the microscope, and represent magnifications of from 500 to 800 diameters.

Fig. 1 shows the organisms that appear in an organic decoction or infusion, such as that of hay or beef broth, for example exposed some time to a free contact with air. On examining a drop of the liquid by the microscope there is found in it a myriad of living beings of diverse forms, such as monads and thin corpuscles (*c*, Fig. 1), which are reproduced by fissiparism, that is to say, each of which divides through a median furrow into two beings that separate and afterwards lead an independent life. There is one species known in which the division does not take more than six or seven minutes for its accomplishment. A single individual might consequently produce more than a thousand offspring in an hour, more than a million in two hours, and in three hours more than the number of inhabitants on the globe. Alongside the monads are perceived small granules (*c* and *f*, Fig. 1), which are called *Micrococci*; and, at *a* of the same figure, there are seen infusoria of large dimensions, called *Kolpodes*. These are the beasts of prey of the microscopic world that we have just described. Their origanization is quite perfect; they have a mouth and a stomach and they live at the expense of the smaller beings which they devour; and they even possess contractile vesicles that it is manifestly impossible not to liken to a heart.

This is the world of microscopic beings that was first known, and among which was implanted that doctrine of spontaneous generation that Mr. Pasteur, through irrefutable experiments, has utterly annihilated.

We should like to follow Mr. Duclaux in the complete enumeration that he gives us of this microscopic world; but his book should be read in its entirety, for there is nothing in it that can be abridged; and, in calling attention to it, we shall content ourselves with representing a few other organisms whose role has been most studied in recent times.

In Fig. 2 we have represented, to the left, the bacteria of carbon in artificial cultures, and, to the right, the same in the blood of an animal afflicted with the disease. In Fig 3 we have the celebrated microbium of chicken cholera—a young specimen being seen to the left and an old one to the right; and, finally, in Fig. 4, we see the septic vibrio that accompanies septicæmia.

On opening the body of a dead septic animal we find therein extensive disorders, which are manifested by a general swelling. On examining by the microscope a drop of the liquid or serosity which fills the abdomen, we find therein, in multitudes, (as shown in Fig. 4), moving vibrios that are sometimes very elongated and sometimes very short. The active motions of these organisms, and their abundance, scarcely permit them to be overlooked, and there is reason for surprise that they should have escaped all scientists who occupied themselves with septic diseases before Mr. Pasteur. The refraction of the vibrio, being very near that of serum, renders it difficult to find it; but it is discovered at length, however, flexuous, crawling, and gliding along amid the globules of blood, like a serpent among dead leaves.

Such are a few of the microscopic beings, those dreaded enemies which for ages have passed unperceived, and which science has revealed. Mr. Pasteur has already triumphed over some of them—if not in causing them to disappear, at least in rendering them inoffensive. The road is for the future laid out, and, as Mr. Duclaux says, at its terminus will be found the preservation to their families and country of thousands of existences.—*La Nature*.

IRRITATING EFFECTS OF STINGS IN THE ANIMAL AND VEGETABLE KINGDOM.

By Prof. August Vogel, of Munich.

It is well known that the effect of a stinging nettle on the skin agrees very closely with the sensation produced by the sting of a bee or wasp. But the great similarity is not limited to the feelings it causes, but, what may not be so well known, the cause of the irritation produced on the skin is essentially the same. It may be considered as definitely settled that formic acid is present in the poison sac of the bee sting, in the so-called bee poison. The same corrosive acid also occurs in the sting of the nettle. Some species of caterpillars have formic acid in some of their hairs, which they seem to be able to shake off at will, and when a person touches such a caterpillar the poison penetrates the skin wherever it is moist and causes burning, itching and inflammation. These poisonous members preserve their irritating powers even after the death of the worm. This accounts for reliable statements that visitors to collections of caterpillars have suffered from exanthematous eruptions on the neck. "Many hairy caterpillars cause itching and burning of the skin when touched, and sometimes it gives rise to swelling and redness. This depends on the fine hairs, which produce the same effect when they float around in the air. Many ladies who visited the caterpillar room of the naturalist Reaumur had a breaking out on the neck."

In the sting of the bee, wasp, hornet, etc., a minute drop of a transparent liquid may be observed on the sting and is called "bee poison" (formic acid). It penetrates into the wound produced by the sting, and causes the well known effects. It would, however, be a great mistake to assume that the only object of this is to increase the effect of the sting, that is, that it serves only to injure. It has a far more important purpose, namely, to prevent fermentation and decay. The celebrated bee cultivator, Holz, reports that in his long experience with honey, that which came from what are called "rancorous swarms" (boshalt) had peculiar properties. It always had a bitter, harsh taste, and its smell was sharp too. How can the character of the swarm effect the smell and taste of the honey they gather? We know that bees, when they are disturbed, run out their stings, on the ends of which may be seen a tiny drop. This little drop, as we have already said, is bee poison, formic acid. When the disturbance is at an end they draw in their stings again, but the little drop of liquid does not go back with it, but is wiped off on the comb, and sooner or later gets mixed up with the honey. This explains how honey from such excited bees must taste and smell sharper than from peaceable bees. Excitable bees will rub off this little drop of formic acid more frequently than other bees; perhaps a larger drop is formed by nervous bees than by those that are not nervous, and hence the honey is richer in formic acid. This acid is never absent in genuine honey, but the amount differs. This contamination is not only uninjurious but very useful, in fact necessary, for it keeps the honey from spoiling; we know, indeed, that purified honey, from which the formic acid has been removed, very soon ferments, while unpurified honey will keep unchanged for years. Nature furnishes the bees with this knowledge instinctively, and therefore they do not carry this drop of formic acid away out of the hive. Bee connoisseurs assure me that the bees add it to the nectar which they collect that is free from it so as to make it keep, and they do this in places where they are not disturbed too.

Bee stings are often spoken of in agricultural and popular papers as a remedy for rheumatic affections, and numerous cures are adduced to prove it. If the formic acid that accompanies the sting can be looked upon as the principal agent in the cure, it would be worth while to try the experiment of rubbing the spot with this acid or injecting it under the skin, so as to avoid the somewhat inconvenient method of applying live bees.

Two hundred years ago formic acid was made from the brown wood ants, by triturating them with water and distilling it. The acid liquid was used to irritate the skin. The reddening of the skin, by using baths of pine leaves, is also due to the action of the formic acid. The anti-fermentative action of formic acid has also long been recognized.

As regards the irritative action of sting nettles and other similar vegetables, it depends, as already stated, on its formic acid. The point of the nettles is brittle as glass, and by the lightest touch penetrates the skin and breaks off, pouring out its acid and causing the burning sensation.

In this little notice frequent mention has been made of formic acid. In conclusion it may be stated that it gets its name from the ant (*formica*) because it was *first* found in them. If it had been found first in the bee or nettle it would have received another name. If an ant runs over a piece of blue litmus paper he will leave a red streak. Put a stick in an ant hill and they will squirt strong acid on it.—*Humboldt*.

Deadening Sounds.—The following plan for deadening floors is reported to have been made the subject of a recent patent. It is exceedingly simple, and not materially unlike plans that have been before proposed in this journal. A 3 by 6 inch plank is directed to be inserted betweed each joist, 2 inches from the bottom of the joists, and projecting 4 inches beneath them. The ceiling boards are nailed to these intermediate planks, and the space between is filled with sawdust to within one inch of the joists.