

PHOTOGRAPHIC NOTES.

New Test Paper for Alkaline Solutions.—At a recent meeting of the Society of Amateur Photographers in this city, Dr. H. G. Piffard exhibited a new test paper for testing the alkalinity of toning baths. An ordinary piece of white blotting paper is dipped in a solution of,

Alcohol.....1 ounce,
Phenol-phthalein.....3 grains,

and dried. Speaking of its qualities, Dr. Piffard said: "On immersion in an alkaline fluid, it immediately turns a bright scarlet, and is more sensitive than litmus paper, commonly used. The change of color is much more striking than in the case of litmus, and I have used it for some time in preference to the latter. I am not aware that a test paper of this description has been used before for the purpose indicated, although the reaction in question has been known to chemists for some time."

Formula for Making Blue Prints on Paper.—Mr. T. C. Roche gives the following method of making fine blue prints on paper, wood, canvas, etc., and only requires washing to fix properly:

FIRST SOLUTION.

Red prussiate of potash.....120 grains.
Water.....2 ounces.

SECOND SOLUTION.

Ammonia citrate of iron.....2 ounces.
Water.....140 grains.

The solutions should be made separately, and, when dissolved, mixed and filtered; then pour it into a dish, and float plain photographic paper on it for three or four minutes. When the paper is dried, it will keep for months. Print in the sun for eight or ten minutes; then simply wash the paper under the tap with running water. The result will be a strong blue picture on a white ground. The addition of a little gum arabic water to the above solution, when made, will render the color of the picture richer and the whites purer.

Spiritual Materialization.

Some of our correspondents ask how the so-called materialization of "spirits" is effected, and especially how the "floating lights" are made. The following from the New York *Herald* tells the whole story. It is from a Hartford, Conn., letter of Oct. 8, 1885:

Since the expose of the memorable Katie King swindle in Philadelphia, there has been no more thorough revelation of one of the so-called spiritual mediums than that in this city last night of Mrs. Eugenie Beste, of Washington, D. C. Among her Washington sitters recently was Mrs. James McManus, of this city, daughter of the senior editor of the Hartford *Times*. Mrs. McManus is inclined to investigate the mysterious, including spiritualism. She became convinced that Mrs. Beste was a fraud, and concluded to invite her to Hartford, where the opportunities were better for arranging an expose, and she would not have the advantages of her Washington house in avoiding detection. Mrs. Beste was located at a private residence in the city, and gave two seances without interference, while Mrs. McManus, with Mrs. Wrisley and other ladies she had brought into the plot, were perfecting their plans.

Last night everything was ripe for the expose. A circle of twenty was formed, only five of whom were not in the secret. Two stalwart employes of the *Times*' office were concealed in an apartment adjoining the seance room, awaiting the signal. A spirit called Nettie emerged from the cabinet, clothed in a long robe which shed a pale phosphorescent light in the darkness. The two men sprang into the room. The spirit gave a piercing shriek, and one exclaimed, "That won't do, old Spirit! we've got you." Lights came; the drapery was torn from the head, and Mrs. Beste's face, ashen with powder and fright, was revealed. Her dress and slippers were found in the cabinet. Her gauze drapery, worn over her underclothing, was saturated with a chemical substance which gave the light, and patches of luminous paint aided the effects.

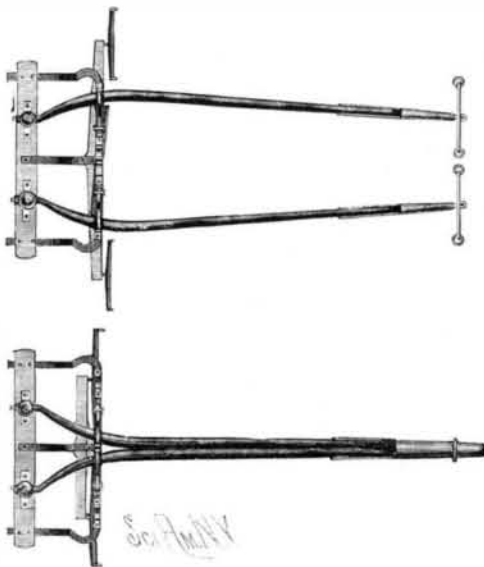
There was nothing left but to confess the fraud, and a lawyer present drafted a full confession, which she signed. In this she recites that she is the person known as "Mrs. Beste, the voice medium;" that her exhibitions of materialization of spirits given in Boston, Hartford, Philadelphia, and Washington were fraudulent; that the materials used were gauze and luminous paint, and the voices of pretended spirits simply manifestations of her own vocal powers. The paper concludes: "And from this date henceforth to the end of the world I shall desist from any further exhibitions."

DURING the month of August enormous swarms of ants passed over the town of Solothurn in Switzerland. They came from the Jura Mountains, and formed a cloud, consisting of seventy-five perpendicular columns, in which the ants circled around in spiral form. The swarm lasted for twenty minutes, the height of the cloud being upward of ninety feet. Millions of them fell to the ground, however, without making any visible change in the phenomenon.

COMBINED SHAFTS AND POLE FOR VEHICLES.

It has been hitherto necessary for those who use a variable number of horses at different times with the same vehicle to possess a corresponding number of separable gear. An invention recently patented by Mr. John Pettinger, of Santa Barbara, California, entirely does away with this expense and inconvenience by providing a combination gear which permits the use of one, two, or three horses at the pleasure of the driver. In his device the two shafts are pivotally connected with a rear crossbar, and are constructed with a curvature such that when they are turned to have their concave sides facing each other, sufficient space is left for an animal to stand between them, as with the ordinary shafts; but, when the two shafts are turned to bring their convex sides facing each other, they are brought together, and form a single pole. These two positions of the shafts are secured by suitable spring locking devices on a bent bar or hound attached to the forward axle of the vehicle.

When the combination gear is to be employed with three horses abreast, an extension thimble, provided with a strap or neck yoke, is placed on the end of each shaft, as shown in our first illustration. In this case a short doubletree, between the shafts, serves as a whiffletree for the middle horse, while a long doubletree extends beyond the shafts on each side, in order to provide for the outer horses. When two horses are used, a double thimble is placed on the forward ends of the two shafts, and is provided with lugs to serve as stops



PETTINGER'S COMBINED SHAFT AND POLE FOR VEHICLES.

for the neck yoke ring, as shown in the second illustration. For use with one horse, the long doubletree and thimbles are simply omitted, and the shafts arranged as ordinarily. The changes necessary for these several uses are quickly and conveniently made, and in all cases the gear is compact and graceful in appearance.

Seeing and Hearing.

It is a well known fact that those who are deprived of one of their senses have usually some compensation in a greater acuteness of the others. The blind will hear sounds that are inaudible to most people. They have been known to detect the presence and position of the smallest sapling on the roadside, simply by the echo of their footsteps. The deaf mute, on the other hand, learns to see what his friend is saying, by the motion of his lips—a feat which to most of us would be impossible. The wonderful degree to which the touch may be developed in delicacy and power of perception is manifest to all who are familiar with Laura Bridgman's attainments.

This superior power, however, is chiefly the result of education and long practice. It is rather acquired skill in using the only means at hand for gaining needful knowledge than any original supremacy in the organ itself. It is strange that with such examples before us of what can be thus accomplished, and fully recognizing the value of such education to those who are deprived of one or more of the senses, men are yet so unimpressed with the need of some similar training for those who are blessed with all of them. With our many complicated systems for developing the mental powers, there is yet no thorough and systematic course laid out for the culture of the eye and the ear. Because Nature does so much in this direction, instead of co-operating with her we leave her to do all, and thus sacrifice much of the possible happiness and usefulness of life. Yet these are the channels through which the mind must be fed, the very means on which we rely for all instruction, and, indeed, all communication; and it would surely seem only rational to make them as perfectly adapted to their work as possible.

There is a woeful deficiency in this respect in a majority of people. Not having been trained to observe with care and scrutiny, they only see a small part of what they look at; and as soon as their eyes are removed, much of even that part fades from their

memory. They visit lake, mountain, and forest, and return with only a confused and faint recollection of the treasures of nature upon which they have looked. They meet acquaintances on the street, and pass them by unrecognized. They pass through picture galleries, gaze on fine edifices, and witness interesting scenes without taking in their meaning, or being able to describe them to others. So in hearing; they only half listen. With a preoccupied mind, they gain only an inadequate or garbled idea of what is said, and a few repetitions from one to another are sufficient to change the whole meaning of the original utterance. Few persons really know how to listen to a lecture so as to carry away with them any well arranged ideas of its plan and substance. Few can even report a conversation accurately; and, as for the sweet sounds of nature's harmony, the sighing of the winds, the ripple of the waters, the humming of bees, and the singing of birds, they fall too often on dull and unresponsive ears.

When we consider how needful to all the departments of human effort the accuracy of the testimony of the senses is, we cannot too earnestly claim their culture. Dr. Thomas Hill puts this none too forcibly when he says: "The errors in the world come less from illogical reasoning than from inaccurate observation and careless hearing. A clear and intelligent witness, who can state precisely what he saw, and who saw everything there was to see; who can repeat exactly what he heard, and who heard everything that was said, is rarer than a sound lawyer or judge. . . . Physicians can rarely obtain from the patient a statement of his symptoms unmingled with theories as to their cause; lawyers cannot get a statement of what a man did uncolored by an imputation of motives for his action; scientific men are well aware that popular testimony to any minute phenomenon is wholly untrustworthy. In short, we should benefit science, art, jurisprudence, therapeutics, literature, and the whole intellectual and moral state of the community if we could raise up a generation of men who would make it a matter of conscience to use their five senses with fidelity, and give report of their testimony with accuracy."

A large part of the culture of the senses consists in securing habits of observation and attention. When the mind is suffered to run upon other things, or to sink into revery or apathy, neither eye nor ear can fulfill their true work. The power of concentrating the thoughts, for the time being, upon the object on which we look, or the sounds to which we listen, will make both sight and hearing more acute and accurate. It is a rare but valuable ability that takes in much at a glance, and has it impressed on the memory. It is in childhood that these habits can be most easily and pleasantly gained. The senses are then more active and amenable to training than the mental powers; and most children would be better and more harmoniously developed if some of the time now spent on books was rigorously devoted to the training and exercise of sight and hearing. Should this subject come to receive a liberal proportion of the care, thought, and talent that education rightfully claims, our children will grow up to be more reliable, more truthful, and certainly happier and more capable of giving happiness to others than their fathers have ever been.—*Philadelphia Ledger*.

The Postal Ounce.

Referring to the Revised Statutes of the United States, Title XLVI., Chapter 3—Mail Matter—we find:

SEC. 3880.—The Postmaster-General shall furnish to the post offices exchanging mails with foreign countries, and to such other offices as he may deem expedient, postal balances denominated in grammes of the metric system, fifteen grammes of which shall be the equivalent, for postal purposes, of one-half ounce avoirdupois, and so on in progression.

Approved June 22, 1874.

This enactment plainly declares that fifteen grammes shall be the equivalent of one-half ounce avoirdupois, and so on in progression, but not that the half ounce shall be the equivalent of fifteen grammes; consequently the legal ounce, for postal purposes, is thirty grammes, the practice and rulings of the post office authorities to the contrary notwithstanding. As the act above cited was approved by Congress more than eleven years ago, it would appear to be about time for the Postmaster-General to pay attention to it.—*Jour. of Education*.

THE *Northwestern Lumberman* is fearful that there will be much trouble from small pox in the logging camps the coming winter. With an epidemic of that disease in Canada, it thinks it is highly probable that the contagion will be introduced into Michigan and Wisconsin camps—more especially into those of Michigan—by Canadian workmen. It has been proved that a logging camp makes a good foothold for small pox. The men are huddled together, are not cleanly in their habits, or careful about exposing themselves. The operator the coming winter would make no mistake if he insisted that his crew be vaccinated.