

of the Schneiderian membrane, enlargement of the lymphatic glands &c.—but it is a specific disease from its commencement and runs a regular course invariably ending in death. Unfortunately the nasal discharge in glanders may for a long time be unaccompanied by any other visible sign of the disease, and it is in these cases that we find the greatest difficulty in deciding whether we have to deal with a simple nasal catarrh or with the dangerous malady glanders.

A few years ago, the only means of deciding whether such a discharge was specific or not was by inoculating a donkey with the discharge and waiting the result. If the case was glanders, then the donkey became affected, and all doubts were ended. To-day we have another aid to diagnosis in mallein, which is used as an inoculation in a suspicious case, and which produces certain definite results whenever glanders exists. It is reliable, and by its use we can detect latent cases of glanders, even where no discharge or other symptom has been noted. Then the veterinary surgeon goes on to say "that a horse suffering from nasal gleet may infect healthy horses with glanders or farcy, and yet may not show any symptom beyond the gleet, and may eventually recover, while the horses infected by him will die of the disease." Here is another fallacy. If the horse with the nasal discharge has glanders of course he may communicate the disease to other horses in close contact with himself and they may die while he may *apparently* recover for a time; but the improvement is only temporary and sooner or later acute glanders will supervene, rapidly ending in death. If, on the other hand, the horse is merely suffering from chronic nasal catarrh he cannot infect other horses with glanders, and if the other horses do become affected with glanders we should have to look for another source of infection. If the horse which was thought to have communicated glanders to the veterinary surgeon was only suffering from nasal gleet, he probably would recover as stated, but he could not produce glanders in the man. If he *was* suffering from glanders and appeared to recover, then sooner or later the disease will become acute and will cause his death.

I cannot believe in a case of simple nasal gleet running on to glanders or farcy, nor in true glanders ending in complete recovery. It is much to be regretted that the case in the horse was not tested by an inoculation of mallein, which would have set all doubts at rest. I do not know whether the mallein test has ever been tried in the human subject, but it seems worthy of trial, and might have been useful in the case recorded by Mr. Garstang. It would be most interesting to hear something of the later history of the horse in question, whether his recovery has been permanent, or whether any relapse has occurred. If the horse has *completely* recovered, as stated, I should say positively that he has never suffered from glanders, and that if Mr. Garstang's diagnosis was correct he must look for another source of infection. If the horse is still alive it would be most interesting to learn whether an inoculation of mallein would produce any effect. It would decide positively whether he has glanders or not, for it is possible for a horse to suffer from chronic glanders for many months before the malady becomes acute, the disease being confined to the lungs and producing no visible sign of ill-health. At any rate it is impossible for a veterinary surgeon to accept the statement that the horse has had glanders, has conveyed the disease to a man, and has completely recovered. With many apologies for taking up so much space,—I am, Sirs, yours faithfully,

T. W. CAVE, M.R.C.V.S., F.R.M.S.

University College, Nottingham, April 22nd, 1895.

THE DISCOVERY OF ANÆSTHESIA.

To the Editors of THE LANCET.

SIRS,—It seems to me that Dr. Preston's letter in THE LANCET of April 20th, claiming the discovery of anæsthesia for Dr. Long, ought not to go unanswered. Some ten years ago I investigated this most interesting, but highly complicated and little known subject, and the conclusions at which I arrived were as follows. Priestley¹ discovered nitrous oxide gas in 1772. In 1800 Sir Humphrey Davy² discovered its anæsthetic properties and successfully inhaled it himself to relieve the pain of cutting a wisdom

tooth. In his account of these experiments there occurred this memorable sentence: "As nitrous oxide in its extensive operation appears capable of destroying physical pain, it may probably be used with advantage during surgical operations in which no great effusion of blood takes place." Strange to relate, nothing came of these remarkable observations. Their real import was not understood until nearly half a century later. One winter's night in December, 1844, a number of the inhabitants of Hartford, U.S., assembled to hear a lecture on nitrous oxide and other gases from Dr. Colton, a well-known popular lecturer, who tried the effect of the first-named gas on several of the audience. Among those present was Dr. Horace Wells, a dentist of that city. He noticed that a person under its influence sustained a severe injury of his leg without feeling any pain. Wells was so impressed with this fact that the next day he got the lecturer to give him the gas, and while under its influence he had a molar tooth extracted without feeling the least pain. As he recovered from the effects of the gas his first words were: "A new era in tooth-pulling."³ The modern practice of anæsthesia dates from this operation. He soon afterwards gave the gas to more than a dozen of his patients, and with complete success. There can be no doubt that Wells, as indicated by the title of his pamphlet, "The History of the Discovery of the Application of Nitrous Oxide Gas, Ether, and other Vapours in Surgical Operations," had thoroughly grasped the anæsthetic idea, which in its subsequent developments so completely revolutionised surgery. He alone, in my opinion, is entitled to be regarded as the discoverer of modern anæsthesia. After his tragic death in 1848 his discovery was again in danger of being lost. Colton's praiseworthy endeavours to reintroduce it were in vain until 1863, when he succeeded in getting a few practitioners to try it. Subsequently its use spread rapidly. Among those present at Wells' ill-fated trial of gas at the Boston Hospital was his former pupil, Dr. Morton, and Dr. Jackson, lecturer on chemistry. Desiring in 1846 to use the gas in dentistry Morton applied to Wells for instructions how to make it. Wells referred him to Jackson, as the latter was a scientific man and a chemist. Jackson advised Morton to use ether instead, as it possessed the same properties and was as safe and easier to get.⁴ Acting on Jackson's suggestion, on Sept. 30th, 1846, Morton painlessly extracted a bicuspid tooth from a man named Eben Frost. Thus the anæsthetic properties of ether were first practically demonstrated. In the following October several important operations under its influence were performed at the Boston Hospital, Morton being the administrator. In a wonderfully short time ether was in use nearly all over the civilised world. Probably no great improvement in the practice of medicine, once started, ever became so rapidly established. This was no doubt in a measure due to the fact that prior to Morton's discovery the properties of ether were not altogether unknown. It had often been inhaled both in America and elsewhere as an excitant. In 1818 Faraday had pointed out that the effects of inhaling its vapour were similar to those produced by nitrous oxide gas, and it was subsequently customary in the college courses both in Europe and America to illustrate this fact by various experiments. The resemblance between the action of nitrous oxide and ether vapour was therefore well known. A French dentist, Parnly of Paris, had occasionally anæsthetised his patients with ether prior to 1840. Dr. Wilhite, of Anderson, U.S., accidentally anæsthetised a patient with ether in 1841. We next come to Dr. Long, an English physician practising in Jefferson, U.S., who in 1842 performed a surgical operation on a patient thus anæsthetised. As, however, none of these persons published any account of their experience, the far-reaching importance of which they failed to discover, it is impossible to accord to any of them the honour of the discovery, for in a matter of this sort publicity is the touchstone of invention. Such are the isolated antecedent facts subsequently brought to light after the practice of ether inhalation had been established by Morton, to whom, in my opinion, the chief credit is due, for the history of all great discoveries shows them to have cast similar shadows before.

I am, Sirs, yours truly,

Preston, April 25th, 1895.

W. ROGER WILLIAMS.

¹ Experiments and Observations on Different Kinds of Air, vol. i., p. 215. London, 1774.

² Researches, Chemical and Philosophical, chiefly relating to Nitrous Oxide, pp. 464-65. 1800.

³ Wells' Pamphlet: Discovery of Nitrous Oxide &c., p. 14.

⁴ Official Documents &c., Jackson's Statement, p. 472, also Morton volume, p. 47.