Original Communications.

Fibrinous Concretions in the Heart and large vessels. By BENSON BAKER, L.R.C.P., London, &c., late physician to the Star Street Dispensary, Paddington, London (late surgeon Allan S.S. "Polynesian.")

It is only of late years that the subject of this paper has received attention at the hands of the physician. The etiology and pathology of certain conditions of the blood which exist prior to the formation of fibrinous concretions, offer a field for suggestive and interesting inquiry. In the spirit of an inquirer I venture to record the facts I have observed, and to ask whether the interpretation of these facts, and the deductions drawn therefrom, may not be such as your reason and experience approve. Let the subject be discussed, some light will be let in, and eventually the truth will be elicited, or at least a new impulse will be given to further investigation.

The discovery of the circulation of the blood marked a grand epoch in medicine. Is the inquiry to stop here? Shall not that wonderful fluid, in its various and ever varying conditions be persistently interrogated? or, shall we fall, back on the old Mosaic doctrine, the blood is the life, and seek in this organism all the initiatory changes that precede all other organic pathological changes. Does not the altered condition of the blood materially affect the force of the circulation, and does not a morbid condition of blood and altered force of circulation make up important factors in the change which special organs and the general system undergo? Examples of these pathological conditions are familiar to us in every day practice, *i. e.*, hyper trophy of the heart from kidney disease. Seeing therefore, the great importance attendant upon altered conditions of the blood, it behoves every student of medicine to interrogate the facts that come before him as to the antecedent condition, or the tendencies that precede such alterations in the organic constituents of the blood. In the variety of pathological appearances that are presented to us as the resultant of morbid changes, might it not be instructive and interesting to inquire what was the condition of the blood whilst these changes were being wrought out. Is there an excess of fibrin or a decrease in red blood corpuscles, or an increase in white corpuscles, or an increase in color. What part do the blood salts play, are they in excess or deficient, or in an alcoholic form; if so, does this or any other condition of the blood affect its osmosis? Is the chemico-vital action of which the blood corpuscles are susceptible disturbed or destroyed? if so, what part does the nervous system or electrical conditions play in this change; or are there certain morbific products destroying the consistency of the blood and tending to fibrinous concretions in the vessels, thus sapping systemic life, and causing death.

Professor Huxley states that coagulation of the blood is a purely physico-chemical process dependent upon the properties of certain of the constituents of the plasma apart from the vitality of the fluid, if the blood plasma be prevented from coagulating by cold and greatly diluted, and a current of carbonic acid passed through it, will throw down a white powdery substance. If this substance be dissolved in a weak solution of common salt, or an extremely weak solution of potash or soda, it will coagulate and yield a clot of true, pure fibrin.

It would be absurd to suppose that a substance which has been precipitated from its solution and redissolved still remains alive. There are reasons for believing that this white substance consists of two constituents of very similar composition, which exist separately in living blood and the union of which is the cause of the act of coagulation. The reasons may be briefly stated thus: The pericardium and other serous cavaties contain a clear fluid which has exuded from the blood vessels and contains the elements of the blood without the blood corpuscles. This fluid sometimes coagulates spontaneously as the blood plasma would do, but very often it shows no disposition to coagulate; when this is the case it may be made to coagulate and yield a true fibrinous clot, by adding to it a little blood serum.

Now, if serum of blood be largely diluted with water, and a current of carbonic acid gas be passed through it, a white powdery substance will be thrown down; this redissolved in a dilute saline or extremely alkaline solution will, when added to the pericardant fluid, produce even as good a clot as that obtained with the original serum. This white substance, named globulin, exists not only in serum, but in various tissues of the body. It possesses the same