

ON DIFFERENT METHODS OF WATER FILTRATION.

{Bijwid O. *Ueber Verschiedene Arten der Wasser Filtration. Centralblatt für Bakteriologie und Parasitenkunde*, July 23rd.)

For large cities covered in sand filter basins are best. By the sand filters a water containing from 1,000 to 50,000 microbes per c.c. may have this number reduced to 20 to 40 per c.c. Sand filtration has only a good result if the river water contains a little slime, which forms the real filtering medium, on the surface of the sand. Sand filtration in rivers not containing this, as the Neva, does not produce a good water. Of house filters only the Chamberland and Nordmeyer-Berkefeld candles give good results. But both become infected after a few days, five in the case of the former, three in the latter, when they must be disinfected by being left to lie for an hour in boiling water.

THE BACTERIOLOGY OF WHOOPING COUGH.—Dr. J. Carmichael, in the discussion on whooping cough at the Bristol meeting of the British Medical Association, quotes the important investigations of Poulet and Letyerich in regard to the flora of whooping cough, and their researches, together with those of Affanassieff, have resulted in the discovery of a bacillus of which pure cultures have been obtained. These, when inoculated upon the respiratory surfaces of animals, have developed a specific catarrh which has run a like course and been attended by similar complications to those seen in man. The bacillus has been termed *Bacillus tussis convulsivæ*. Affanassieff's experiments show that the poison, when injected into the windpipe of animals, produces all the usual effects, thus demonstrating the probability, amounting to tolerable certainty, that in man the virus enters the system by the respiratory surface; whether it may do so through the digestive tract by ingestion, the virus gaining access to the respiratory mucous membrane through the blood, is not proved so far as I am aware. The importance of arriving at a solution of this question will be obvious when we consider the subject of treatment, as if inhalation is the ordinary mode of access, the likelihood of mitigating the severity of this disease by local treatment of the nasal, tracheal, and bronchial membranes is evident. Another point deserving of notice, and I think bearing out this contention, is the very slight amount of pyrexia in uncomplicated whooping cough as compared with other zymotic diseases. This would point to the improbability of the virus developing and circulating to any extent in the blood, and thus affecting more directly the heat centre. From all we know of the effects of the poison on organs and tissues, it seems more likely that it spreads from the mucous surface through the lymph rather than the blood vessels.—*From the British Medical Journal*, August 25th, 1894.

A REVIEW OF PUBLIC ANALYTICAL WORK.*

By ALFRED W. STOKES, F.C.S., F.I.C., Public Analyst for Paddington.

JUST now a Parliamentary Committee is sitting to consider what revisions of the Food and Drugs Adulteration Act are necessary or advisable.

This, therefore, may be a fitting time to briefly review the working of the Food and Drugs Adulterations Acts as experienced during the last sixteen years at Paddington.

The original Adulteration Act was passed in 1860, it was amended in 1872, again in 1875, and again in 1879. An Act specially dealing with butter and margarine was passed in 1887.

In spite of all this, fresh legislation is needed; the present laws are found unsatisfactory alike to the farmer and manufacturer who produce the articles, to the vendor or middleman who sells them, and to the purchaser or vestry authority, who, when defrauded, has often no legal remedy. The farmer cannot produce butter to compete with margarine sold as butter, nor can he supply pure milk at the price of the mass of skimmed milk sold in tins as whole milk. Almost the whole of this margarine comes from abroad, as does also the tinned milk; so that honest British produce is undersold by foreign adulterated goods. . . .

The question of the label on the article bought is a serious one; you may ask at a shop for coffee, cocoa, butter, and a tin of milk. For coffee you may get 90 per cent. of chicory; the butter may consist entirely of margarine; the cocoa may contain 80 per cent. of starch and sugar; there may be no cream at all in the tin of milk. Yet if these are marked somewhere on the paper containing them as "mixtures" or as "margarine," you will have little or no remedy. You did not ask for, nor did you expect to get these mixtures, yet if you prosecute the vendor, a majority of the magistrates will refuse to convict, they holding that even if you are blind and unable to read, or have made the purchase through a child, you have received due notice of the adulteration. The right to have what you ask for and nothing else is not yet ensured by any Act of Parliament. Even when the article is not in any way labelled a mixture, and a conviction is obtained, the penalty is usually far too small to make adulteration unprofitable.

The special Act to prevent margarine being sold as butter has quite failed; it allows of fines ranging from £20 to £100. Yet, though 11½ per cent. of the butter samples purchased during the last sixteen years in this parish have been adulterated, only once has the fine reached as high as £5. The last fine for selling 90 per cent. of margarine as butter was 1s.; while this quarter a servant enables his master to make a profit on a similar article without any fine at all.

* From Mr. Stokes' Second Quarterly Report to the Paddington Vestry, 1894.

The warranty clause of the Act works in favour of adulteration. The summons, for an adulterated milk for instance, must be served on the vendor within twenty-eight days of purchasing the sample. If, when summoned, the vendor produces a written warranty, and shows that the sample was in the same state as when he purchased it, he is discharged. But the time limit then usually prevents any action being taken against the farmer or wholesale supplier. So that, by a little collusion between the two, certain street dairymen habitually supply adulterated milk with safety to themselves and the farmer.

Rather than allow certain workmen to contract themselves out of the Act, the present Government abandoned the Employers Liability Act; yet the publicans contract themselves successfully out of the Adulteration Act. A clause of the amended Act of 1879, fixed the legal limits for the dilution of spirits; now most publicans fix up somewhere in the bar a notice that "all spirits are diluted according to price," and the magistrates hold that there the legal limits do not apply. Yet the legal limits seem low enough; for gin it is alcohol 30·8 and water 69·2; for all other spirits, alcohol 35·8 and water 64·2 per cent. by weight.

An attempt will be made to get the Parliamentary Committee to fix standards for certain articles, such as milk, vinegar, etc., but whether the only standards so far fixed, namely, those for spirits, encourage the belief that these will be of much use is an open question. Minor legal difficulties as to the present defective form of certificate of adulteration prescribed by the Act: the place of delivery of an adulterated article: questions as to whether the sender, the receiver, the vendor, or his assistant are liable, help to protect the adulterator, and need revision.

Leaving these legal defects, we find that during the past sixteen years 20½ per cent. of the milk samples, 11½ per cent. of the butters, 4½ per cent. of the spirits, and 6 per cent. of the grocery samples, have been adulterated. Of the groceries, the chief offender has been coffee, no less than 17½ per cent. of the coffee samples having been adulterated.

The forms of adulteration have changed during this sixteen years. At one time most mustard samples contained flour; now it is very rare to meet with such a sample. Lard then was frequently highly watered, while adulterated butter was almost unknown; now this is reversed—lard is usually pure, while butter is much adulterated.

Tea containing exhausted leaves or iron-sand was common; it is very difficult now to get such samples. Cheese was always genuine then; now American cheeses occasionally have their cream replaced by other fats. Alum in bread, injurious colouring matters in sweets and pastry were common once, now they are practically unknown.

Adulteration nowadays is more scientifically

done and is more difficult to detect. The Adulteration Act has done much to reduce the sophistication of food in parishes where like this an active sanitary committee watches over the food supply.

Comparing my first quarter's work (that of Michaelmas, 1878) as your public analyst with my last, I find that in the first quarter of a total of 21 samples analysed 13 were adulterated, that is 62 per cent.; while this quarter, of a total of 105 samples, only 10 samples, or 9½ per cent., were adulterated.

Then 85 per cent. of the milk samples were adulterated; now these have fallen to 12½ per cent.

OUTWORKERS IN ISLINGTON.*

By A. E. HARRIS, L.R.C.P. Edin., etc., M.O.H. for St. Mary, Islington.

ONE inspector continues to devote the whole of his attention to this work, which seems to be of a never-ending character. The method of obtaining the lists of outworkers is wrong, and defeats the object which is desired. The inspector has found in the course of his visits that not only do the shops employ outworkers, but that these outworkers often employ other outworkers. He has also found that the employers are constantly changing their hands, and either adding to or decreasing their staffs according to the requirements of trade. It has been found that by far the larger portion of the outworkers employed by Islington tradesmen live in the parish, although there is a not inconsiderable body who reside in other districts. Day by day lists have been forwarded to the medical officers of health of other places, but very few are received in return. I have no hesitation in saying that if any good is to result from the keeping of the lists of outworkers by the employers, some method other than that ordained by the Home Secretary must be adopted. There are two courses open. The first is that the employers should be compelled to send a list of their outworkers to a central authority, the Home Office, and that it should then distribute the names and addresses to the several London sanitary authorities, or that the same office should forward the lists to the medical officers of health of the several districts, who would in turn forward the names and addresses to the sanitary authorities. In Islington it is impossible for one inspector to complete a round of visits in three months, and consequently he cannot keep an up-to-date record of the outworkers. His experience has been that on a second visit he has found the lists entirely altered, the old hands gone and new ones employed in their places, or else the lists greatly increased in number, the increase having occurred in some instances not long after his preceding visit. To

* From Dr. Harris's Report, first quarter, 1894, St. Mary, Islington.