

give this garment a trial. After experimenting by wearing one (1) by day only, (2) by day and by night, (3) by night only, I came to the conclusion that the last was sufficient to prevent such attacks. I have very often met men, and I think they are a large majority, who have never worn a belt and apparently have never required one. To these a cholera belt is a fad. A daily temperature variation between maximum and minimum of 30° F. is by no means uncommon in parts in which I have served, and it is in these places that mild intestinal disturbances chiefly occur. I have more than once been told by laymen that by leaving off the cholera belt at night much the same result is obtained as follows the taking of a large dose of salts. The value of the cholera belt, in relation to cholera and dysentery, appears to me to lie in its preventing the formation, by protecting the abdomen from chill, of sites of lowered resistance, in which the organisms of these two diseases could thrive and flourish.

I am, Sir, yours faithfully,

London, April 1st, 1912.

V. S. HODSON.

THE PROTECTION OF FOWLS.

To the Editor of THE LANCET.

SIR,—My attention has been called to an article in your issue of March 16th with regard to the protection of fowls from suffering. I think the writer of the article must have been under some misapprehension as to the present state of the law. Under the Protection of Animals Act, 1911, the word "animal" means "any domestic or captive animal," and "domestic animal" means "any horse, ass, mule, sheep, bull, pig, goat, dog, cat, or fowl," and "fowl" includes "any cock, hen, chicken, capon, turkey, goose, gander, duck, drake, guinea-fowl, peacock, peahen, swan, or pigeon."—I am, Sir, yours faithfully,

E. G. FAIRHOLME,

Secretary, Royal Society for the Prevention of Cruelty to Animals.

March 30th, 1912.

* * We regret the error.—ED. L.

THE PRESENT POSITION OF SALVARSAN.

To the Editor of THE LANCET.

SIR,—In spite of the eminence of the introducer of the salvarsan treatment of syphilis, the solid scientific basis on which it appeared to rest, and its marvellously rapid effects, like all vaunted new remedies (I might say proprietary remedies) this drug has failed to maintain its claims. Where is the *sterilisatio magna* which we were told could be accomplished by a single dose? The advocates of the treatment now resort to several doses and still are not able to prevent relapses. So great is their confidence in the treatment that they recommend that it should be followed by the disparaged mercurial course! Turning to the question of safety, the position is equally unsatisfactory. Deaths following its administration are now constantly recorded, and reports come from all over the world that many are never recorded. The earlier deaths were attributed by Ehrlich to the use of the drug in unsuitable cases, when contra-indications which he has laid down, such as organic disease of the nervous or cardio-vascular system, were present. Admitting this explanation, for the sake of argument, it is only one proof of the dangers of the drug. For in several of the recorded cases the patient showed no signs of the lesion found after death and held responsible. Thus in the case reported by Professor Ultramare, of Geneva,¹ a robust man who had contracted syphilis 15 years before, desired an injection of salvarsan, although he was free from symptoms. A complete examination revealed no signs of disease. He was given a single intravenous injection of 60 centigrammes, which was well borne. On the third day he complained of headache, and on the fourth day died comatose after several attacks of convulsions. Two of the supporters of the salvarsan treatment² ask why not throw some of the blame on the lepto-meningitis, chronic bronchitis, and broncho-pneumonia which were found post mortem. Excepting the bronchitis, the evidence is that these lesions were due to the drug. In any case the argument

is irrelevant as regards safety, for the man was on examination found not only healthy but robust. Several other cases have been recorded in your columns in which ordinary doses of salvarsan proved fatal to young robust patients.³ We are unfortunately familiar with the symptom-complex of coma, epileptiform convulsions, and death—termed by Sicard meningotropism—as a result of the injection of salvarsan, and it corresponds exactly to the nervous form of acute arsenical poisoning. Indeed, Mr. Foerster (an advocate of salvarsan by the way) says that it is "inexplicable except as acute arsenical poisoning."⁴ It is curious that it most frequently has been observed after a second dose. At a meeting of the Société Médicale des Hôpitaux de Paris on Nov. 17th last M. Paul Ravaut discussed a series of eight such fatalities, one of which occurred in his own hands. In all a young robust patient without visceral disease was given an ordinary dose of salvarsan which was well borne. After a varying interval a second dose was given and was followed by vomiting, pyrexia, epileptiform convulsions, coma, and death. The necropsy showed congestion of the brain and other organs, and sometimes small hæmorrhages into them. In three other and non-fatal cases an erythematous eruption appeared after the second injection. The advocates of salvarsan attribute them to cumulation. M. Ravaut was compelled to reject this explanation, for in some of the cases the doses were small and the interval between them was many days. Thus, in one fatal case two doses of only 40 centigrammes were given at an interval of 40 days. As to the theory of Wechsellmann, recently maintained in your columns,⁵ that such symptoms are due to microbes in the distilled water used for dissolving the salvarsan, M. Ravaut points out that he always uses filtered water, sterilised at 120° C. Moreover, in two of the cases the same solution was used for other patients who manifested no symptoms. The only conclusion is that the ill results were due to some idiosyncrasy. Possibly the first injection causes some modification, which leads to decomposition of the second dose. It is not generally realised that an ordinary dose (60 centigrammes) of salvarsan contains such a large quantity of arsenic as 3 grains. It is true that, as in the cacodylates and other organic compounds of arsenic, quantities of arsenic otherwise poisonous can be given in salvarsan usually with impunity, but we have no guarantee that such compounds may not sometimes decompose in the body, setting free a toxic amount of arsenic. On the contrary, we now have evidence that this does occur. In addition to the form of arsenical poisoning just described, commoner and characteristic toxic effects have been observed—acute fatal nephritis,⁶ fatal jaundice,⁷ herpes zoster, erythema, melanosis, conjunctivitis, vomiting, diarrhoea, and muscular cramps. In the paper referred to above suggesting that the toxic symptoms following the administration of salvarsan are due to microbes in the distilled water, the writers have produced evidence only that the immediate and temporary symptoms following the injections—rigors, rise of temperature, and malaise—are due to this cause. They have produced no evidence that symptoms of arsenical poisoning can be so produced. In the extensive use of saline injections in surgery, without the elaborate precautions now enjoined to keep the solution microbe-free, has anyone observed arsenical poisoning or, excepting cases where enormous quantities have been administered, any serious effects whatever? Finally, take the theory that the toxic symptoms are due to endotoxins set free in the destruction of the spirochætae. If true, this would only be another admission of the dangerousness of the drug, for who can gauge the amount of endotoxin that will be set free? But, as Professor Finger has shown, similar symptoms follow the use of the drug in psoriasis and leprosy. One gets impatient of these ever-changing "explanations" which do not explain, and are only attempts to square the facts with the erroneous teaching that salvarsan is innocuous when given according to rule. They are an insult to the intelligence. I submit that in the routine treatment of syphilis salvarsan has shown no advantage over mercury except rapidity of action; that in permanency it is less reliable; and, therefore, that it is unjustifiable to expose patients to its undoubted

³ Ibid., Dec. 23rd, 1911, p. 1785.

⁴ Ibid., Feb. 3rd, 1912, p. 285.

⁵ Ibid., March 9th, p. 637.

⁶ Ibid., Oct. 14th, 1911, p. 1085, and Feb. 24th, 1912, p. 537.

⁷ Ibid., Dec. 23rd, 1911, p. 1785.

¹ THE LANCET, Feb. 24th, 1912, p. 537.

² Ibid., March 2nd, p. 609.