is given a quiet room free from all noises. The blinds are drawn down to avoid distractions and assist in producing a drowsy, restful state of mind, and her ears are plugged with cotton-wool to damp all unavoidable noises. She is put in charge of a competent nurse trained to give hypodermic injections and with instructions on no account to leave the patient unless relieved by another nurse. The bowels and bladder having been emptied and the pains
having become regular and strong, she is now ready for the first injection. The first dose, which consists of \( \frac{1}{4} \) gr. morphia and \( \frac{1}{50} \) gr. scopolamine, we give as early as possible in the first stage of labour consistent with the pains being regular and fairly strong. In a very short time she sinks into a state of light narcosis, from which she begins to emerge, as a rule, in about three-quarters of an hour.

The second dose is now given, which consists of \( \frac{1}{15} \) gr. of scopolamine, and this dose is usually repeated hourly till the child is born.

In the majority of cases we found this dosage sufficient to keep her continuously in a condition of twilight sleep. In some cases, however, where the pains were very strong, we had to increase the dose to \( \frac{1}{10} \) gr. or even to \( \frac{1}{30} \) gr. of scopolamine in order to maintain the narcosis, and in a few very refractory cases we had to repeat the morphia more than once, as well as to administer several whiffs of chloroform in order to keep her under. And it is worthy of note that the more experience one has of the treatment, the better one is able to judge as to proper dosage in unusual cases, the more favourable the results obtained, and the greater one's confidence grows in the perfect safety and value of the narcosis.

And it is an undoubted fact that the mental attitude of both medical attendant and nurse have a specially powerful influence upon the patient when she is well under the influence of the narcotics, for in this condition she is evidently extraordinarily suggestible. To have perfect faith oneself in the efficacy of the treatment assists materially in promoting its success. And vice versa: if the attendant nurse is weak, negative, and easily thrown off her balance, the patient invariably becomes restless and difficult to handle.

It is essential that the physician thoroughly understand the method, and that he be full of the faith and confidence born of knowledge and understanding. And it is equally essential that the nurse be thoroughly competent and able to handle the patient with firmness and confidence. It is a great mistake to imagine that because the patient is apparently in an unconscious state that she is unable to sense one's mental attitude. She is in reality much more amenable to mental influence in this condition than she is in normal consciousness; and, of course, patients vary very greatly in susceptibility to this influence. Personality is a very important and powerful factor in managing these cases, as,
indeed, it is in the case of patients of all kinds. The operation of this factor in success explains why some men make a brilliant success of twilight sleep, while others make a miserable failure, although using the same drugs and dosage.

By giving small doses of scopolamine, repeated with sufficient frequency to keep her in that state of amnesia and analgesia to which the term twilight sleep is applied, one can keep the patient entirely oblivious to her surroundings. At the acme of her pains she may arouse herself and make a great outcry, but she relapses into the twilight as the pains subside.

A few of our patients were very restless, noisy, and obstreperous throughout the whole of the treatment, and yet, when questioned afterwards, they had no recollection whatever of anything that happened.

When the head is on the perineum she is especially liable to be noisy, but a little chloroform soon puts her under again. After delivery she usually falls into a deep sleep, lasting, on an average, from four to ten hours, from which she awakens refreshed and without the slightest sign of exhaustion.

The course of the puerperium is uniformly prosperous, for there is absence of exhaustion; the lactation is normal, the involution is satisfactory, and the recovery is more rapid than in the average case of natural delivery, because the course has been freed from shock and fear. In a small minority of cases, however, there exists an idiosyncrasy towards scopolamine, and in them the method fails. In such cases there is no amnesia, and instead of producing narcosis the drugs may cause excitement and even delirium. As soon as these indications arise the treatment should be immediately stopped.

In our early cases we followed rigidly the Freiburg technique, which necessitates very close watching and involves the use of the memory test as an indication for a further injection.

An essential requirement for the induction and maintenance of twilight sleep is that the patient be kept as quiet and undisturbed as possible. For this reason some obstetricians, who use the memory test, refrain from vaginal examinations during the treatment so as to avoid arousing the patient. They cannot, however, apply the memory test without arousing her. We, therefore, soon came to the conclusion that, on the whole, the application of the memory test was much more objectionable than frequent vaginal examinations, for the latter could be made without awakening the patient, whereas the former could not. Moreover,
internal examination furnishes valuable information regarding the state of the membranes, the condition of the os, and the progress of labour—facts that cannot be obtained in any other way: whereas the memory test often gave no reliable information, for we found that a test object may be clearly recognised every time it is shown and yet there may be complete amnesia. And furthermore, it is sometimes difficult to extract anything intelligible from a mentally confused and drowsy patient. Therefore we soon discontinued the memory test, but did not hesitate to make vaginal examinations when deemed necessary.

Two labours were unduly prolonged owing to the membranes being so tough that they refused to rupture without interference. In one case the first stage of labour would have been shortened several hours had we made the necessary vaginal examination. Finally, we resorted to a routine method of hourly injections, as described in the foregoing pages, and made occasional vaginal examinations to ascertain the progress of labour.

This routine method of controlling patients under twilight sleep has been employed by Dr. Haultain at this hospital on previous occasions and with great success, and it was under his supervision that the present series were conducted. The results we obtained in the present series of observations were equally encouraging, striking examples of which are given in detail later.

This simplified technique allows twilight sleep to be carried out at home in the case of the better-class patients, and frees the obstetrician from the necessity of constant attendance, as a competent nurse trained to give injections can be left in charge, and the physician phoned for when complications arise or when the head is on the perineum.

But, unquestionably, ideal conditions can alone be provided at a properly staffed and appointed institution, where physicians are in constant attendance and the supervision is of the closest kind.

During the first quarter of the year 1918, at the Maternity Hospital, Edinburgh, we gave scopolamine-morphine to 104 patients, of whom 64 were primiparous and 40 multiparous. The results obtained in amnesia and analgesia are given in the following tables:

| Primi parae         | Multiparae        |
|---------------------|-------------------|
| Complete amnesia    | 50 per cent.      | 52½ per cent. |
| Partial amnesia     | 39 "              | 40 "           |
| No amnesia          | 11 "              | 7½ "           |
| Complete analgesia  | 59 "              | 57½ "          |
| Partial analgesia   | 38 "              | 40 "           |
| No analgesia        | 3 "               | 2½ "           |
The term amnesia is applied to that mental condition in which there is complete loss of memory of all events occurring after a certain injection and lasting until consciousness is regained after delivery. In this state the patient is utterly unconscious of the birth of her child. In many cases where the amnesia was incomplete, the outstanding impressions recollected were the strong pains experienced when the head was being born. This constituted an "island of memory," and if previous impressions had formed other "islands," the series constituted stepping-stones by which she mentally retraced what she fancied to be the whole course of her labour. On questioning her, however, one soon perceived that her mind had been in reality for the most part a blank while she was undergoing treatment.

It will be observed from the foregoing tables that only 11 per cent. among primiparae and 7½ per cent. among multiparae remembered the whole course of their labour. Where the treatment was prolonged there was always some amnesia. The no-amnesia patients included those having few doses, and cases where treatment was begun late in the second stage. It was curious to observe that in some cases where there was great outcry and apparently great suffering there was nevertheless complete amnesia. One very uproarious patient stated afterwards that she had a sort of dazed recollection of having had a nightmare. Only 3 per cent. of primiparae and 2½ per cent. of multiparae had no analgesia. Even in those cases where there was no amnesia, most of them admit that the injections diminished the pain. In two cases, where the whole course of labour was clearly remembered, there was no pain whatever. Notwithstanding that many patients came into hospital too far advanced in the second stage to derive much benefit from the treatment, about 97 per cent. of all cases treated derived some benefit, which is certainly a remarkable result.

We shall now consider the working and effects of the narcosis more in detail.

**Effects on the Labour.**—Pains that are irregular are rendered steady and regular by the narcotic. In some cases, however, where the labour seemed to have been arrested, we found that the contractions were going on all the time, but gently and imperceptibly, so that an external os dilated one finger would in the course of a few hours be found fully dilated. Often the lessening of the contractions is more apparent than real, for they are so painless they go on unobserved.

In the first stage the narcotic tends to steady and prolong the
period of contraction, but it affects the length of this part of the labour very little.

In the second stage labour is prolonged, especially in primiparae, mainly due to the lack of voluntary expulsive effort, but also in a measure to the slowing of the uterine contractions. The resultant easy and gradual dilatation of the maternal passages has the following advantages:

It diminishes shock, it lessens the risk of perineal lacerations, and it gives ample time for head moulding.

Twilight sleep increases the percentage of forceps cases. In this series of observations it was 24 per cent. Some cases were accounted for by persistent occipito-posteriors, and others by varying degrees of pelvic contraction. In two cases forceps was put on because the patients were so noisy and obstreperous during pains that we gave chloroform and delivered, although the head was making fair progress. Some of our forceps cases would very likely have delivered spontaneously had we given them sufficient time, but in the latter half of this series we usually interfered instrumentally if progress was slow as the head approached the perineum and the external parts were sufficiently dilated to allow the easy application of forceps.

We have had healthy, vigorous children of normal weight—one of 6 lbs. 12 ozs.—delivered through a pelvis of conjugata vera $3\frac{1}{2}$ ins. and with contraction throughout, by giving plenty of time for dilatation of the passages and head moulding.

It has been urged as an objection to twilight sleep that it greatly increases the number of forceps cases; but when the passages are fully dilated and the head is down on the perineum, where is the objection to applying forceps? With proper care as to delivering the head between pains, removing the forceps before the head is completely freed, and pressing it out gently from behind the anus, perineal tears can, in most cases, be avoided. Thus the labour may be terminated sooner than otherwise, and the doctor and nurse liberated for other patients. An experienced obstetrician can apply low forceps without the slightest danger to mother or child.

The third stage was very little affected. The placentas in about half the cases were spontaneously expelled within an hour. Two were adherent and had to be removed manually. The rest were expressed from the vagina.

The Puerperium.—The condition of the great majority of the patients after delivery was good. The period of recovery was
shorter than is the case with women who have gone through labour in the ordinary way. Lactation was not interfered with. Involution was normal, and there was a general feeling of well-being that was very encouraging. The following cases, however, were exceptions to the general rule of restfulness and uninterrupted recovery in the puerperium.

1. An elderly primipara, æt. 35, who was admitted with hyperemesis gravidarum and bronchitis. Nine injections were given, which much diminished the vomiting. She gave birth to a seven months', very evil-smelling, macerated fetus. There was a good deal of post-partum haemorrhage and collapse. She died of broncho-pneumonia within a fortnight.

2. An elderly primipara, æt. 35, justo minor. Breech case. Thirty injections. Child delivered dead and slightly macerated.

3. Full-time primipara, æt. 24. Came in with eclampsia. Three fits before admission. Os size of half a crown. Two injections. As fits continued and os fully dilated, we delivered with forceps. Recovered slowly after delivery of child. Well in four weeks.

4. Multipara, æt. 27. Second pregnancy. Conjugata vera less than 3½ ins. Forty-one injections. Dr. Lackie delivered her by pubiotomy. Died in a few days of tuberculous broncho-pneumonia. Suffered from phthisis from childhood, and was not expected to live to maturity. Father, sister, and two uncles died of phthisis.

5 and 6. Two other cases developed puerperal fever, but ultimately made a good recovery, and were discharged quite well.

In our opinion scopolamine-morphine narcosis cannot be held accountable for the unsatisfactory puerperal condition of the foregoing patients.

Our experience goes to show that, after long and trying labours, patients who undergo treatment make a quicker recovery than those who have been delivered without it. Most of our patients we allowed up for an hour on the third day of the puerperium. We believe that this early rising improves the circulation, promotes involution, and tends to prevent the possibility of retroversion of the uterus. We noted the blood-pressure before rising and again in the evening of the same day, and it was common to find that it had increased 3 or 4 mm. of mercury. Our twilight patients for the most part availed themselves with alacrity of the privilege of early rising. It seemed to aid in banishing the delusion that the lying-in process was a pathological one, and that the puerperal condition, being one of disease, needed to be handled with great caution.

The Use of Chloroform.—Some twilight patients are so well
under control they can easily be delivered without the aid of a general anaesthetic. In other cases, when the head is on the perineum, the pains often become so strong that patients come out of narcosis and an island of memory is formed. In all such cases it is better to give chloroform, as from such isolated memories the mind automatically tends to build up a fanciful picture of the whole course of labour, and such patients will afterwards declare the treatment gave them no relief whatever. Giving chloroform when the head is being born will prevent the patient forming an island of memory and aid in producing complete amnesia in many cases that would otherwise be only partial. It also aids in preventing perineal tears by relaxing the parts during expulsion.

The use of chloroform at any stage is a great aid in keeping the patient under, and in quietening her when very restless. Pregnant women take chloroform very well, and only a small amount is required to keep her in the twilight condition when she is taking scopolamine-morphine. In restless and delirious cases chloroform is invaluable. One physician uses scopolamine-morphine in the first stage only, and controls the second stage entirely with chloroform, giving the patient a whiff as often as may be necessary. With this liberal use of chloroform he claims to get very good results.

*Effects on the Child.*—Out of 104 labours conducted under scopolamine-morphine narcosis, 98 living children were delivered and 7 were dead. The following is a detailed list of the dead children:

We had only one case of twins in this series of twilight cases. The first of the twins was delivered dead and slightly macerated. Three patients gave birth to very macerated foetuses, one from a case of hyperemesis, a second from an eclamptic. One was a breech case in a primipara, æt. 35. One was from an induced labour lasting four days in a woman eight months gone. One was a hydrocephalus whose head had to be punctured before delivery was possible. There is no evidence that any of these deaths was due to twilight sleep.

Out of ninety-eight children born alive, twenty-two were in a state of oligopnoea. In this condition the child gives a single gasp or a cry at the moment of birth and then makes no further attempt at breathing. It is very limp, and the condition closely resembles that of blue asphyxia. It is a transient condition, however, and usually passes off in about twenty minutes.
Scopolamine-Morphine Narcosis

Oligopnea is likely to occasion anxiety to the inexperienced, and death may be caused by too energetic treatment. The child is simply in a state of twilight sleep like the mother, and will shortly recover. We observed nothing unusual in the subsequent history of these children up to the time of discharge from hospital.

Effects on Sleep.—Nearly all the patients slept after the labour was over and recovered consciousness in from four to ten hours, for the most part feeling refreshed. Three patients felt somewhat dazed during the whole of the next day and unusually drowsy for several days thereafter.

One woman, a weak negative character, was in a hazy mental condition and the victim of hallucinations of sight and sound for six days after delivery. She dozed at intervals but had no continuous refreshing sleep. Bromidia induced regular sleep and thus cured her condition. Particulars of her case are given later.

The majority of cases were in twilight sleep in the interval between pains. Fifteen were asleep the whole time, remaining apparently in complete unconsciousness even during contractions. Ten remained awake during all the treatment; some of these, however, had only two or three doses, having arrived too far advanced in labour to be put under a proper course of twilight sleep.

Four common clinical features of the narcosis are thirst, flushing of the face, mental confusion, and restlessness. Thirst was present in nearly all our cases. Often the restlessness of the patient drew our attention to the dry and parched condition of the lips, and when water was offered it was taken greedily and the restlessness disappeared. When the narcosis lasts longer than six or eight hours most patients need catheterising. It is to be remembered that a full bladder will impede the progress of labour.

Mental confusion was present in the majority of cases. In a few cases where the treatment was prolonged the patient rambled disconnectedly the whole time. A few had hallucinations of sight or sound, or both. This mental derangement passed away during the after-labour sleep in all cases except two. In one case it persisted for a day; in the second case for six days after the birth of the child.

Restlessness.—Marked restlessness occurred in 14 cases out of the 104 that had the treatment. In some it was continuous throughout, with periods of exacerbation at the acme of a pain. Two cases became almost maniacal at the height of their pains.
Both were multiparæ: one with a conjugata vera of $3\frac{1}{2}$ ins., with strong pains and slow advance and controlled by four whiffs of chloroform at different times. (See Case VIII., p. 98.) The second had roomy passages but the membranes were tough; seventeen injections—the last two doses we increased to $\frac{1}{300}$ gr. scopolamine—and, finding it made her still more unmanageable, we made a vaginal examination and found the os fully dilated, the head nearly down on the perineum and the membranes unruptured. We ruptured the membranes, put on forceps, and delivered her in five minutes. She made a good recovery in the puerperium. After this case we no longer hesitated to make vaginal examinations when necessary. In three cases the restlessness took the form of the patient trying to get out of bed. These were easily controlled by being ordered firmly to lie down. As we have already said, most twilight patients are very suggestible.

In two cases, increasing the dose from $\frac{1}{450}$ gr. scopolamine to $\frac{1}{300}$ gr. scopolamine increased the restlessness. All cases of restlessness were easily brought under control with chloroform. The following is an abstract of instructive cases:

**Case I.**—*Three Doses of Morphia.*—Multipara, æt. 30. Third pregnancy, abdomen very pendulous, pelvis roomy, pains very strong. Abdominal binder put on. Seven injections; first, sixth, and seventh of $\frac{1}{4}$ gr. morphia and $\frac{1}{450}$ gr. scopolamine. Very noisy. Child born an hour after last dose. Cried vigorously as soon as born and thrived well afterwards. Chloroform was not given as the head was coming through, as she appeared to be well under the influence of morphia. Only partial amnesia, as she remembered the birth of the child. Both mother and child were quite well the next day. A whiff of chloroform when the head was on the perineum would have produced complete amnesia.

Some obstetricians assert that the child will be born in a condition of oligopnœa if morphia is given within three hours of birth. This is not our experience.

**Case II.**—*Two Doses of Morphia.* Labour could have been much shortened if a Vaginal Examination had been made earlier.—Primipara, æt. 28. Pains very strong. Forty-one injections. First injection $\frac{1}{4}$ gr. morphia and $\frac{1}{450}$ gr. scopolamine. Last thirteen injections of $\frac{1}{100}$ gr. scopolamine, as she began to make an outcry. Twenty-seventh injection of $\frac{1}{6}$ gr. morphia and $\frac{1}{450}$ gr. scopolamine. This quietened her somewhat, but she continued to be restless and talked nonsense continuously. As she was making very slow progress, after the thirty-eighth injection a vaginal examination was made and the membranes were found unruptured and very tough. Ruptured them with a stylet. Child
Scopolamine-Morphine Narcosis

was born within four hours. Cried vigorously as soon as born. Gave chloroform when the head was emerging. Complete amnesia and analgesia. Mother and child both well the next day.

Case III.—Two Doses of Morphia. Did not give Chloroform on Delivery.—Multipara, at. 37. Second pregnancy. Strong pains. Restless and noisy. Eleven injections. First dose of $\frac{1}{4}$ gr. morphia and $\frac{1}{10}$ gr. scopolamine; sixth dose $\frac{1}{4}$ gr. morphia and $\frac{1}{15}$ gr. scopolamine. The rest were $\frac{1}{15}$ gr. scopolamine. Pains became very strong towards the end and the child was delivered so rapidly that there was not time to give chloroform. Child cried as soon as born. Partial amnesia and analgesia. She remembered the birth of the child. Mother and child both well the next day.

Case IV.—Contracted Pelvis. Two Doses of Morphia; Four Whiffs of Chloroform.—Primipara, at. 20. Conjugata vera 3½ ins. Very strong pains. Thirteen injections. First dose $\frac{1}{4}$ gr. morphia and $\frac{1}{10}$ gr. scopolamine; ninth dose $\frac{1}{4}$ gr. morphia and $\frac{1}{15}$ gr. scopolamine; last four doses were $\frac{1}{50}$ gr. scopolamine. Slept between pains but made a great outcry at the acme of pains. Quieted her four times with chloroform. Child born in a state of oligopnoea. No tear of perineum. Child breathing normally in twenty minutes without any special treatment. Complete amnesia and analgesia. Mother and child both well the next day.

Case V.—Contracted Pelvis. Two Doses of Morphia; Three Whiffs of Chloroform. Her Doctor sent her in for Cæsarean.—Primipara, at. 19. Conjugata vera less than 3½ ins. Eleven injections. As she was very noisy during the first three hours we gave her three whiffs of chloroform. The head was bobbing at the brim during the first six doses. Before giving the seventh dose a vaginal examination was made and the os was found fully dilated. We ruptured the membranes and gave $\frac{1}{4}$ gr. morphia and $\frac{1}{10}$ gr. scopolamine. After this she gave no further trouble. The head gradually moulded; the external parts, which were unusually small, dilated, and the child was delivered spontaneously without any tear of the perineum. Great moulding of the head. The mother was not given chloroform as the head emerged. The head was kept on the perineum for nearly two hours to insure full dilatation of the parts. Child born in oligopnoea; normal breathing in thirty minutes without treatment. Complete amnesia and analgesia. Mother and child both well the next day.

Case VI.—Contracted Pelvis. Two Doses of Morphia. Thirty-three Injections.—Primipara, at. 27. Justo-minor between 3½ ins. and 3¾ ins. Thirty-three injections. Second dose of morphia about three hours before birth. After the head was two hours on the perineum, forceps
was applied and child delivered. Mother slept a good deal during treatment. When awake she incessantly talked nonsense. Much moulding. Child in oligopnoea. Breathed normally in twenty minutes. Complete amnesia and analgesia. Mother drowsy the next day. Child quite well.

**Case VII.**—Inevitable Abortion of Four Months. Two Doses of Morphia.—A good deal of bleeding during the night before admission; packed cervix and vagina and gave twelve injections. First and fifth doses of $\frac{1}{4}$ gr. morphia and $\frac{1}{150}$ gr. scopolamine. Removed packing in twelve hours and found embryo on top of it. She was curetted without being aroused. Complete amnesia and analgesia. Felt rested the next day. Left hospital in a fortnight quite well.

**Case VIII.**—Maniacal at Height of Pains. Difficult to Control. Four Whiffs of Chloroform.—Multipara, æt. 33. Third pregnancy. Conjugata vera 3½ ins. The first pregnancy was a three-months’ abortion. The second pregnancy was a six-months’ abortion. External parts very small. Fifteen injections; the first of $\frac{1}{4}$ gr. morphia and $\frac{1}{150}$ gr. scopolamine, the following eight doses of $\frac{1}{150}$ gr. scopolamine. She made such an outcry we gave her four whiffs of chloroform and made the last six doses $\frac{1}{30}$ gr. scopolamine. Baby cried as soon as born. Great moulding. Complete amnesia and analgesia. Mother and child quite well the next day. It is doubtful if this child of 6 lbs. 14 ozs. could have been born spontaneously alive and well and without a tear of the perineum, through such a small pelvis, without the aid of twilight sleep.

**Case IX.**—Sent in for Pubiotomy. Conjugata vera less than 3½ ins. Very Small Woman. Two Doses Morphia; Four Whiffs Chloroform.—Multipara, æt. 31. Second pregnancy. First pregnancy a craniotomy. Thirty-two injections. Two doses of morphia; first and twenty-third dose. Twenty-two doses of $\frac{1}{150}$ gr. scopolamine; nine doses of $\frac{1}{30}$ gr. scopolamine. Chloroform four times. Pains very strong. Much outcry and restlessness. Head thirteen hours in engaging. Great moulding. Delivered spontaneously under chloroform. Child in oligopnoea. Normal breathing in thirty minutes. Mother and child quite well the next day. She said she never felt better in her life.

**Case X.**—Conjugata Vera 3½ ins. Two Doses Morphia; Four Doses Chloroform.—Multipara, æt. 21. Third pregnancy. First pregnancy still-born. Second pregnancy, forceps; lived ten days. Six injections; first and fifth doses of $\frac{1}{4}$ gr. morphia and $\frac{1}{150}$ gr. scopolamine. Very restless and noisy. Kept her under with four whiffs of chloroform and two doses of morphia. Child born spontaneously while mother under chloroform. Complete amnesia and analgesia. Mother and
child both well the next day. The last dose of morphia was given less than two hours before the birth of the child.

Case XI.—Conjugata Vera 3½ ins. Full Breech. Two Doses Morphia; Four Whiffs of Chloroform.—Primipara, æt. 30. Breech presenting and half-way down cavity. Labour going on twenty-four hours before admission. Sent into hospital by her doctor. Sixteen injections; first and sixth doses of $\frac{1}{4}$ gr. morphia and $\frac{1}{130}$ gr. scopolamine; four doses of $\frac{1}{46}$ gr. scopolamine; six doses of $\frac{1}{360}$ gr. scopolamine. Very restless and much outcry. Kept her under, with aid of four whiffs of chloroform. Full breech impacted on perineum. After an hour’s vigorous manipulation delivered a dead child of 7 lbs. 5 ozs. Mother next day said she felt well, but tired. Partial amnesia and analgesia.

Case XII.—Mental Confusion lasting for a Week after Delivery.—Multipara, æt. 34. Second pregnancy. First child, æt. 8, alive and well. Twenty-six injections. In a dozing condition the whole of the time. No evidence whatever of pain. Child born spontaneously without a tear of the perineum. Very vigorous child. Cried as soon as born. The mother persisted in a state of mental confusion, with hallucinations of sight and sound, for six days after delivery. Fell into a light doze occasionally but no proper sleep. Under treatment with bromidia she gradually recovered her mental balance and was quite normal again at the end of a week. Mother and child left the hospital quite well a week later.

Case XIII.—Conjugata Vera 3½ ins. Pubiotomy Case.—Multipara, æt. 33. Sixth pregnancy. Three boys craniotomied; two girls delivered dead with forceps. With the aid of twilight sleep and pubiotomy she now delivers a living child. Twenty-three injections. Head bobbed at the brim for twelve hours before engaging. Foetal heart regular and normal. Head impacted half-way down cavity. Dr. James Lackie did a pubiotomy and in less than five minutes delivered a healthy, vigorous child. Weight 8 lbs. Mother made a splendid recovery. Next day she said she felt a little sore about the pelvis but otherwise felt quite well. Mother and child left the hospital in excellent condition.

Case XIV.—Complete Amnesia and Analgesia with Four Doses.—Primipara, æt. 20. Four injections. First dose put her to sleep. Unconscious all the time. Child cried as soon as born. Mother and child quite well the next day.

The Number of Doses.—The number of doses given to each patient in the present series of observations range from a single one up to forty-one doses.
That a large number of injections can be given without injury to either mother or child is evident from a careful study of the cases cited above. Case II., given on page 96, had forty-one injections. There was complete amnesia and analgesia. Both mother and child were well the next day and were discharged from hospital in excellent condition. A difficult primiparous breech case had twenty-five injections. The child cried vigorously as soon as born, and mother and child were both quite well the next day. Case IX., given on page 98, had thirty-two injections. Both mother and child were quite well the next day. The mother said she never felt better in her life.

In the pubiotomy case, sketched on page 99, twenty-three injections were given. The child cried as soon as delivered. The mother's recovery was most satisfactory. Both parent and infant left hospital in perfect health.

The number of doses given has no direct relation to the degree of amnesia and analgesia attained. One case was in complete amnesia and analgesia from the first dose, the total number of doses being only four.

Only three patients out of 104 cases treated had a single dose. Twelve patients had two doses; twelve patients had four doses, and nine had six doses. Those having only one, two, or three doses reached hospital too far advanced in labour to derive full benefit from twilight treatment.

Hereunder is a complete statement in tabular form of the number of doses given to each patient:

| Number of Doses | Number of Patients |
|-----------------|-------------------|
| 1               | 3                 |
| 2               | 12                |
| 3               | 7                 |
| 4               | 12                |
| 5               | 6                 |
| 6               | 9                 |
| 7               | 6                 |
| 8               | 3                 |
| 9               | 5                 |
| 10              | 1                 |
| 11              | 4                 |
| 12              | 4                 |
| 13              | 1                 |
| 14              | 3                 |
| 15              | 4                 |
| 16              | 3                 |

Carry forward . . . . . 83
Scopolamine-Morphine Narcosis

| Number of Doses | Brought forward | Number of Patients |
|-----------------|-----------------|-------------------|
| 17              |                 | 83                |
| 18              |                 | 4                 |
| 19              |                 | 3                 |
| 23              |                 | 2                 |
| 25              |                 | 3                 |
| 26              |                 | 2                 |
| 32              |                 | 2                 |
| 33              |                 | 1                 |
| 37              |                 | 1                 |
| 41              |                 | 2                 |
| **Total**       |                 | **104**           |

Routine Treatment Carried Out in the Foregoing Series of Cases.

1. The patient was thoroughly examined before beginning the treatment. The state of the passages was determined and the pelvic measurements taken. Bladder and bowels were emptied, and pulse and temperature recorded.

2. She was put into a quiet, darkened room and all visitors were excluded.

3. The injections were begun as early as possible in the first stage consistent with the pains being regular and strong. The first dose consists of \(\frac{1}{4}\) gr. morphia and \(\frac{1}{150}\) gr. scopolamine. The second injection of \(\frac{1}{150}\) gr. scopolamine was given three-quarters of an hour later. Subsequent injections of \(\frac{1}{150}\) gr. scopolamine were repeated hourly until the child was born.

4. We found that morphia can be safely repeated at intervals of a few hours if the patient is difficult to keep under.

5. An occasional whiff of chloroform is very helpful in controlling restless patients. We always gave chloroform when the head was being born, if the pains were strong.

6. Water was given when the patient was thirsty, and she was catheterised when necessary. The condition of the lips is a good index of the need for water.

7. We unhesitatingly put on forceps if the head was well down and the parts well dilated.

8. The baby was removed as soon as born to prevent its cries arousing the mother and thus creating an "island of memory."

9. A child born in a state of oligopnoea must not be forcibly treated. We simply cleared the respiratory passages and kept it warm. In some cases we did a little very gentle artificial respiration.
10. As the patient needs to be constantly watched we kept a competent nurse in constant attendance.

11. It is very important to get a reliable and constant preparation of scopolamine and morphine. The doses are made up in tablet form which dissolves very rapidly without residue.

The varying results of different observers are due to four factors:

(i) The varying composition of the narcotics used.
(ii) Differences in dosage.
(iii) Personal idiosyncrasy to the drug.
(iv) The personality of the physician and attendants. The patient must be encouraged to have perfect faith in the treatment.

Conclusions.

Scopolamine-morphine narcosis is a great boon to the lying-in woman. It is a perfectly safe and efficient means of managing labour when intelligently used.

It is of special value in primiparae, in whom, as a rule, the first and second stages are long and painful; and in a prolonged second stage due to a large head or contracted pelvis, as it allows head moulding and dilatation of the maternal parts to proceed easily and gradually, without exhausting the patient. From the work that has already been done in perfecting this anaesthesia, there is not the shadow of a doubt that the treatment has come to stay, and that it will be an unqualified blessing to the motherhood of the future.

And there are obstetricians even now who would as soon consider performing a surgical operation without an anaesthetic as conducting a primiparous labour without scopolamine-morphine narcosis.

The only contra-indication to the use of twilight sleep is personal idiosyncrasy. Idiosyncrasy occurs in a small percentage of cases where scopolamine acts as an excitant rather than a sedative.

Absence of exhaustion after difficult and prolonged labours is one of its greatest advantages.

As now, more than ever, the importance of motherhood is being realised by the State, twilight homes should be established all over the country where lying-in women could have the best and closest attention.