

FOR THE PUBLIC GOOD.

CHEMICALISED FOODS.

"The people have rights, and they will dare to assert them, and the greed of gold and the concupiscence of trade must give way to the broad, ethical principle which forbids the use of drugs and chemicals in food."

—Dr. H. W. Wiley.

HUMANITY labors under an eternal debt of gratitude to Dr. Wiley, Chief Analyst of the United States Bureau of Chemistry, for his self-sacrificing efforts in the cause of food reform. He has never tired of proclaiming the inherent right of the people to a food supply pure and undefiled. The public is now being educated by him and others to a fuller realisation of the fact that the moral health of the community is largely determined by the physical fitness of its individual citizens. Man is primarily a marvellous piece of machinery, with means for continually renewing his working parts by wholesome and well-chosen food. If that food, which is necessary to supply the vital, energising force, is vitiated or impure, a state of inefficiency arises, resulting in the breakdown of the machine and the degeneration of the race. The importance, therefore, of an adequate and unpolluted food supply cannot be over-estimated.

To those who have prided themselves on the general excellence and freedom from contamination of the food they eat, the revelations made in *THE LONE HAND* for January must have come as a disquieting surprise; for, despite all that is being done by our various Health Boards, fraud and adulteration are still rampant in our midst. That such an alarming state of things is allowed to continue, constitutes a serious indictment against those entrusted with the framing and administration of our pure-food legislation. How that trust has been abused must form the subject of another article to appear later on.

THE ANTIQUITY OF ADULTERATION.

Probably there never was a time when people did not cheat one another by adulteration. Pliny, in his writings, records several instances of the practice, and in the ancient Mosaic law it was found necessary to enjoin the use of "just weights, just measures and just balances . . . for the people weary themselves to commit iniquity . . . their silver is become dross . . . their wine is mixed with water . . . being merchants, the balances of deceit are in their hands." In those days there were no interfering analysts to detect the presence of fraud, and the methods of the adulterator were crude and unscientific. Now, with the advent of the modern chemist, it has become a difficult matter to sheet home the crime to the actual perpetrator.

THE TRAIL OF THE CHEMICAL.

It has been left to the latter part of the nineteenth century to perfect the art of food sophistication. Analysts are now telling us that there is hardly an article of food and drink which is not likely to be affected by the addition of foreign and, more often than not, harmful substances. Chemical preservatives and coloring agents, disguised under fancy trade names, are now numbered by hundreds, and are often extremely difficult to detect. Although perhaps not so fraudulent as some of the more glaring forms of adulteration described last month, they are, on account of their widespread use, insidiously injurious to human health. This has been recognised by nearly every European Government prohibiting their

use in articles of food and drink altogether. But in Australia, for the most part, such chemicals as boric acid, boron compounds, benzoic acid, coal-tar dyes, salicylic acid, cochineal, saccharin, formaldehyde (formalin), fluorides, sulphites, bisulphites, and many others of a similar nature, can still be freely employed in large or small quantities according to the whim of the manufacturer.

A CHEMICAL MENU.

The following hypothetical case, based on official analyses, may be instanced to show how various articles of food are adulterated. It is not an extravagant one, and by no means improbable. The figures given are the amounts actually found in the several articles of food mentioned:

Breakfast.—Porridge, with cream containing 0.3% boric acid; sausages, 0.6% boric acid; sauce, 0.08% boric acid; toast and jam, 0.12% boric acid (or 0.1% salicylic acid); tea, with milk containing 0.08% boric acid (or 0.2% salicylic acid).

Lunch.—Ham, 0.6% boric acid; bread and butter, 0.9% boric acid; beer, 0.03% boric acid (or the same quantity of salicylic acid), or temperance drinks, 0.08% boric acid.

Dinner.—Soup, 0.1 boric acid; fish and roast fowl, 0.1% boric acid; wine, 0.2% boric acid; custard, with milk, 0.08% boric acid; coffee and milk, 0.08% boric acid.

Following this course, we get a daily consumption of boric acid (*one* only of the many chemicals used) of 30 grains, or three times the ordinary medicinal dose!

A somewhat similar statement was prepared for the Science Association by Mr. W. Doherty, of the New South Wales Government Laboratory. He discovered preservatives in almost every article of food examined. An ordinary person at breakfast would get borax in his coffee, boracic acid in his milk, butter, fish, sauces and sausages, and salicylic acid in his jams and preserves. The same chemicals would be met with later on in the day in wines, beer, aerated waters, cheese, pickles, etc. For supper he would have salicylated stout, and oysters soaked in a solution of boracic acid; formaldehyde, sulphites, and fluorides might also be added to the day's menu.

DESTRUCTION OF INFANT LIFE.

The cumulative effect of this continual dosing with chemicals may well be

imagined. Physicians everywhere report an enormous increase in ptomaine poisoning, intestinal diseases, appendicitis, kidney troubles, gastritis, and the so-called "acute indigestion," many of which diseases they attribute to the use of preservatives. But the prejudicial effect of these chemicals upon healthy adults is small when compared with the suffering and loss of life they cause among young children. To a country like Australia, with a small population, it is of vital importance that the most favorable conditions should exist for the successful rearing of its children. Yet it is estimated that, owing to the prevalence of intestinal diseases, induced to a great extent by the adulteration of milk, at least 2000 infants are lost to the community every year. It is a scandalous reflection on our present methods that, day after day, mothers may be innocently administering food to children which is not only impure and unwholesome, but insufficient to maintain life. Dr. Carty Salmon, M.P., referred to this recently in the House of Representatives. He emphasised the fact that a great deal of the food given to infants is worse than no food at all, because not only is it unassimilable, but it brings in its train diseases and infantile ailments which often result in the untimely death of the child.

This preventable loss of infant life occurs in America, only in a much more extended form. Official statistics compiled by the Secretary of the Indiana State Board of Health show that no less than "400,000 infants died in 1905 from the effects of adulterated infants' foods, poisons used in coloring butter and candy, formaldehyde in milk, and other impure articles of diet; and that 65 per cent. of the total deaths of infants in America must be attributed to the use of adulterated and chemicalised foods." The same thing has been noticed in England by Sir James Crichton Browne, an acknowledged authority on diseases of children. He states that:

Of 150,000 infants who die in Great Britain, 75 per cent. are artificially fed.

And points out that:

While only 8 per cent. of the naturally-fed children die in infancy, 61 per cent. of the hand-fed children perish in early life, under circum-

stances which indicate, not so much any inherent weakness in the child, as slow starvation under improper feeding.

This loss to the State, from a monetary standpoint alone, is a very heavy one, and one for which the extra profits earned by the manufacturers can never compensate. Taking the cash value of each child at £120, it will readily be seen how the natural wealth of the community is being depleted, because, owing to the ineptitude of the State, the unholy greed of gold, which is at the root of all these unscrupulous methods of food adulteration, is tolerated and condoned.

GENERAL EFFECT OF PRESERVATIVES ON HEALTH.

The late Dr. D. A. Gresswell (one of Australia's most valued public servants), when chairman of the Victorian Board of Health, pointed out some of the results which generally followed the use of chemical preservatives in food. Amongst these, he instanced :

Inflammation of the digestive tract, resulting in indisposition to take food, nausea and vomiting, abdominal pains, biliousness and diarrhoea. These symptoms generally disappear when the "preserved" food is set aside, but recur upon returning to that food. Interference with the digestive organs, and irritation of the kidneys, often follow the use of preservatives in food, more especially when salicylic or boric acid is used. This irritation frequently causes inflammation, with serious results. Skin eruptions are often produced, and, lastly, serious interference with the general tissue and change resulting from loss of weight not seldom follow the continued use of preservatives in food.

These assertions, made by Dr. Gresswell years ago, were practically confirmed afterwards by the experiments conducted by Dr. Wiley upon a squad of healthy young adults, who were fed with food containing chemical preservatives. Dr. Wiley stated that the tests proved that :

No food containing such preservatives is fit for human consumption, because the same qualities which enable the preservative to hold in check the putrefactive action of bacteria in food, also cause it to arrest digestion in the human system.

He concludes his report with the assertion that :

Both boric acid and borax, if taken continuously for some time in small doses, or for a short time in large doses, cause disturbance to appetite and health, and prejudicially affect a man's capacity for work.

CONDEMNATION OF BORIC ACID.

The researches of the Imperial Health Department of Berlin, and the very exhaustive investigations made in recent years by German scientists, fully confirm all that has been said in reference to the injurious effects of these preservatives. Such leading authorities as Professor Dr. Rost, of the Imperial Health Department of Berlin; Professor Franz Hofmann, Director of the Hygienic Institute of the University at Leipzig; Professor Dr. Boehm, of Leipzig; Professor Hans Meyer, of Marburg; Dr. Merckel, of Nurnberg; Professor W. Erich Harnack, of Halle; Professor Dr. W. Noorden, of Frankfurt-on-Maine; and Dr. Wilhelm Dosquet-Manasse, have all expressed themselves as strongly opposed to the use of preservatives in food. The German State Secretary of the Interior (Dr. Graf V. Posadowsky), in a recent elaborate speech on the boric acid prohibition, referred to the preponderating weight of scientific testimony in favor of the prohibition :

These opinions must remain sufficient evidence as long as there is no convincing proof that they are based on false scientific fundamentals. If we are not to rely on the conclusions of the scientific world, how are we to come to a decision? We would soon then have to ask the Pilate question: "Where is truth?" So long as there is no convincing proof of another truth, we must adhere to what such eminent authorities as those quoted have concluded. If we are to wait until all scientists agree, we should be obliged to wait until Easter falls on Whitsuntide.

Dr. Oertel, M.P., in the same debate, referred to Professor Dr. Hofmann's conclusion that :

Boric acid is by no means a harmless body, but a very dangerous cell-poison, against which the public must be protected.

He added :

Do you think such an authority would closely define his opinion if he were not altogether convinced of its scientific accuracy? Professor Harnack has come to the same conclusion, and has expressed the opinion that boric acid cannot possibly be quite harmless, and Dr. Boehm, another undoubted authority in this field, has definitely asserted that boric acid is a poison which causes disturbances in the digestion, skin eruptions, and other symptoms of disease. Professor Hans Meyer has expressed himself to the effect that the possibility, or even the danger, of injury through boric preparations is quite positively proved. If a Professor of the authority of Hans Meyer says that, I am bound to believe him. He cannot speak of a positive proof if that

proof had not been given him, or if he himself were not in a position to give such proof. Opinions may differ as to the degree of the harmfulness, but nearly all are agreed that symptoms of illness are produced, and that boric preparations cause a decreased assimilation of food substances. For me, this question is not only an hygienic one, but chiefly a question of trade gain. What do boric acid and its salts effect in the first place? They conceal the bad state of the meat. They are intended to produce a "phantasy of fresh meat." One is to be deceived that the meat is not inferior or old. The state of freshness, of good quality, is to be deceitfully impressed upon the eye. That is dishonest trade gain, and, therefore, from this point of view, the boric acid prohibition is to be welcomed with joy. Dr. Manasse has tried some interesting experiments upon himself and in his business in this connection. A learned cook treated tinned meat with boric acid and afterwards tested its contents. He found that those contents looked very nice, that also nothing could be detected in the taste; but notwithstanding this, the cook suffered, after partaking of the same, for a long time from vomiting and nausea. Gentlemen, whoever uses only good meat does not require boric acid; and it is our duty to protect people who use good meat from such undue competition which conceals the inferior state of the meat by boric acid and boric acid salts. That is the vital point. If we wish to partake of a beef-steak *à la Tartare*, we want to have certainty that the beautiful red color is natural, and not artificially preserved. And when we buy a sausage we expect that between the two ends of the skins there is good meat, and not a prepared, boraxed, mummified, undefinable and sometimes inedible mixture. Whoever has an in-suppressible desire for boric acid may go to a chemist and buy it there. Then we will gladly hail him with: "A good appetite to you. May it agree with you."

PROFESSOR LIEBREICH DEFENDS PRESERVATIVES.

The principal authorities quoted in opposition to the use of preservatives are Professor Liebreich and Drs. Mendel and Gerlach. The impartiality of these scientists was, however, strongly questioned during the above debate in the Reichstag. As far back as 1896, Prof. Liebreich, in his *Encyclopedia for Therapeutics*, expressed himself to the effect "that poisonings may result through boric acid additions." But Professor Liebreich has always had strong objections to any legal regulation of the food traffic. This, to Professor A. W. V. Hofmann, is incredible, and he finds it difficult to believe "that a scientist, who, through his scientific activity, appears of quite a special calling, should at all regard the legally ordained supervision as superfluous." The CHEMIKER ZEITUNG (November 9, 1904),

in reporting an important prosecution in America of the Kansas Beef Co., for using sulphites for the preservation of "Hamburg steak," says that:

Numerous experts gave evidence for and against the defendant, and amongst others the defendant had secured the services of Professor Liebreich, of Berlin, who gave evidence to the effect that he considered the use of sulphites as harmless. Professor Liebreich was paid the sum of 4000 dollars (£900) for his services.

For those who want further confirmation as to the harmfulness of chemical preservatives and coloring substances, they cannot do better than refer to the elaborate speech of the representative of the Chancellor of the German Empire, Graf. von Posadowsky, delivered in the German Parliament in 1903, on noxious and deceptive additions to food. It recapitulates, with a wealth of detail, all the reasons from a scientific standpoint why the use of preservatives should be altogether prohibited in articles of food.

WHEN DOCTORS DIFFER.

It is a remarkable fact that, in the face of such overwhelming evidence, some medical men continue to ridicule the harmfulness of these chemicals as preserving substances. The only conclusion we can arrive at is either that they are grossly ignorant of the latest literature on the subject, or that they are biassed in favor of drugs which they have become familiar with in their daily practice. It would be difficult, however, to find any Australian doctor who would go as far as Professor Liebreich in affirming that the use of boric acid and sulphites in foods is not detrimental to health. Any chemical which will check the natural decomposition of food, and not only has the property of preventing red meat from becoming grey, but can actually restore the red color after this greyness has appeared, cannot, despite Professor Liebreich's assertion to the contrary, be regarded as altogether harmless.

HOW PRESERVATIVES AFFECT FOOD.

Nature has provided us with certain means of determining whether food is fit to eat or not. Taste, color, aroma, and flavor, all help to indicate its condition. Preservatives, however, are used to disguise this natural process of decay, and do this so effectually that food which appears to be sound and wholesome may

in reality be an active agent in the propagation of disease. The old maxim, "*Caveat emptor*" ("Let the buyer beware") is not applicable to this question, because, generally speaking, the buyer is unable to form a sound judgment as to whether preservatives are present or not, and, if they are, whether they are likely to prove injurious to his individual health. What may be poison to one man may be quite harmless to another. A foreign substance, quite innocuous to the healthy adult, may seriously derange the health of an infant or invalid. It is also of great importance to physicians to know exactly the composition of the food their patients are consuming. The unknown consumption of chemical preservatives often seriously interferes with the course of treatment, and frequently hinders the physician from arriving at a correct diagnosis as to the cause of the illness.

A PREMIUM ON DIRT.

Another grave objection to the use of preservatives is that it prompts the utilisation of unsuitable and partially decayed products. Dr. Vaughan alluded to this in his evidence before the Senatorial Committee (U.S.A.), appointed a year or two ago to enquire into this question. Dr. Vaughan's statement was that:

Chemical preservatives, like coloring matters, enable a man to sell a poor-grade article in place of a better grade. They also enable the manufacturer to be less careful in other means of preservation. For instance, if he is putting up a case of peaches or pears, or anything of that kind, if he adds a little salicylic acid he need not be so careful of his sterilisation. That is a very important thing. I do not think benzoic or salicylic acid, or anything of that kind, ought to be allowed in preserving fruits and jellies, because if sterilisation is complete, these things can be kept without any antiseptics being added.

Whatever preservatives do not do, they certainly place a premium on dirt, carelessness, and inferiority, allowing the unskilful manufacturer to escape the consequence of his want of knowledge, and causing the innocent consumer to suffer.

PRESERVATIVES ARE UNNECESSARY.

One of the main arguments in support of the use of preservatives is that food will not keep without them. This is quite contrary to fact. When the boric acid prohibition was being debated in Germany it was asserted that it would ruin

the meat trade, and that the "poor man" would have to pay more for his meat. The same sort of statements were made during the passing of the Victorian Wine Adulteration Act and the Pure Food Act. It is remarkable, however, how quickly manufacturers adapt themselves to altered circumstances when the prospect of being hauled before the Courts presents itself to them. Before the German prohibition of boric acid in meat, an examination of the sausages delivered to the Nurnburg Hospital disclosed the presence of boric acid in every case. Orders were given that the use of this chemical must be discontinued. The Hospital at once obtained the same goods, of equal quality, and at the same prices. Most of the best wines, beers and cordials are those manufactured without the use of preservatives. Most home-made jams and preserves are made without them, and keep for an indefinite time. Sterilisation by means of heat, cool storage, and "curing" with condimental substances, are all available for the proper preservation of food, and are safe and unobjectionable methods. The real reason why preservatives are favored is that they cheapen the cost of production, and thus increase the profits of the manufacturer at the expense of the consumer.

THE "SMALL QUANTITY" ARGUMENT.

Another contention, frequently advanced, is that chemicals are harmless because they are only used in small quantities. If we ask who is to judge this small quantity, the reply always is "the manufacturer." To him, however, the "small" quantity is always *the maximum quantity he wishes to use*, and he must use sufficient to be sure of the result. The plea is not an honest one. If preservatives are harmless, as is often asserted, there is no necessity to limit the amount which may be used: if they are harmful, it seems unwise to allow their use in any quantity. It is no argument that because they are frequently prescribed by doctors they must be good in food. Because salicylic acid is an excellent thing for rheumatism, and an admitted specific for eating away the hard outer rind of corns, it is no reason why non-rheumatic people should be com-

pelled to drink it in their milk. No one ventures to assert that arsenic and strychnine would prove useful accessories to our daily regimen, yet these poisons are prescribed in "very small" doses by physicians. Sulphate of copper may be an excellent thing for impregnating railway sleepers in the tropics to protect them from the ravages of the innumerable fierce hosts of cryptogamic diseases, worms, etc., which infest those parts; and it may also be effective in giving canned vegetables and pickles a very nice bright green color; but it is hardly a drug which commends itself as an article of food. Yet the consumers—and by this term we include infants in mothers' arms, invalids, the convalescent and the old and infirm—are compelled day after day to partake of food dosed with these injurious chemicals, many of them rank poisons, principally because our present laws are ineffective, our system of supervision inadequate, and the fact that the makers of these chemicals and the manufacturer who uses them are often able to exert sufficient influence to hinder the cause of reform.

THE RIGHTS OF THE CONSUMER.

The consumer has rights which must not be overlooked. These rights are paramount over trade interests, and should be protected. Preservatives are advo-

cated only because they lessen the cost of production and increase the profits of the manufacturer. The proposition therefore becomes an ethical one. Shall the manufacturer be permitted to force upon the consumer certain chemicals which he does not want, in order that he may increase his own profits? Or shall the rights of the great mass of consumers be conserved and protected against the commercial aggrandisement of a comparatively few manufacturers? There is only one answer, and it finds a fitting place at the head of this article: "The people have rights and they will dare to assert them." How to best conserve those rights will form the subject of another article. In the meantime, the various conclusions which have been arrived at may be briefly stated as follows:

1. Chemical preservatives are, except in a few instances, unnecessary.
2. They are injurious to health as now used.
3. They encourage dirt, inferiority and dishonesty.
4. Most civilised countries have prohibited their use altogether.
5. The weight of expert evidence is against them.
6. Their use is always urged from the manufacturer's, and not the consumer's standpoint.
7. The present methods of food supervision in Australia are to a great extent inadequate and ineffective.