Profession, from its not being mentioned in works on the Practice of Medicine, which I have seen; even Sir Thos. Watson, in his valuable work, does not allude to it among the numerous remedies he refers to, and I have reason to think it may be new to the Profession, and prove as useful in the hands of those who may give it a trial, as it has in mine.

## CHLOROFORM.

By A. M. ROSEBRUGH, M. D.

*Being a Paper read before the Medical Section of the Canadian Institute.*

Action of Chloroform.—Various theories have been advanced to explain the physiological action of chloroform. According to the theory that was first advanced on this subject, chloroform exerted a primary action upon the brain and central nervous system. It was believed that the chloroform was absorbed into the blood unchanged, and that general insensibility was the result of its contact with the nervous system for which it seemed to have an affinity of election. In support of this theory, it was shown that after death, from ether or chloroform, a superabundant portion of the anæsthetic is found in the brain and spinal cord. (Lallemand, Perrin, Duroy, Dr. Anstie.)

The following results of experiments on animals are opposed to this theory:

1. The brain may be exposed and chloroform applied either to its external surface or to its substance when divided, without producing symptoms of narcotism.
2. Chloroform may be injected into the carotid arteries without bringing the animal under its influence.
3. An animal may be placed under the influence of chloroform, in the ordinary way, and portions of the brain removed, and the animal will awaken in due time as if nothing unusual had occurred.

It was also objected although after death from chloroform, a large quantity of the anæsthetic is found in the brain, this arises simply from the fact that its soft substance is favorable to exosmose, and the storing up of the fluid, and not from any special affinity that the brain has for anæsthetics.

It was also pointed out that after death from chloroform or ether, the anæsthetic is found in large quantities in the liver, although we do not attribute the symptoms of anæsthesia to its presence in that organ.

Another objection to this theory was that the effects of anæsthetics passed off too rapidly to admit of any elective affinity on the part of the brain.

This theory of cerebral affinity was held by M. M. Lallemand, Perrin, Duroy, Flourens and Dr. Anstie.

The more recent experiment of Snow, Richardson, Sansom, Nunneley and the Chloroform Committee of the Medico-Chirurgical Society of England, lead to the belief that the *blood* is the element of the organism that is first acted upon by anæsthetics.

Dr. Sansom pointed out that when the vapor of chloroform is breathed for the purpose of producing narcotism, it may obviously do one of two things; it may be absorbed into the fluid part of the blood, and manifests its effects by its direct action on the brain and nervous system; or, it may act on the blood "modifying its vitalization—modifying that interchange of elements necessary to perfect health."

It has been proven that when carbonic acid gas has been inhaled, it produces anæsthesia by arresting the aëration of the blood; the carbonic acid which it is the function of the lungs to eliminate, remain in the blood, and an additional quantity is absorbed. According to M. Claude Bernard, when carbonic oxide is inhaled, it poisons by preventing arterial blood in the capilliaries of the peripheral portions of the body from becoming venous; it acts directly upon the blood globules by arresting the process of endosmose and exosmose of their cell-walls—thus preventing the absorption of the gas in the midst of which they lie, and preventing the yielding up of the gas which they inclose.

Dr. Sansom and others believe that carbonic acid gas and carbonic oxide are true anæsthetics, and that chloroform, ether, and even nitrous oxide gas, produce a primary effect upon the blood in a similar manner,—that they all act by suspending the due oxygenation of the blood, and that when death takes place from the inhalation of an anæsthetic, the person dies for the want of atmospheric air; in other words—*from suffocation.*

Statistics, &c.—Within the last few years the subject of chloroform has been thoroughly investigated by a committee appointed for that purpose by the Medical and Surgical Society of England. During their investigations, the committee were enabled to collect the records of 109 cases of death from chloroform. Drs. Sansom, Snow, Kidd, and others have also placed on record a large number, making a total of nearly 250 fatal cases. From an examination of these cases of death from chloroform, we