

destructive power of some, Governments have been compelled to take measures to avert evils, which sweep our kingdoms and are not stopped in their course by the widest oceans. A wild terror has too often suggested means of prevention, and Quarantine, right in itself, has frequently violated all common sense. To say that a disease is communicable, suggests at once the idea that it can be limited; and to accomplish this, regulations, communal and imperial, are made. These regulations require to be based upon a great deal of accurate observation and a great deal of philosophical thought. For, however much may have been done, there exists still a great ignorance of the conditions of several of these diseases; and until a more exact knowledge is attained, errors in Quarantine must arise. Medical men ever differ upon the essential character of several of them, some medical men maintaining those to be epidemic, which others as firmly maintain to be communicable, whilst both may be ignorant of the region to which the propagation may be limited. The characteristics of *one*, however, are too palpable, and small-pox, one of the most virulent, has to be met by the most stringent isolation. The office of Hygiene will be to ascertain the exact nature of these scourges: the virus which propagates itself in the animal economy; their epidemic character, whether it depends upon the increased *subjective* poison, or upon the *objective* conditions, or upon both; their prevalence, whether general or local. When these conditions are known, then, we may look for wise legislation in the direction of a thoroughly sound Quarantine.

Of epidemics pure, and their causes, but little is known.

Diseases personally induced form a large class and arise from causes which being generally known can be avoided. The tendency to perpetuate the same action will cause some which are the result of personal contact to be ranged under the next class which comes under our observation—that of inherited diseases. They are numerous and deeply interesting, and they are the result of a train of external circumstances which, acting during a longer or shorter period, impress a character upon the animal economy.

The death rate of these several diseases may be tolerably uniform, but they are subject to influences which may greatly increase or modify their intensity and mortality, and it is to these influencing data that our further attention must be directed. Taking inherited diseases for our illustration, they are the result of tendencies already brought into existence by exposure to external causes, aided by the habits of life of previous generations. A concentration of these causes will develop a further increase of the same diseased action until the death rate shall be greatly in excess of the average, so that when depressing agencies lower the vital resistance the

disease will assume the character of an epidemic. Scrofula is undoubtedly an inheritance, and yet may not scientific Hygiene determine the conditions which are favorable to its production, and may not the tendencies to such diseased action be steadily beaten back by a removal of the disturbing elements which called it into being and activity? The disease cannot be original, for who of living men would be exempt, and if induced why may it not be eradicated.*

Death may, and often does, become more frequent owing to disturbing causes which act upon the vitality of communities, and Hygiene can only become acquainted with those noxious elements by an extensive observation of the physical conditions which so operate, and among these meteorology holds a prominent place. Climate, which embraces variations in the relative degree of moisture and temperature, differences in the barometrical and electric state of the atmosphere, exercises a modifying power over the system. The physique of man in different countries shews this, and sometimes we may expect a deterioration of a race by a change of climate, until an adaptation to the new conditions is developed. It is questionable whether the constitutional characteristics of the people of this continent will not require a long time before they settle down upon a permanent basis.

Some causes are so palpable that their results are recognized at once, and yet, simple as they appear, are so mixed up with other disturbing elements from a common source that they require careful elimination before their true value can be realized.

Cold affects the mortality of the aged and we might naturally expect this, for when age advances the power of generating animal heat becomes less. On the other hand, the greatest death rate among the young is during periods of highest temperature.

The air we breathe may be charged with death.† The effects of continued moisture or of an electric state of the atmosphere can only be determined by observations over large areas, liable however to er-

* The chief effort of sanitary science in combating the prevalence of Zymotics, is to destroy and arrest their infection and contagion; but the scope of its endeavours must be greater when the Tubercular Diathesis among the people is to be counteracted. Then the chief desiderata are warmth, clothing and food, which are within the province of individual or of family arrangements; and fresh air, exercise, and relaxation from daily toil, which must for their indulgence receive the help of municipal or of national policy. (Trench, 1869, p. 35.)

† In the Dublin Lying-in Hospital 74 years ago, of 17,600 children born in the institution, 2,944 died within the first fortnight,—17 per cent. Dr. Clarke considered a foul and vitiated state of the air of the wards a principal cause. Arrangements were adopted by which a free circulation of air was secured through the wards; of 8,033 children born subsequently, only 419 died, or $5\frac{1}{2}$ per 100. Under additional improvements a further decrease of the death rate—of 16,564 born, only 286 died—about 1.7 per 100.