Hypertrophy is found under circumstances where there is no obstruction to the blood-flow, notably in the hypertrophy of the left ventricle so commonly seen in mitral regurgitation (Niemeyer, vol. i, p. 318, ed. of 1870). Again, as the same authority tells us, hypertrophy is frequent in cardiac dilatation, the result of partial myocarditis accompanying pericarditis (p. 298 of same edition), by which the dilatation is limited. In both these instances, there is no obstruction to overcome, but in each there is a dilating process to be arrested. In mitral regurgitation, the blood rushes into the left ventricle with unwonted force from the distended auricle and veins behind it, and a dilating process is so set up, which, in well nourished organisms, is limited by a growth of muscular fibre. There is no similar enlargement of the left ventricle in mitral stenosis, though there the auricle and pulmonary veins are equally distended; but then there is an abnormally small, and not an unnaturally large orifice, through which the blood can flow furiously into the left ventricle. In the case of softened walls, leading to dilatation by the normal inrush of blood, the dilating process sets up hypertrophy sooner or later: sooner in well nourished organisms, later in debilitated systems. How dilatation induces hypertrophy, cannot be given here. It is not the place, even if the time could be spared.

This brief digression will enable us all the more readily to see that, in pure aortic regurgitation, the growth of the walls of the heart is not the result of any obstruction to be overcome; for none such exists, or, if so, only to a trifling extent. But there is a dilating process to be arrested. When the aortic valves are rendered incompetent, the left ventricle is no longer filled solely by the blood coming in from the auricle and pulmonary veins—a comparatively calm current—it is also filled by a second blood-current—the blood driven backwards by the aortic rebound through the insufficient aortic valves. The distending power of this new current is a very different matter from the normal current, which is itself undiminished. There is, indeed, no diminution in the normal distending force, while there is added to it a new force of unusual and unwonted power. The ventricle is now, in fact, distended by the aortic recoil, and the regurgitant current possesses great distending force. The ventricle yields before this new force, and dilatation would soon become marked and the ventricle be placed *hors de combat*, if it were not for the hypertrophy which, coming to the rescue, arrests the dilating process and limits the dilatation. It is under these circumstances, indeed, that we find the most massive hypertrophy—the *cor botinum* in fact. The hypertrophy is not to overcome obstruction here, but to arrest dilatation. It is necessary to be clear about this, in order to comprehend the indications for treatment. We do not, under these circumstances, require more forcible ventricular contraction—the effects of digitalis; for the powerful and enlarged ventricle is already working ruin in the arterial walls, which, at every systole, are distended by the contraction of a ventricle, not only much more powerful than a normal ventricle, but holding a larger quantity of blood. The overdistension to which the arteries are subjected produces chronic parenchymatous inflammation of their walls, or atheroma (see an article by the writer in the *Philadelphia Medical Times*, August 7th, 1875 on "Atheroma"), and to administer digitalis here is to aggravate the evil. Already the contraction of the enlarged ventricle overdistends the arteries, so that the pulsation may be seen in the arteria centralis retinae with the ophthalmoscope; and, to administer an agent like digitalis, which, as Balthazar Foster tells us, prolongs the diastole, would be injurious. By delaying the diastole, the ventricle will be all the fuller, and all the longer exposed to dilating forces; while the action of digitalis in producing a more vigorous contraction of the ventricle will only tend to all the sooner ruin the arterial walls. The agent here, if we possessed a drug of such properties, would be one which should lessen the diastole and limit the force of the ventricular systole; the antagonist, indeed, of digitalis. In the early stages of aortic regurgitation, then, digitalis is contraindicated. Such, however, is not the case in the more advanced or later stages.

In order to make this clear, it is necessary to trace the further progress of aortic regurgitation. We stopped the inquiry above at the point of massive hypertrophy; we must now follow the downward progress of this pathological process. The arteries, as we saw, became atheromatous from the overdistension to which they are subjected, and they lose their elasticity, and so the arterial recoil is diminished. This would be beneficial in reducing the dilating power of the regurgitant current, if it were not also the fact that the aortic systole is the force which fills the nutrient vessels of the heart itself. The coronary arteries, seated at the base of the aortic column, are filled by the backward flow of the blood on the aortic recoil arrested by the semilunar valves. When, then, the aorta loses its elasticity, and the recoil is lessened, this loss of arrest in the backward flow of

the blood leads to imperfect filling of the coronary vessels, and the nutrition of the heart-walls is impaired. Consequently, the hypertrophy of aortic regurgitation, though the most massive, is the least durable of all conditions of hypertrophy. Mauriac has pointed out the why and wherefore of this fleeting hypertrophy; and Balthazar Foster has given a still more brilliant illustration of the subject by showing that, when an aortic valve is ruptured by violence, the duration of the consecutive hypertrophy depends largely on which of the valves is affected. If the torn valve have a coronary orifice behind it, the compensatory hypertrophy is brief, and the downward progress of the case swift; but, if the valves behind which the coronary arteries spring are the uninjured ones, the complete valves arrest to some extent the backward flow, and so the integrity of the muscular walls is maintained and the hypertrophy is more lasting. (*Clinical Medicine*, and *Medical Times and Gazette*, December 1873.)

When the hypertrophy is being cut down by molecular decay, the consequence of impaired tissue-nutrition, the ventricle falters, and its contractions are wanting in vigour, the arteries are insufficiently filled, and the coronary flow is still further diminished, leading to still further mural decay. The muscular structure is being undermined, and the ventricle yields once more to the dilating forces of the incoming currents, and not rarely hesitates. The system is insufficiently supplied with blood, and the case progresses rapidly on its downward career. Under these circumstances, the administration of digitalis gives relief, and its use is not only permissible, but beneficial. By exciting more perfect contraction in the faltering ventricle, a fuller and better circulation is secured, and the case is tided on for a while. But that is all. When there is also intermittency in the heart's action, and there is a long diastole, during which the dilating forces are in action and the ventricle is almost paralysed by its long halt, then the administration of digitalis is very beneficial. It not only excites more powerful ventricular contraction, but it does away with the long diastolic halt, and with it the tendency to ventricular paresis. This I have seen in several instances, and notably in a case quoted by my friend Dr. Clifford Allbutt in his well known essay on the *Effects of Overwork and Strain on the Heart and Great Blood-vessels*. Here there was the common double aortic disease, where the regurgitation was marked, and at times the ventricle halted over as many as four beats. The man was already confined to bed, but the rest alone was insufficient to inaugurate improvement. Digitalis and steel soon made a marked difference: the man was up and about in a short time, and got so well that he once more went down the coal-pit to work; it must be said with the most disastrous consequences, for in a few days he was dead.

In advanced aortic regurgitation, digitalis may be given to delay the inevitable end, but more cannot fairly be expected from it. Its use in mixed or double aortic disease must be determined by the nature and indications of each case, and especially by the condition of the ventricular walls. When the ventricle falters, digitalis may be safely resorted to; till then it is better withheld. We may sum up as follows.

1. Digitalis is useful in aortic stenosis. By exciting a more powerful ventricular contraction, it enables an equal bulk of blood to be driven through a narrowed orifice in an equal time, thus establishing a new equilibrium.

2. In the earlier stages of aortic regurgitation, with massive hypertrophy, it is harmful rather than useful.

3. In the later stages of aortic regurgitation, where the heart is failing from mural decay, and especially when intermitting, digitalis may be given with at least temporary advantage.

POISONING BY NITRATE OF POTASH.

By RICHARD WOOD, L.R.C.P.Ed., Bromsgrove.

ON August 15th, about noon, I was called in a great hurry to see a woman who had intended to take two ounces of salts, but who, by mistake, had taken something that only looked like sulphate of magnesia. Whilst swallowing, she perceived the taste to be different from what it should be, but could not tell what she had swallowed. She complained of great burning pain in the stomach, and, in about five minutes, vomited some glazy fluid on the floor of the room. There was no time to be lost. I at once gave her a drachm and a half of ipecacuanha, followed by one ounce of chalk mixed with water. After this, I tried to pick up some of the vomit with a spoon; failing in my attempt, I wiped it up with my pocket-handkerchief to take home. The cup which had contained the draught was quite empty and clean. Upon rubbing my finger, however, round the bottom and applying it

to my tongue, it tasted saltish, like nitre, and not like acid. All this time, the poor woman complained pitifully of the pain in her stomach, and spoke of it as a burning pain. To help vomiting, some oil was given in milk, and immediately she brought up a quantity of brownish fluid. The pain was not relieved; she continued groaning with it, but had no convulsions. Some slight shivering and tremulous motions of the hands occurred, with an unsteady attempt at walking. The pulse was quick and feeble. The bowels acted twice within the first two or three hours. She vomited no blood; the retching continued off and on most of the night, and she could obtain no sleep or cessation from pain.

On the 16th (the next day), I ordered a mixture containing opium to allay the pain and applied poultices. I was now told that a quarter of a pound of saltpetre had been bought some time previously for curing bacon, and it was thought that the woman might have taken what was left of it. Acting upon this suggestion, I tested for nitre in the liquid I squeezed out of my pocket-handkerchief. I evaporated a drop on a glass slide, and found under the microscope rhombic prisms and acicular crystals. Some paper dipped in another portion of the fluid dried and burnt, deflagrated. I may here mention that chlorate of potash-paper also deflagrated; but, after being burnt, the ash or the charred parts of the chlorate is grey, whilst that of the nitre is black. In a watch-glass I evaporated a little more of the fluid, added two or three drops of sulphuric acid to the residue with some copper-filings; upon slightly heating this mixture, reddish fumes were given off, which reddened litmus paper and blackened starched paper previously moistened with solution of iodide of potassium. There was no longer any doubt as to the salt taken by my patient.

I now come to another stage of the case. Knowing what the poison was, I ought to know what the treatment should be, but I did not. In several books which I have, I can find no treatment.

On the 17th, after another sleepless night, the woman showed signs of great and serious prostration. She herself felt her end approaching. She remained quite conscious, and could point out the exact place where all the mischief was. The pain was still a burning pain, a weight that did not leave her for a minute. She could take no beef-tea; the sight of it made her sick; she took nothing but cold milk and water. Her bowels had not acted yesterday nor to-day. An enema of warm gruel, with a quarter of a pint of castor-oil, was given, with the effect of producing a satisfactory motion. She was able to pass urine freely all the time; the urine and evacuations were free from blood. I regretted not having used the stomach-pump. I took it with me on my first visit, but was unwilling to use it before ascertaining what had really been taken. Towards the evening of this day, she fancied the pain was relieved by the medicine; but the relief must have been only slight, for she spoke with hesitation, and was very depressed in spirits.

August 18th. On my visiting her this morning, I was surprised to be told she had slept some hours, and had taken some tea for breakfast. She looked up and made an attempt at a smile. She spoke more hopefully. The pain was less intense, and had even on one occasion left her for a few minutes. She asked to discontinue the poultices. Her pulse was better; her tongue, which had been very dry, was moist, and from this day she gradually rallied.

THERAPEUTIC MEMORANDA.

NOTE ON LACTOPEPTINE.

In the number of the JOURNAL for September 15th, reference is made to the above-named new preparation. As I have been using it extensively during the past year, it may interest some of my professional brethren to learn the extent to which I have been able to attribute beneficial results to its employment.

The first case in which I used it was on November 20th, 1876, in that of a lady suffering from uterine affection, with very obstinate dyspepsia, which had baffled all ordinary treatment. Lactopeptine, in fifteen-grain doses, given three times a day in a little water after meals, did more to restore her digestive power than anything I had hitherto prescribed; and she has persevered in its use from time to time, as the stomach appeared to require assistance. As her general health has improved in consequence, so have the uterine symptoms, under appropriate treatment.

Since then, I have used lactopeptine in a large number of cases of weakened digestion, and in the majority of cases with marked success: even in very young children, I have seen great benefit result from its employment, especially in those cases which are attended with obstinate vomiting. The composition of the preparation, which has been pub-

lished, would lead us to form a favourable *à priori* opinion of its efficacy in the cases for which it is recommended; and I have no hesitation in stating that, as far as I have used it, the combination is very materially more successful in its results than its component parts in any form in which I have hitherto employed them, while it is both more readily taken and retained than pepsine in those cases in which it is advisable to prescribe that remedy.

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THE USE OF BROMIDE OF POTASSIUM IN EPILEPSY.

DR. FARQUHARSON has, I think, done good by drawing the attention of medical men to the fact that much larger doses of medicine than those sanctioned by authority should be given to children in order to obtain their full effect. I can quite bear out his observations with reference to the doses of bromide of potassium which should be given to children suffering from epilepsy. During the time I held the office of medical registrar at the Children's Hospital, Great Ormond Street, I found that more than one of the physicians was in the habit of giving from ten to fifteen grains of the bromide in this disease, with great benefit to the patients. Since then, I have carried out and somewhat further extended the practice. I usually order fifteen grains of bromide of potassium three times daily for all the epileptic patients in this (Clapton) asylum; and this dose is continued, not only during the epileptic seizure, but for weeks and months afterwards. In some cases, fifteen grains have been given every two hours for a short time with great benefit; and, during the *status epilepticus*, I have on a few occasions, when the breathing has been much affected, injected into the bowel one or two drachms with good results. Some authorities, I am aware, are of opinion that the continued administration of bromide of potassium dulls the intellect of the patients to whom it is given. There is no doubt, however, that repeated attacks of epilepsy do more harm; and this opinion is, I find, confirmed by Professor Benedikt, who says (*Wiener Medicinische Presse*, April 1876), in reference to the administration of the bromide in epilepsy: "By this means, without doubt, some are cured; in many, there is a marked improvement as to frequency and intensity of attacks, at least for a long time. Only very seldom is there no good effect. I insist strenuously that patients shall not wholly discontinue the bromide, although it may be taken in diminished dose. In time, the bromide may effect lasting influence upon the intellectual faculties; but there is less harm done by it than by frequently repeated epileptic attacks." In this opinion I quite concur. From many of the children here the epileptic attacks have entirely disappeared, and in nearly all cases their frequency has much diminished.

My experience in the administration of iodide of potassium differs somewhat from that of Dr. Farquharson. A girl, aged 16, has been taking the drug in doses of ten grains for more than two months; at first, for the space of a week, every two hours; and since then three times daily. The girl has not only had no rash, but her complexion has become clearer, and she has gained flesh.

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OBSTETRIC MEMORANDA.

AN INTERESTING CASE OF LABOUR.

I LATELY attended a midwifery case. My patient had been so large in the last months of pregnancy, that I expected twins. The labour lasted about seven hours, and both child and placenta came away without any trouble. The abdomen continued so large, that I made an external examination and found there was no other child. I banded my patient, and, as she complained of very severe pain over the uterus, I administered a full opiate. I left her at 1 P.M., and promised to call again in the evening. I saw her at 7 P.M., and found her quite comfortable. She said that about three hours after I left she found occasion to rise to the chamber, when she said she passed a couple of large clots, and that she filled three-fourths of the chamber utensil with the breaking of the waters as she described it, and as she well understood, having had several children previously. I had to tighten the bandage fully four inches, she was so much reduced in size. I did not see the clots, the nurse having removed them. My opinion is, that this was a case of imperfect twin-conception. I merely publish it as being interesting, and to elicit the remarks of others more experienced than myself.

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