

yellow." Van Eecke found exactly the same differences independently of Pekelharing and Winkler (page 114). The sources of error which might arise in such microscopical investigation are discussed, and their avoidance indicated. It being thus proved that specific organisms were constant in these cases, it remained for these observers to cultivate them and endeavour by inoculation to provoke in animals those symptoms characteristic of the affection in man; that is to say, they had to induce a peripheral nerve degeneration, especially in the nerves of the hinder limbs. Beri-beri, however, being etiologically a specific affection, the originating cause must have a long and continuous influence before it reaches its full development. A period of from six to twelve months' residence in an infected district is necessary before the development of definite symptoms. Now patients with such symptoms slightly marked, who are removed from the spot in which beri-beri prevails, do not become worse, but improve rapidly, and ultimately recover. It is not surprising, therefore, that the injection of bacteria-infected blood from a patient into the abdominal cavity of a monkey, or the fixation of a portion of infected popliteal nerve in the subcutaneous tissue of the thigh of another monkey, should have given negative results. Other animals, however, were also experimented on, and gave some definite results. Rabbits and dogs were infected with subcutaneous injections varying in number, intensity, and in the periods that elapsed between each inoculation. Of five such rabbits, one exhibited no nerve lesion whatever; one had signs of nerve degeneration in the nerves of the left hinder extremity, but not in the right; while three had well-marked degeneration of the nerves of both hinder extremities. Two rabbits confined in a hutch for fifty-six days, into which beri-beri cultures were daily deposited, were similarly affected with nerve degeneration. In other experiments, too numerous to detail, the nerves of the hinder limbs were in most cases found degenerating; at times, however, no results accrued. Dried cultures brought by these observers to Utrecht were employed in further experiments, and the characteristic nerve degeneration definitely demonstrated. From the blood of infected rabbits micrococci were cultivated, microscopically like those injected into their systems. In the atmosphere, too, these investigators are said to have found bacteria which could induce this nerve degeneration. The culture of the "white micrococci" from the blood of a rabbit infected through the atmosphere corresponded in every way with that obtained from human blood. Notwithstanding these results, the writers are careful to give a guarded opinion as to the influence of the organism in the propagation of the malady. Peripheral polyneuritis may ensue as a consequence of other affections, but in beri-beri it is a constant and early symptom. The fact, however, that the nerve degeneration following inoculation need not be the nerve degeneration of beri-beri, and the fact that the endemic tropical characteristics, apart from nerve degeneration, are not induced by these micrococci, are the arguments which render the question still dubious.

The work closes with a short discussion as to the "means whereby the disease may be counteracted." Disinfection of enclosed spaces—e.g., barracks, camps, houses, ships, &c.,—originated by Cornelissen and Kobler, were extensively carried out by Winkler and Pekelharing, and were in their hands most efficacious. The manner in which the disease was checked, not only in individuals by an amelioration of their symptoms, but also generally by a cessation of the spread of the affection, was proof that the virulence of the infecting poison was dependent on the dose, and that it had a cumulative effect.

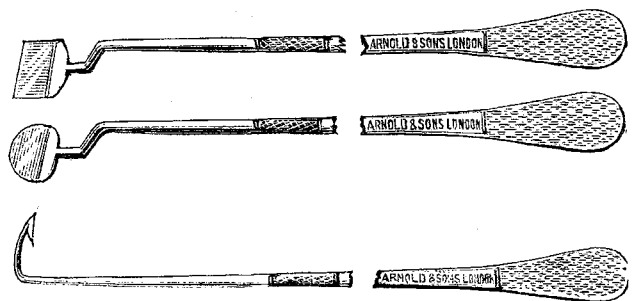
The following is a *résumé* of the most important points in this work:—1. Beri-beri has no dependence on anæmia.

2. There exists a well-developed and recognisable initial stage for all forms of the malady. 3. The unity of the various clinical and frequently widely differing forms of beri-beri is confirmed by a close investigation into the electrical reaction of nerve and muscle tissue. 4. The majority of the symptoms are dependent on affections of nerve and muscle tissue, and these are due to a definite nerve lesion—degeneration. 5. In the blood of beri-beri patients bacilli and micrococci are to be found. 6. Cultivations of such micrococci give a nerve degeneration of like nature to that found in beri-beri when injected into rabbits and dogs. 7. The inhalation of air impregnated with such culture can originate a nerve degeneration in rabbits. 8. Beri-beri must in all probability be regarded as a contagious disease induced by the action of a micro-organism. 9. The infecting micrococcus can also exist apart from contact with the human being. 10. Direct transmission from one person to another rarely occurs; infection through wearing apparel is more common. 11. The infecting material finds its way into the body principally through the respiratory organs. 12. The spread of the malady can be interrupted by disinfection, or, in a person attacked, by removal; when the symptoms are once well-developed nothing but nature can effect a cure.

## New Inventions.

### A NEW TRACHELORRAPHY KNIFE AND TENACULUM.

To obtain the necessary success in the operation of Hystero-trachelorraphy (better known as Emmet's operation), it is all important that the cicatricial tissue should be entirely removed and the angles of each laceration evenly and properly freshened. Emmet prefers using scissors of his own design, and no doubt in his hands they act better than the knife; but I fancy a more even surface can be obtained with the latter, if the fear of extra hæmorrhage is dismissed from the mind of the operator. The knives usually sold for plastic operations are never wide at the point or top of blades, and it has always proved a source of difficulty to me, when performing this operation, to denude the very angle of each laceration properly with the knives



usually sold for the purpose, the blades being on the same line as the handles, making it awkward (to say the least) to obtain access to the very point of laceration. Messrs. Arnold and Sons, of London, have made for me two chisel-shaped knives, the one with rounded, the other with straight edge, which I have found a great improvement. These blades, not being set in the ordinary way as regards the handles (see illustration), allow the operator greater facility for denuding the entire track of laceration, more especially the angles, and so make it easier to secure perfect apposition of the cut surfaces, with the certainty of a better result. The cervix, being exposed with the duck-bill speculum, is transfixed by a curved needle set in a handle, with an eye in the point, above the site of laceration. The needle is then threaded with a stout silver

wire, and drawn through; the two ends of wire, after being released from the needle, are handed to an assistant, who thus, while holding the speculum, is able to steady and fix the cervix, drawing it in any direction the operator wishes. I then transfix the apex of a laceration with my barbed tenaculum (also made for me by the same firm), and proceed to cut it out along with the two sides and point of the lacerated surface. I then proceed with each laceration, and when all bleeding has ceased, but not till then, I proceed to pass the wire sutures, approximate the edges, and twist the wires, leaving them *in situ* for a week or so. If the bleeding is free, I swab the surface with a sponge dipped in very hot water or a saturated solution of salicylic acid. When I meet with a bad case of stellate laceration, where the os is split deeply into segments, I quite agree with my friend, Dr. More Madden, that it is better practice to remove the entire cervix (covering the stump with mucous membrane, as recommended by Sims). I am, however, under the impression that where the entire cervix has been removed sterility generally results; and if this is borne out by statistics, I venture to recommend removal of the entire cervix as a prophylactic treatment (so to speak) of difficult labour when due to malformation of the pelvis. I think the chisel-shaped knife will be found a practical improvement, and the barbed tenaculum a valuable aid.

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## ANNUAL REPORT OF THE MEDICAL OFFICER OF THE LOCAL GOVERNMENT BOARD.

### [SECOND NOTICE.]

IN addition to the points we have already noted in Dr. Buchanan's recent report, two other subjects are dealt with. The first has to do with the prevalence of cholera in Europe during 1887, and the second relates to the scientific investigations which have been carried out for the purposes of the medical department of the Local Government Board. As to cholera, it is pointed out that Dr. Thorne Thorne has continued for the year 1887 the history written as to the European epidemic of 1884-87; and that during the latter year the incidence of the disease was mainly on Sicily, where 1924 deaths took place: on Southern Italy, where there were 704 deaths; and on Malta, where the fatal attacks amounted to 429. The cholera in Malta has for this country the more interest because of the quarantine measures resorted to in a British colony, and to this Dr. Buchanan addresses himself at some length. Quarantine has again and again failed to keep cholera out of Malta, but the Maltese Government have continued to enforce it. And this practice of Malta constitutes a difficulty for this country, for when England has occasion to assert her conviction that restrictive measures of prevention cannot be relied on, her representations have been met by the retort that England herself resorts to the same practice in her Mediterranean colonies. The subject has been discussed by us recently in considering Dr. Pisani's report, and for the moment we may leave it here, trusting that the lesson again learnt by Malta in 1887 may not be without effect, since the Lieutenant-Governor himself has now declared that those who rest their faith on sanitary measures and not on quarantine may find a confirmation of their views in the latest occurrences in the island colony.

With regard to the scientific work carried out during 1887, considerable prominence is given to the subject of "scarlatina in milch cows" and its communicability to the human subject. The position which had been attained up to August, 1887, as to this is again set forth, and certain further researches by Dr. Klein are next discussed. Thus, it is pointed out that, when newly-calved cows have been inoculated with the material of scarlet fever, whether the material was taken direct from the human subject or after it had passed through the calf, the inoculation has resulted in ulcers on the teats, which appear after an incubation period of from four to nine days; the disease induced manifesting itself in various organs, and the post-mortem appearances

bearing much resemblance, in essentials, to those found in human subjects dying of scarlatina. As to the so-called Edinburgh cow disease, which was associated, in the milk consumers, with a febrile sore throat, Dr. Klein finds differences between it and the now notorious Hendon disease, and he has come to the conclusion that the former is not the same disease as "cow scarlatina." In forming this opinion much is stated to depend on a proper distinction of the organisms which are classed as streptococci, which, to quote Dr. Buchanan, present to the less-educated judgment "as little difference between one and another.....as, to the eye of the ordinary dweller in towns, exists between the swift, the swallow, and the martin." And, with a view of making clear to the micro-pathologist the grounds on which Dr. Klein bases his opinion, a paper has been prepared on the morphology and biology of streptococcus, which is embodied in the report, and from which it appears that Dr. Klein holds himself in a position to formulate seven sets of characters serving for differentiation between one and another organism of the group; seven tests being thus wanted before an assertion of the identity of any two streptococci can, even provisionally, be made. This chapter will certainly be read with much interest by all students of the subject.

A series of further reports and papers are also included in the volume, these dealing more or less directly with the question of micro-organisms in drinking-water. Some refer to the present unsatisfactory state of our knowledge as to the meaning of the various "colonies" discovered in London waters; and from new observations made by Dr. W. R. Smith, who gets evidence of the presence in our metropolitan supplies of several kinds of organisms, each having cultural characters of its own, we now learn that, on the inoculation of mice or rabbits with them, no morbid result of any importance has been found to follow. Obviously, what we most want to know has to do with the nature and quality rather than with the mere number of the colonies formed by these micro-organisms; and the experiments in question, coupled with those as to the chemical action of the bacteria by Dr. Dupré, show that distinct advance may be hoped for by the promotion of bacterial processes by the chemist and biologist acting in aid of each other. Another paper, bearing on the same subject, is of a totally different character. It is by Mr. W. H. Power, and it deals with some of the considerations affecting the periodical occurrences of lead poisoning from potable water such as have taken place in the public services of Sheffield and Huddersfield, and which we have referred to from time to time. To the intermittent character of some of the lead-poisoning outbreaks attention is especially directed, and it is suggested by Mr. Power that the phenomena, as they have presented themselves, would seem to require for their explanation, not so much the existence of agencies uniformly at work, "but rather the operation of circumstances varying very much as vital processes—especially morbid processes—vary." And he then raises the question whether the life-processes of low animal or vegetable organisms may not be concerned with the solvent action of certain waters upon lead. This is, we believe, an entirely new idea, and one that by no means excludes chemical action in so far as such action may be the result of bacterial life or the destruction of such life.

Further observations are also reported on the question of disinfection which, from former reports, seemed to be making substantial headway. Information of a trustworthy and a practical nature has been much needed on this subject. That which has already been forthcoming as to the true disinfecting action of perchloride of mercury has been extremely valuable; and in so far as further experiments in the same direction have been made, they go fully to confirm that which has before been reported. Indeed, it may be hoped that our knowledge as to the true value of the various agents recommended for disinfecting purposes may soon be based on an intelligible and scientific basis.

The year's work, as summarised by Dr. Buchanan, shows that, whilst a general supervision is maintained as to the health of the country, many of the more important branches of scientific hygiene are being diligently pursued, with a view to the acquirement of such further knowledge as is needed to a proper understanding of the many causes of disease that are still obscure, and of the means of prevention to be applied to a more extended promotion of the public health.