

culate sounds were heard very loud and distinct in the distant telephone, though occasionally marred by what appeared to be the rattling of the cinders in the jar. Sounds were also quite audible, even when the speaker stood several yards away from it. But the most remarkable feature which the experiments tended to show was that the transmitter could also be used as a receiver. For this purpose similar jelly-cans containing cinders were used, both for transmitter and receiver, and a battery of two Grove's cells was included in the circuit. Articulate sounds uttered in the one cinder jar were distinctly heard in the other, and even voices could be distinguished, although the results were not perfectly satisfactory.

Purifying Water. A writer in the *English Mechanic* gives the following mode of purifying water: Different waters, like different diseases, require different treatment to purify them, and all waters, no matter how impure they may be, can be made quite pure for drinking or other domestic purposes without distillation, providing the proper materials be used, and sufficient time allowed the re-agents to act; but in many samples of water I have found distillation to be the quickest and cheapest mode of purifying them. All filters in use that I am aware of only purify the water from solid impurities mechanically suspended in the water. The following is a description of a filter that I have often used, which purifies foul water from organic impurities held in solution as well as from suspended solids: Take any suitable vessel with a perforated false bottom, and cover it with a layer of animal charcoal; on the top of that spread a layer of iron filings, borings, or turnings, the finer the better, mixed with charcoal dust; on the top or the filings place a layer of fine clean siliceous sand, and you will have a perfect filter. Allow the foul water to filter slowly through the above filter, and you will produce a remarkably pure drinking water. Before placing the iron filings in the filter they must be well washed in a hot solution of soda or potash, to remove oil and other impurities, then rinse them with clean water; the filings should be mixed with an equal measure of fine charcoal. If the water is very foul it must be allowed to filter very slowly. The deeper the bed of iron filings is the quicker they will act. If you have to purify water containing Bacteria, you must first add hydrochloric acid to the water till it is slightly acid to test paper; that will destroy the whole of the animalculæ; then add sufficient lime water to neutralize the acid, then precipitate the lime with oxalate of ammonia, and filter through the iron filter described above. The foulest ditch water, treated as above, is rendered quite pure and fit for drinking, I may mention that I have made it a practice during the last twenty-seven years to boil all my drinking water. It is the safest plan for a man moving from place to place. You cannot always carry a filter and chemicals about with you, but you can always manage to get boiled water; people talk about it being vapid and tasteless but I am used to it, and liked it.

Cause of Infant Deformities.—A Manchester (Eng.) physician, Dr. Crompton, who has made a study of the care of Infants, gives some information of great importance to mothers, in regard to the cause of the common deformities known as bow-legs and knock-knees. He attributes the first mentioned distortion to a habit some youngsters delight in, of rubbing the sole of one foot against that of the other—some, as is well-known, will go to sleep with the soles pressed together; they appear to enjoy the contact only when the feet are naked, not attempting to make it when they are socked or slippers. The remedy, therefore, is simply to keep the child's soles covered. Knock-knees the doctor ascribes to a different childish habit—namely, that of sleeping on the side, with one knee tucked into the hollow behind the other, a custom familiar to the observation of most parents. Here the preventive prescribed is to pad the inside of the knees, so as to keep them apart, and let the limbs grow freely their own way.

Poison in Wall Paper.—Formerly suspicion fell on green wall papers only, and there was a certain reason for this, because there is really not the slightest excuse for using arsenic in even the brilliant colours of any other shade than green. Paper stainers, however, have found that it is such an unusually profitable practice that now they are not content to use arsenic in green papers only, but are introducing it into even the palest white drawing room papers, and especially into those which have an enamelled ground. Some recent analyses have resulted in the startling disclosure that many of the pale

coloured wall papers contain from fifteen to twenty five grains of arsenic per square foot, or a quantity in excess of that which is contained in most of the brilliant green papers. By attempting to make the colour of the pattern as dead as possible, the evil is increased, for the arsenical colouring matter is put on in such a loose and powdery form that the mere friction of a coat or dress against the paper is sufficient to bring off quantities of arsenic which can be detected by a chemical test.

Gaining the Attention.—The teacher who fails to get the attention of his pupils fails wholly. There is, and there can be, no teaching where this is not secured. Gaining the attention, however, is not the only indispensable condition. We have seen a class wrought by tricks and devices to the highest pitch of aroused mental activity,—fairly panting with eagerness, yet learning nothing. The teacher had the knack of stirring them up, and lashing them into a half-frenzy of expectation, without having any substantial knowledge wherewith to reward their eagerness. With his one-sided skill, he was but a mountebank. For real, successful teaching, there must be these two things,—the ability to give sound and seasonable instruction. Lacking the latter ability, the pupil goes away with his vessel unfilled; lacking the former, the teacher only pours water upon the ground.

How shall the teacher secure attention?

In the first place, let him make up his mind that he will have it. This is half the battle. Let him settle it with himself, that, until he does this, he is doing nothing; that, without the attention of his pupils, he is no more a teacher than the chair which he occupies. With this truth fully realized, he will come before his class resolved to have a hearing; and this very resolution will have its effect upon the scholars. Children are quick to discern the mental attitude of a teacher. They know, as by instinct, whether he is in earnest or not; and, in all ordinary cases, they yield without dispute to a claim resolutely put.

This, then, is the first duty of the teacher. He must go to his class with the resolute determination of making every scholar feel his presence all the time. The moment a pupil shows that the consciousness of his teacher's presence is not in his mind, as a restraining or attracting power, something is wrong. The first step toward producing that consciousness, as an abiding influence, is for the teacher to determine in his own mind to bring it about. Without being arrogant, without being dictatorial, without being or doing anything disagreeable or unbecoming, he must put forth a distinct power of self assertion. He must determine to make them feel that he is there, that he is there all the time, that he is there to every one of them.

In the next place, the teacher must not disappoint the attention which his manner has challenged. He must have something of value to communicate. He must be thoroughly prepared in the lesson, so that the pupils shall feel that they are learning from him. His lips must keep knowledge. The human heart thirsts for knowledge. This is one of its natural instincts; and nothing is more common than to see children hanging with fondness around one who has something to tell them. Let the teacher, then, be sure to have something to say, as well as be determined to say it.

In the third place, the teacher must have his knowledge perfectly at command. It must be on the tip of his tongue. If he hesitates, and stops to think, or to look in his book for the purpose of hunting up what he has to tell them, he will be very apt to lose his chance. Teaching children, particularly young children, is like shooting birds on the wing. The moment your bird is in sight, you must fire. The moment you have the child's eye be ready to speak. This readiness of utterance is a matter to be cultivated. The ripest scholars are often sadly deficient in it; the very habit of profound study being apt to induce slowness. A teacher who is conscious of this defect must resolutely set himself to resist it and overcome it. He can do so if he will; but it requires resolution and effort.

In the fourth place, the teacher should place himself so that every pupil in the class is in sight. It is not uncommon to see a teacher pressing close up to the centre of the class, so that, if he turns his face to those on one side, he must at the same time turn his back to those on the other. Always sit or stand where you can see the face of every pupil. I have seen the whole character of the instruction and discipline of a class changed by the observance of this simple rule.

Another rule is to use your eyes quite as much as your tongue. If you want your class to look at you, you must look