

2nd. Fermentation always requires a ferment (i. e. matter in a state of decay, as yeast) to set it up; whereas *oxygenization* simply signifies that a body has absorbed oxygen, which is *not* a ferment (i. e. complex matter in a state of decomposition), but a simple, primitive element.

III. The blood, therefore, does *not* carry through the arteries any alcoholic spirit it has *manufactured* by organization. For,

1st. The only basis of *alcoholic* spirit is the fermentable matter called *sugar*; but the blood is not sugar, nor, in a healthy state, a sugary solution; moreover, the oxygen unites itself, not with the sugar, but with the carbon it carries off as carbonic acid from the lungs, and with the *blood itself*. As, therefore, sugar is the *only substance*, and the *vinous* fermentation the *only process*, from and by which *alcohol* can be generated,—and as the matter and conditions for this process do not exist in the normal blood,—spirit neither is, nor can be, manufactured either in the venous or arterial circulation.

2nd. Even if the chemical conditions of the *vinous* fermentation did exist in the blood, that process could not be carried on many minutes *without destroying life*. If we escaped death as the result of the *process* of fermentation set up, as before explained, we should inevitably perish under the action of the *products* of the *vinous* fermentation. For, while the alcohol generated would poison every organ and rob the blood of its vitalizing oxygen, the *carbonic-acid gas* would immediately *asphyxiate* the lungs, and *narcotize* the brain,—thus terminating life as effectually as by inhaling the fumes of charcoal, or the foul air which ascends from one of Sir Fowell Buxton's brewing vats. If the objector were to put his head over the edge of one of those vessels, while employed in the Christian function of transmuting food into poison, he would fall down insensible, and put out life as effectually as we put out the flame by placing the extinguisher upon the candle. The same would happen if the *brewing* took place *within* the body.

3rd. The analysis of human and bestial blood, will not yield a single drop of *alcohol*, unless alcoholic fluids are first introduced. Hence forbidding blood has nothing at all to do with forbidding alcohol, as the objector fancies. Alcohol cannot make blood, nor does it any way stand related to it, except as a poison.

4th. The objector's theological inference from his physiological fancies, is quite the *reverse* of that which his premises would warrant. For if alcohol were the vital or essential element of blood, then the forbidding of blood would be, virtually, the forbidding of alcohol, since that would constitute the essence of the forbidden article. This part of the objector's reasoning, however, is too childish to dwell upon; and having already removed its foundation, the structure may be left to fall into ruin of itself.

IV. Blood, then, is 'certainly *not* a fermented alcoholic fluid.' Nothing, in fact or science, is more certain than this—that normal blood contains *no alcohol*, that living blood (or the blood of a man) is *not fermented*. The only fluid in blood is water,—and the only fluid in the sap of trees is water. Hence,

V. The juice, or 'blood of the grape' contains no alcoholic, or indeed any other fiery fluid. Alcohol is equally a poison to the organism of plants and animals.

VI. *Oxygen* (or *pure air*), is the only real '*vital spirit*' of the blood; but nature gives us this abundantly in the atmosphere; there only, and neither in the grape nor in wine, should we seek for it. Nay, the '*spirit of wine*,' more than any thing else, robs the blood of this vitalizing gas, filling the stream of life with the fumes of charcoal, and doing in fact, in the blood, the *very opposite* of what fresh air effects. Oxygen invigorates and warms the blood, alcohol weakens and chills it—fresh air purifies, alcohol poisons.

I beg, in conclusion, to refer you to the results of some mi-

croscopical examinations and experiments, conducted by Prof. Schultz, of Berlin;* and to subscribe myself, in the truth,
Yours most cordially,

FRED. R. LEES.

THE CHRISTIAN DOCTRINE OF ABSTINENCE.

Great social movements are generally the visible embodiment of great principles. In this respect there is a philosophy in the temperance, or, as it now exists, total abstinence society, beyond that exhibited by the direct object of the institution. As an instrument for reclaiming the drunkard and preventing sober men from becoming drunkards, it is wisely constructed, and to a considerable extent answers the expectations of its originators; but as the visible embodiment of a great christian principle which has been too long neglected, it exhibits, if we mistake not, the token of its origin from a higher will, and more perfect perception than man's. There is not a popular movement, whether apparently in the right or wrong direction, but shows the operation of some principle acting upon the human mind, struggling to gain the ascendancy over some other principle or mere habit of thought and action, and from which the honest and enlightened thinker will never fail to receive instruction. It may happen that in the struggle between principle and habit, or between correct and erroneous principles, there is little christianity exhibited in the men by whom the struggle is conducted; yet truth is revealed, and by the weakness of the instruments is proved, not the less clearly, its divine origin.

One important truth revealed by the temperance movement, which is in fact the primary principle of that movement, is the *necessity of abstinence from the natural incentives to evil, on the part of those who desire to escape from the evil itself*. A principle which was verbally taught by our Saviour when he gave the following memorable advice to his disciples and followers:—"If thy right eye offend thee, pluck it out and cast it from thee; for it is profitable for thee that one of thy members should perish, and not that thy whole body should be cast into hell. And if thy right hand offend thee, cut it off and cast it from thee; for it is profitable for thee that one of thy members should perish, and not that thy whole body should be cast into hell." It seems strange, and yet it is not inexplicable, that this principle, when applied to intoxicating liquors, should be objected to by many well-meaning, and, we dare not doubt, sincere christians, on the ground that it is not consistent with

* "Narcotics destroy the contractility of the vesicles, so that they are paralysed and remain expanded, the coloring matter accumulating in them. Alcohol, on the other hand, stimulates them to an increased and unnatural contraction, which deprives them of coloring matter, and hurries them on to the last stage of development, i. e. induces their premature death. The decolorization of the blood vesicles is not sudden but gradual, and is more or less perfect according to the quantity of alcohol used. If the excitement be kept up, the vesicles contract to the size of a point, and at last disappear altogether, leaving one uniform transparent red fluid. In other words, the coloring matter has changed its locality, and passed from the vesicles into the plasma of the vital stream. The relations of the two constituents of the blood are reversed. The pale, or white vesicles, have lost all vital resistance: hence less oxygen can be absorbed and less carbon carried out. Therefore is the blood of the drunkard so dark, so venous. The formation of plasma, which is the true nutritive material of the blood, is interrupted in exact proportion to the decrease of the respiratory process, while owing to the presence of the coloring matter of the vesicles, the plasma itself becomes an irritant to the circulatory and secreting organs. Hence, while congestion is occurring in the capillaries, unnatural irritation is present in the secreting organs, of all which the necessary result must be disturbed function."—Vide Dr. Lee's History of Alcohol, No. 5.