

opaque, treacly, and vapid. To swallow it would have been *felo de se*; how to get rid of it without offence to the worthy superintendant who was talking to me I could not tell. At last when his back was turned, I offered it to a groom who sat on the same bench. He shook his head emphatically in refusal. I as a last resource, left the table, seized my hat and fled.

As I walked away, I could not help asking myself if it were reasonable to expect working men to leave the cool pewter pot, with its frothy, tonic appetising potation, for such a sickly, and hypocritical decoction of brown paper and treacle?

It would be perfectly easy to give a good cup of coffee for a penny. The superintendant of a coffee shop might roast and grind the berry, and give half an ounce of coffee to a third of a pint of boiling water, add two lumps of white sugar. This would be worth drinking. This might compete with the half-pint of beer which a penny will purchase, and which in my judgment, is a good investment for any poor man's penny.

It is much to be hoped that the promoters of working men's clubs and dining-rooms will not taboo good table beer, not, at least, until Pall-Mall can show a testotal club for the aristocracy. But, whilst we do not forbid table beer at meals, we should endeavour to shew that, for purposes of stimulation, for the purpose for which wine answers at the rich man's table—that is, to promote jollity good feeling, and social talk—good coffee is better cheaper and more agreeable, as well as safer than gin and water and tobacco. And to this end the working people must have something in the shape of coffee that shall be worthy of the name.

As your ably-conducted journal seems to take an interest in all social questions, I venture to ask you to insert the above.

MECHANICAL EQUIVALENT OF HEAT.

An amount of heat sufficient to raise the temperature of water by 1 deg. of Fahrenheit's thermometer, requires for its production 772 foot-pounds of mechanical power. The expenditure of the same amount of power will also raise 1 lb. of water to 1 deg. Fahr. This "dynamical specific heat of water" is known by the name of "Joule's equivalent," having been first determined by that gentleman through a series of experimental researches extending over many years. 772 (foot pounds being the mechanical equivalent for 1 deg. Fahr.; 1,390 foot-pounds is the equivalent for 1 deg. Centigrade.)

In a most interesting and striking manner, Professor Tyndall traces the existence of water through its various stages. 1 lb. of hydrogen, in combining with 8 lb. of oxygen to form water will, raise 34,000 lb. of water 1 deg. C. "Knowing the number of foot-pounds corresponding to the heating of 1 lb. of water 1 deg. C., we can readily calculate the number of foot-pounds equivalent to the heating of 34,000 lb. of water 1 deg. C. Multiplying the latter number by 1,390, we find that the concussion of our 1 lb. of hydrogen with 8 lb. of oxygen is equal, in mechanical value, to the raising of 47,000,000 lb. 1 foot high!" When this combination is effected, the substance is in the state of vapour; it first sinks to 212 deg. Fahr.,

and is afterwards condensed into water. The atoms of oxygen and hydrogen clash together and form the compound substance, steam; and molecules of the steam then fall together and form the liquid, water. The mechanical value of these acts can be also calculated. Thus, "9 lb. of steam in falling to water, generate an amount of heat sufficient to raise $967 \times 9 = 8,703$ lb. of water 1 deg. Fahr.; multiplying this number by 772, we have a product of 6,718,716 foot-pounds as the mechanical value of the mere act of condensation. The next great fall of our 9 lb. of water is from the state of liquid to that of ice, and the mechanical value of this act is equal to 993,564 foot-pounds. Thus, our 9 lb. of water, in its origin and progress, falls down three great precipices: the first fall is equivalent to the descent of a ton weight urged by gravity down a precipice 22,320 ft. high; the second fall is equal to that of a ton down a precipice 2,900 ft. high; and the third is equal to the descent of a ton down a precipice 433 ft. high.

DEODORIZING PETROLEUM AND MINERAL OILS.

A patent has been taken out by Mr. J. Moule, chemist, London, for the employment of deutoxide or nitrous gas in removing the offensive odor of petroleum and other mineral oils. One mode of procuring this gas is by using nitric or fuming nitrous acid in combination with shreds of iron, copper or other metal, the nitrous gas thus formed is conducted from the outlet by means of a pipe or tube, into a vessel charged with petroleum to be deodorized, in such a way that this pipe or tube reaches to the bottom of the vessel, thus allowing the nitrous gas to force its way through the whole of the contents. The gas is continued to be generated and forced therein, until fumes of nitrous gas begin freely to escape from the petroleum or oil, thereby indicating its complete saturation. As soon as this has taken place, the whole is to be well roused by forcing air through the liquid, or by a suitable agitation, after which the vessel containing the liquid petroleum or oil is to be closed until, by testing, the petroleum or products thereof are found free from any disagreeable odor, the time for which will be in proportion to the amount of gas generated and forced therein. Should the temperature be so low as to render the petroleum thick, it should be heated to a temperature of 100° Fah., and by thus liquefying it the deodorization will be more quickly and easily effected. Another modification of this deodorizing process is to pass the nitrous gas during the distillation of petroleum into the upper part of the still, so as to bring the nitrous gas into contact with the vapors arising therefrom. The gas for this purpose is collected in a suitable gasholder, and by pressure forced into contact with the petroleum vapors, the proportion of gas being regulated by a suitable stop-cock. The nitrous gas in this process may also be used in combination with ordinary or superheated steam, if thought more desirable. As it may be found convenient to effect the deodorization of the crude petroleum in the casks, other means are made use of as follows:—Into a cask, the contents of which are about 40 gallons, there are poured three or four pounds of nitric or fuming nitrous acid, and the contents thoroughly roused by means