

cases also, the apex of the heart scarcely relaxes at all. Again, a person under the influence of digitalis may have a heart beating 50 or 60 per minute when in the recumbent posture, but on sitting up the pulse may suddenly become weak and mount to 100 or 120. The action of digitalis has been carried in such a case to the point at which an excess will throw stimulation into overstimulation and imperfect contraction. The act of rising brings an extra strain on the heart, and the muscle loses its power of regular action.

Digitalis, then, in man, by its action on the inhibitory apparatus, prolongs the period of diastole, thus giving time for the ventricles to fill up with more blood than usual, and also increases the muscular power of the heart, so that when it contracts a greater volume of blood is thrown with a greater force into the arterial system. Before we begin to apply these principles, remember also that the vascular system under the control of the vaso-motor nerves is probably kept in a state of contraction by the influence of digitalis.

Almost nothing but common sense is needed now to apply these facts to the treatment of heart-diseases. If what has been said is true, digitalis ought to be useful when there is a deficiency of heart-power. Remember that it is not a rag that will stop up a leak; and do not fall into the common error of expecting the drug to perform impossibilities. It cannot tighten a leaking valve. It cannot open and smooth down a contracted orifice. In other words, in valvular lesions it can only indirectly remedy the defects; and, although often you will get the most surprising results from its use, yet in every case of valvular lesion there comes, sooner or later, a stage when digitalis is powerless. It is when the valves are healthy, and the cardiac failure is due simply to weakness of the muscular walls that digitalis exerts its most wonderful powers. Nothing is more marvellous in clinical medicine than the relief you can sometimes rapidly afford in cases of simple dilatation of the heart. The following extract from my private note-book will probably do more than any declamation to impress this fact upon you:

"Mr. D., æt. 55, when first visited in the morning was found in a condition of intense cardiac dyspnoea. There was no cardiac murmur, and nothing to indicate a valvular lesion; but the heart-sounds were very feeble, and the impulse was exceedingly weak and fluttering; its area as well as that of the percussion-dulness was widely extended. The urine was albuminous, and the patient was passing only three or four ounces in the twenty-four hours. The sick man sat during the whole day and night leaning against the back of a chair, struggling for breath. He would fall asleep for an instant, the respirations becoming feebler and more and more distant, until the face grew livid and deathlike, when suddenly he would awake with a violent start, and enter upon a succession of labored, gasping, struggling respirations. In three or four minutes he would become quiet;

then the respirations would grow slower and slower until at times they would be entirely suspended for nearly a minute, when he would awake with a start as before. For several weeks, under the care of a notorious dispenser of diluted nothings, this man had spent in this manner nights and days of horror with death staring him in the face. He assured me that he had not been conscious of sleeping for over a week, and that he only wanted to get sufficient relief to allow him to get to his home in the far West and make some business arrangements before going the long journey. He was ordered fifteen drops of tincture of digitalis every two hours. At the end of twelve hours the effects were already manifested. The pulse had fallen from 102 to 94, and it was fuller and stronger than before. The agony of the spells was slightly relieved by the administration of morphine. Quinine and stimulants were also given. In the next twenty-four hours seventy-five drops of the tincture were given, and the pulse fell to 84 and became full, strong, and regular. He passed over a pint of urine. During the ensuing night the patient took no digitalis, and his pulse was not so strong in the morning as it had been, although only 86: during the day following he was given forty-five drops of the tincture: in the twenty-four hours he passed one and a half pints of urine.

"Not to weary you with details, I will tell you that, continuing the use of the drug, in the course of two or three days the spells of dyspnoea almost disappeared, and he was able to sleep in his bed. In a few weeks this man returned to Omaha, where he died suddenly a few weeks later."

Let me give you, gentlemen, another lesson from my note-book:

"A physician leaving town for a few days asked me to take charge of a lady patient of his, whom we found in our visit together very much in the same condition as the case just described. She had been taking five or ten drops of tincture of digitalis three times a day. I suggested a large increase of the dose; and my friend, turning to the patient, said, 'Doctor, this woman has been in this chair many weeks: I have done all I could for her, but life is a heavy burden to her: she wants to die. You can't do more than kill her: if anything offers a prospect of relief, she wants it, no matter what are the risks. She is well pleased to have you kill her.' The patient nodded acquiescence. It was the strangest scene I ever witnessed in a sickroom. Digitalis was therefore ordered in large and constantly-increasing doses. The result was that, a few weeks subsequently, when my colleague returned and rang the door-bell of the house, this woman came down from the third story to let him in."

The dilated heart is weak, and also is embarrassed by that weakness. Owing to its want of power, the circulation begins to fail; then instantly through the nervous system come the demands from all the tissues: more blood, new blood, better blood, is wanted. The heart is irritated beyond