

THE HOME CIRCLE.

The Village Church.

The river flows soft below, The rushes murmur on the brink; At noon the women fill their pails, The thirty cattle come to drink; At night the stars look down away Into the heart of each blue bay.

The village stands above the stream, On a fair slope that comes to meet The limpid waters; trees are round The village green; and all things sweet Gather and grow. Peace seems to stand Smiling upon the smiling land.

God in the midst, she shall not move; This little place is holy ground— One God, one Faith, one Hope, one Love, The simple people gather round The house of prayer. They love to be Under its shadowing canopy.

Each home springs up beneath the shade, Of the old steeple that has seen A score of generations pass; A thousand children on the green, The grandsire and the little son, Through the long years that time has run.

A hundred stones with names out-worn, A thousand graves are round its feet, And death has little fear for these, Who know so well to think so sweet The garden of their dead that lies Under the blue and smiling skies.

O happy place, where children grow To love God's house and know it well! O holy wisdom of the bird That near his altar loves to dwell! Long may true homes be such around, This fairest spot of hallowed ground.

Teaching Children Courtesy.

Many mothers forbid their toddling children any intercourse with other little people, because they suppose it is not time for them to fully comprehend the courtesies of life. This is the very reason why they should be taught to be polite and considerate at the earliest possible moment. We have seen parents who seemed to suppose that the first lesson bestowed upon a child is exactness of statement, and that a falsehood is a cardinal sin. But to teach the child to tell the truth, requires a process of incomprehensible reasoning, while an infliction of pain upon another child has its immediate results, and the child can both see and feel the consequences of its unkindness. It is very curious to observe little people when they first meet. They usually look at each other sharply, but speculatively, and, after proper deliberation, decide upon their line of action. It is either war or peace, but never entire indifference. Even the peace may be but temporary, provided one possesses that which the other covets. Doubtless this covetousness is not so much due to original sin as to that deep law of human existence—self-preservation. The child who sees an article in another's possession imagines, vaguely, perhaps, but positively, that it is a thing that is necessary to his own welfare and happiness, and instinct teaches him to seize it. Now this is not unfrequently set down as an unpardonable sin, and an omen of future wickedness. Nothing can be more unjust or unreasonable. It is a characteristic which, when properly guided, will lead to honorable worldly success. Misdirected or uncurbed, without being taught a proper reverence for the golden rule, the young creature may fall into positive crime. Manifestly in a boy corresponds with womanliness in a girl, and the nobility of unselfishness cannot be too early taught to children, nor can this quality be learned practically unless association with other children is not only encouraged, but used as a constant habit of instruction.

COLOR OF THE HAIR.—The Transactions of the British Royal Society, extending over two hundred years, contain no instance of any sudden change in the color of the human hair—a circumstance regarded as conclusive that no such change has ever occurred, for had it ever been undoubtedly witnessed, it is not likely that it would have remained undescribed. The most eminent medical writers confess themselves un- aware that, irrespectively of recorded evidence anything in support of the popular notion on this subject can be adduced on physiological grounds. It is well known that human hair cannot be injected. Using colored fluids, such as a solution of nitrate of silver and a solution of iodine, does not produce any change of color except in the portions actually immersed. Whether it owes its color to a fixed oil, to a peculiar arrangement of its constitutional molecules, or to both, it resists decay in a remarkable manner; it resists the action of acids and alkalis, except the strongest, which dissolve it; it resists maceration, and even boiling water unless for a long time applied and under pressure, when it suffers disintegration and decomposition. Exposure to the sun will bleach hair, but this will not account for any very sudden change of color. The popular notion, however, is in favor of the affirmative of this question, and some naturalists and physiologists adduce what they regard as credible instances of hair changing to white or gray in the case of persons under strong emotions of grief or terror.

HOW TO CURE A SETTING HEN.—"T. F. P." thus writes of setting hens in the Framingham Gazette: "I've got a hen that would set, whether or no; allers would set. I tried every way in the world to stop her, and never could do it. But last Sunday, as I was comin' home from meetin', an idee struck me. No, it wasn't nothin' in the sermon; nothin' to do with the sermon; it was chestnut burrs. I went to the hen house, and I pulled her off the nest and just put three likely lookin' burrs snug into the nest, and waited to see what would turn up. Well, sir, you would ha' luffed. She giv' a squawk and jumped onto the edge o' the nest and looked round at the burrs. You ought to ha' seen that hen look at them burrs; and there she sot and sot, and looked out o' the door and considered; and every now and then she'd look round at the burrs and consider. Well, sir, she considered for just exactly two hours, and then she came down amongst the other hens, and hain't been nigh the nest since. Fact, just as I tell ye."

EVIL COMPANY.—The following beautiful allegory is translated from the German: Sophronius, a wise teacher, would not suffer even his own grown sons and daughters to associate with those whose conduct was not pure and bright. "Dear father," said the gentle Eulalie to him one day, when he forbade her in company with her brother to visit the volatile Lucinda, "you must not think us childish if you even imagine that we should be exposed to danger by it." The father took a dead coal from the hearth and reached it to his daughter, saying: "It will not burn you, my child; take it." Eulalie did so, and behold her delicate white hand was soiled and blackened, and, as it shined, her white dress also. "We cannot be too careful in handling coals," said Eulalie, in her vexation. "Yes, truly," said her father, "you see, my child, that coal, even if they do not burn, blacken. So it is with the company of the vicious."

Physical Phenomena in Dying.

A striking fact in connection with the dying is, that they are not afraid of death. You notice this even in executions. The majority of men who are hanged are reported to die "game." Death following disease or injury is, with the rarest exceptions, unaccompanied with fears. Disease dulls the intelligence so that the situation is not fully comprehended; or there may be pain, and death is looked upon as a relief. Nature, by a kindly provision, seems to prepare for the flight of the spirit; as the hold of life grows weaker, so does the desire for life grow less; and in scarcely a single instance within my own experience, or within that of my professional brethren, with whom I have conversed upon this point, has not the dying man relinquished life at the last without seeming reluctant or fearful. The several physical phenomena which accompany the act of dying vary considerably in the earlier stages with the causes that produce death; there is much similarity in the later steps. Death offers them a physiognomy, which, once witnessed, is not hard to recognize again. Among the more constant signs are the falling pulse, which gradually becomes imperceptible, first at the wrist and lastly at the breast itself; the extremities grow cold; the countenance changes as the venous blood courses through the arteries; the skin grows clammy as the vessels relax; the eye glazes; the jaw drops; the fluids accumulate in the windpipe, causing the "death rattle" so called, as the air passes through; the breath comes short and finally ceases. As the red blood leaves the brain judgment becomes obscured, and the senses deficient. Speech is incoherent. Many times "last words" are imagined by affection to mean more than intended. If there was any intention at all. "It grows dark," "more light," are common sayings, as the optic nerve loses its stimulus. Or strange sights may be seen and sounds heard, as occurs sometimes in the still twilight. The hallucinations of the dying may be often explained upon natural causes.—Prof. O. R. Costling.

BENEFIT OF SOCIAL PLEASURE.—That nature is defective which has no love or capacity for social enjoyment. Social powers should be developed and provided for. The higher powers are stimulated or refreshed by the proper exercise of all these humbler members of the intellectual household which, while not assuming the rule, are yet an indispensable part of the family. To most of us these remarks are truisms, but what are we doing about it? Do we appreciate the necessity of social amusements for the young, or realize the keenness of youthful enjoyment in congenial society? Many a weary brain-worker has been ready to place among the benefactors of mankind those who opened to him the treasures of an elegant home and surrounded him, for an hour, with genial and cultivated spirits, with whom to enjoy them. It is a great mistake to suppose that the old, or those past the meridian of life, are unmitigated by their age for pleasures of this kind. In Germany, persons of three generations may often be seen enjoying the same amusements, the pleasures of those in each extreme of age being augmented by the presence of those in the other. Not only the highest pleasure, but the greatest benefit of cheerful intercourse, results from the mingling of old and young in the same company. A party of old people crowning over their infirmities and the degeneracy of the times, is no more demoralizing than one composed wholly of the very young, whose ignorance and indiscretion may lead to follies for which a life-long repentance cannot atone. The necessity for mutual entertainment which a company of mingled old and young calls forth, is the best discipline for both morals and manners, and, like most other disciplines of one's self, is attended with a pleasure which mere selfish indulgence can never give.

BRIDAL TOUR FOR ONE.—There came one day to a little inland town in Kentucky a young rural couple who had just been bound by the "silken bands." Their destination was the depot, and the bridegroom was evidently quite impatient for the train should arrive before he could reach the office. Buying one ticket they stood on the platform until the train had stopped. When they entered the car the bridegroom found his bride a seat, kissed her most affectionately, bade her "good bye," and going out, seated himself on a box and commenced whittling most vigorously. He watched the train out of sight, regret depicted on his face, when a bystander, thinking the whole proceeding rather strange, resolved to interview him. Approaching him carelessly and chewing a straw to keep up his courage, he said: "Been gettin' married lately?" "Yes," said he, "me and Sallie got spliced this mornin'."

"Was that her you put on the train?" "Yes," with a sigh. "A likely lookin' gal," said our questioner. "Anybody sick, that she had to go away?" "No; here he grew confidential. "You see me and Sallie had heard that everybody, when they got married, took a bridal tour. So I told Sallie I hadn't enough for both of us, but she shouldn't be knocked out of her. So I just brought her down here, bought her a ticket and sent her on a visit to some of her folks and thought I might get some work harvestin' till she got back." That afternoon found him busily at work, and when, in a day or two afterward, Sallie came back, he welcomed her cordially and affectionately, and hand in hand they started down the dusty road to their new home and duties.—Louisville Courier-Journal.

THE FOLLY OF PRIDE.—The very witty and sarcastic Rev. Sydney Smith thus discourages us on the folly of pride in such a creature as man: "After all, take some quiet, sober moment of life, and add together the two ideas of pride and of man; behold him, creature of a span high, stalking through infinite space in all the grandeur of littleness. Perched on a speck of the Universe, every wind of heaven strikes into his blood the coldness of death; his soul floats from his body like a melody from the string; day and night, as dust on the wheel, he is rolled along the heavens, through a labyrinth of worlds, and all the creatures of God are flaming above and beneath. Is this creature to make himself a crown of glory, to deny his own flesh, to mock at his fellow, sprung from that dust to which both will soon return? Does the proud man not err? Does he not suffer? Does he not die? When he reasons, is he never stopped by difficulties? When he acts, is he never tempted by pleasure? When he lives, is he free from pain? When he dies can he escape the common grave? Pride is not the heritage of man; humility should dwell with frailty, and atone for ignorance, error and imperfection."

AFFECTING SCENE.—There was a strange, pathetic scene at the Milwaukee depot, a little while ago. A young German, who by four years' hard work in a brewery had saved enough money to make a home, was waiting for his betrothed, who was to arrive from Germany. She came, all radiant, to his arms, there was a close embrace, but when the young man tried to disengage himself, the girl's hands were firmly clasped about his neck; she moved not, spoke not—she had literally broken her heart with joy.

Influence of Pets.

"Nature never betrays the heart that loves her."—Wordsworth. There is something exquisitely touching in our attachment to pets. Back from the long ago come tender memories of God's lower creations. It may be the wail of a dog, crouching in mute appeal to our childish generosity; or a pair of tiny existences, the one human, the other brute, commencing life together—companions, lovers as it were. By and by the little hands are folded, the sweet lips still forever. The mother, bereft, cherishes the living reminder, and when it dies, who shall enter into her grief?

Seemingly we do not half appreciate the value of pets in the formation of character. Dignity and strength challenge admiration, yet divested of sympathy the combination becomes the coldness of stolidity or the recklessness of fatalism. If pets can do anything towards cultivating this sympathy, shall not voices be raised in their behalf? The genial, the happy and the prosperous, find the capacity for a large and loving charity broadened and deepened. Not in every home is there a child; not every heart wins the love of his fellows. To such, through great sorrows or peculiarities of mind, pets come with double solace. Who has not seen the cross-grained visage relax, the zealous mouth grow almost tremulous with affectionate gratitude for the manifest love of man's friends? Character is developed through responsibilities. A person who has no ambitions and no purposes, is capable of no self-denial, assumes no ties of home or social relations, has no character—is a neutrality whom the world scarcely knows. He has set no long-lived forces in motion and is, in death, forgotten.

Remembering the law of early development, we should, at the earliest period, coner upon the child responsibility. Farmers, to whom poultry raising can be made so lucrative, are grossly to blame in not granting the best opportunities in this line to amuse and discipline their children. The young untrained mind seeks something upon which to fasten. Shall it take an erratic course, missing every mark, or pursue steadily a tangible purpose? If your boy's fowls are better and handsomer than his neighbor's, pride will be an incentive for him to strive for their still farther advancement. Kindness will be fostered—things dependent upon us we love. Industry becomes a habit from the daily care necessary for success. Exchanges and transactions between transactions familiar. The books and journals they get will be a nucleus around which will gather those which discuss the more weighty subjects that will surely propose themselves in the coming years.—Poultry Journal.

JAPANESE PERSPECTIVE.—Thoughtless people, scrutinizing a bit of Japanese ware, are diverted with what they are pleased to call "the comical lack of perspective" in the ornament. The Japanese artist does not undertake to produce aerial effects or linear perspective on plates, bowls, and vases. We must look to European art for such absurdities as landscapes and architectural drawings on spherical surfaces. In a Japanese workshop, the decorator feels just where a bright mass of color or a flowing line is wanted. He knows exactly where a single spot of gold or crimson will be most effective. He seems to have an intuitive appreciation of the relation which color and line have to the general mass before him. Therefore he makes no mistakes. The bunch of brilliant azules, the flight of storks, or the floating butterflies, are each placed where they belong on the object; with unerring accuracy, each ornament finds its true position in decorative art. The space left undecorated is only an intellectual balance to the weight of color or mass on the other side. Precisely what geometrical rules determine the value of these lines, or govern the disposition of masses, we may not be able to say. But we may be sure that such agreeable, harmonious, and complete designs as those furnished by Japanese artists, are the result of serious study of certain fixed principles.—Scribner.

COPPER PIPE ELECTRIFIED BY STEAM.—M. Donato Tomasi says, in a late number of *Comptes Rendus*: "When a current of steam is made to traverse, under a pressure of five to six atmospheres, a copper tube of two to three mm. diameter wound spirally round an iron cylinder, the latter becomes so strongly magnetic that an iron needle placed some centimeters away from the steam magnet is energetically attracted, and remains magnetized during the whole passage of the steam current through the tube." In continuation of this, M. Maumene, in the same journal, quotes the following observations: "The important experiment of M. Donato Tomasi should, it seems to me, be interpreted by a very different consideration from that of the author. Heat does not act so as to produce 'a new source of magnetism.' It produces a thermo-electric current, generating the observed magnetism, and is set up by the difference of temperatures between the interior surface of the copper spiral traversed by the steam and the exterior surface exposed to the air. M. Tomasi ought to be able to reverse the current, and consequently the poles, by causing heat to act so as to warm the exterior surfaces, at the same time maintaining the interior surfaces cold."—Engineer.

ACTION OF PLANTS ON IMPURE WATER.—At a recent meeting of the Societe Centrale d'Horticulture de France, Jeannel related the following experiments with water containing putrid matter:—In the month of May, sixty grammes of water, which had become offensive, and which the microscope showed to be full of bacteria—small animalcules, supposed to be the ordinary agents of putrefaction—was placed in a glass, and the root of a young growing plant plunged therein. An equal quantity of the same water was placed beside it in a test glass at the same time, without a root. The water in the second glass remained infected; that containing the living root, on the contrary, was pure at the end of the fourth day; all the bacteria had disappeared, and had been replaced by large infusorial animalcules of kinds found only in potable water. Water containing putrid meat was treated in the same way, with the same results. It was found that it was only necessary to immerse the root of a living plant therein for five days, to remove all the ill odor and render the water pure and sweet.

MATCH MARKS upon hard-finished walls may be removed by rubbing the walls with a bit of pumice stone. Prevention is better than cure, and if mats made of sandpaper, cut in circular or hexagonal shapes, fastened upon pasteboard, and bound with bright colored braids, with a ring attached to a sack, are hung near the match box, these unsightly disfigurements may be entirely prevented.

AMERICAN PLATE GLASS.—The production of plate glass, which recently introduced into this country, is making very rapid progress. There are now three polished plate glass manufacturers in the United States—one near New Albany, Ind., Louisville, Ky., and St. Louis, Mo., and one rough plate glass factory, at Lenoir, Mass.

Young Folks' Column.

Who is it?

Surely a step on the carpet I hear, Some quiet mouse that is creeping so near. Two little feet mount the rung of my chair: True as I live, there is somebody there! Ten tiny fingers are over my eyes, Trying to take me by sudden surprise; Then a voice, calling in merriest glee, "Who is it? Tell me and you may go free."

A Short Talk with the Boys.

Boys, did you ever feel when you went to town and looked upon the well-filled stores, and fine business houses and beautiful residences, costly turn-outs and the well-dressed men of your own age, that the old farm with its hard labor and your rough work clothes were not just the things? Haven't you wondered, while looking at the clerk who puts up the pins and tape mother sent for, with his fine clothes and huge watch and chain, if his place was not a great deal easier than yours? Haven't you wished you, too, were able to appear gay and stylish like him, with his hair parted on an equatorial line? Yes, you have. You have said to yourself, "These fellows have a good time and I am a slave."

Now see here, boys, let's look over this matter. There are two sides to the many, many honest efforts men and women put forth to earn their livelihood. When the tired and worn-out clerk is able to get off at eight, nine or ten o'clock to his bed in the room above the store or down in his cheap boarding house, after a long day's effort to please every body with some appropriate speech, trying to look pleasant over the grossest snubbings, bowing gracefully to the many who doubt every word he says, and declare he lies to sell his pins and ribbons, he lays down to sleep, wishing he was among the green fields. If he is a poor boy, he looks off into the future, hoping some day to be a merchant—among whom five in a hundred succeed.

The business man working late and early to meet his obligations, eviling the farmer, whom he surrounds with an ideal independence as far from the every day fact as your dream, my young friend, is from the real labors of over-worked help in all kinds of city business. Bright young men of all ages fill the towns looking for easy, respectable work—thousands have come West to grow up with the country—trusting to luck to get into some employment. Many are forced to accept work they never supposed they would do, others drift about until they find themselves loafers, bummers, gamblers, preying upon society, trying to extort a living without moderate labor. It won't do, boys—whether it's law, medicine, merchandizing or farming—genuine, honest success comes only through long and laborious exertion, and don't you be fooled by the glib talk, stove-pipe hat, or big, cheap chain; they don't signify that life is easier or better to him than yours is to you. We don't mean to say to you that every boy born on a farm ought to stay there. Farmers require special fitness for success in farming, as men do in law, medicine, ministry or mechanics, all have many blunders in them. Their point of view is driving at it that success comes from special fitness, application and a great deal of square, hard work, that there are no royal roads open to agriculture, or any other honest calling by which men suddenly become rich. And now, boys, we only ask of you in a common sense way not to imagine you ought to be a lawyer because you can repeat a passage from Burke, Clay or Webster. There is no profession in our opinion, that presents great opportunities to young men of courage, ability and clear grit than the study of agriculture as an honest calling for profit and reputation and happiness. Remember, however, just one thing, boys, viz: that the dignity of labor of which we read so much, lies in the brains and heart of the laborers, and not in the soil.—Kansas Farmer.

MOLECULES—THEIR RELATION TO PRESSURE.—Every substance is now supposed to be composed of an immense number of molecules, which, even in the solid state, are never entirely at rest, and, in the gaseous, are in a state of perpetual violent commotion, rushing about in straight lines in all directions with inconceivable rapidity; and it is this perpetual bombardment, as it has been called, by these little particles, that explains the known pressure of gas on the walls of any containing vessel, the incessant impact of the molecules producing the effect of one continual pressure, just as upon the eye a succession of rapid flashes of light have the effect of one continuous flame. Of course the molecules, although they are supposed to be separated for a very considerable distance from one another, are perpetually meeting and rebounding, and thus their velocity is interfered with, but there is a certain resistance of speed left, resulting in a mean velocity for the whole. This mean velocity indicates also temperature, and, for the same substance at one pressure, the same mean velocity is always accompanied by the same temperature.

DANGERS OF HYDROGEN TOY BALLOONS.—Th. Abbe Moigno calls attention to the need of placing restrictions on the sale of the miniature balloons inflated with hydrogen, which have lately appeared as a novelty in the Parisian toy shops. The case of a cabman is instanced, who was very severely burned about the head and eyes, by an explosion inadvertently caused while reaching into his vehicle, by placing the end of a lighted cigarette near to one of these balloons that had been left therein by a child.—Les Moutons.

An interesting experiment on the powers of electricity is tried by suspending a ten cent piece by a thread and holding it inside of a glass jar. The thread must be held tightly between the forefinger and thumb, and the hand being charged with electricity from the hand, will take an oscillating motion, swinging rapidly to and fro, until it touches the sides of the jar. Some of our young readers with an eye to the curious may feel inclined to try the experiment, and we mention it for their benefit.

NATURE OF THE TAILS OF COMETS.—It is known that the iron-nickel meteorites often contain hydrogen in occlusion, but Wright has discovered by means of the spectroscopic that the stony meteorites contain the oxide of carbon instead of the hydrogen, and it is given off at so low a temperature that it is often sufficient to mask the hydrogen. The amount of these gases, according to Wright, is sufficient to form the tail of a comet, while the spectrum of their tails corresponds, or rather is identical, with these gases.

Useful Information.

Notes on Iron.

A flanged tire bar, 5 in. x 1.8 in. and containing 10.2 square inches, requires upward of 200 tons pressure on a pair of ordinary shears to cut it open. In one experiment 210.6 tons were required.

A new railway bar has been known to break in three pieces on simply falling from a wagon. A cast iron pillar, loaded with 97-100ths of its calculated ultimate breaking strain, bore the load six months and then broke.

Locomotive tires are gradually extended in circumference by the friction to which they are subjected. They often become so loose upon the wheels as to require to be taken off and set anew.

Steel swells in hardening. Iron absorbs carbon and swells in case-hardening, as well as in conversion into steel. Forgings of scrap iron are liable in case-hardening to absorb carbon unequally, and to twist or vary, owing to the irregularities of the iron.

In punching long angle iron with closely pitched holes, as for riveting, the iron is stretched, often half an inch in ten feet, and a different template should be used in laying off the holes in such iron, so as to allow for the stretching.

Cast steel, when hardened to too great an extent, has been known to explode violently. A case was reported in the *Franklin Institute Journal*, for 1844, where a hardened steel step or bushing 1 1/2 inches in diameter, having a one-eighth inch hole, exploded with a report like a pistol.

A steel wire or bar of steel of whatever diameter, having a tensile strength equal to 150,000 pounds per square inch, would just support its own weight, if 8 3/5 miles (46,166 feet), long and suspended freely from one end.

Forgings which have been hammered when nearly cold often prove very brittle, a quality occasionally attributed to crystallization. Such forgings, however, if brought to a good heat and allowed to cool slowly, recover their toughness.

Hard cast iron, when cast in very large masses, and allowed to cool slowly, is found to become soft. Heavy guns, when cast solid from hard iron, are found to bore easily.

The strength of 1 1/2 inch bolts made of a given quality of iron, being twenty-five tons per square inch. Mr. Brunel found the strength of one-inch bolts of the same iron to be twenty-five tons to the square inch, while three-fourth inch and five-eighth inch bolts of the same iron bore respectively twenty-seven and thirty-two tons per square inch.

By successively reheating and reworking puddle iron, Mr. Wm. Clay found that while its original tensile strength was 43,904 pounds per square inch, its strength at the sixth reheating was 61,824 pounds. Subsequent workings reduced the strength until at the twelfth reheating it again stood at 43,904 pounds.—*Ex.*

TO MAKE LEATHER WATER-PROOF.—The *Bayerisches Industrie und Gewerblatt* contains a proceeding, which has been patented in Bavaria, for rendering hose of fire engines completely water-tight, so as to withstand the greatest pressure. The hose are, after they have been cleaned and dried, impregnated with a mixture of 100 parts of glycerine of 24° B. and 3 parts of carbolic acid, which may be done either by drawing the hose through the liquid, or, better still, by brushing it well in. Thus treated, the hose are said to preserve a certain degree of dampness, without, however, being liable to rotting in the least degree, and so suffering deterioration in quality and durability. The brass fittings of the hose are attacked only imperceptibly by the acid contained in the composition; but even this may be easily prevented by giving them before impregnation a coating of weak shellac varnish, or by greasing them well with tallow. The hose must be cleaned every time they have been used, dried, and impregnated anew with the liquid. As frost does not affect the mixture, hose prepared in the above manner do not freeze easily at low temperatures. If the preparation named is as effective as stated when used in connection with hose, it should be especially valuable as an application for leather boots for miners' use.

TO FIX PAPER ON DRAWING BOARDS.—Take a sheet of drawing paper and damp it on the back side with a wet sponge and clean water. While the paper is expanding, take a spoonful of wheat flour, mix with a little cold water, and make it a moderately thick paste; spread the paste round the edge of the drawing paper one inch wide with a feather, then turn the drawing paper over and press the edges down on the board. After this take four straight pieces of deal wood, three-fourths of an inch by two and one-fourth inches wide; place them on the edge of the drawing paper, and put a large book or heavy weight on each corner to make the paper adhere firmly to the board. In about an hour's time the paper will be straight and even, and quite ready for executing a drawing. When the drawing is finished, take a sharp knife and raise one corner of the paper, then take a scale, run it around the edges, and the paper will come off easily. Turn over and take the dry paste off with a knife, and all will be perfectly clean, and no paper will be wasted.

NEW SPEAKING AND HEARING TRUMPET FOR DIVERS.—An apparatus patented by Bremen & Co., of Kiel, and introduced for trial into the German Imperial Navy, not only enables the diver to communicate with those at the air-pump, but also to hear distinctly, to a depth of sixteen fathoms, every word spoken at the surface. The absolute safety of the diver being thus secured, it is expected that they will be able to work for smaller wages, thus rendering their services available in many cases in which they otherwise would be too costly. It is said that the invention is very simple, and can be attached, without much expense, to any diving apparatus. The main principle involved is the application of vibrating metallic plates for the propagation of the sound, without, however, allowing them to come in contact with the water.

NEW USE FOR MOLASSES.—In consequence of the low price of molasses, attempts are being made in France to introduce it in the place of manure. It is used either in a liquid form, diluted with seven parts of water, or as a powder; and just at this moment it is cheaper than ordinary manure, while it contains all its essential elements in equal abundance. As soon, however, as the cold weather comes on, the molasses will again be required for cattle-feeding purposes, and will probably rise to a price at which it would be useless for manure.—*Jour. of App. Science.*

FARADAY established the fact that gases are but the vapors of liquids possessing a very low boiling point.