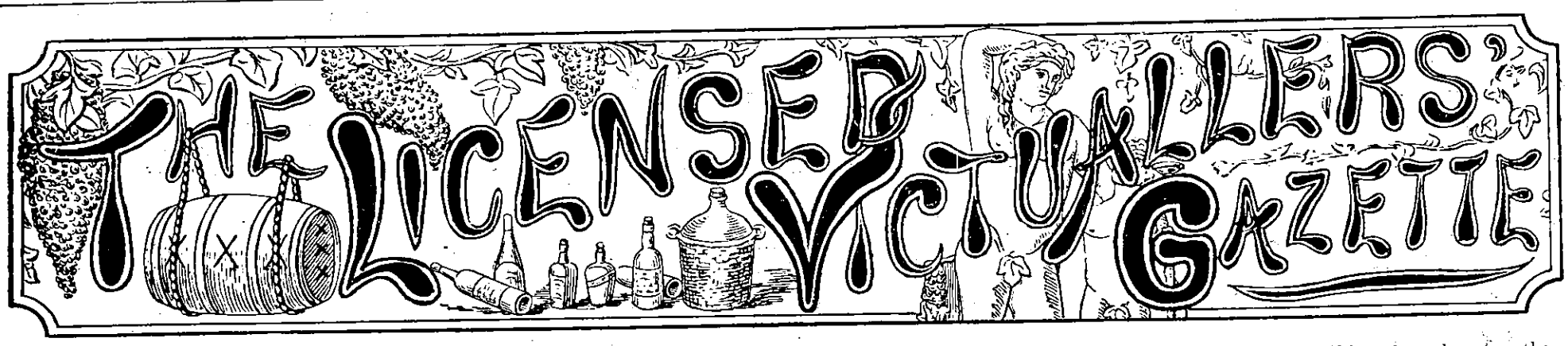


## SUNDAY TRAMS.

**The opposition to the running of the electric trams on Sunday proceeds ostensibly from the "religious" people, but in reality it is engineered by that hysterical party which seeks to interfere with every action of our daily life, to regulate our drinks, our dietary, our clothes and our modes of thought They are well-named prohibitionists, for they would, if they could prohibit everybody from doing anything for which they themselves have no inclination or which is debarred them. Unhappily for the credit of Christianity certain sections of the Church have linked their interests with this intolerant and intolerable band, the impelling motive being no doubt fear—fear lest the dispersion of the working people over the fields of a summer Sunday should reduce the sum total on the collection plate.**

**Now, assuming that the pastors of these small bigoted sects have a proprietary interest in the members of their own congregations, is the whole community to be penalised in order that a few possible backsliders may be kept within the fold? Without irreverence, it may be said that the souls of these sham religionists, even supposing that they possess such articles, are scarcely worth saving. The psalm-singing prohibitionist is very like the Chinese in Elia's delightful Essay who burned down their dwellings in order to obtain roast pork!**

**But are we, who owu the houses, going to submit to this wholesale arson? That is the point for the people to consider For some reason or other, the "Star" is championing the cause of the anti-trammists, and the correspondence columns of that journal have been crowded with letters denouncing the greed of the Tram Company and the impiety of those who want a ride in the trams on "The Lord's Day." The natural liberty of mankind, say these hysterical folk, is threatened, which is quite true, but they themselves menace this liberty. The proof that the Sunday tram is a public boon is to be found in the crowds that already patronise it along the suburban line, notwithstanding that many of the passengers have to walk long distances to avail themselves of the facility. Are these people to be denied the boon of a run into the country because a few narrow-minded and hypocritical "religionists" are afraid of the "Continental Sabbath?" The two larger divisions of the Church, the Roman Catholics and the Anglicans, are not, as such, opposed to Sunday trams, because it is recognised by these that there is nothing essentially impious in a tramcar any more than there is in riding in a carriage or a cab, or on horseback, or in a perambulator.**

**The question, in short, in the eyes of all those who are not dominated by one idea, is quite unconnected with religion. The blocking of Sunday trams will not have the effect of driving those to church who do not want to go; on the contrary, it will tend to strengthen the dislike that many already entertain for the so-called Evangelical sects. The prohibition of the Sunday trams will be looked upon as a most unwarrantable interference with the liberty of the subject. There is no resemblance between the prohibition of liquor and the prohibition of trams, because whereas the former affects only a few of the male sex, the latter is felt by men, women and children alike. We hope, for the credit of our character for common sense, as well as for the sake of the future of this great city, that the inhabitants will show by an overwhelming majority that they do not intend to be bound by the fetters of a sham Puritanism, a Puritanism that possesses all the bad qualities and none of the heroism of its alleged prototype.**

## IS ALCOHOL A FOOD? SCIENTISTS SAY "YES."

(Concluded.)

It is necessary for us to consider here what a food really is.

The animal body may be compared to a steam engine. In an engine, by burning a given amount of fuel, we obtain a certain amount of energy in the shape of heat, which, when properly utilised, is capable of executing a certain amount of mechanical work.

In the animal economy food takes the place of fuel in the engine. For engine purposes some fuels are better than others. A ton of coal will, for example, do more work than a ton of wood. So also is it with different foods, but the estimation of their true values is a more complex matter than those of fuels, for the reason, chiefly, that food plays a dual part. It is really more to the animal body than fuel is to the engine. Not only does it constitute the sole source of heat and muscular power, but it also supplies the materials necessary for the renewal of worn-out parts. As the different organs of the body perform their functions they wear out, and this wear and tear has to be continually repaired if the body is to remain in its normal state of health.

We may divide foods into two great classes, each of which is equally indispensable. These are—(1) Heat-producing foots, or carbohydrates; (2) nitrogenous foods, or those which supply materials for renewals and repairs. The two divisions dovetail into one another to a great extent. Most of our foods are complex mixtures of simple substances, each of which belongs to one of these two great groups.

The difficulty of accurately estimating the true value of a food is further increased by the fact that all foods are not equally well adapted to the digestive apparatus of the individual. This, however, is a point that concerns us less, for alcohol is one of the most easily assimilated of substances. In fact, it requires no digestion prior to assimilation.

This digresssion may seem irrelevant, but it is necessary in order that I may be able to make you understand the true food value of alcohol. Chemically considered, it consists of hydrogen, carbon and oxygen. It contains no nitrogen. In other words, it is a carbohydrate or animal fuel, and must only be compared with other substances of the same class, the most important of which are starches, sugars and fats, of which there are many varieties, according to the particular form of food under consideration. Carbohydrates are really the most important food substances so far as quantity is concerned. In the animal economy as in an engine, to continue the simile, the fuel necessary is far more considerable in quantity than the materials required for repairs.

Alcohol cannot, therefore, be a complete food any more than butter or other fats, starch, or sugar. If, however, it can be proved that it is capable of replacing a given quantity of one of these substances, its food value is established once for all, and that it can take the place of other carbohydrates is the important result of Atwater and Benedict's experiments.

To find the true value of a food is an infinitely more complicated matter than to find that of a fuel. In the case of the latter, it is only necessary to burn it completely in an instrument in which the amount of heat evolved by its combustion is collected and accurately measured, due precaution being taken against loss of any kind. Such an instrument is termed a calorimeter. It enables one to ascertain how many heat units the combustion of a given weight of the fuel under consideration can produce.

We cannot treat a food in the same way. Some substances which would develop great heat are not foods at all, and could not be assimilated by the animal economy.

The different foods had therefore to be studied in their effect on the animal body.

Atwater and Benedict had a special form of calorimeter constructed of sufficient size to be able to contain the animal upon which the effect of different foods was to be tried, every precaution being taken to avoid loss of heat of any kind. It was only necessary to shut the animal up in the calorimeter, give it a known quantity of food to be studied, measure carefully everything that went into and came out of the instrument, including the air inhaled and exhaled. The temperature of everything being carefully taken, it was possible to ascertain the number of heat units a given quantity of any food was capable of being transformed into.

(The difference between a heat unit or calorie and a degree on a thermometer was then explained.)

One of the most original features of these experiments was that instead of studying effects of different foods on an ordinary domestic animal, such as a dog or a pig, they were actually carried out on human beings. The animal experimented on was really the scientist who conducted the experiment. He shut himself up for several days in the calorimeter, which in its essentials consisted of a small room so constructed that loss of heat by radiation or by conductability was impossible. Absolutely everything that went in or out was weighed, analysed, and its temperature taken, even including the air breathed. It was thus possible to draw up a sort of balance-sheet, on a heat basis, of the phenomena which took place in the room, and to find how many heat units a given supply of food was capable of producing. I again quote from Dr. Duclaux' article.

The following was the problem :—

"An adult in good health and in equilibrium—that is to say, in such a condition that he is neither gaining nor losing weight—is at a given moment introduced into an enclosed space, which may be compared to the bulb of a thermometer, in that every variation of temperature is noticeable and measurable. He takes in with him the necessary food for his stay of several days. . . . . As the chamber is hermetically sealed, a current of air ventilates it constantly, bringing in the necessary oxygen and carrying away the waste products. These are analysed both qualitatively and quantitatively at their entrance and exit. The operator notes the state of his pulse and all necessary observations, and remains in telephonic communication with his assistants, who are outside. . . . If he wishes, as might naturally be expected, to try the effect of work on nutrition, he has a 'motorcycle,' in which the force he expends is transformed, by means of a dynamo, into an electric current. This current spends itself in an Edison incandescent lamp, enclosed like everything else in the chamber. The heat given out is estimated in conjunction with that produced by the other forms of the transformation of the food. It is thus evident that, taken in the form of food, all these different forms (of energy) leave the instrument in the same form, viz., that of heat, and are collected by the same apparatus."

Being in possession of this unique calorimeter, which cost several hundred pounds to construct, owing to necessarily complicated mechanism, Messrs Atwater and Benedict were in a position to carry out experiments with a degree of thoroughness which had never before been possible. These experiments were very numerous and varied. The subject under observation was sometimes given a diet, including a certain quantity of alcohol, and sometimes one from which alcohol was omitted. Dr. Duclaux gives a number of particulars and figures as to a series of twenty-six experiments, in which three of the assistants at the laboratory took part. They were respectively a Swede, an American and a Canadian. Two of them were total abstainers, but they did not experience any inconvenience from taking the alcohol prescribed in the trials. It was equivalent to a litre (practically an imperial quart) of light wine per day. It did not produce any particular physiological effect worthy of note.

Repeated experiments extending over periods of several days each, were tried on different individuals, diets, including alcohol and non-alcoholic diets, being given alternately. In addition, some experiments were tried with the subject in a state of rest, others, again, when he was doing hard muscular work. Eight hours of it on the motor-cycle.

The results are resumed by Dr. Duclaux in the following words :—

"In the daily ration of three healthy men, it has been possible, without any inconvenience, to replace butter, vegetables or other similar foods by alcohol, in the form of wine or brandy. These substitutions and alterations do not depend upon whether the subject is at work or at rest, nor any other circumstance concerning him. Everything depends upon the isodynamic co-efficient of the food, which remains physiologically the same, so long as these co-efficients are taken into consideration in making the substitutions. When wine is suppressed at a meal it must be replaced by something else."

This language is rather technical, and in portion of his closing paragraph he expresses himself in a more every-day manner, as follows :—

"This is the altered view I pointed out previously. . . . . Science had not studied the question. . . . The obstacle has at last been removed, and we find that it did not hide anything unforeseen. Alcohol was in its place as a food, as one could guess from what was known of it in microbiology. . . . The merit of Mr Atwater and his colleagues lies in their having enlightened us on this point. Alcohol is thus a food to the same extent as the various foods it can replace. Furthermore, substitutions should be made, not weight for weight, but by parts setting free, when they are burnt, the same quantity of heat and containing the same quantity of energy. From this standpoint, alcohol is one of the first on the list."

(An extract from the English paper "Nature," of September 4, 1902, dealing with the same subject, was then read.)

Alcohol must henceforth be looked upon as a food, a qualification which was denied to it by many leading authorities in the past.

True, most of us have had a sort of instinctive feeling that the beer consumed by Englishmen and Germans, and the wine which forms the staple beverage of France, in the vast majority of cases taken regularly, and in moderate quantities, could not be quite devoid of value, but until the Atwater and Benedict experiments, the food value of alcohol had not been scientifically demonstrated. It will be observed that in the experiments referred to above, alcohol was always taken in moderation.

## Trade Topics

The repairs and alterations to the three Cambridge hotels having been completed to the satisfaction of the Licensing Committee, the licenses have been renewed.

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We learn by cable that, according to an expert estimate, the English hop crop this season will not exceed 425,000cwt, while it may possibly amount to only 350,000cwt. The requirements of the home market are stated at 800,000cwt. The imports from the Continent will probably be 60,000cwt, and from the United States 90,000cwt. The stocks now on the market are the smallest known since 1883, and in view of the expected deficiency in the supply high prices are probable.

* * * *

A case against Mr Dineen, lessee of the Ashburton Railway Refreshment Rooms, for alleged sale of liquor on the 5th inst., and keeping liquor for sale, was heard before Mr Wray, S.M., on Friday. The magistrate, in dismissing both informations, said there was no direct evidence that sale had taken place, and that the stock which was found on the premises, and which was the remains of the stock in hand when the license was taken away on June 30, was not a kind likely to be kept for sly grog-selling. The whisky looked suspicious, but defendant appeared to have plenty of friends, and that was evidently why he kept it on the premises. The magistrate thought something should be done by the authorities to prevent liquor going into premises of this sort.

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The Hastings correspondent of the "Hawke's Bay Herald" writes :—"Mr Bragato, Government Viticulturist, informed me yesterday that Mr F. Anderson, at present managing Mrs Randall's vineyard at Greenmeadows, has been appointed manager of the State vineyard which is to be planted at Te Mata. No time is being lost in getting the vineyard planted. The ploughing and preliminary working have been placed in the hands of Mr L. Cooper, of Havelock, and the vine cuttings have been sent over from Hastings. Mr Bragato remains in the district to supervise the work.