Fig. 2 (to be read from left to right).—Cat's heart. Uppermost tracing shows the period of vagus stimulation. Second tracing (marked V) records the action of the ventricles (upward movement = contraction); and the third tracing (marked Au.) the action of the auricles (downward movement = contraction). The lowest line indicates half-seconds. After the heart had been depressed and enfeebled by vagus stimulation a periodic series of (eight) induction shocks was applied to the ventricles. The resulting group of beats is marked (1). The individual beats are much improved in strength as compared with the spontaneous beats occurring before and after, marked (2). The beneficial effect of direct excitation is very apparent.

In order to do this in man one electrode should be applied in front over the area of cardiac impulse, and the other over the region of the fourth dorsal vertebra behind, so that the induction shocks may traverse the organ. The electrodes should be of considerable extent (for example, large sponge electrodes), and they and the skin should be well moistened with salt solution. The shocks employed should be strong, sufficient to excite powerful contraction in the voluntary muscles.

Such a method, it seems to me, is the only rational and effective one for stimulating by direct means the action of a heart which has been suddenly enfeebled or arrested in diastole by causes of a temporary and transient character. Of course, at the same time, the expedient of artificial respiration must by no means be neglected, but, on the contrary, most sedulously attended to.

ON THE ACTION OF CERTAIN DRUGS ON THE PREGNANT UTERUS.

By LOMBE ATTHILL, M.D.,

President of the King and Queen's College of Physicians, Ex-Master of the Rotunda Hospital, Dublin, etc.

IN the number of the BRITISH MEDICAL JOURNAL for November 24th a correspondent asks if, in a case of suspected abortion, "he should prescribe a mixture containing iron or *any other emmenagogue which causes abortion* (the italics are mine), how would he stand if accused of intentionally procuring abortion?" And, again, in the case of a married woman who has "missed one menstrual period and is complaining of 'neuralgia,' how is the practitioner to act in similar obscure cases? Is he justified in giving an emmenagogue?" As I have for more than twenty years carefully watched the action of medicines on the utero-ovarian system, and specially with reference to their effects on the menstrual function, my opportunities for observation having been exceptionally great, and as I take much interest in the question, I venture briefly to make a few remarks on the subject, for I think your correspondent and numberless other practitioners are labouring under a false impression as to the power of drugs in such cases as he refers to.

It is right that I should, in the first instance, say that I have never made any experiments on pregnant women, and that the opinions I now hold are based, first, on the fact that, in the treatment of certain diseases and affections in which I felt myself called on to administer to pregnant women drugs supposed to have the power of inducing abortion, I never observed them to have any such effect; and, secondly, that having administered the so-called emmenagogues to women who were not pregnant, in almost every possible form, my belief in their value has been so shaken that I have grave doubts as to their efficacy, except in cases where the amenorrhoea depends on the presence of some condition or affection such as anæmia, incipient phthisis, etc., which being removed or cured, menstruation recurs.

I will relate a case which made a great impression on me at the time, and has materially influenced my practice ever since. About fifteen years ago I was asked to see a lady threatened with abortion at about the tenth week of pregnancy. She had been married two years, and during that time had aborted on three previous occasions. I found that she had lost some blood, which continued to come away continuously, but there were no pains; and, on examining her, the os uteri proved to be patulous. She was

very nervous, having had sharp hæmorrhage on a previous occasion. Taking into consideration her history in connection with her present state, I came to the conclusion that she would again abort, probably with hæmorrhage; and I deemed that the sooner the ovum was expelled the less risk there would be of the occurrence of a dangerous loss. With the view, therefore, of lessening the risk of hæmorrhage and exciting the uterus to expel the ovum, I put her on ergot. The result was most satisfactory, but not what books would have led a student to suppose. No uterine action followed on the administration of the ergot, but the hæmorrhage gradually lessened. I kept this patient in bed for many weeks, and in due time she gave birth to a son, who still lives and is in robust health.

From that time on I have treated similar cases on the same principle—that is, to patients threatened with abortion, hæmorrhage being present, but uterine action, indicated by the occurrence of pains, not having been excited, I administer ergot; these patients are frequently plethoric, with relaxed muscular tissue, and I think it probable that in them the ergot excites a tonic contraction of the muscular tissue of the uterus, which by lessening the blood-supply checks the hæmorrhage. In some the ergot excited uterine action, but in all these I had little hope of averting abortion, and believed that it was inevitable. In many ergot seemed to produce no effect at all, and my belief is that ergot will rarely excite uterine action in cases of threatened abortion, unless the ovum is already blighted and virtually a foreign body. If, therefore, for any reason, the administration of ergot was deemed necessary in the case of a pregnant woman, I should not hesitate to give it. I may add that for many years I was in the habit of administering ergot for several days before the expected date of parturition to patients liable to *post-partum* hæmorrhage, with the view of anticipating its occurrence, with very satisfactory results; in no single case did labour set in earlier than was expected, in none did the child suffer in any way, while in two or three cases the occurrence of labour seemed to have been actually delayed by several days. Iron and quinine I have for years administered as freely and in as large doses to pregnant women, as to any other patients, with perfect safety; in fact, I much doubt whether the ordinary medicines given in ordinary doses have any effect on the retro-ovarian system, whether it be in the case of pregnant women, or taken during the continuance of the menstrual flow; but as I have recently, in a paper published in the December number of the *Dublin Journal of Medical Science*, an abstract of which appeared in the JOURNAL for December 1st, discussed this part of the subject at some length, I abstain from referring further to it now.

I must, however, express my surprise at "Omega's" hesitating to prescribe iron in a case of suppression of the menses, and at his classing it with "*emmenagogues which cause abortion*." Personally, I know of no emmenagogue which will cause abortion; ergot, quinine, and strychnine, in ordinary medicinal doses, I am satisfied, will not do so. Savin and rue, etc., I have never ventured to give to pregnant women, because I believed them to be unsafe drugs to administer in such cases; but iron is perfectly innocuous, and its being classed by any practitioner with "*emmenagogues which cause abortion*," shows how little consideration has been given to the action of drugs on the utero-ovarian system by medical men.

I can, in conclusion, without hesitation, say that in cases similar to those referred to by "Omega," any of the ordinary tonics, including quinine and strychnine, in ordinary doses, may be safely

administered, assuming, of course, that the patient's general health is good. None of them will induce abortion, but neither will any of them have any direct effect either in inducing or retarding the menstrual flow, and perfect general health is not incompatible with even the prolonged suppression of menstruation.

THE RELATION OF HÆMORRHAGES TO UNHEALTHY SURROUNDINGS.¹

By JOHN MEREDITH, M.D. EDIN.,
Medical Officer of Health, Wellington Union District.

I HAVE within the last few days had a small pamphlet published, and I have taken the liberty of sending a copy of it to each member of the Branch whom I might expect to be present here this evening. In the latter part of that pamphlet I have described the line of argument which I have taken upon the question, and which I here propose to recapitulate.

I can illustrate this best, perhaps, by a brief account of a case of bleeding from the nose.

On September 22nd, 1888, a little girl, aged 9, was brought to me owing to severe attacks of epistaxis, which had been going on for three days. The child looked ill. I examined her, found her tonsils enlarged, and she had some mucous matter sticking about in the fauces. The glands on the side of the neck were hard and swollen. I was well acquainted with the little patient and her family. I very soon came to the conclusion that the illness was due to what, with your permission, I will call "malsany."²

Next came the question, What form of it? The child's mother stoutly denied that there was any drain nuisance near her house, or any unhealthy condition of that sort; and what was more, the water which they all used was obtained from the town supply, and there was nothing amiss with that, and the child did not wander about to bad-smelling places. I felt a little puzzled in the face of all this, gave the mother some necessary instructions as to what to do, and desired her to bring the child back in a couple of days; and this she did, and reported that the bleeding was not stopped; that it came on when she was in bed as well as when she was up sitting by the fire. She had given up playing, only she walked out towards the other end of the row of houses in which she lived, did not care for her food, but was always drinking.

A few doors off from her mother's house, in the same row, is a pump, placed at the side of a garden plot, and which is still used by many of the occupants of those houses. The water from the pump I did not consider good; soakage from garden plots was apt to find its way into the well. It was very hard, of course, but the people all liked the taste of it "much better than your tap water," as they take care often to inform me.

I asked my little patient, at the second visit, if she went to the old pump for water, and she replied "Yes, often; like it better than the tap water." In fact, she took a lot of it, an announcement which appeared to surprise her mother not a little. I told her to discontinue this practice at once, and on no account to drink any water except that taken from the tap. As soon as this was done the bleeding from the nose ceased, and the child rapidly recovered in other respects.

The malsanic cause, or the special malsany here, was undoubtedly, in my opinion, polluted water.

A few years ago I had a very severe case of epistaxis, in the house next to that where the child just mentioned lives; it happened to a man, aged 70, and it lasted a great many days. Astringent injections and all the recognised applications gave very imperfect results. I also considered this due to some insanitary matter—a malsany, as I would say now—but what was the immediate specific form? He partook of the water, and that freely, from the pump just referred to, and I am pretty sure that the quality of it then was no better than it is now; but at that time there was no better to be had within convenient distance.

The old man was exposed to another malsanic influence at the same time, and that in his own dwelling. Under the stairs, in his cellar, he had a quantity of turnips stored, and some potatoes as well. The slow decay and drying smell from these penetrated his house, and was powerful about the door of his bedroom. I begged

him to get rid of those things at once, but the request was not heeded, as he did not believe in the necessity for it, and so they were allowed to remain. However, some of his friends, seeing that the old man was getting more and more feeble, set to work and had the cellar properly cleared out and cleaned. It was surprising as well as gratifying to notice how rapidly the patient recovered; the bleeding soon ceased, and he has remained in good health ever since, and he tells me he does not keep "turnits" in his cellar now. It may strike you, of course, that these cases were only coincidences—mere *post hoc*—and that, probably, would be the conclusion of many. I cannot, however, in a brief paper of this sort, bring forward a multiplication of cases all bearing upon the question at issue, but taking them in the light of considerable experience and observation, they appear to me as cause and effect.

The vascular system in the first instance was imbibing through the digestive system a deleterious element, which vitiated the quality of the blood, and this, in its turn, the quality of the vascular coats, producing vascular tension, and this pressing, the vessels gave way at their weakest part, which was the Schneiderian membrane. In the second case the vitiation ensued through the pulmonary system, and very likely through the digestive as well, but probably in a minor degree in the case of the latter, both, however, tending to the like end. The old teachers aptly described these sorts of phenomena as only cases of determination of blood to the parts. It was a bad phrase, since somehow people got to be contented when they said that much, and that there was nothing further to inquire into.

My contention is that the many and varied unhealthy influences and conditions which I would designate by the term "malsany" may, any one of them, or a combination of two or more of them, cause, and often do cause, hæmorrhage from some organ or other in the body exposed to them. But malsany is also the cause of many other forms of illness, some of them of so serious a nature as to prove fatal to the victim in a very brief space of time, while others may be of a trifling character, barely distinguishable from a state of ordinary health. But at present we have to consider the connection between this and blood-loss. The most serious form in which one meets with this is menorrhagia, and it is probably the most frequent form of the loss also. In the pamphlet which I have already referred to I have given many cases illustrating this. I would, however, like to add one or two additional pieces of evidence before closing my remarks.

In a corner of the parish in which I live is an isolated block of houses. The block is surrounded by highly cultivated garden plots. On the north side, between the houses and cultivation, is the well. The subsoil is sandy and porous. Some time ago the water in the well was evidently impure and not safe to drink, and the state of things around the well's mouth was not sanitariously satisfactory. No representations were made, and it was a long time before I became informed as to the nature of affairs. During the period nearly all the women in the place suffered from excessive discharge at their monthly periods, amounting in some to severe menorrhagia. After the insanitary matters were removed by properly securing the well and reconstructing the drains, the females of the tenement improved in health, and the menses resumed their ordinary character, not, however, without leaving permanent marks on the constitution of more than one among them. If the above were but a single instance of the kind, I should not feel justified in placing it before you, but to me it is only one among a great many.

At times cases of menorrhagia are met with which run on for a period of about three weeks. It may be that an apparent stopping appears at the end of the first week, but the relief is very short, for on comes the flow; a similar illusory occurrence may be witnessed about the end of the second week, only, however, to end in disappointment. At the end of the third week there is a cessation, and the patient feels disencumbered from a sense of lassitude at the same time. The instances where I witnessed this peculiarity were in women who were exposed to sewer gas and sewage-polluted water. But sewer gas and sewage-polluted water are often the causes of typhoid fever, and the ordinary duration of an attack of typhoid fever in this district is three weeks. Perhaps the greatest number of these cases of excessive catamenia last for about a week or ten days. I have been satisfied, in all cases of this character, that I have inquired into, that they were the victims of some unhealthy influences or other, usually polluted water or drain air, or both.

Now there is a febrile condition, perfectly well known, which runs a course of about a week or ten days, and is the result of

¹ Part of an address delivered in opening the discussion for the evening, before the Somerset Branch of the British Medical Association, at Taunton.

² This is the word which the author proposes to introduce to express insanitary surrounding conditions.