

death. It was generally fluid, though coagula were found here and there in the blood-vessels, and especially in the cavities of the heart. It was very dark, yet strongly coloured and of a tolerably thick consistence. The quantity of fibrine was very small. Beneath the microscope the blood corpuscles appeared indented, and many fat globules were observed. The serum, after the subsidence of the red corpuscles, was of a dark-yellow colour, and an alkaline reaction. It contained a full quantity of albumen, but not a trace of biliphœin could be detected. The quantity of fat was large; that obtained by ether and alcohol was perfectly saponifiable, and contained no cholesterine. When examined for urea by Simon's process, it was found to contain a very large quantity of this substance. This was manifestly the result of the great suppression of urine. The proportion of fixed salts in the blood was much increased, especially the quantities of the chlorides of sodium and of potassium, which were absent in so marked a degree from the urine. A similar circumstance was noticed by Phœbus.

The fecal evacuations, which were very abundant and frequent, were watery, and of a turbid whitish, gruel-like appearance; the fecal odour was but seldom perceived. They had an alkaline reaction, and contained albumen. By nitric acid their colour was changed to a deep brownish-red, which passed into violet, exactly resembling, therefore, the changes produced in the urine by the same reagent; ammonia also produced here the same dark brown-red colour as it did in the urine. The same peculiar substance, therefore, which was found in the urine, and regarded as altered bile-pigment, was present also in the fecal evacuations. Simon, also (as well as others), mentions this peculiarity of the bile in the feces of cholera, being frequently coloured red instead of green by nitric acid.* Crystals of ammonia and phosphate of magnesia were also found in the fecal evacuations in this case.

The matters vomited during the progress of the disease were very watery and of a greenish or yellowish-green colour, and had a slightly acid or neutral reaction. Bile was the most essential ingredient, and it reacted towards nitric acid as ordinary biliphœin would, the first change in colour produced by the acid being green.

In conclusion, it would seem as if in this disease a peculiar change or decomposition was undergone by the bile, and it would be important to ascertain whether a similar alteration of this fluid takes place in other cases.†—*Lond. Med. Gaz.*, Aug. 1846, from *Heller's Archiv*.

6. *On the presence of large quantities of Fat in the Blood.* By DR. HELLER.—In a state of health, no free fat, in the form of fat globules, can be detected by the microscope in human blood; for the chief part of this ingredient, with the exception of cholesterine and seroline, exists in a saponified state. Inasmuch as chyle, however, after complete digestion, contains a considerable quantity of unsaponified fat, it follows that the free fat absorbed into the blood from this source must, during the metamorphosis which the blood undergoes, be converted into fatty acids. When, however, an inflammatory or other serious affection attacks any of the organs, which are largely concerned in the various metamorphoses which the blood undergoes, and the cells of which contain a considerable quantity of fat, as, for example, the liver, the kidneys, the lungs and the peritoneum, then much unsaponified fat may be found in the blood, and the serum has, in consequence, a more or less opaque milky aspect. This fat usually occurs as an emulsion, combined with albumen; and its peculiar appearance beneath the microscope, as well as its chemical characters, shows that the fat is neither saponified nor exists as an acid, nor even as free fat. The existence of milky serum in the blood has been noticed by Marcet in diabetes, by Trail in hepatitis, and by Christison in dropsy. The subject of the case which furnished the following observations was a robust, though not very corpulent, middle-aged man, who was admitted into the hospital for an attack of peritonitis. He was bled by venesection to about five ounces. The blood, when drawn, was of a tolerably bright-red colour, and sepa-

* *Animal Chemistry*, Dr. Day's Translation, vol. ii., p. 383.

† In a note, Heller mentions having subsequently met with a case of *Morbus Brightii* and peritonitis, in which the same altered bile-pigment, as above described, was found in the urine.

rated perfectly into clot and serum. No inflammatory crust formed on the coagulum, which was of its ordinary colour; yet, on the surface of it, there appeared several roundish depressions, about the size of peas, which seemed as though they were caused by the separation of fat from the clot. When the milky serum was decanted off, these little hollows remained filled with a portion of it, and gave to the whole clot a very singular appearance. The clot offered nothing peculiar when examined beneath the microscope. The serum was quite as white and opaque as milk, and remained so, after standing for a considerable time. It deposited nothing beyond a few blood-corpuscles. Its reaction was alkaline; specific gravity 1024.35. Examined beneath the microscope, the objects seen in it were: (a) a few groups of round transparent annular-looking globules, smaller than blood-corpuscles, yet quite different from ordinary fat-drops; (b), globules of the same kind, but larger, and occurring both singly and in pairs; (c), a few floating blood-corpuscles; (d), a fine granular matter; and (e), a very few large and opaque drops of fat. When a portion of serum was dried on the glass, and then redissolved in water, the annular-looking globules reappeared in still larger quantity and distinctness; the fat-globules also reappeared, but not the granular matter. When the serum was treated with ammonia, the globules arranged themselves in larger-sized groups, whilst the fluid in which they floated still remained turbid. Ammonia, therefore, had no saponifying effect. On the addition of acetic acid to the serum, its turbidity disappeared, the globules became clearer, and, on the addition of ammonia to them now, they became saponified. The application of heat caused the globules to become larger and less round. It appears, therefore, from the above results, that the annular-looking globules consisted of a kind of emulsion, composed of albumen and fat: and this view is confirmed by the subsequent chemical analysis, which showed the existence of an enormous quantity of fat, together with a much larger amount of albumen than usual. To the presence of these opaque globules composing the emulsion was the milky appearance of the serum therefore entirely due. 1000 parts of the serum consisted of 829.515 parts of water, and 170.485 of solid constituents, of which latter no less than 50.473 parts were fat (the average quantity of fat, in 1000 parts of healthy blood, seldom exceeding 2.5;) of the remaining solid constituents of the serum, albumen formed 108.791 parts, extractive matters and salts 11.221. The fat was obtained by repeated boilings in ether. It was perfectly saponifiable, and contained not a trace of cholesterine. There was about double the ordinary quantity of fibrine in the blood, whilst the corpuscles were considerably diminished in quantity. At a subsequent period, another venesection was performed, when the blood was found to have approached nearer to its ordinary condition.—*London Med. Gaz.*, Sept. 1846., from *Heller's Archiv*.

7. *On the Formation of Fat in the Animal Body.*—The following fact, related by M. Köss, is valuable, when taken in conjunction with the recent discussions which have been held in relation to the formation of fat in the animal economy. A workman was killed on a railroad, just after partaking of a full meal, consisting entirely of bread and grapes. His body was subsequently examined. The process of chymification was found in full activity, and at those portions of the small intestines which the chyme had reached, the mucous membrane was found dotted with white points, which, on closer examination, were seen to depend on the presence of drops of oil in the epithelial cells surrounding the extremities of the villi. Here is an example of the abundant formation of fat from substances which, at the most, could contain but a very small quantity of fatty elements, being composed almost entirely of gluten, starch and sugar.—*Lond. Med. Gaz.*, Oct., 1846, from *Encyclop. des Sc. Méd.*, March, 1846.

8. *Composition of Croup Membrane.*—DR. SERTZ mentions having examined beneath the microscope a portion of the false membrane lining the larynx and trachea, of a child which died of croup. The membrane was about half a line in thickness, and of slight consistence. It was composed almost entirely of ordinary pus-globules, mixed with which were a few inflammation-globules, and some other cells exactly similar to pus-globules, except in being at least as large again.—*Ibid.*, Sept., from *Heller's Archives*.