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TUBERCULOSIS: A DISEASE OF INSANITARY LIVING*

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PEOPLE who live in temperate climates necessarily inhabit houses requiring to be closed in inclement weather, and have had to establish a harmony with an air environment which may truly be called an artificial climate. It is in relation to this house climate that the people of civilized communities have especially to study how they may best establish a complete harmony.

CONSTITUENTS OF AIR

Normal air everywhere contains the same constituents, which are nitrogen and oxygen in the proportions of nearly four of the former to one of the latter, with incidentally a minute amount of carbonic acid of three parts in ten thousand of air. Such is found everywhere, over great expanses of water, of forest and of mountain where there are few residents, to contain almost nothing else than gases; but where population increases and human industries are carried on, many particles of dust from cultivated fields, streets and yards, stables and factories, and the bodies of men and animals are to be found, these reaching, on a windy day, as many as a million particles in a cubic foot of air, while living particles or microbes in the air of a hospital may reach 40,000 per cubic metre. In addition to such dust particles are the seeds of many plants and the spores of moulds and fungi, some of which live upon dead organic matter, while others live and multiply in the air passages and tissues of men and may become the exciting causes of disease.

When it is remembered that air at five miles an hour causes a change of the atmosphere around a person standing still of some 25,000 times, while with warm air moving at the rate of more than six feet a second a draft is felt, it must be plain that, as persons breathe seventeen times a minute, and even while sitting exhale at least 30 cubic inches of air, they not only will inhale a cubic foot of air every three minutes, but will also exhale the same amount, giving off not only carbonic acid to the extent of 25 per cent of the air exhaled, but also any dried particles from the mucous surfaces of the respiratory passages. In addition to this, particles of epidermis and whatever clings to it are constantly given off from the hands and exposed parts of the body, and these often contain living particles, either vegetating on the skin or picked up from the objects which are everywhere handled. It is under such conditions of life, especially in the houses of our cities and crowded work-rooms and stores, that such particles, being the direct cause of some disease such as smallpox, scarlet fever or tuberculosis, may become, by contact, as they pass into the air and by touch, immediately dangerous to individuals of all ages.

CONTAMINATION OF AIR

In addition to this direct source of disease, we have special cases where the dangers are greatly multiplied, as where individuals known to be suffering from open cases of tuberculosis contaminate the air enormously, both by particles of moisture from the throat while speaking and

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