

dom accupy themselves with devising adequate means for protecting the consumer against having a butter substitute, or adulterated butter, fraudulently sold to him as the true article. Farmers who look with a favorable eye upon the new political project, may as well understand that if the Customs' line be abolished, it would be practically impossible to prevent the illegal importation of butter substitutes from the United States; and they should inform themselves, therefore, on the probable effect of Commercial Union, if adopted, on the dairying interest in this country.

Our readers may be interested to know that a committee of the British House of Commons has recently been sitting, under the presidency of the Right Hon. G. Sclater-Booth, to consider the provisions of two bills proposing to regulate the manufacture and sale of butter substitutes, and the evidence taken certainly contains matter which will be new and opportune information in this country. The first witness was Sir Frederick Abel, who began by describing the process of manufacturing butterine, as he had seen it carried out in Holland. He drew a sharp distinction between butterine and oleomargarine, stating that the former is the finished product and ordinary article of commerce, while the latter is merely the manufacturer's intermediate product—an article not sold retail at all. In fact, he described butterine as a mixture of 50 to 60 per cent. of oleomargarine (which is the more fluid portion of animal fat), with ground-nut oil or sesame oil, churned milk or strongly-flavored butter, and annatto or some other harmless coloring matter, together with a due proportion of salt. He said he considered butterine perfectly wholesome and unobjectionable, which reads strangely to her Majesty's subjects in this Dominion, victims of a coercion act passed by their own law-makers, the disingenuous preamble of which reads as follows:—"Whereas the use of certain substitutes for butter heretofore manufactured and exposed for sale in Canada is injurious to health and it is expedient to prohibit the manufacture and sale thereof."

The next witness was Mr. H. P. Thomas, principal clerk in charge of the Public Health department of the Local Government Board. He doubted the necessity for any special legislation on the subject of butter-substitutes, believing the existing laws for preventing and punishing adulteration or fraudulent substitution sufficient, provided they were strictly administered. He thought the existing provisions requiring declaration of the nature of mixtures sufficient; but mentioned that he had known instances in which the last three letters of the word "Butterine" on a package had been covered up by a price label being pasted over them.

Mr. A. H. Allen, president of the Society of Public Analysts, presented a draft bill for the consideration of the committee. In this draft the labelling of all butter-substitutes sold retail was made compulsory and this rendered an invoice equivalent to a warranty. He expressed the opinion that special legislation with respect to butter-substitutes was desirable, as there was no

other article of an exactly parallel nature, except perhaps factitious wine. Thus, mixed coffee, adulterated pepper, and watered milk do contain some of the article under the name of which they are sold; but butterine often contains no real butter, except the trifling proportion added to give it a characteristic flavor. Much of this witness' examination was devoted to the question of the desirability of abolishing the word "butterine" in favor of "margarine" or "oleomargarine." In his opinion all of the three were equally unscientific; but, as butterine had now become a generally accepted commercial name for butter-substitutes, he saw no reason for prohibiting its use, provided it were made illegal to cover up or hide the terminal letters on any label bearing such designation. He explained that "oleomargarine" was the name originally given to the finished article or factitious butter, though it might now be more accurately employed to designate an intermediate product. But, "oleomargarine" is still recognized as the ordinary name for butter substitutes in America, and has recently been made compulsory all over the United States; hence the anomaly that an article exported from New York as "oleomargarine" ceases on arrival at Liverpool to be properly so described; and it thenceforward becomes known as "butterine."

Mr. Otto Heiner testified that the mixing of butter with butter-substitutes was a manufacturer's operation, and was rarely practised by a retailer. He proposed that all admixtures of real butter in order to produce butterine should be prohibited, so as to decrease the tendency to fraud and get rid of all difficulties for analysts.

Dr. James Bell, of the Inland Revenue laboratory, considered that the inspector should have power to go into any butter store, whether wholesale or retail, and take a sample for analysis of any article of the character of butter which was not distinctly labelled by the name eventually adopted to distinguish butter-substitutes. In other words, he proposed that failure to label a butter-substitute kept in stock for sale should be accepted as evidence of fraudulent intent, and as such be made an offence, even when no sale took place.

The last suggestion found favor with a subsequent witness examined, who spoke "on behalf of the wholesale butterine merchants"—a class of traders placed in Canada equally under the ban of the Dominion blue laws with vendors of distilled or fermented beverages within the limits of Scott Act counties. Thus, Mr. John Cary Lovel spoke of having had great experience "as an importer (but not from Canada) and distributor of butter-substitutes." He restricted the term "oleomargarine" to the manufacturer's intermediate product, he objected to the suppression of the word "butterine," and would apply that appellation to every substitute for genuine butter. In his opinion the sale of butterine for butter should be put a stop to, all butter substitutes sold retail should be wrapped in descriptive labels, and the word "Butterine" should be branded on all kegs and cases. He held that by inflicting sufficiently heavy fines, and even

imprisonment for repeated offences, the fraudulent sale of butter-substitutes would soon cease.

PETROLEUM USED AS FUEL.

Since discussing, in a recent issue, the subject of fuels of the future, we have seen, in the August number of *Forney's Railroad and Engineering Journal*, an interesting description of a method employed by a Scotchman in Russia, of using crude petroleum as fuel for locomotive engines. Finding oil plentiful and cheap in South-eastern Russia, and other fuels both scarce and dear, Mr. Thomas Urquhart, who has been for some years locomotive superintendent of the Grazi-Tsaritzin railway, devised a method of using petroleum as fuel upon the engines of that road. It is so far successful that there is now upon the railway named no less than 143 locomotives burning petroleum. We shall endeavor to describe the method there in use.

Briefly, the oil is fed into the fire-box of the engine by means of an injector consisting of a central horizontal tube, to which steam is admitted by a pipe set at right angles to it. An annular recess or jacket surrounds the tube, which receives steam through holes leading from this jacket. The tapering nozzle of this steam-tube projects into the back end of the fire-box through a hollow stay-bolt, and around this nozzle is an annular opening through which oil is admitted; outside of this again is a still larger cylindrical opening to which air finds its way. At a point between the steam-holes and the nozzle, oil is supplied through a larger pipe to a chamber concentric with the circumference of the steam-tube. The current of steam and oil which escapes at the nozzle draws in a supply of air. Pressure of steam converts the oil into a finely divided spray with which the air mingles. The admission of oil is regulated by the turning of a band wheel, which shoves the tapering end of the steam-tube into or withdraws it from the oil tube, thus stopping or starting the flow of oil into the fire-box.

Last year, the Pennsylvania Railroad instructed one of its representatives to go to Russia and learn what he could of Mr. Urquhart's system of burning oil. He did so, and on his return the company resolved to apply the system to one of their engines. A good deal of modification was required to adapt the method of American engines but, says the magazine we have quoted from, "the difficulties have apparently been all overcome and the Pennsylvania engine to which it has been applied has been in successful use for some time." In the case of this engine, the fire-box is lined with a fire-brick wall, in front, at the sides and on top. The shape of this fire-brick structure is that of a bonnet, with its opening turned towards the injector. The object of the fire-brick is to receive the particles of oil that are not consumed when they are first injected into the fire-box. The bonnet-shaped brick structure acts as a combustion-chamber, which becomes heated to a very high temperature, radiates heat to all parts of the fire-box and also re-ignites the oil which has escaped burning. This fuel,