omentum was adherent to the fundus of the uterus, and tightly stretched over the distended intestines. This distension was chiefly limited to the small intestines, which were full of fluid feculent matter; the cause of it was an obstruction of the bowel, at about six inches above the ileo-cæcal valve, where it was adherent to the uterus, only a very small passage still remaining open. A second obstruction, effectually preventing the passage of solid faecal matter, existed in the sigmoid flexure of the colon, which was also adherent to the uterus. The transverse colon was distended with flatus. With the exception of the fundus, almost the whole of the uterus had been destroyed by cancerous ulceration; and its place was occupied by a sloughing cavity, communicating with the vagina. The right kidney weighed only two and a quarter ounces; it was small and sacculated; very little of its secreting structure remained, and its ureter was dilated. The left kidney was normal; and so were the other organs examined.

CASE VI.—The last case I have to relate is that of a farm-labourer, aged 44, who had cancer of the right side of the tongue, encroaching somewhat on the soft palate. The disease had invaded the glands of the neck, especially those of the right side; and it was of nine months' duration. It had previously been excised, and subsequently destroyed by the galvano-cautery—only to return again, however. On account of the advanced nature of the disease and the impossibility of completely extirpating it, further operative treatment was not advised; but, subsequently, at the patient's urgent request, it was decided to remove the tongue and as much of the disease as could be got at. His general health was fairly good, though he was somewhat emaciated. Having been propped up, in the position usual for such operations, the mixture of chloroform and ether was administered, exactly as in the two preceding cases. Only partial anaesthesia was induced, with a view of obviating the ill effect of anticipated hæmorrhage. A gag was then introduced into the mouth, and the right cheek was slit freely open. The wire loop of the *écraseur* was next passed round the base of the tongue, behind curved-handled needles previously introduced. As soon as the *écraseur* was tightened up, the patient became pale, and ceased breathing. A few hasty turns of the screw sufficed to complete the removal of the tongue. The throat was mopped out with sponges, and examined for a foreign body, but none could be detected. Artificial respiration, tracheotomy, and galvanism were resorted to; but the patient could not be revived.

At the necropsy on the following day, rigor mortis was present, and the integuments were pallid. The lungs were firmly bound to the chest-walls by old adhesions. They were emphysematous and congested at their bases, but crepitant throughout. The trachea and larger bronchi contained some blood and mucus; and blood could be traced into the smaller bronchi, especially in the lower lobes. The right side of the heart contained a large quantity of dark semi-clotted blood, and the left side contained some fluid blood. The right ventricle was dilated; the left contracted. The valvular apparatus and the muscular substance were normal in every respect. The kidneys were large and congested, but otherwise healthy. There was nothing abnormal about the other organs examined.

I have observed that those who administer anaesthetics too often, do so without any fixed principles to guide them. This is lamentable, because, as many of these cases show, the fundamental laws of the anaesthetic art cannot be disregarded without entailing a deplorable sacrifice of life. I will here endeavour to state, in the briefest manner possible, what I consider to be the most important practical inferences to be drawn from them.

With regard to chloroform, then, subject to the attainment of the object in view, too much air cannot be given during its administration; and with regard to ether, too little air cannot be given during its administration. From this it follows, that a long time is required to induce anaesthesia by chloroform; but to produce the same result with ether, a short time is sufficient. Now, by a long time, I mean about a quarter of an hour, and by a short time, about five minutes.

Surgeons are not unfrequently to blame in this respect. How often one has heard it said to the chloroformist—"Be as quick as you can; I want to begin the operation in *five minutes*." In my opinion, this is equivalent to saying—"Kill at least 1 per cent. of my patients." Those inhalers are the best which most readily facilitate the fulfilment of these requirements. For giving chloroform, one with a wire framework, having a diaphragm of flannel, or some similar material, stretched over the top of it, on which to evaporate the anaesthetic, but open at the sides, would be very good; but a piece of lint, or the corner of a towel, properly used, would do as well. A graduated drop-bottle is neces-

sary in any case, as only a small quantity of chloroform should be poured on at a time, and this requires to be frequently renewed. For the administration of ether, Ormsby's inhaler seems to me the best; it was designed to fulfil the requirements just mentioned, and I have found it answer admirably.

There is only one other point I will now mention, and that is the importance of watching the respirations during the process. To do so properly, of course the epigastrium must be uncovered. It is of much greater value than feeling the pulse, since, when the latter stops, there, as a rule, is an end of the patient. Mr. Lister has very ably insisted on this. However, I have found it generally neglected at King's College Hospital.

ON THE OXYTIC ACTION OF QUININE, AND A METHOD OF PREVENTING IT; WITH CASES.

By NEIL MACLEOD, M.D. Edin., Shanghai.

DOES quinine excite contractions in the human pregnant uterus? Schröder, in his last edition of his *Lehrbuch der Geburtshülfe* (T. Auflage, Bonn, 1882, S. 484), regards this action of quinine as "problematic," and cites a number of authorities in support of this view. This question is of great interest to medical men residing in malarious districts, who are frequently called upon to treat neuralgia and fever of malarial origin in pregnant women, and has been answered in the affirmative by French, Italian, and more particularly German and Indian medical men; and in the negative chiefly by American physicians, who maintain that abortion after quinine given in malarial poisoning, is the result of the latter.

There are some difficulties which stand in the way of settling this question, but these may be set aside. Fever itself is known to stimulate the pregnant uterus to contraction so effectually, at times, as to cause abortion, but the fallacy which this involves may be avoided by observing the effect of repeated doses of the drug, as I was enabled to do in some of the cases recorded below. Cases of neuralgia are free from this objection.

In the later months of pregnancy, when the uterus is above the pelvic brim, pains can be easily ascertained by palpation to be accompanied or not by uterine contraction; but in the early months, it is practically impossible to ascertain the existence of these contractions; and the subjective pains cannot be accepted as sufficient evidence of uterine action, even in pluriparae, unless accompanied by blood discharge from the uterus. On the other hand, it is quite possible that many examples of this effect of quinine have been overlooked; as where "pains" have been present, but have not been severe; have been unaccompanied by blood discharge, or not followed by miscarriage or abortion; moreover, it is not unlikely that the use of opiates, in neuralgic cases, has interfered with the observation of the ecboic effect of the drug, a conjunction of remedies well illustrated in Cases II, III, and IV, recorded below.

The ordinary use of opiates in threatening miscarriage, suggested to me their administration before that of quinine in such cases, and the result was so encouraging in Case II, that I have, since then, used opium, morphia, and chlorodyne for this purpose, in several cases, and have now no hesitation in prescribing large doses of quinine to pregnant women suffering from malarial fever or neuralgia, or to reduce high temperature in other conditions. It is said that, in India, large doses of quinine are generally avoided in these cases, from fear of uterine disturbance (*Berliner Klinische Wochenschrift*, September 11th, 1882, S. 563), and, on inquiry, I find that a similar practice is generally prevalent amongst my colleagues in China. Hausmann (*Ibid.* S. 564) records a well-marked example of uterine contraction following the use of quinine in a case two months advanced in pregnancy, and expresses his accordance with the views of Hehle and Cochran, that the subjects most likely to be affected in this way are delicate, nervous women, wasted by a chronic ailment, and with a history of miscarriage. Hausmann concludes his paper with the remark, "since even a large dose (fifteen and twenty grains) only excited fleeting contractions of the uterus in my case, in spite of well marked predisposition, a therapeutic dose (which, however, he does not define), may be accompanied by excitation, or increase, of pains in still weaker persons, or by miscarriage with a very large dose." I regard fifteen grains as an ordinary "therapeutic" dose in malarial fever, such a dose having frequently to be followed by a still larger one to arrest the disease.

CASE I is only interesting as being probably predisposed to this effect of quinine. A thin, delicate, nervous primipara, at the com-

menacement of the ninth month, for a week before she was seen by a medical man, had suffered from fever which turned out to be remittent. On each of the evenings of October 26th and 27th, 1880, she took fifteen grains of quinine by prescription. I saw her, for the first time, on the 28th, when the first stage of labour was going on, she having spent an uneasy night, and the membranes having ruptured between five and six A.M. The labour finished in the evening. Here the temperature had been raised for a week without exciting pains, which, however, followed the administration of quinine. In this case there was no history of chronic ailment or miscarriage.

Before detailing the next case I may state that, up to this point, I agree with Schröder in his view that quinine was but a "problematic" oxytocic.

CASE II is of a much more interesting character; a pluripara, aged 29, having never miscarried, very thin, with a history of old spinal (bone) disease, and loss of power in the limbs, the latter being permanent. She had just recovered from a severe nasal catarrh and facial neuralgia—the description of the latter suggesting "lightning pains." I examined for, and found the patellar reflex well marked in both limbs. Sight was defective, and there was commencing optic atrophy. Six grains of quinine were given for neuralgia, about the middle of January, 1881, and were followed by uterine pains and contractions, so marked, that I was afraid to give any more that day, as I had intended doing. After these pains had ceased, I, however, tried three grains, but with a similar result. I then injected morphia subcutaneously, and kept her under its influence for two or three days, when the neuralgia ceased. She was seized on January 30th with quotidian ague, when I ordered one-grain doses of quinine every hour; but after the third dose the uterine pains set in, and I stopped the medicine. On the 31st, six doses, each twenty grains of soda salicylate, were given, without any apparent effect on the fever. On February 1st, ten grains of quinine were given after a quarter of a grain of morphia by the skin, and also forty grains of salicylate of soda by the rectum. No pains followed, but the temperature rose from 98° in the morning to 103° in the evening. On February 2nd, morphia was again injected subcutaneously, and followed by sixteen grains of quinine. February 3rd, morphia and twenty grains of quinine. February 4th, 9 A.M., morphia and twenty grains of quinine, followed at 4 P.M. by ten grains, and at 7 P.M. by other ten grains of quinine. From February 1st, no pains were observed or felt, and the fever, absent on the 5th and 6th, returned slightly (101.7°), on the evening of the 7th, when twelve grains of quinine were taken without morphia, were followed by uterine action, which continued all through the 8th. This patient gave birth to twins at full term in April.

CASE III.—A delicate pluripara, aged 36, three and a-half months pregnant, having threatened miscarriage in the second month, was seized with intermittent fever on May 5th, 1881, and on that day four doses of salicylate of soda, each twenty grains, were given, without any effect on the fever. On the evening of the 6th, the temperature being 103° , at 8 P.M., twenty-five minims chlorodyne; and at 9 P.M., fifteen grains of quinine were given. On the 7th, the temperature, from 99° in the morning, rose to 101.2° in the evening, and no pains having been felt, at 8.30 P.M. sixteen grains of quinine were taken without chlorodyne. On the 8th, at 1.30 A.M., pains and bearing-down came on, and ceased on taking twenty-five minims of chlorodyne. She left for Nankin on May 13th, and returned to Shanghai on August 29th, much reduced from chronic diarrhoea, being literally "skin and bone," and nearly seven months advanced in pregnancy. I saw her on board ship at 4 P.M., with a temperature of 105° and pulse 120. Fifteen grains of quinine were at once administered, and as she had had a starch and opium enema before I saw her, no other opiate was given. At midnight, the temperature being 104° , twelve grains more of quinine were taken. On the 30th, the morning temperature was 98.4° , and the stools being dysenteric, the large bowel was washed out with large enemata of a saturated solution of boracic acid in water, and the opiate enema continued. On the evening of the 31st the temperature again rose to 104° , and fifteen grains of quinine were given. There was no rise of temperature after the 31st, and no uterine disturbance manifested itself at any time. A child was born at full term. This case was a most anxious one, and, without opium, I would scarcely have ventured to give twenty-seven grains of quinine in eight hours. The patient was not a nervous one.

CASE IV.—A primipara, aged 23, delicate, very thin, with a highly nervous temperament, with a history of "fits" before her arrival in China, six and a half months pregnant, was first seen on March 3rd, 1882, at the end of the first week of what turned out to be enteric fever. Fifteen grains of quinine on the 3rd were followed by slight

rhythmic pains in the abdomen, not ascertained, however, by palpation, to be uterine. On the 5th, twenty-two and a half grains of quinine, followed in an hour by twenty-five grains of chloral hydrate and thirty grains of bromide of potash, were given, and no pains were complained of or observed. On the 7th, twenty-two grains of quinine were followed by uterine pains, which continued on the 8th, and were accompanied by foetal movements. Two doses of chlorodyne (each twenty-five minims), were followed by cessation of these pains. The interval between the two doses of chlorodyne is, unfortunately, not recorded. On the 9th, twenty-five grains of quinine, after twenty-five minims of chlorodyne, were given in the evening, and slight pains were felt during the night. On the morning of the 10th, twenty-five grains of quinine were given, and no pains are entered in my notes for that day; but on the following one, I observe that chlorodyne was given (there being one hard motion), and the expression "no pains" follows. This patient gave birth to a full-time child.

Other cases I have observed and treated in the same fashion; but as they were either under observation for only a short period, or as the evidence afforded by them was negative, no record was kept. A fifth case, one of enteric fever in a highly nervous pluripara, at the end of the second month of pregnancy, affords evidence, on the whole, supporting the view set forth in this paper; but, unfortunately, as pregnancy was not even suspected, and although abdominal pains are recorded as following quinine without an opiate, my attention not being specially directed towards the uterus, no attempt was made to localise them. One point suggested by the case, is the possibility of chloral hydrate (given with bromide of potash), being another antagonist to the ebolic action of quinine. This patient is now in the fifth month of pregnancy.

Having remarked that the disagreeable feeling about the head, and the singing in the ears, were much less prominent after a dose of quinine preceded by an opiate, I now frequently order a dose of chlorodyne shortly before a large dose of quinine, in cases where no uterine disturbance is in question. I may add, that I have, on several occasions, observed the menstrual discharge increased, or come on before its time, after the administration of a large dose of quinine.

DEATHS FROM ANÆSTHETICS, 1882.

By ERNEST H. JACOB, M.A., M.D., Leeds.

IN a list given in the early part of last year, I called attention to the rapidity with which deaths from chloroform were occurring, and several of those in the subjoined lists were then recorded. In reviewing the tables given below, it will be seen that, as usually happens, the greater number of deaths from chloroform occurred when the anæsthetic was given for trivial operations, such as amputation of fingers, reducing dislocated shoulders, etc., while in three cases the organs were noted as being perfectly healthy. Nos. 8 and 20, however, should hardly be considered as due entirely to the anæsthetic, as in the first the trachea was greatly obstructed by a large tumour, and tracheotomy, which could alone have relieved the spasm of the glottis, was impracticable; and in the second, the trachea and larynx were much bruised and contained blood. Turning to the deaths which occurred under ether, in the first, the patient was apparently suffocated by pus in the air passages, derived from an empyema. In the second, the patient was affected with cardiac disease, as well as severe blood poisoning, and death seems to have occurred rather as the effect of exhaustion after an operation of nearly an hour and a half than as the result of the anæsthetic. No. 3 seems to be one of the rare cases in which death under ether occurs from syncope instead of asphyxia, and it is worthy of note that here the kidneys were diseased. With regard to the last case, I will give some rather fuller details, to which I am indebted to the courtesy of my friend, Mr. Jefferson, the house-surgeon to the York Hospital.

The patient was a man, aged fifty-three, who walked (with support) into the hospital, suffering from a crush of his right hand, a compound fracture of the forearm, a simple fracture of the humerus and a fracture of the third rib, all on the right side. He had been caught by a driving wheel and jammed between it and the ceiling. His chest was examined, and as his breathing appeared easy, ether was given. He took the anæsthetic badly, breathing very feebly, and struggling, and it was nearly twenty minutes before he was ready for operation. The forearm was then amputated, and when the operation was nearly completed, the breathing suddenly ceased. After artificial respiration for about fifteen minutes, he began to breathe, and a feeble femoral pulse could be felt, but this soon ceased.