

that "all the spirit drinkers whom he has ever seen or known have been either subject to chronic cough or dyspnea, or have labored under chronic dry bronchial disorder, with asthma." It has been shown by Rodier and Becquerel that fat increases in the blood in most acute diseases, when the biliary secretion is retarded, and when a scanty amount of food is taken. Now we have these very conditions present under the influence of alcohol. Under their use (says Dr. Aitken) "we have a morbid condition induced which is highly favorable to the accumulation of fat in the blood, and such an accumulation has been proved to take place."

The presence of fat globules in the blood is a physiological condition met with during digestion, and after eating substances rich in fat, but the extreme degrees of this is met with especially in drunkards (Vogel, Buchanan, Frank) this latter authority is quoted by Vogel himself to show that the white and fatty blood has its origin in the abuse of alcoholic drinks. Dr. Adams of Calcutta, Dr. Serule of Strasbourg, and Dr. Rayer mention cases in which globules of oil was found floating in the serum of the blood, and in the urine after death.

Dr. Aitkin remarks truly: "it is shown by abundant testimony that the blood becomes surcharged with unchanged and unused material, and contains at least 30 per cent. more of carbon than in the normal state."

Dr. Parkes gives the order of events by which this state of things is brought about, as follows:—"Alcohol is directly absorbed by the blood vessels, without undergoing any change or decomposition. Part of it is eliminated very slowly, *as alcohol*, by the lungs, by the liver, and by the kidneys; but it appears to 'tarry' in largest amount in the liver and in the brain."

Drs. Becker and Hammond are quoted by Dr. Parkes to show that another portion is decomposed: "its hydrogen enters into combination with oxygen to form water, which, with acetic acid produced, is further changed into carbonic acid and water. *Oxygen is thus diverted from its proper function*, the exhalation of carbonic acid in the lungs is diminished, both absolutely and relatively and less urea is excreted by the kidneys than consistent with health."

"The pulmonary aqueous vapour is not lessened but the water of the urine is diminished, the chlorine greatly lessened, as also the acids and bases."

Dr. Aitkin continues: "All the evidence points to the effect of alcohol, as causing the retention of substances which ought to be eliminated; and this

retention of effete matter is still more intensified by the stimulant action of alcohol increasing for a limited time the frequency of functional acts, followed as it is by a corresponding depression. In this way impaired health is soon brought about, tending to wasting of the tissue generally; and, so long as any alcohol remains in the blood, *as alcohol*, a certain toxic or poisonous effect continues to be produced upon the nervous system through which the poisoned blood circulates."

"If a constant supply of the alcohol is kept up, the phenomena of *alcoholism* becomes chronic or persistent, and acute paroxysms supervene."

"In other instances the degeneration of several vital organs generally, may become so excessive that death follows by asthenia, or with typhoid phenomena, ending in coma."

Another writer says:

"The circulatory system is seriously affected; the arteries being often abnormally contracted, and the veins greatly and irregularly enlarged. Organic disease of the heart, especially ossification and fatty degeneration, is frequently induced. The blood is much darker, less coagulable, and more venous in character than in temperate persons. Consequently, digestion, assimilation, absorption, excretion, and indeed all the bodily functions, depending as they do on a healthy circulation, are imperfectly performed.

The respiration gives signal indications of this loathsome habit. The breath is generally impregnated with alcohol, and is frequently attended with a disgusting fetor. Well authenticated cases are on record of spontaneous combustion, resulting from the ignition of this alcoholic gas. The lung substance itself frequently becomes tuberculous, and consumption is induced."

Dr. Ainslie considers it to be "a true narcotic poison," and classes it with the so called anæsthetics, chloroform and sulphuric ether. As such, he accounts for its action in producing paralysis both sensory and motor, by its efficacy in producing a "suspension of nervous activity," and rendering the nerves "incapable of transmitting impressions," and this "increased by other sources of deficient vital power, he considers a sufficient explanation of the nervous debility, which brings about the delirious crisis," as evidenced in maniacal excitement, terrifying hallucinations, and delirium tremens. He also attributes to it the power to produce a series of morbid phenomena which he treats of under the general name *alcoholism* (so called from the cause by which they are induced,) which he considers are "due to the direct action upon the nervous system of a