activity *de noro*—that is, by a kind of spontaneous generation. The labors of the trained observers mentioned go to show that the factors heat, moisture, and filth furnish the conditions or environment, so to speak, that is adapted to the development of disease-producing germs, yet no germ, no disease....

It is quite probable that those who boldly say : "We do not believe in this germ theory and this attenuation of Koch's and Pasteur's," disbelieve simply because they are ignorant of it, and it is no evidence of the untruthfulness of the doctrine that the busy practitioner of medicine cannot always trace disease to its cause. That part of this subject relating to attenuations and inoculations is full of absorbing interest, but time and space forbid my telling what is known about it. I will, only for our profit, undertake, in the language of another, to study the development of one germ and, perhaps, if this paper is not too long and your patience not exhausted, relate some interesting facts that have been brought out in the study of germs and the practical results obtained. It may perhaps, be well at this point to give the definition of the germ theory of disease, which is, "that certain diseases are due to the propagation in the system of minute organisms which have no share or part in its normal economy." The germs set up an action in the blood analogous to processes of fermentation that can be witnessed outside of the body. As illustrative of the theory of the development of the germ, I will, as I have said, use the language of another : "Take a portion of any vegetable -e.g., the beet or some grapes-crush them, add a little water, let the mixture stand a short time, then pour off the liquid, and you have the simplest form of vegetable infusion. Allow it to remain exposed to the air at the ordinary temperature, and shortly a change will be found to have passed over it, which is popularly called souring, but which is fermentation, and takes place as follows: the air is full of microscopic 'germs' or 'spores' or 'cells,'" the microderms of Billings, which only need the right soil or matrix to grow or develop. Let a grain of corn remain in your coat pocket, and it will stay a grain of corn, but drop it in

some fertile spot of earth, and it changes into a tall plumed spike, bearing many thousands of similar grains. The glucose of the infusion is related to these universally diffused spores just as the waiting earth is to the grain of corn, and a spore which might have stayed a spore a thousand years but for the infusion, finds its divinely appointed environment, lives its life, dies its death, and fulfils its mysterious but appointed part in the economy of nature. It is so small that it takes more than 3,000 of them ranged in line to measure an inch. One spore having appropriated its infinitesimal morsel of glucose instantly becomes two; these in turn appropriate their modicum of glucose and at once double, so that by a swift progression the nature of the infusion is changed -it may be into alcohol, it may into something with boundless powers for mischief to which science has not yet fitted a name.

"The same thing is illustrated by allowing a little beef's blood to stand exposed to the air. An analogous change to the foregoing takes place, which is called putrefaction. In this case the albumen of the blood represents the soil. The germ that changes the fluid is bacteria. As has been remarked, the air is at all times ladened with these spores, yet only when the proper conditions obtain, as illustrated by the kernel of the corn, will they multiply.... Leave a pot of flour paste open, and it will become covered with a greenish mould; an old boot left in a damp place with blue mould, and a lilac leaf in July will have spots that look like dust from the road."

All of these—the mould—are plants produced by air-sown invisible seeds, and if not disturbed and the conditions remain favorable, will produce perfect plants and will ripen their seeds just as perfectly as any plant in the field or garden. This is not an imaginery statement, for the process can be watched under the microscope. These parasites are as dissimilar in their physical characteristics as any familiar forms of vegetation visible to the naked eye, as a potato plant and cabbage if you please....

The steps in the study of splenic-féver, by which so much of practical value has been learned, (and which has been so des-