

Hygiene.

Sickness from Air Poisoning.

BY PROF. SCRUB.

THE worst and most fatal kinds of diseases are now generally conceded to come from tiny organisms (germs) of various kinds which arise from decaying vegetable matter, stagnant water, badly laid drains, cesspools, etc., and which float off into the air and are thus taken into the system, or they may be carried into the system through drinking impure water. Scientific research has now proven that too great care cannot be exercised in planning and building a home, to see that drains and sewer pipes are properly constructed and that no gases or vapors arising therefrom escape into the house. Cellars should be carefully drained and thoroughly ventilated to prevent dampness. All cesspools, outhouses, and heaps of decaying matter should be kept a good distance away from dwellings, that poisonous germs coming from them may not get into the house through open doors and windows.

A wealthy family in the east fearing disease from their poorly constructed drains paid out a large sum of money to have their cellars and sewers re-constructed on the most approved plan. Yet, one after another, their children died of diphtheria till six of them had passed away. Upon investigation it was found that near the open ventilator through which the air passed to the hot-air heater was a pile of decaying rubbish!!

But diseases from germs are not always so virulent or sud-

den in their attacks. Strong, healthy persons can throw these germs off more readily, but nevertheless sooner or later they show their effects. Gradually the constitution breaks down; languor and lack of ambition follows, and later malarial symptoms become manifest, when typhoid or slow fever may set in.

The most prolific sources of foul air giving off disease germs are to be found around human dwellings and on the farm, such as barn yards, chicken-coops, hog-pens, and the invariable privy-vault which is indispensable in small towns and country districts not provided with a sewage system. Underneath the house may be found the cistern, from which damp vapors ascend into the building and encourage the formation of mould upon the walls and the development of germs in the close space usually found underneath the house.

The cold of winter checks the processes of decay, but when the temperature rises and spring arrives, and the snow and ice are gone, the warm sun soon starts up a vigorous growth of germs, with a superabundance of foul gases. During the winter season the atmosphere is comparatively pure, but as

the temperature moderates it becomes more or less contaminated according to the amount of decomposing matter present.

These poisonous vapors, full of disease germs, are as invisible as the air itself and their presence may not even be detected by the sense of smell; though the smell of rottenness or decay always means that dangerous gases and still more deadly germs are present in the air.

Figure A represents a house where every facility is offered for the spread of disease. In the cellar may be seen bins or heaps of vegetables—potatoes, cabbages, apples, etc.—many of which at this season of the year are likely to be found in an advanced state of decomposition—sending forth germs or gases in great quantities. There being no means of ventilation these readily find their way up through the door or doors leading to the living or sleeping rooms above and must inevitably breed disease or at least impair the health of the strongest individuals.

In some cellars added to vegetable-decaying matter may be seen barrels of soap, soap grease, dried meats, in a state of beginning or advanced decay. The walls of such cellars are often covered with green mold, or festooned with masses of white fungus growth, which indicate in a most positive manner the extreme unhealthiness of the state of things present.

Special attention is drawn to the sink in the corner and its connection to the cesspool. As will readily be seen the deadly poisonous fumes from the cesspool find their way up into the building through the open drain pipe.

Now turn to figure B which shows a proper state of things. The cellar should be thoroughly well ventilated and kept scrupulously clean. It should be whitewashed, and if vegetables and fruit are kept in it these things should frequently be looked over and anything showing signs of decay promptly

removed. If possible the door from the cellar should not open into a living room—better into the shed or summer kitchen—but if it does, it should be kept closed and made to fit tight, so as to exclude all dampness and vapors. Note carefully the change in the connection of the sink to the cesspool. The drain pipe is made with an S shape to form what is known as a "trap" in which water may collect and prevent the gases arising from the pool passing through into the house. A ventilating pipe should always be provided to allow accumulated fumes to escape from the cesspool into the open air, where they may be disposed of by natural agencies instead of being carried up into the house to be breathed; yet thousands of drain connections to cesspools are made as shown in figure A, and people wonder why they don't feel well or why they are sick!

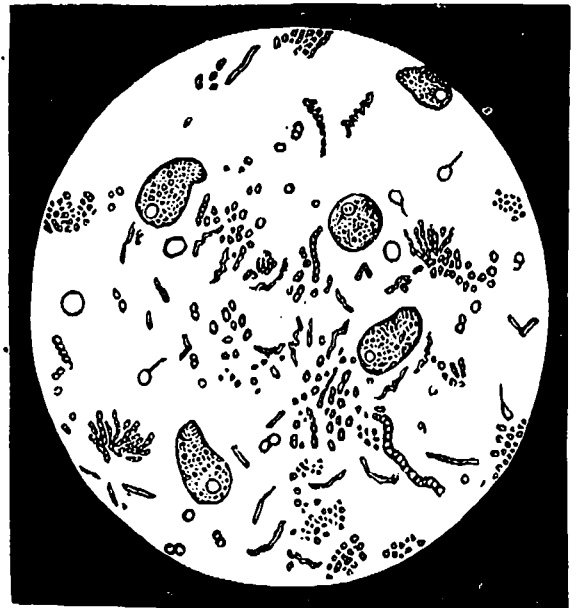
Cesspools are not the most sanitary means for the disposal of house slops, but in many instances are a "necessary evil." When they are used they should be made water-tight, and all drains leading thereto provided with "traps" and the cesspool itself provided with a ventilating pipe as shown, and which should be from

4 to 6 inches in diameter to allow all gases to pass off freely. It should not be necessary to add that such a pipe must be of sufficient height and so located that none of the escaping vapors can possibly pass into the house through any of the upper windows.

We close our paper on this all-important subject by quoting from an article on "Domestic Sources of Air-Poisoning," which appeared in *Good Health*, the following description of disease germs and which we have fully illustrated:

DOMESTIC SOURCES OF AIR-POISONING.

At the present time, no intelligent person is ignorant of the fact that a large number of the most dangerous and fatal dis-

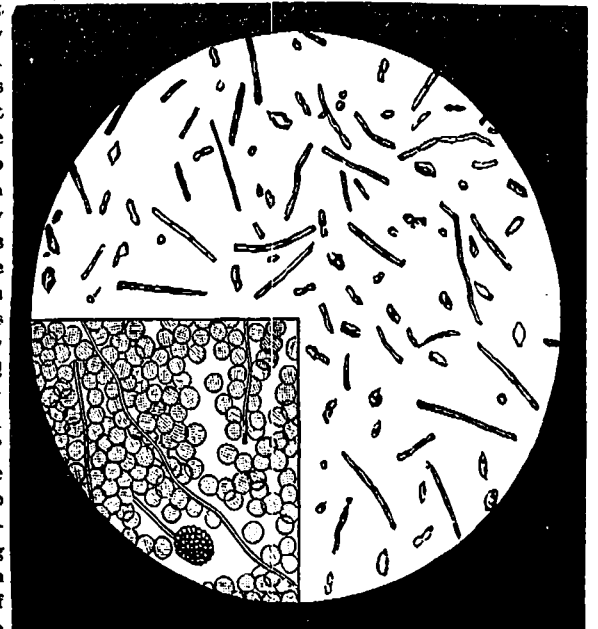


Germs Attacking the Blood Corpuscles.

eases are fairly attributable to the mischievous work of minute organisms termed bacteria, microbes, bacilli, or more commonly, though less technically, germs. Some of these germs are shown in the accompanying cuts, in which they are represented as they appear when magnified by a powerful microscope.

These so-called germs are a low form of vegetable life closely allied to the fungi or molds. They are found to be universally present whenever any kind of decay or decomposition of animal or vegetable matter is taking place. When received into the system through the air we breathe or the water we drink, these germs often multiply in great numbers. The body is undoubtedly able to dispose of a small number of germs, or to resist their attacks upon the tissues. It is claimed, indeed, that one of the important offices of the white blood corpuscles is to devour the mischievous germs which may find their way into the blood. If, however, the white blood corpuscles take up too large a number of these organisms, the germs may destroy the corpuscles, instead of being themselves destroyed. Thus, in some germ diseases, the blood is found to be extensively disorganized.

The only safety, as regards germs, is to keep them out of the body. Although invisible, they are by all odds the most dangerous foes to life and health. Germs are always present whenever decay of any sort is taking place, as in the decomposition of animal or vegetable matter. On this account they are the most abundant in cities and villages, and close about human habitations.



Germs of Chicken Cholera.

It is to be hoped that those readers of the *ILLUSTRATED* who have hitherto neglected these all-important sanitary matters, will pay earnest heed to these our warnings, and so prevent sickness and ill-health. Science has revealed to us these never-failing laws of nature, and when we break Nature's laws we must most certainly suffer the consequences.

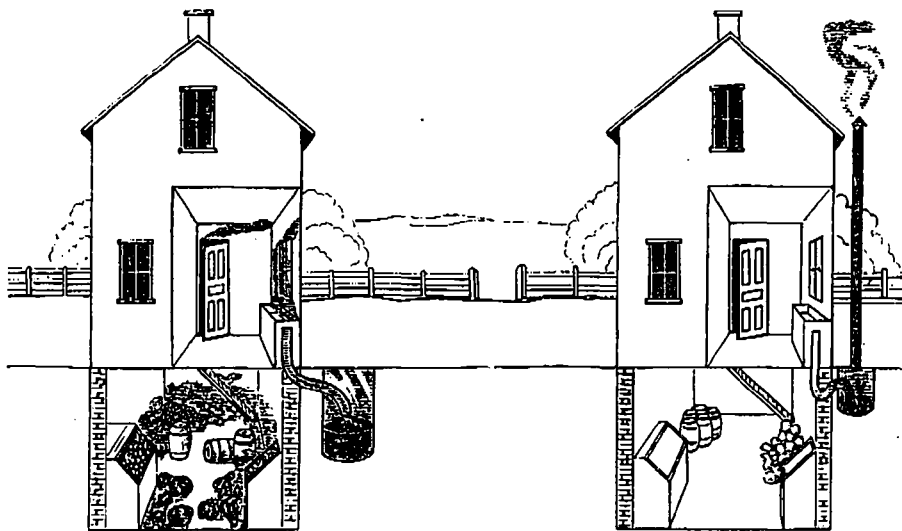
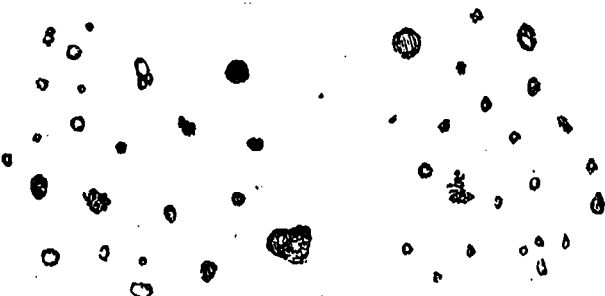


FIG. A.

FIG. B.

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Atmospheric Dust containing Germs.

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