

## OUR FOOD SUPPLIES.

THE strength of a chain is no more than the strength of its weakest link; a chain that has a failing link has no strength at all; the links of a chain are useless until they are put together into the chain. Such is the law of chains. In considering modern systems of hygiene in relation to our food supply, various steps and processes may be considered as links of a chain which is dependent for its strength upon the merit of each individual link.

A case in point is the system under which the retail meat trade of this country is carried on. It is a chain with a flaw. Let us assume that in all other respects the system is perfect, that the law prescribes absolutely all that it ought to prescribe in the matter of killing under proper conditions, that it allows no carcass to be removed to the place of retail without a certificate given after expert examination; that it demands loftiness, airiness, and cleanliness in the slaughter-house and surroundings. As a matter of fact there are many exceptions to the rule which aims at perfection in these respects. The regulation of the abattoir is not universal; for example, the useful but unclean pig is, in certain cases, exempt from the law of scientific examination. Assuming, however, that the system is perfect, in every respect, the fact would remain that all the meat so admirably safeguarded would be a prey to the army of cells and microbes which is borne upon the wind in every street at every hour, seeking what it may devour, numbering in its ranks the germs of every disease imaginable, advancing stealthily and invisibly in the wake of the great plague of flies buzzing and circling among noisome things, in places hideous and unmentionable, and then with disease-infected bodies crawling upon meat intended for human consumption. Here we see the last link of this chain which imperatively requires strengthening. And it is easily strengthened. Put the meat away in a room cooled by a refrigerator, and inflict a heavy fine in every case where it is exposed to the flies and dirt from which it ought to be protected. There need be no hardship, for nowadays refrigerating plants can be obtained at small cost. Every butcher's shop should be licensed, and after the expiration of a certain period no license should be given in respect of any shop within a municipality unless the same is provided with a refrigerating room, equal in capacity to the trade undertaken by the shopkeeper.

Another side of our food supply offers considerations similar in character, but rather more extended in scope. There is in the trade of the baker of our cities room for reflection on the forging of links and the making of chains. The conditions under which a loaf is produced are never perfect, and in many cases the process is carried on in a manner which would revolt the stomach of a hardy garbage collector. When finished, whatever may have been the conditions of its genesis and its surroundings in the place of storage, the loaf is carried forth for delivery to the consumer exposed as it came from the oven to the assaults of the microbic horde, and against contact with which, as against other things of evil repute, it has no protection whatever.

Now for the various stages of manufacture there are existent, although some of them are employed for other purposes, processes and machines which would, if assembled and combined in a bakery, make a perfectly ideal chain for the production of a loaf absolutely pure and protected from contaminating influences. There are machines that mix, machines that knead, machines that shape and cut and weigh, machines that bake and machines that wrap in papers. Now what is there to prevent all these links from being assembled under some well thought out plan to make a chain complete in itself? An apparatus which will receive the ingredients at one end and deliver the paper-wrapped loaf at the other? a complete baking-machine, economical in operation and sanitary from every point?

The picture is easily drawn. The factory lined with glazed white tiles; receiving hoppers for the flour; shuttles carrying it to the mixing-machine, from which it is delivered to the kneading-apparatus; endless wire conveyers conducting the dough to the steam-heated "raising-chamber" and subsequently to the machine cutters, weighers, and steam baking-ovens; the baked loaf being finally conveyed to a mould in which it is automatically wrapped in paper drawn from a reel.

A glance at the future career of the loaf so produced is reassuring. Consider the accidents of the road; it falls upon the ground, its coat of prepared paper tough and staunch protects it against the assaults of the microbe legions. The hand of the delivery car driver reeking from contact with greasy harness or filthy wheel-chain lifts it for delivery. The unkempt guest of the cheap restaurant extends towards it his unwashed fist and his

knife of all trades, but from the point of view of wholesome human food the loaf remains uncontaminated. We have drawn a fascinating sketch of what easily might be.

Will any one make it a reality? It is a mere question of bringing together a series of links which are now individually used for other but analogous purposes.

There is another chain devoted entirely to the retail supply of milk to the consumers of our towns. Take Wellington for instance, whose supply sources extend on one side as far as Longburn and on the other as far as the Wairarapa. Two railway lines bring in a large proportion of the bulk of this supply every day, and the rest is carried down by a thousand carts from a thousand hills. The links of the chain where it tries to hold the byres and the yards and the thousand details of the dairy, its cleansings and washings and scrapings and precautions expedient and sanitary, are not at all what they ought to be, considering that milk is the greatest of all carriers of infection known to human experience. But it is where the milk approaches the consumer, the place where the chain ought to be strongest, that it is the weakest. So weak is it that the very existence of any links at all may well be doubted. The fact may be observed by any one who likes to take the trouble any day he chooses that the jugs and cans used for its reception are many of them imperfectly clean and, as he can see at a glance, seldom sterilised. At the same time milkmen are attainted by prevailing epidemics of influenza and bronchitis, and hovering ever over the heads of seller and customer alike is the dread scourge of tubercle.

It may be safely asserted that the clothing of very few milkmen is as clean as it should be, and that milk is often ladled from the can by filthy-contaminated hands, the milk running over the fingers and back into the can.

It is clear as daylight that if the delivery is not effected in a cleanly manner, efforts to protect the other parts of the service of milk are reduced to absurdity. Open delivery cans are a fertile source of the dissemination of disease from affected milkmen and should be prohibited. Every can should be fitted with a draw-off tap, readily removable for cleansing purposes, and for convenience the can might have a light base to raise it from the ground so that the measuring vessel could be held beneath the tap; milk should where possible be pasteurised and delivered to consumers in glass-stoppered bottles, such as are widely used in many European countries. Ensure a safe delivery, and you have the best encouragement for perfecting the whole chain of milk supply. There is every reason to believe that the efforts of our health Department will before long result in great improvement in the system of retailing milk. When that consummation is reached there will be promise for the strengthening of the at present practically worthless links in the chain of general control. The result must be increase of human health and considerable reduction in the death rate.

In this connection it is interesting to remember that it was reported from Paris early in last October that a new method of sterilising milk had been discovered by Professor Behring. This is done without boiling, which is objected to by so many consumers for reasons of flavour; or the destruction of any of its essential principles—a far more important consideration. The method according to *Engineering* is based on the powerful qualities of German perphydrol simply oxygenated, one gramme per litre being sufficient to destroy all noxious germs. It is important that milk thus sterilised can be kept a long time, and is not injured by travelling. It cannot, however, be drunk until it has been gently warmed, and a drop of catalytic substance added.

Another circumstance very noteworthy, irrespective of the sterilisation, is the discovery of the same competent observer and authority that light has a very harmful effect upon milk, whether sterilised hot, or cold. Hence his recommendation that all milk should be kept in a dark place and in red or green bottles.

## House-Moving by Water.

Chicago still has so many frame houses that house-moving is frequently undertaken. The crowded condition of the streets, with both elevated and trolley lines, is, however, a heavy obstacle. Consequently, when the buildings are near the water, they are often carried to their new destination on scows.

The oldest university in the world is the "School for the Sons of the Empire" at Peking China. The names of its 60,000 graduates are carved on 320 stone pillars.

## THE FUTURE OF WIRELESS.

A MONTH ago the proposals of the Marconi company were before the government. To-day they stand postponed to enable the government to study recent developments. Australia will probably follow the example, and it has been said that New Zealand ought not to decide in a matter of such importance until co-operation of Australia is secured. In some degree there is truth in this, because it would be absurd to deny that the co-operation of Australia is both important and desirable. But that New Zealand must not consider her position on its own merits without reference to any other dependency of the Empire, is equally unthinkable. New Zealand, moreover, there is no reason against it, may very well take the lead, especially where all hesitate.

In this case the facts are of the simplest. Britain has the command of strategic points enough to make a girdle of communication round her whole empire. Therefore, should the cable services suffer, as they are sure to suffer at the hands of an enterprising enemy in war time, the girdle of communication can still be maintained intact by a series of wireless stations safe from attack. Secondly, the colony is ready to bear a larger share of the cost of the navy that protects her commerce so effectually and guarantees her existence as a component part of the empire with irresistible power; it is one of the questions to be settled at the Imperial Conference to which the Prime Minister is now journeying. But what better assistance could we give the navy than by providing wireless stations for the King's ships, which all carry the instruments of the Marconi system of wireless telegraphy? It is the kind of assistance by which the vision of the admiral in command of the Australasian station would be increased by vast distances, and his plans in the hour of emergency kept inviolable. Thirdly, there is our own shipping. Undoubtedly the advantage of wireless news daily delivered would be popular with all travellers by sea here as it is popular with the travellers of the Atlantic Ocean. It is also certain that the companies carrying passengers in the intercolonial trade are ready to take advantage whenever a wireless system is installed. Fourthly the advantages of a wireless installation on a ship are obvious. Take for instance the case of the steamer abandoned the other day and still drifting about at the back of nowhere, and add all the cases of broken-down drifters which would have been heard of very much earlier in their wanderings, and add, too, all other possibilities of disaster. Fifthly the claim of meteorology is impressive. The difficulty of the forecasts of the marine departments of these countries consists mainly in the small number of stations. But if every steamer plying in these seas were a travelling observing station with facility of instant reporting, that difficulty would be greatly diminished, with, moreover, great advantage to the success of climatology. Here be five irrefragable reasons for the installation of wireless. The only argument as yet raised against them is that the disasters to shipping in these seas are too few, and the visits of the coastal shipping to coast ports are too many to make an economic case for the establishment of wireless. The "pros" are imperial—strategic, mercantile, popular, humanitarian, scientific; the "cons" are £10,000 a year. It is Lombard street to the China orange on wireless.

For postponement there is a better case. It is that the late international conference decided to make all stations common as far as possible. This was qualified, it is said, by the British delegates in some way, in a direction of a recommendation that the British government, which admittedly commands the position by virtue of the great extent of territory over which it has permitted the installation of wireless telegraphy, may permit some further installation common to the nations of the civilised world. If this be so, it only means that the British representatives, while maintaining the advantages gained by superior British enterprise, have advised a generous action for the benefit of the civilised world. But there is some doubt on the subject unhappily, for it is known that the action of these delegates has caused a great commotion of discontent and protest in the War Office and at the Admiralty. Therefore it may be well to wait until the question is cleared up of what did really happen at the conference. In other words, to what is Britain committed, and if Britain, being committed by the British representatives, will refuse to ratify their action? Such is the argument for postponement of decision. It is scarcely strong enough, however, to counterbalance the Imperial, scientific, commercial, humanitarian, and other advantages above enumerated. Of course, the case for postponement would be better, if the question of whose wireless system is to be adopted were open. But the fact that the King's ships are supplied with the Marconi system settles that point. The only question that remains is whether the