Fatal Cases of Poisoning with Sodium Nitroprusside

The following cases are worthy of record in view of the chemical compound which was the cause of death.

CASE I

The patient, a second-year probationer nurse aged 23, had had vague abdominal pain suggestive of chronic appendicitis in July, 1940. This settled down, but recurred in February, 1941, and she was to have been examined by a surgeon on February 13.

During the night of February 9 she had an attack of vomiting, but on the following day was apparently perfectly well. On the 12th she attended a lecture from 11 a.m. to noon, and at 1.15 p.m. she was heard to call out and was found leaning against the wall in one of the lavatories in the nurses' home. She was put to bed: her colour was poor, the temperature was 95° F., the pulse rate 132, and the respirations 26. She was able to answer questions, but was drowsy and had difficulty in concentrating. The pupils were slightly dilated; the conjunctival reflexes were present. She was transferred to hospital, where a diagnosis of a fit or poisoning was made. The stomach was washed out by 2.20 p.m. At 2.25 p.m. she was unconscious, and respiration gradually became slower and more laboured. At 2.45 p.m. the pulse rate had fallen to 45, the pupils were fully dilated, and trismus was present. After the stomach lavage there was some frothing at the mouth and nose. The patient remained unconscious, and she was placed in a Drinker respirator. She died at 3.45 p.m.

At the post-mortem examination the dependent parts of the body showed the characteristic bright pink coloration seen in cases of poisoning by hydrocyanic acid. There was a little frothy mucoid material in the trachea, and the upper lobes of the lungs were oedematous. The stomach contained a small quantity of partially digested food which had a definite smell, but this was not distinct enough to be identified with certainty as the smell of bitter almonds. The mucosa of the stomach, duodenum, and upper few inches of the jejunum was slightly congested, the congestion fading from the stomach to the jejunum. The vessels of the liver and kidneys were congested. As poisoning by prussic acid was not suspected no attempt was made to detect any smell when the skull was opened, and later no particular odour was noticed. Nothing else abnormal was seen except congestion of all the organs.

Analysis showed traces of hydrocyanic acid in the stomach contents, but the amount was very small, less than 1/3 grain. Sodium nitroprusside was found principally in the stomach contents but also in a specimen of vomit and in the stomach washings, the total amounting to about 6 grains. It is proposed to make a separate communication to the *Analyst* giving details of the method of analysis used.

CASE II

This case occurred at Rochester in 1936, but no details have hitherto been recorded.

A young surgeon was found dead in a hospital dispensary on a Monday morning, poison having been taken and death having occurred apparently on the Sunday afternoon. The case was complicated by the fact that a large dose of arsenic had been taken before the nitroprusside. Actually arsenic equivalent to over 45 grains of sodium arsenate and sodium nitroprusside amounting to over 400 grains were found in the stomach contents and viscera. Between 3 and 4 grains of hydrocyanic acid were present in the stomach. At the post-mortem examination the organs were all found to be congested. It was suggested that death must have taken place very quickly and that the arsenic played no part.

We are indebted to the matron of the hospital and to the member of the honorary staff who was called in for the clinical details of the first case.

P. LAZARUS-BARLOW, M.D.,
Honorary Pathologist, Royal East Sussex Hospital.
G. M. NORMAN, B.Sc., F.I.C.,
Public Analyst, Hastings County Borough.

Reviews

AETIOLOGY OF CHOLELITHIASIS

Studies on the Etiology of Gallstones. A Subtilis-like Bacilli Group as an Etiologic Factor. By Karl Mårtensson. From the Department of General Pathology at Karolinska Institutet, Stockholm. *Acta Chirurgica Scandinavica*, vol. lxxxiv. Supplementum lxii. (Pp. 227; 74 illustrations.) Nordisk: Rotogravyr.

Dr. Karl Mårtensson of Stockholm has done a bold thing in publishing his *Studies on the Etiology of Gallstones*, for the discoveries which he has made are of the kind which has sometimes ultimately to be written off as a mare's nest. He began by tracing statistically a connexion between certain general disturbances and gall-stone formation, but concluded that these rather control the composition of the stone than determine its original formation, and therefore began a search for a local cause. Since the nucleus of a gall-stone often contains epithelial cells, inflammation accompanied by desquamation might well be the first stage of the process. The cause of this inflammation is identified as a spore-forming Gram-positive bacillus which can be demonstrated by special methods involving solution and sectioning of gall-stones as forming part of their stroma; it has also been demonstrated in the mucosa of the gall-bladder. It was cultivated from 33 out of 78 specimens obtained at operation or necropsy, more often from the stone itself than from the bile, never from the bile without also being present in the stones, and in no case from bile in the absence of stones. It was also found in the faeces of 5 out of 25 cases of cholelithiasis. The majority of strains of these bacilli were aerobes, and are therefore to be placed in the genus *Bacillus*, though their characters, which appear to be fairly constant apart from the small group of anaerobic organisms also recovered, are not exactly those of any named species in this genus. The inoculation of sterile bile with this organism was followed by acidification and cholesterol precipitation. Various other bacteria were also found in some of these specimens, but the newly described bacillus differs from them all in the fact that animals inoculated with it develop gall-stones. Not only did this occur in numerous animals of several species besides the obliging rabbit when the bacilli were introduced into the gall-bladder itself, but in some animals gall-stones were also formed after intravenous or subcutaneous inoculation, the addition of the bacilli to drinking-water, and even their insertion into the vagina before parturition. Further, rabbits immunized against the organism were thereby protected against cholelithiasis following inoculation into the gall-bladder. These animal lesions and the findings in human cases are profusely illustrated. No adequate criticism of such work as this is feasible in a small compass; we only feel that the facts should be stated in order that others interested in the subject may apply the author's methods, and either confirm, modify, or refute his conclusions.

PHYSIOLOGICAL REVIEWS

Annual Review of Physiology. Volume 3. Edited by James Murray Luck and Victor E. Hall. (Pp. 784. \$5.00.) Published by the American Physiological Society and Annual Reviews, Inc. 1941.

The third year of publication finds this annual volume considerably augmented in size and in value. It is beyond question that our American friends have a genius for this sort of thing—collections of reviews on those branches of any subject that are of special present-day interest. This series of reviews on physiological topics made itself a place in the world's literature on physiology when the first volume