John Snow's bookplate carried his motto—"Vive, ut vivas!" He lived a hundred years ago: his fame is higher and more widespread to-day than it has ever been: and his name will be revered as long as there is a science of Public Health and as long as there is an art of anæsthetic administration.

REFERENCES

1 SNOW, JOHN (1849) On the Mode of Communication of Cholera. London.

2 —— (1855) On the Mode of Communication of Cholera. 2nd edit., much enlarged. London.

3 —— (1858) On Chloroform and Other Anæsthetics: Their Action and Administration. Edited, with a Memoir of the Author by Benjamin W. Richardson. London.

4 —— (1853) On the Continuous Molecular Changes, More Particularly in Their Relation to Epidemic Diseases. Being the Oration delivered at the 80th Anniversary of the Medical Society of London. London.

5 —— (1847) On the Inhalation of the Vapour of Ether in Surgical Operations; Containing a Description of the Various Stages of Etherization, and a Statement of the Result of Nearly 80 Operations in which Ether has been employed in St. George's and University College Hospitals. London.

6 —— (1851) On the Inhalation of Various Medicinal Substances. London. *London Journal of Medicine*, **3**, 122.

John Snow and the Enlightenment

By M. H. ARMSTRONG DAVISON, M.B.E., T.D., M.D.

Newcastle upon Tyne

AT the centenary of John Snow's death, we realize that his achievement is recognizably great, even when placed beside the vast knowledge of medicine which has since accumulated: it appears even greater when placed in its true setting—the work and ideas of the era in which he lived.

Snow, born in 1813, was a child of the period which is called the "Enlightenment", which may be considered to have begun in 1754 with the presentation, by Joseph Black, of his doctoral thesis, "On Magnesia Alba and Other Alcaline Substances"; and which came to an end on October 16, 1846, when Morton demonstrated that anæsthesia with ether was a practical reality.

The advances of the "Enlightenment" were not often obvious medical improvements. The work of Priestley, Lavoisier, Auenbrugger and Laennec did little at the time to improve the lot of the patient, while the discovery of vaccination, important as it was, did not lead to any understanding of the processes of disease. At the time of Snow's birth, the only specific curative drugs known were quinine (malaria), ipecacuanha (dysentery) and mercury (syphilis). The many other drugs in the pharmacopœia were of symptomatic benefit only, or of no use at all.

The doctors were ignorant of the cause of disease. Fracastoro, in 1546, had laid down the basis of contagion and infection, and Kircher, in 1658, had attributed plague to an invasion of the body by micro-organisms, but all this had been forgotten. With the overthrow of the classical ideas by such men as Galileo and Newton, the humoral theory of disease was also discarded, but there was nothing to put in its place.

The doctors of John Snow's period were too materialistic to lay the blame for disease upon God, and they were forced, therefore, to admit their ignorance. Consequently, the patients lost faith in their doctors, and the doctors lost faith in themselves. Nor were the doctors in a position to investigate the cause of disease scientifically, for each branch of learning was cut off from its fellows by an almost complete lack of societies and scientific journals. With communications depending on the horse and the sailing-ship, the doctor was separated by an immense gulf from advances, not only in general science, but also in his own particular subject. The doctor, therefore, had to look for the cause of disease within the small horizon which his own eye commanded, and, in this, he was often misled by his ignorance of statistics. These were first successfully employed in the cause of medicine by Louis, when, in 1835, he demolished the theory of Broussais, that bleeding was a suitable remedy for pneumonia.

Naturally, therefore, many doctors constructed for themselves their own systems of medicine, such as Broussais, who decided that gastro-enteritis was the cause of all disease, Cruveilhier, who blamed phlebitis, and Cullen with his theory of nervous irritation. John

Brown claimed that diseases were either sthenic or asthenic; for the former he prescribed a sedative, and, for the latter, a stimulant. Benjamin Rush of Philadelphia went even farther, and developed a theory that all fevers ought to be treated by reducing the excitability of the blood vessels, which he did by strong purges and bleeding to the point of syncope. It was this attitude which created homœopathy, for its inventor had noticed that quinine, which was used in the treatment of fever, would itself produce fever, if given in sufficient quantity. Snow himself was touched, if only slightly, by the same urge, for, like his friend B. W. Richardson, he came to believe, if not that alcohol was the sole cause of disease, yet that it was responsible for a good many of the ills to which the flesh is heir.

These, and other, systematists did great damage to medicine, and their squabbles became the laughing-stock of the public, who at least had knowledge enough to realize that the empty vapourings of the professors lacked all vestige of scientific basis, save a jargon of meaningless words of Greek derivation.

It was to this atmosphere that Snow must have been introduced when, in 1827, at the age of 14, he became the apprentice of Mr. William Hardcastle of Benton, near Newcastle upon Tyne. His duties at first would be confined to the tasks of rolling pills, washing bottles and delivering medicines. Later, he would have been allowed to accompany his master on his visits, and, in time, he would even be permitted to advise the "charity" patients. The treatment given would be the usual purges, vomits, plasters, blood-lettings and draughts, the latter being composed of many evil-tasting and useless galenicals. Every patient who recovered would be claimed as proof that the treatment was correct, but the failures would be forgotten, and, of them it would be said that, if only treatment had begun sooner and had been more drastic, they would have recovered. Nor would Snow have learned anything very different from these accepted methods when he attended the new Medical School in 1832, for this was a very modest undertaking, and by no means a seat of vast learning and research.

When, in 1831, the epidemic of Asiatic cholera broke out, Snow seems to have been given charge of a branch surgery at Killingworth. If it be true that it was during this period that Snow first realized the importance of the water supply in the transmission of cholera, we must acclaim the intellect of this youth of 18, who could make such an hypothesis against the background of a medical science such as we have described. Nevertheless, the period was not without men whose outlook was so different as to stamp them, like John Snow, as the precursors of the new era. Bretonneau and his work on diphtheria; Henry Hill Hickman and his single-handed fight against pain; Richard Bright, whose "Reports of Medical Cases" in 1827 first drew attention to the connexion between disease of the kidneys and dropsy; O'Shaughnessy and his quantitative examination of the blood serum in cholera; Marshall Hall and his discovery of the reflex arc: these were all men who were on the right track, and even they were overshadowed by the advances which, in Snow's day, were taking place in Public Health. All in all, however, the men who were on the right track were few: the adherents of mumbo-jumbo formed the hard core of the medical fraternity; and only time could tell whether any particular concept was right or wrong. This is exemplified by the case of Robert James Graves, who, in 1835, described exophthalmic goitre, for which his name is remembered. He is also the man who asked that his epitaph might be, "He fed fevers", and, in this, we, a century later, know him to have been right. At the time, however, he was but another systematizer, and perhaps this great idea was nothing more than a new treatment, as different as possible from all others, dictated, not by scientific reasoning, but by the wish to found a new doctrine and to set up a following of his own.

Let us now take another look at John Snow: read his three great books and compare them, not with the medical science of our own times, but with the articles published in the *Lancet* in Snow's own day: the discipline will reveal the astonishing grasp of that great man. I refer, in particular, to his work "On the Inhalation of the Vapour of Ether", in which the results of physical experiments on gases and vapours, and of animal behaviour under the influence of ether are correlated with clinical appearances and the description of new apparatus. All this, and yet the book was on sale within a year of the first administration of an anæsthetic.

The year 1858 which saw the death of Snow at the early age of 45, also saw new life appear in the medical profession, for, in that year, the Act of Parliament was passed which established the General Medical Council, and which has led to the benevolent direction of medical education into paths which, if not perfect, have at least served the victims of disease better than could ever have been achieved by the method of apprenticeship to which Snow himself had to submit.

[A "John Snow" book display was arranged by **Dr. Bryn Thomas.**]