5. Sulphocyanide of potassium induces no effect, thus indicating the iron to be in a state of protoxide.

6. Ferridcyanide of potassium, after the addition of sulphuric acid, changes the solution to a deep emerald green.

7. Oxalate of ammonia—white precipitate.

8. Barytic water—white precipitate.

9. Nitrate silver—copious white precipitate soluble in ammonia.

10. After the addition of hydrochloric acid, and the precipitation of all the lime by oxalate of ammonia, the addition of carbonate of ammonia, followed by phosphate of soda or ammonia, produces an instant deposit.

Twelve ounces of the water were now boiled, and reduced by evaporation to two ounces. This was subjected to the following tests:—

Experiments 1, 2, 3, 4, 5, 6, 8, and 10, were repeated without any effect being produced.

Experiment 7, was attended with a precipitate.

Experiment 9, likewise.

Experiment 10. To another portion starch and chlorine water were added, but no alteration in colour took place after 12 hours' rest.

During the boiling a precipitate gradually formed at the bottom of the flask. This was collected, and after having been boiled in hydrochloric acid, to which a few drops of nitric acid had been added, properly diluted with water, was filtered. It was now tested in the following manner. The nitric acid was added to peroxydise the iron—

11. Sulphocyanide of potassium—a blood red.

12. Ferrocyanide of potassium—a fine blue.

13. Ferridcyanide of potassium—a deep blue.

14. Oxalate of ammonia—a copious white precipitate.

15. After filtration from the last experiment, treatment by carbonate of ammonia and phosphate of soda yielded a copious precipitate.

16. This precipitate being digested in caustic potash ley, and saturated with hydrochloric acid, the addition of carbonate of ammonia induced a slight turbidness.

From these experiments, the presence of the following ingredients is demonstrated—

Carbonic acid.
Chlorine.
Lime.
Magnesia,
Alumina,
Sodium.
Iron in a state of protoxide.

There can be no doubt that the iron is held in solution by the carbonic acid which exists in the water in quantity. I may also notice that vegetable extractive matter was also obtained, as well as a trace of silica.

Although, as I have already remarked, from the unintentional error committed in using the two kinds of water for the experiments promiscuously, no very satisfactory evidence can be deduced as to the exact composition of either, yet the result tended to demonstrate that their saline impregnation was not strong. The solid constituency of the gallon amounted only to 184.6 grs., the chief proportion of which was chloride of sodium, while the amount of protoxide of iron in the same quantity did not exceed 5 grains. These springs, however, are valuable chalybeates, and a good analysis of them is a desideratum.

Montreal, January 6, 1846.

ANATOMY AND PHYSIOLOGY.

STRUCTURE OF THE HUMAN PLACENTA.

In giving an abstract of the following observations on the structure of the placenta by Mr. Goodsir, it will render the subject more intelligible to divide it into three heads, as adopted in the original memoir:—

1st. Each placental tuft consists of a trunk, of primary branches, and of secondary branches or villi. Each villus is made up of the following parts. An *external* fine transparent membrane. This membrane is common to the whole tuft, passing from one villus to another, and closely covering the free surface of each. A layer of flattened nucleated cells beneath this membrane, (*external cells* of the villus,) here and there these cells are grouped together into heaps, in the centre of which is a germinal spot, which is engaged in the constant formation of new cells. It seems probable that the internal aspect of this layer of cells is lined by a fine membrane, as in the case of the intestinal epithelium. Beneath these structures, and immediately surrounding the blood-vessels within the villus, is another still finer and more transparent, but firm and strong membrane (*internal membrane* of the villus). This is readily separable from the layer of cells described: the space between them is probably occupied by a peculiar fluid. Within this membrane are the blood-vessels of the villus, consisting of one or sometimes two vessels, which form a simple or contorted loop occupying the cavity of the villus; they are derived from the umbilical arteries and veins; they differ from capillaries in their large size, and from arteries and veins in preserving the same mean diameter throughout: one such vessel occasionally passes from one to two or more villi, forming a loop in each, before it becomes continuous with a vein. Between these vessels and the internal membrane are some other cells, nucleated and highly transparent, called the *internal cells* of the villus.

2d. The substance of each tuft of the chorion is made up of nucleated cells of various sizes, containing a granular fluid. The surface of the tuft is covered by a fine membrane, which consists of flattened cells united by their edges. The free extremity of each villus of the tuft is bulbous, and consists of transparent cells arranged round a central germinal spot. These groups of cells are the active agents by which the villi grow. As gestation advances, and the allantois becomes applied to the internal surface of the chorion, blood-vessels become developed within the villi, which then communicate with the umbilical vessels. Thus, then, the villi of the chorion from the internal (or fœtal) portion of the placental villi, previously described, —the loops of vessels, internal cells, and internal membrane of which have their origin in the villi of the chorion.

3d. When impregnation has taken place, the mucous