enrolled in union with the college is one shilling; and for candidates not so connected, five shillings. The examinations are conducted in two divisions, senior and junior, and candidates are allowed their choice of either, without consideration of age, but no candidate over the age of sixteen years is eligible for prizes or other honours in the junior division. Prizes of £5 and £3 are offered to all comers, and in addition there is a special prize of three guineas, open to cathedral choristers only. Certificates are also awarded to all candidates who satisfy the examiners. Abundant evidence of the need that exists for some such examinations as these (the Society of Arts' Examinations in Music appeal to a limited constituency only) is afforded by the fact that during the present year, at the first of these examinations, 1,118 candidates, or almost as large a number as entered for the whole range of Society of Arts' Examinations, have presented themselves. This large number of candidates is altogether unprecedented in the annals of purely Musical Examinations, and must have afforded great encouragement to the promoters of this latest endeavour to elevate the tastes of the people. Full particulars of these Musical Examinations may be obtained on application to the Secretary of the College, Weymouth Street, Portland Place, W.

And here we must conclude our review of the system of Local Examinations, a system which is spreading like a vast network all over the United Kingdom, bringing practical tests of knowledge right to our very doors, and bidding all, at the very lowest expenditure of time and trouble, obtain some one or other of the many certificates accepted by the world in general as guarantees of the holder's knowledge. G. W.

THE GATHERER.

Churchyard Gardens.

We certainly do not make the most of our churchyards. They are often possessed of all the advantages that could be desired for a charming garden, yet the rule is to see them bare as a house-top, and much less interesting, as regards vegetation, than the very ditches by which they are surrounded. This is true, not of churchyards in towns, but of those in the fairest parts of our most lovely counties. Yet no spots are more easily converted into beautiful gardens. The expense need not be great: a few score pounds judiciously spent will convert the howling wilderness of the churchyard into a delightful retreat.

Churchyards are more than usually favoured spots for the formation of gardens of the best kind. The situation, at least in the country, is often picturesque; the soil is generally suitable, the tree-planter has usually the certainty that what he does will last for ages, the associations of the spot are such as to rouse the mind to the influences of great natural beauty, the walls of the church usually afford the finest opportunities for the display of the noblest hardy climbers, and the walls of the churchyard advantages for the development of those of more humble growth, whilst the ground is generally admirably adapted for noble trees, and the very turf may easily be converted into a garden of beauty.

There are several trees well suited for growth in churchyards. Only those certain to be long-lived should be planted, and of all trees hardy evergreens furnish the most easy means of adornment. Summer-leafing trees, however, should not be neglected, as amongst these are our most lovely flowering-trees, and many that give refreshing shade and pleasant foliage, fresh and green, far into the autumn. Where the area is limited, and it is desirable, as it nearly always is, to leave some space between the trees for view, the various pyramidal or tapering trees will answer very well. The low walls often placed round graveyards offer a desirable position for wall-plants—such as the various ivies, clematis, &c. Sometimes tombs may present opportunities here and there for the growth of plants of similar character.

Flower-beds of the ordinary type are quite out of place in a churchyard. A group of yuccas or lilies may be planted, but they do not need formal beds. In fact, there should just be one large bed—the whole of the turf. In this one of the ideas of the "wild garden"—dotting bulbous flowers through the grass—may be most effectively carried out. The scillas and snowdrops do also exceedingly well in turf, and so does the Apennine anemone. It may be urged that the occasional needful disturbance of the ground would interfere with these plants, but once well established they would not mind this in the least.

On the walls of the church, architecture and gardening may be brought into close union. All who know how readily church walls may be converted into gardens of evergreen and flowering plants, must regret that so many of them are bare of even ivy or Virginia creeper. Many of the finest flowering climbers could be grown in such positions. Each side of the church may have its appropriate plants; choice roses, and the least hardy subjects, having the warmer and more sheltered walls. Where ivy is grown it should not be allowed either completely to cover the walls, or to wholly exclude other and less common creepers.

Miniature Earthquakes in Farmers' Fields.

Dynamite has lately been doing good service as a powerful explosive. It is now extending its usefulness, and proving a valuable auxiliary to the farmer in his agricultural labours. Ground may often be broken up by it better than by any other means. The process is as simple as the effects are satisfactory. Holes from a yard and a half to two yards in depth are first made in the ground with a miner's bar, or otherwise; they are placed from four to six yards apart. Each

hole receives a cartridge containing seven to twelve ounces of dynamite. These cartridges are connected by an electric wire, and exploded simultaneously. The effect produced seems small—there is a dull sound, a slight trembling, sometimes hardly any raising of the soil. But the ground is mellowed to such an extent that at any point one may push into it with the hand a walking-stick to the depth of a yard, or a yard and a half. The cost of the operation is considerable; but to do the work with the pickaxe would cost more, would take longer time, and would not give so deep an effect.

Living in Paper Houses.

Every year a new use is found for paper. We may dress now in paper suits of clothes, substitute paper collars for those of linen, lie warmly in winter beneath paper blankets, keep flour in paper barrels, store valuables in paper boxes, travel in paper carriages mounted on paper wheels, drape our windows with paper curtains, and eat our eggs out of paper egg-cups. But this is not all: out of paper we may make to ourselves snug and comfortable homes. The use of paper as a building material is an American invention, and is reported to be a great success. As is well known, paper is a very bad conductor of heat; the passage of heat, indeed, is easily prevented by a few plies of the material. Houses, then, built of paper will resist the scorching rays of the sun in summer, and prevent the escape of the warmth inside in winter. To enjoy the advantage of this peculiarity of paper it is not necessary, however, to build houses of solid paper bricks. Merely to line them with pasteboard would produce the same effect. One strong point in favour of using paper for purposes of building construction is that it will not shrink or crack, being neither affected by heat, cold, nor damp. Then, it will not burn so readily as wood. The houses, also, will be comparatively light, and might with ease be removed bodily from place to place; when the sensible inhabitants grow tired of living on the side of a hill, they will be able to shift at once to a fine site in the valley; or if they live on the seashore it will not be much trouble to pack up and, house and bag and baggage, go to spend six months of the year in some inland district. The owner of a small paper cottage will almost be able, like the snail, to carry about his house on his back.

Double Acrostic.

These twins for skill were equally far-famed;
A boxer one, the other horses tamed;
One day they dwelt in Hades, one on earth;
Great were their deeds, but lowly was their birth.

I.

How oft maternal tenderness I see
Expressed beneath and yet restrained by thee!

II.

Fifty heroes bold I bore
To the fabled Colchian shore
In the glorious days of yore.

III.

This is on each document
Of serious import;
When found in northern latitudes,
'Tis many a seaman's sport.

IV.

Oh, who shall of this patriot tell,
And the brave deeds he wrought—
How he, at risk of home and life,
His country's freedom bought?

V.

"All that glitters is not gold,"
Is a proverb, I am told,
Which of this quite true will hold.

VI.

I am a king—there's no mistake about it.
Consult your Latin grammar, if you doubt it.

Answer to Hidden Quotation on p. 509.

"A thing of beauty is a joy for ever."
Keats' "Endymion."

Our Sisters in India.

There can be no more interesting object of benevolent enterprise than the improvement of the social condition of the women of India. The estimation in which the native Indian woman is held is well known by Englishmen—how she is compelled to undergo every kind of manual work at the command of her husband; while the lord and master enjoys his life to the utmost, worked for, waited on, and looked up to by his wife and slave. The wretched existence of these women has been described pretty clearly in a single sentence: "She is unwelcomed at her birth, untaught in her childhood, enslaved when married, accursed as a widow, and often unlamented at her death." Lady Anna Gore-Langton has been recently visiting India, and has taken much pains to acquaint herself with the manners and customs of the natives, especially in the south of India. Indian children, she informs us, are married at eight years of age. Native fathers consider it a disgrace to have single girls in the family, and endeavour to get them married in childhood; but when married they do not always go at once to their husbands' homes. Although but little money is laid out in clothes or education, the marriages are very expensive, as there is a great deal of feasting: indeed many families have been impoverished for years by the expense of marriages. Infanticide is not so prevalent now as it was a few years ago, and Government has done a great deal to put it down. The marriages are generally arranged by the old women, who go from family to family to discover suitable matches. The men in India are to a great extent ruled by the women, who are very conservative, and have decided objections to any improvement in their customs. The lower-class women work very hard,

pulling stone rollers, cutting grass, and helping their husbands in bricklaying. Widows are treated by the natives very badly: their clothes and jewels are taken from them, and they are made as miserable as possible. "Nothing," says Lady Anna Gore-Langton, "is more painful than to see the vacant, hopeless, melancholy faces of the adult women; and nothing is more wanted than lady doctors, who might save Indian women much suffering." Sir Salar Jung exerted himself some time back to secure a lady doctor for India. He had to send to America for one, and she has now a large practice among the native women.

Common Sense and High Heels.

If any one thinks that high-heeled boots are a product of nineteenth-century civilisation, he is much mistaken. They were introduced into this country from France in the reign of Louis XIV., the heels in those days being coloured red by those in the extreme of fashion. Since then high heels have come and gone with all the irregularity of fashionable caprice. Does it never occur to those who wear high and narrow heels that the unnatural character impressed on their style of walking is, to quote the words of a medical writer, "the expression of a perversion of the natural relation of the articulations and muscular action, such as cannot but result in serious and permanent damage?" The character of the injury produced by high heels, and the symptoms by which it is expressed, are well described by Dr. Onimus in a recent communication to the Société de Médecine of Paris. The heel of the boot is at present not only high, but narrow and inclined forwards, so that the distance between the heel and the point of the foot is lessened, and the foot appears smaller than it really is. This, absurd as it is, appears to be the chief recommendation in the eyes of the wearers. The effect of the oblique position of the foot is, of course, to remove the weight of the foot from its natural point of support, and project it forwards. Hence one of the most frequent symptoms of which the wearers of these shoes complain is an acute pain in the sole of the foot, and there is often considerable tenderness as well as pain. The toes, instead of the heel, first touch the ground; and the walk is clumsy and heavy, instead of being light and undulating. The toes become permanently flexed and pressed together, partly in consequence of the narrowness of the front part of the boot, and partly in consequence of the over-action of the flexors of the toes, due to the increased pressure. Who, then, having considered these things, will go on pinching her feet and wearing high heels?

Small Birds in Parliament.

Every one knows, or should know, that a large number of wild birds are protected by Act of Parliament during the breeding season. The cuckoo, nightingale, goldfinch, swallow, plover, robin redbreast, wagtail and wren, and at least a hundred other birds, may build their nests and rear their young hopefuls in peace: the eye of the law is upon all their human foes. It is strange, however, that amongst the birds protected in this way one of the sweetest singers in nature finds no place. The skylark, the ethereal minstrel of the "blushing dawn," may be snared, wounded, or shot with impunity. All the thrushes also are unprotected: one may wage a war of extermination against song-thrushes, missel-thrushes, fieldfares, redwings, ring-ousels, and even against melodious blackbirds. Gardeners in Britain know how troublesome thrushes are, when numerous, from their eager appetite for cherries and other small fruit. No wonder, then, that Parliament has refused to encourage their too rapid multiplication. But it is otherwise with the skylark. We all associate this bird, singing at heaven's gate, with beautiful scenes and happy days; and it seems the greatest of pities and the greatest of mistakes—for the bird has given far more pleasure in the world than it ever caused mischief—that the shield of the law has not been thrown around its little form. The best thing we can do now is to let it have an Act of Parliament all to itself.

Living without Food.

It is true that many chronic diseases all the world over arise from eating too much. But it is possible, on the other hand, to eat too little; and we doubt whether many could maintain a healthy existence on the meagre diet of such medical philosophers as the celebrated Cornaro. How long one could contrive to live without eating anything at all, is a question of which few will be inclined to undertake the practical solution. Unfortunately, it has been solved over and over again in the case of many an accident and many a deed of cruelty.

Without something to eat or drink, man will not live beyond a few days, or at most a week. Access to water, however, makes a great difference. There is a well-known case of an Ayrshire miner who lived twenty-three days, buried in a coal-mine, without swallowing anything but small quantities of a chalybeate water sucked through a straw. He had the advantage of being shut up in a contaminated atmosphere, which, by diminishing nervous sensibility, lessened the cravings of hunger. Even more remarkable examples of prolonged abstinence might be given. Persons, indeed, have been found in coal-pits and mines, and in other situations where there was not a mouthful of food, but where water was to be had, as long as six weeks after their seclusion, still alive, though of course in a very feeble state; and a small daily allowance of food has supported life longer even than that, as in some cases of shipwreck and other accidents at sea. Bérard quotes the example of a convict who died of starvation after sixty-three days, but in this case water was taken. Cases of alleged fasting longer than this are certainly in most cases due to imposture. The insane appear to bear fasting better than those in their sober senses, and in some morbid conditions of the body nourishment may certainly be done without for a surprising length of time.

Animals have an advantage over man, so far as

living without food is concerned. Rattlesnakes exist many months without eating anything, and retain all their vigour and fierceness; and many creatures voluntarily spend four, five, or six months in every year without eating or drinking. The tortoise, bear, dormouse, and other animals retire at their seasons to their respective cells and hide themselves—some in caverns of rocks and ruins, others dig holes underground, while some get into woods and lay themselves up in the clefts of trees. What a fine piece of economy it would be if man in dull times could just curl himself up and take a long nap like these inferior creatures!

Cheap Decoration for Dwelling-Houses.

We are a home-loving race, and should be, if we are not, eager to make our homes little art-Paradises. The difficulty, however, usually is to harmonise art with economy, beauty with cheapness. An ingenious process has recently been invented by Mr. T. Whitburn, for transferring artistic designs to wood, to be used in the decoration of houses and furniture. It is a cheap style of work, and highly effective: we therefore anticipate for it a large amount of public favour. The commencement of the process—which is known, by the way, as Xylography—is to draw the design on wood or paper, from which it is afterwards transferred to wood. The design is then engraved, or reproduced in zinc, by a well-known method. An electrotype cast is taken from the woodcut or zinc-plate, and the smooth slabs of wood—American pine—to be used for house-decoration are printed from the electrotype under a regulated pressure and with pigments specially prepared. Enough pressure is used, as a rule, to emboss or depress the pattern. The dye penetrates the wood, and no outside film of colour is visible. To preserve the material and enrich it, the French-polisher may be called in, or the whole of the wood may be covered with a fluid enamel, which can be applied even by the inexperienced with a brush, and is useful for protecting any neighbouring pieces of metal as well as the wood. The wood can be scrubbed, washed, and even sandpapered without destroying the pattern.

Shocks from Electric Eels.

Several kinds of fish possess the extraordinary power of accumulating electricity within their bodies, and discharging it at will in a violent form. Amongst the best known of these is the electric eel, a fish very widely diffused over the warm regions of South America. It is found there in fresh-water pools and streams. Its ordinary length is five or six feet, the skin is soft and without scales, and the colour is a brownish black. To any living body touching it, the electric eel gives a shock resembling in its effects that produced by the discharge of a Leyden jar. Faraday made a series of experiments on a specimen forty inches long, which was exhibited in London some years ago. He calculated that, at each medium discharge, the animal emitted as great a force as the highest charge of a Leyden battery of fifteen jars, exposing 3,500 square inches of coated surface. The strongest shocks were obtained by touching the fish simultaneously near the head and near the tail. The shock is of very variable intensity in different individuals and at different times. Sometimes it is strong enough to paralyse horses, and the discharge of large fish occasionally proves sufficient to deprive men of sense and motion. The energy of the electric eel is exhausted by a continued series of discharges, and, this being the case, it is a common practice with convoys in South America to collect a number of wild horses and drive them into the rivers, in order to save themselves, when they pass over, from being injured by the fish. By the exercise of its electrical power the eel kills its prey at a distance: when some poor innocent fish is seen approaching, the animal coils itself up in the best position for giving the strongest shock; an instant afterwards the fish floats dead on its side, to be devoured at leisure.

Amongst other fish possessing this power in common with the electric eel is the torpedo, belonging to the ray tribe. It is found on the coasts of the Atlantic and Mediterranean, and sometimes so abundantly as to be a staple article of food. From its proximity to European shores it has frequently been made the subject of experiment.

The Ways of Ants.

Sir John Lubbock has for a considerable time been considering the ways of ants, and has arrived at some remarkable conclusions, all tending to show that, however much these little creatures may be models of industry, they are not nearly so intelligent as is commonly supposed. In industry they are certainly not surpassed even by bees and wasps. They work all day and, in warm weather, if need be, even all night. "I once," says Sir John, "watched an ant from six in the morning, and she worked without intermission till a quarter to ten at night. I had put her to a saucer containing larvæ, and in this time she carried off no less than a hundred and eighty-seven to the nest. Another time I had an ant, which I employed in my experiments, under observation several days. When I came up to London in the morning, and went to bed at night, I used to keep her in a small bottle, but the moment she was let out she began to work again. On one occasion I was away from home for a week. On my return I let her out of the bottle, placing her on a little heap of larvæ about three feet from the nest. Under these circumstances I certainly did not expect her to return. However, though she had thus been six days in confinement, the brave little creature immediately picked up a larva, carried it off to the nest, and after half an hour's rest returned for another."

There are many different species of ants, and the different species have strongly contrasted moral characteristics. Some are distinguished by bravery, some by cowardice, and some prove exceptions to the general rule, and are strikingly idle. Indeed, to such an extent is idleness carried on in one species that they are entirely dependent on their slaves. They are too lazy even to feed themselves.

Two ants working at a time are apparently sufficient to supply a nest of three or four hundred with food. When Sir John Lubbock first noticed two working for a whole nest, he thought they might be individuals remarkably fond of work, so he removed them. Two others took their places in foraging, and as soon as these two were also removed, two others took their places.

Ants seem very stupid in regard to locality. And the prevalent idea that they will take care of a distressed friend, Sir John believes to be quite wrong. He tried covering an ant with mould where many were passing and repassing. No one took the slightest notice. A few appeared to feel concern for a drowning fellow-creature, but he was obliged to regard this as an individual peculiarity. Industry, after all, is the little insect's strong point, and Solomon might well recommend the sluggard to pay a visit of observation to an ants' nest.

How to make a Hole through one's Hand.

Our sight is not always to be depended upon, and a very odd experiment, illustrative of the fact, may be performed by any one in possession of two hands and a sheet of paper. Take the paper—stiff writing-paper will answer best—and roll it so as to form a tube about an inch in diameter. Apply the tube to the right eye, and look steadily through it at any convenient object; at the same time keep the left eye open. Now, place the left hand, with the palm towards you and the fingers pointing upwards, by the side of the paper tube and near its lower end.—The strange sight will be seen of a hole—a clearly defined hole—through the palm of the left hand.

We may proceed to a still more curious spectacle. For this a real opening opposite the left eye is needed, and as it would be inconvenient, to say the least of it, to punch a piece out of the left hand, take a sheet of paper and make a hole in it, a quarter of an inch in diameter. It should be made about the same distance from the edge of the paper as the apparent hole was from the edge of the hand. Hold this paper up beside the tube just as the left hand was held. Look intently into the tube, and the little hole of the paper will be seen floating within the aperture formed by the tube. Both holes will be transparent. Each eye obviously transmits different impressions to the brain; but that organ seems to exercise no discrimination whatever in regard to them. The illusion is a strange one, and a good example of the pranks we are liable to have played us by our binocular vision.

Struck by Lightning.

When lightning strikes a building, the electricity speeds by the quickest and easiest way to the earth, and a force that out-of-doors rends rocks asunder and splits trees into fragments like lucifer matches, indoors not unfrequently creates such devastation as can hardly be believed by those who have not seen it. As a safeguard, copper or iron rods are set up, along which the lightning may find a free passage to the earth. Now, do these conductors afford absolute security to the building to which they are attached? There is a vague belief abroad that they do, but this is one of the popular errors of which scientific men have before now drawn up a considerable catalogue. Buildings have often been struck in one place when a conductor was not far off. In the case of ships, the foremast has been frequently struck when a lightning chain was applied at the mainmast. The most we can say is that the employment of a conductor greatly diminishes the risk, and it is something to be even partially shielded from the attacks of such a relentless foe.

The Cool Green Shade.

A law exists in New York State which may well excite envious feelings in the hearts of all foot-sore and weary travellers in other parts of the world. This statute is to the effect that any inhabitant liable to highway-tax who transplants to the side of the highway any forest shade-trees or fruit-trees of suitable size, shall be allowed an abatement of his highway-tax amounting to about four shillings and twopence for every four trees. Certain regulations are laid down as to the distances the trees are to be apart. Elms are not to be nearer than seventy feet, maples and other forest-trees not nearer than fifty feet, except locust-trees, which may be set thirty feet apart. Fruit-trees are to stand at a distance from each other of at least fifty feet.

This is pleasant to read about. Here is a State, not satisfied with providing wayfarers with shelter from the too fierce rays of the sun, but taking care that they shall have apples and other fruits ready to their hands, and so be no longer tempted to enter the fields to steal raw turnips. Many a dusty road in our own country might be treated in the same fashion. Good feeling, without the prospect of a remission of taxes, will perhaps prompt some one to make a beginning.