In this way, it seems to me, most of the difficulties would be overcome. It will be noted that by the first two rules the onus of proving freedom of infection would be placed on the parents, who would naturally call in their own doctor and remunerate him in the usual way. In colliery contract practice the practitioner might feel aggrieved, but he would be more than compensated by the decreased number of cases he would have to attend, the lessened period of attention to each where anti-toxin is used, and the saving in cost of anti-toxin where that is given gratuitously by the district councils.

In the further regulations concerning the schools, the duty is only a part of what ought to be involved in medical inspection in association with sanitary administration.

The probabilities of the adult members of a household, where an attack has occurred, communicating the disease as carriers are so slight that for all practical purposes they may be ignored. The risk is slight in comparison to the grievance which would be caused by isolation and prohibition of work.

Unless it be true that the diphtheria organism has a preliminary and saprophytic existence in the soil, as is confidently alleged by some, but of which there is as yet no proof, it seems to me that by an energetic use of those means which I have briefly sketched, the incidence of diphtheria may be almost reduced to vanishing point, and by the early use of anti-toxin in comparatively small doses in the remaining occasional cases the mortality might almost cease, so that this dread disease may, in the immediate future, in this country at least, become like cholera and typhus fever, only of historic interest, a consummation devoutly to be wished.

MIDWIVES ACT COMMITTEE.—The fourth meeting of the departmental committee appointed by the Lord President of the Council to consider the working of the Midwives Act was held on February 17th at the Privy Council Office, Mr. Almeric W. FitzRoy presiding. The following witnesses attended and gave evidence: Miss Wilson, President of the Incorporated Midwives Institute; Mr. F. B. Harris, Deputy Town Clerk of Nottingham, on behalf of the Association of Municipal Corporations; Mr. Joseph Brown, of Dewsbury, on behalf of the Association of Poor Law Unions in England and Wales; and Mrs. Wallace Bruce, on behalf of the Association for Promoting the Training and Supply of Midwives.

DRAINS AND DIPHTHERIA.*

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THE popular association of diphtheria with defective drainage is of time-honoured, almost paleolithic antiquity, revered alike in the creed of the man on the kerb-stone, the sapient law-giver, and the writer of standard text books.

It might assuredly date from the time of the caveman, when any mishap, which could not reasonably be assigned to the unauthorised use of an illicit flint was attributed to dire omens, to drains, or perhaps, the lack of drains.

Of its truth, until recent times, all appeared to be convinced; few there were who desired evidence or confirmation of the proof. For, in sooth, some one had said it: that ended the matter.

And the belief that these two factors stand in relation of cause and effect, forms the basis of so many actions at law that, in these days of doubt and apprehension, it becomes necessary once more to review the evidence connecting them and the opinions concerning them.

With the discovery of the specific bacillus, this popular, banal and presumably causal association, derived from preconceived and airy impressions has tended to sink into the background, and the opinions now expressed are far less dogmatic and assertive than in former days.

Thus:—

"*Drainage Effluvia*.—Diphtheria is more severe and more prevalent among persons exposed to foul gases from sewers or drains. The relation is, however, by no means direct. Houses with the worst forms of drainage defects may remain free from diphtheria for indefinite periods, and many cases of diphtheria occur in premises in which no defect can be found. The same may be said of other insanitary conditions, notably dampness of house, accumulations of manure and other filth in proximity to houses. All these ought probably to be regarded as predisposing causes only."—*Whitelegge and Newman, 1905, p. 364.*

"It has been a matter of observation that certain rural districts in which the surface soil is cold and humid, and where damp houses and privy and drainage nuisances abound . . . are particularly favoured by diphtheria."

"Faulty sanitary surroundings (drainage and filth nuisances) tend to the production of diphtheria

* A paper read before the North Western Branch of the Society of Medical Officers of Health on June 19th, 1908.

... by engendering a morbid condition of the tonsils, favourable to the growth of the diphtheria contagion if implanted thereon."—*Parkes and Kenwood, 1901, pp. 516, 519.*

"Evidence could be cited tending to show that the disease is fostered by decomposing heaps of manure and vegetable refuse, such as are found about stables where sheep, cattle, and other animals are kept.

Outbreaks of diphtheria have been reported where this condition existed in close proximity to dwelling-houses. The drainage from decomposing animal and vegetable matter imparts to the soil a serious contamination. The digging up of old drains, especially those connected with dwelling-houses, has been followed more than once by an outbreak of diphtheria. Surely the upturning of soil thus polluted is a fertile source of diphtheroid sore throats, or pseudo-diphtheria, if not of the true disease itself. At any rate, it cannot be denied that the emanations from such a source act as a predisposing cause to precipitate an attack when the diphtherial entity is present."—*Welch and Schamberg, 1905, p. 605, Art. Diphtheria.*

"Among the more indefinite sources of infection are defective drainage, decomposing substances, sewer gas; and while it cannot be denied that certain insanitary conditions conduce to the impairment of general health, to catarrhal conditions about the throat and nose, and thus render the system less able to withstand the assaults of any infectious disease to which it may be exposed, nevertheless, the presence of Löffler bacillus is absolutely essential to the production of diphtheria."—*W. P. Northrup—Nothnagels Encyclopedia, Art. Diphtheria, p. 23.*

"In spite of the facts which suggest that it may arise in other ways—for instance, in connection with bad drains, and in newly-inhabited houses which have been built on made soils, and the occasional prevalence of ordinary sore throats just before an epidemic of actual diphtheria—it is probable that infection from a preceding case is the source of it in all cases."—*Taylor—Medicine (7th Edition) p. 115, Art. Diphtheria.*

"A close relation between imperfect drainage or a polluted water supply and diphtheria has not been determined."—*Osler—Medicine, 1901, p. 138.*

"It does not arise from drains nor is it carried to any great distance in the air. Diphtheria is a contact disease."—*MEDICAL OFFICER OF HEALTH, LEEDS. (Annual Report) 1906, p. 99, Art: Diphtheria.*

In Chester, in 1907, there were notified 201 cases of diphtheria, and in only nineteen houses was any evidence elicited on examination, of offensive smell or defect generally included in the term drain nuisance. And, in these nineteen cases, the source of infection was, in eight cases, almost certainly not associated with defective drainage, leaving a possible eleven cases or 5·4 per cent. of the

whole number in which no source was ascertained but where the drains on testing gave evidence of various defects.

The incidence of the disease was not confined to the worst drained portion of the city; it was not worse in the worse drained part than in the rest of the city—indeed, the badly drained district escaped almost completely for a considerable time after the rest of the town had been invaded.

The distribution of the disease was not parallel to the known distribution of poor and defective drainage.

These facts do not lend much support to the popular belief, and are hardly the material upon which to base even a loose association between diphtheria and defective drainage.

If this association has any basis in fact, it would be reasonable to find evidence of it forthcoming by the examination of the air in drains.

I have repeatedly exposed moist swabs, moist slides, serum agar and blood serum culture tubes, serum agar and blood serum petri dishes, at varying heights and in different positions, and at changed inclinations to the horizontal in the inspection chambers of houses and hospitals where diphtheria was present, and have never yet been able to find the Klebs-Löffler bacillus by such means.

I have examined the throat secretions of men daily engaged in sewers and in shovelling sludge with a like result; these men were not picked men and did not undergo a medical examination before employment.

Inquiries elsewhere into the health of sewer men have led to the belief that the constant breathing of sewer air was not injurious to health and life, but it must be remembered that those inquiries were not exhaustive, and the men concerned were said to be picked men working in well ventilated sewers—it was found that they suffered somewhat from ophthalmia.

In the cases of diphtheria at Chester, the history of an offensive smell, or of exposure to drain nuisances was practically unknown; these defects were only ascertained on actual testing.

There were no cases amongst stable men, or stable attendants, or others having to handle manure, or brought into close contact with the exhalations from it.

The same confusion and mis-statement,

derived from preconceived impressions at one time prevailed concerning malaria.

This disease was said to arise from a miasma; text books were especially emphatic on this point in the middle of the last century. Some authorities were so familiar with the exact nature and physical characteristics of this specific factor, that one might well imagine they were prepared to define its precise vapour density, and to give the exact measure of its electrical resistance.

But now that the exact researches of Laveran, Ross, Boyce, Bignami and Grassi have shown the significance of the haemamoeba and anopheles—the miasma as a causative agent in this connection is defunct.

Its decease dates from the time when it was conclusively shown that patients might live unharmed and malaria-free in the most marshy, swampy and pest-ridden district, provided only they took appropriate precautions against the mosquito.

So that in malaria, with the discovery of the special organism, the light came, and the etiology was placed on a sound and clear basis.

The wonder is why, with the discovery of the Klebs-Löffler bacillus, the same course of events has not ensued in the case of diphtheria.

Why has the drainage fetish lived in the etiology of diphtheria, whereas, the corresponding factor in malaria is as dead as Queen Anne?

If diphtheria is due to defective drainage, why does it attack chiefly school children and miss adults?

Why does it affect new houses where the drainage is perfect?

The truth seems to be that defective drainage in this connection is one of those presumed causes which Herman terms "banal"—causes, however discredited, which the student learns in the lump, and introduces into the etiology of any disease when the opportunity offers—causes which might almost be termed "pathologically placid and universal."

Like the latest war scare, a drop in Consols or Grand Trunks, a large sun-spot, a retarded comet with orbit near the ecliptic, a railway strike, or dismissal of employes, they are supposed to depress body, soul and mind and so produce a lowered resistance to infection.

These causes, imperfectly crystallised from the mother liquor of ignorance, recede as our knowledge grows and are gradually eliminated from consideration by serious writers to find at length a lasting refuge in the academic disquisitions of the law-courts.

Seeing, then, that the Klebs-Löffler bacillus was discovered by Klebs in 1883, and Löffler in 1884, why should diphtheria wait?

The time has now surely come to relieve it from the incubus of this make-shift association, and to place it in its proper light as a disease of contact and of person.

THE DUTIES OF COUNTY MEDICAL OFFICERS OF HEALTH.—At a recent meeting of the Isle of Wight County Council the following report was received from the General Purposes Committee: "We have received a letter from the Local Government Board relative to the appointment of Dr. J. A. Gibson as County Medical Officer of Health. The Board inquire whether it is intended that Dr. Gibson should retain the appointment of Medical Officer of Health for the Isle of Wight Rural District. If so, the Board state 'that they do not think it desirable that the medical officer of health for a district comprising the greater part of the area of the county should also act as medical officer of health for the county. Under such an arrangement it would follow that the advice tendered to the County Council on which they might base representations to the Board under section 19 of the Local Government Act, 1888, as to the failure of the Rural District Council properly to put in force in their district the provisions of the Public Health Act, 1875, would be tendered by the person who was responsible for the advice on the subject which had been given to the Rural District Council. In these circumstances the medical officer of Health would scarcely be in a position to give either to the County Council or to the Rural District Council advice that would be quite independent, and it might be that the advice given to the County Council would not be altogether disinterested.' We sent a copy of this letter to Dr. Gibson, asking for any observation thereon that he might wish to make. He has replied, stating that as the Board do not approve of his appointment as county medical officer of health while he holds the post of medical officer of health for the Isle of Wight Rural District, it is with regret that he asks the County Council to permit him to decline to act as their medical officer of health, as he is unable to resign a remunerative post for a non-remunerative one. A reply has been sent to the Local Government Board accordingly. No discussion ensued."