

would be mockery. There is feeling too deep for utterance, and silence is its natural language. We have met here as brothers ; let us part as such, let us live as such. Allow me to congratulate you on your past success, and to express the earnest wish that your brightest hopes may be realized. But if they should not, give no room to discouragement, remembering that there is a morning sun of joy to every night of sadness, and, more than all, that this fitful life if well spent will end in perpetual day.

And now, as we go hence, let us again mutually pledge to be true to our science, true to ourselves, true to our fellowmen, and true to Him who knoweth all things as they are. FAREWELL.

NEW THEORY OF THE MOTIVE POWER OF THE BLOOD

[Communicated for the Boston Medical and Surgical Journal.]

IN a late number of the Journal I find a communication from Dr. Chandler, of St. Albans, Vt., making inquiries respecting the signification of several *English* words contained in an article in a previous number from Dr. Cartwright, and intended, most distinctly, to be rendered in their simplest and most common sense.

Concerning the first interrogatory of Dr. Chandler, Mrs. Willard would say, by proxy (it being rather diminutive save for a deputed reply), that in the phrase "*chief motive power*," the word "*chief*" has a *comparative* or relative meaning. Thus, if I should say, such a man is tall, I should convey the idea that height was the particular quality to which I wished to call attention by the adjective. I should convey the idea that this word was *intimately connected* with the property in the man, and that he was evidently *longer* than some shorter men with which the word at once compares him. The word "*chief*," then, has a relative signification, and calorification is believed the "*chief motive power*," relatively considered with the contraction of the heart, arteries and muscles. As illustrating the allegation or premise that the chemical action effected by respiration is the "*chief*" source of the circulation, Mrs. W. instances the immutable law of expansion by heat, and, which is also true, says that if the blood expands it *must* move, and of two ways, *must* take that in which it *can* move, meaning the natural passages leading from the lungs to the right ventricle, aorta and smaller arteries.

Another corroboration of the "*chief power*" designated is the abundance of heated surface with which the blood comes in contact at the lungs, being equal to a circle whose area is 17 feet in diameter, and the effect, "*momentum*," or impulse (as Dr. Chandler will have the goodness to select), confined to the aorta, a tube of an inch in diameter. Mrs. W. thinks it not astonishing, also, that some force should attend the current of blood at this channel.

A little farther into this communication of Dr. Chandler, I find more curious interrogatories about the meaning of the words "*subordinate*," "*momentum*," and "*chief power*," as Dr. Cartwright speaks of the heart's

subordinate power in moving the blood. I cannot see the propriety of quizzing, and therefore must desist from further reference to these words, believing that the imperativeness with which the *aurora borealis* of science makes every object absorb its rays, will do its work of chivalry in every mind.

Mrs. Willard takes the ground only and emphatically that respiration indirectly is *literally* the *chief* motive power of the circulation relatively with all the collateral agencies. I believe she does not claim that "calorification is the efficient, prolonged force which impels the current through its entire circuit." She distinctly states that the power that *chiefly* moves the blood is antagonistic to gravitation, and acknowledges the fact that when particles of fluid become more heated than others with which they are connected, the heavier fall downwards and force up the lighter.

Says Dr. Chandler, "Does the *new theory* repudiate the fact that the expanded ventricle contracts on its contents, and thus impels them onwards?" I would say, that holding upon this point, Mrs. W., in her work on the circulation of the blood, has some important and appropriate remarks. "But it may be argued," says this lady, "that the blood flows in pulses, and these we know are originated by the beat of the heart, and therefore the motive power must reside in the heart. To show the futility of such an argument, suppose an India-rubber tube of any length, not very great, as six feet, be filled with water and placed in a coil upon a table; there would be in this case no current; but strike successively upon one end of the tube, while you place your finger upon the other, and you will feel a pulsation, seemingly simultaneous with the stroke. Again, take the same tube and attach it to the orifice of a vessel filled with water which you wish to empty. Lay it along an inclined plane, and the water will flow through it in an equable current, more or less rapid, as the plane upon which it lies is more or less inclined, the force by which the fluid moves being that of gravitation. We see here that *pulsation*, and that *motive power* which produces a current, are entirely different, and exist separately. They may also exist in combination. For let the India rubber tube, which is carrying the current of fluid, be grasped by the hand near the orifice of the vessel, in successive contractions of the fingers, a corresponding pulsation will be felt all along its course, and the water will pass on through it '*per saltum*,' like the blood in the aorta; and will issue from it in leaps. Yet in this case, if no valves are in the tubes, the successive contractions of the hand driving just as much of the fluid back as forward, will add nothing to the motive power, which produces and keeps up the current. But suppose there had been valves placed along the tubes, closing towards the orifice, then a contraction of the fingers upon the tube would have aided the motive power by adding, in a degree more or less slight, the force of impulse to that of gravitation. We conceive it to be a fact concerning the human system, that the contractions of the heart *aid* in a similar manner the motive power, which, after respiration begins, gives the first movement to the current of animal life, and without which it must cease."

I believe Mrs. Willard's book contains much truth that seemingly and successfully conflicts with many portions of every other theory of the circulation. I should admire to find it generally perused by the profession, even by those, if there be any, who believe that treatises upon such subjects by a lady are anonymous in point of character, and a narrative in point of science.

CHARLES BELL.

Medford, Mass., January 31st, 1852.

CHLORIC ETHER AS A DISINFECTING AGENT.

BY C. H. HILDRETH, M.D.

[Communicated for the Boston Medical and Surgical Journal.]

THE following account of the "chloric ether lamp," noticed in a recent number of the Journal, is extracted from the American Journal of the Medical Sciences, No. XLIII. Since the time of its first application, I have had numerous opportunities of testing its efficiency, and am of the opinion that it will be found exceedingly well adapted for the purpose proposed.

"Having recently had occasion for the use of chlorine as a disinfecting agent, I was led to consider whether there might not be some method more convenient and efficacious than that usually adopted for its evolution. Though the gas extricated by the new method is not chlorine, but chiefly hydrochloric acid, yet it seems practically of at least equal efficiency for deodorizing purposes.

"Chlorine is usually generated by the action of sulphuric acid upon a mixture of binoxide of manganese and chloride of sodium; by the action of the same agent upon the chlorides of lime or soda; or by the simple exposure of the latter in open vessels. If, in the first process, the binoxide of manganese be omitted, hydrochloric acid is evolved; this latter method is in popular use. Even where the manganese is present, much hydrochloric acid is given off, and if pure chlorine be desired, manganese and sulphuric acid only should be used. In either process the application of heat is necessary.

"The first of these methods is inconvenient, and requires considerable attention. By the second, the gas is rapidly liberated, but the supply is soon exhausted, and the materials must soon be replenished. The third is simple and convenient, but not sufficiently efficacious.

"The plan which I propose is both simple and efficient. It consists in the combustion of chloric ether in a common lamp.

"The gas arising from the decomposition of the ether has been analyzed by Dr. Bacon, and found to be hydrochloric acid, with a trace of chlorine. Practically, I have not found it less efficacious than pure chlorine for disinfecting purposes. It has been used to a considerable extent in the Massachusetts General Hospital, and gives no inconvenience to the patients. Its odor may be plainly perceived upon entering a ward where the lamp is burning, and in proper quantity it is far from disagreeable. So far as has been observed, it exerts no injurious influence upon the furniture or metallic utensils in the wards. Its deodorizing powers are fully equal to those of chlorine.