THIS paper is not an attempt at a history of typhoid fever in Ireland. It is nothing more than a modest effort to trace the growth of control measures against the disease and evaluate their merit. I shall take this opportunity also of giving you a picture of the actual conditions with which the Medical Inspectors had to contend about 25 or 30 years ago, for on them devolved the entire responsibility for the conduct and direction of field operations against infectious diseases.

In order to trace the origin of control measures and follow their development, we must go back to the middle of the nineteenth century. We see the first faint glimmerings of understanding emerging as a tender shoot from the mists of the miasmatic era, and as the orb of science mounted in the heavens, the mists melted away and the plant of knowledge grew and thrived. As the nature of infectious disease came to be better understood, so also the control measures developed in accuracy. They began to take on more and more the accuracy of the rifle in reaching the target, and left behind the character of the old horse-pistol which so often misfired altogether, and at best could not be relied on to hit a target unless it was very big or very near.

Up to 1922, Ireland was governed from Westminster, and in consequence progressive administration in public health matters reached this country on the English model after a lapse of time, and often in attenuated form. A review of the events in England which led to the great sanitary awakening of the mid-nineteenth century and the subsequent formulation of the Sanitary Code is necessary for a proper understanding of the birth and development of modern epidemiological practices, and their application to this country.

We need not go back beyond the time of Edwin Chadwick (1800-90). In Chadwick's early days a distinguished authority wrote what I suppose we could call an essay to show that if the death rate from one disease decreased, the death rate from some other disease must increase, on the principle that nature abhors a vacuum. Even to those of us who are not distinguished authorities, this sounds like complete nonsense. However, I must ask you to realise that, although crudely expressed, such

---

* Communication to Section of State Medicine, December 18th, 1950.
fatalism was characteristic of that time. Let us not judge them too harshly either, for when I was a student I was taught that measles was a "scavenger disease". Perhaps Chadwick's greatest service was in replacing this fatalism by a new faith in the power of scientific control of the physical environment.

Chadwick's report *On The Sanitary Condition of the Labouring Population of Great Britain*, written in 1842, was the activating force for the wave of sanitary reform which swept over the civilised world in the middle of the nineteenth century. It was no arm- or office-chair production either, but the report of a survey actually carried out, and with full details of conditions as encountered.

At this time the miasmatic theory of the spread of infection still held sway. To understand why miasmata generated by filth were so generally accepted in Chadwick's day, it is necessary to realise the appalling conditions of insanitation which then prevailed. Whole areas of houses in London had their cellars full of night soil to a depth of over three feet. In Glasgow, Manchester and other cities, conditions were even worse. In some of the poorer areas of Glasgow, approach to the houses was only possible through a morass of human and animal excrement. The remedy for such conditions was, of course, the elimination of excretal deposits, the cleansing and flushing of streets, and the introduction of water and sewerage systems. Water supplies were considered more important for washing purposes than for drinking. "When were you last washed? When I was in prison," was a common question and answer. Chadwick also attacked bad ventilation and overcrowding in the factories and in the homes. He was less concerned with the causes of fever than with the methods of preventing its spread.

The development of the Sanitary Code during the third quarter of the century can be traced to the writings of John Simon (1816-1904), who took over from Chadwick the leadership in the practical development of the sanitary programme. In 1856, in a special report on London cholera epidemics, he makes a clear reference to drinking water as a possible source of infection. This observation was based on the findings of John Snow. In a report written in 1863 on hospital hygiene, Simon gives a hint of the transition from the miasmatic to the parasitic concept of the aetiology of infectious disease.

The official papers of Sir John Simon, as he now was, give a perfect picture of the evolution of epidemiological theory between 1849 and 1878. The miasmatic theory of diseases emerged into something of practical value. It was based on a sound empirical recognition of the relation between filth and disease. The theory, crude at first, became clarified step by step to the realisation of the importance of a pre-existing case of disease as the source of infection. Gradually, too, there grew a realisation of the specificity of the diseases themselves. Filth was recognised as the medium by which contagion was transmitted, rather than as its primary source. Finally, the conception of the contagious element as a living organism clarified the whole picture. The factors which effected this transformation may be cited as two in number: (1) the studies of a few field epidemiologists and (2) the development of the germ theory by Pasteur. I shall content myself here by referring to the work of two field epidemiologists, John Snow and William Budd.