### CIENCE NOTES.

LASTING ROCK WITH WATER.

A writer in a German technical paper, scribes a hydraulic device for blowing rocks. It is based on the principle of hydraulic press; enormous pressures set up within the rock, which eventlly bursts. The pressure is transmitted a pipe-line to a cylinder 85 millimeters diameter in which eight pistons may be ccessively displaced telescopically. The dinder is inserted into a hole, drilled an electrical drill in the rock to be own up. The pistons bury themselves the rock one after another and blow

#### ROCKET TO REACH THE MOON.

According to an announcement authised by the Smithsonian Institute at ashington, a high efficiency rocket has en invented by Professor Robert Godard, of Clarke College, capable of shootg upward 200 miles or more, and it is iggested that after a few practical exeriments a rocket can be constructed thich will reach the surface of the moon. be principle of Professor Goddard's ocket is a series of recharges, which exlode one after another as the missile roceeds, and the hope is expressed that rocket will shortly be fired containing ecording instruments, which, when reovered, will give information regarding he nature of the higher levels of the arth's atmosphere, its chemical composiion, temperature, electrical nature, density, ozone content, etc.

#### FIRE-FIGHTING WITH DYNAMITE.

the conquest of one of the largest fires n gas well history in California, has demonstrated that dynamite is far more effective than water in fighting the most stubborn fires. A hundred and ninety million cubic feet of gas was being consumed every 24 hours—enough to supply a city. Water, mud and earth were poured into the crater of the well, to no avail. Then, by means of cables suspended from nearby derricks, 150 pounds of blasting gelatin was swung directly into the flame, 30 feet from the mouth of the well. The gelatin and the electric wires attached to it were insulated against the terrific heat and the explosive discharged by an electrical spark as it reached the flame. The explosion snuffed one the tower of fire, and immediately streams of water were played upon the well to prevent the fire starting again.

### WEIGHING THE EARTH.

A standard experiment which deserves to be carried out more frequently than seems customary is that of weighing the The fact is, the earth weighs something like 6,000,000,000,000,000. tons The law of gravitation tells us that all bodies attract each other with a force that depends, among other things, upon the relative masses of the bodies involved So in the experiment, two small spheres, carefully weighed to the most excruciating accuracy, are attached at the end of a small rod. The spheres were freely suspended so that they could be swayed in any direction. They were hung by threads of quartz drawn out to onetwelfth the thickness of an average human hair. Next on the list of properties were two lead balls of about ten pounds each. in the vicinity of the swinging spheres, these lead balls at once made their presence felt by an infinitesimal deviation of the spheres, which was magnified by being reflected in a large mirror forty feet away. On the basis of the known weight of the tiny spheres and the lead balls, the movement which the presence of the latter caused in the former made it possible to calculate the force which the lead had exerted upon the spheres. At the same time, it was already known what force the earth, with its gravitational field, was exerting on the lead balls. So the weight of the earth was then found as the fourth member in a proportion of elementary simplicity.

#### TO CUPID.

If Love his arrows shoot so fast. Soon his feathered stock will waste: Bat I mistake in thinking so, Love's arrows in his quiver grow; How can be want artillery? That appears too true in me: Two shafts feed upon my breast, Oh make it quiver for the rest! Kill me with love, thou angry son Of Cytherea, or let one, One sharp golden arrow fly To wound her heart for whom I die. Cupid, if thou beest a child,

Be no god, or be more mild. -James Shirley (1632).

# CARDEN NOTES.

TRANSPLANTING FRUIT TREES.

As the season for transplanting fruit and other trees and plants is again near at hand no time should be lost in preparing the soil, planning out the ground, and making every preparation that would assist to expedite the work of planting when the trees are ready for lifting. Too often little or no attention is given to these matters until the trees are ready for planting, when holes are hurriedly dug, in many instances in virgin soil that has not previously been pulverised, and the trees planted. Failure can only result from such method of planting, for although trees may remain alive, for a time at least, it is almost impossible for them to make any headway under such treatment.

TO GROW TREES WELL.

To grow trees successfully the soil requires equally as good treatment as for any other crop. The advantage of having the ground well prepared and placed in the best possible condition for planting, particularly for young trees, is in favour of the planter every time. It is, in fact, on account of seeing so many failures with trees that have been planted in soils that scarcely any other crop would be expected to grow in that attention is so frequently drawn to the importance of placing the soil in such condition as will, with reasonable after-culture, ensure success.

#### FUTURE SUCCESS OF TREES.

It should be borne in mind that the future success of trees depends upon the treatment they receive in planting, and during the first three or four years of their growth. The amount of preparation the soil needs will naturally vary according to its character, and the treatment previously given. In lands of a light, porous nature, that have already been under crop very little preparation will be required. Much of the land, however, selected for orchards, is of a fairly stiff retentive nature, and need thorough working to bring it in good form for planting. In such lands, too, thorough drainage is of the greatest importance, as stagnant water is most injurious to all kinds of fruit trees. Deep double working, if the land is of an undulating character, will often provide sufficient drainage. In every case, however, there must be free cutlet for surplus moisture or the trees cannot

#### PREPARING FOR PLANTING.

In preparing the holes for planting, providing the subsoil is of a stiff clay nature, the holes should in no case be dug below where the soil has been previously broken up. Last year my attention was drawn to some holes that had been dug out in soil of a clay nature, and at the time of seeing them there must have been at least a 1ft to 18in of water in them, without any appearance of an outflow. It is far better to dig only the depth of the surface soil, if the subsoil has not been broken up, than to make wells, in which water can accumulate.

#### TREES AND MOISTURE.

amount of moisture in the soil is necessary to keep the trees in a healthy growing climber giving a dense mass of snow white condition, but this must not be in excess, and on no account must it be stagnant. Vet this without doubt is the cause of many failures. Soils on the other hand that are of a free, open nature, can be deeply dug with advantage. In every case it is an advantage to have the holes prepared before the time of planting, as it altows the soil to pulverise and sweeten, though manure should not be applied until umn value. planting takes place.

#### WHEN TO PLANT.

Planting should in no case be done while the soil is in a sodden condition, for in order to assist the roots to strike into the soil as quickly as possible it is requisite to press the soil firmly about the roots. But if this is done while the soil is very wet it becomes puddled, and as goon as it dries is a solid mass, which cracks open as soon as dry weather is experiencied. Where trees are received from a distance one cannot always ensure suitable weather for planting immediately uvon their arrival, so that temporary laying in the soil is the only safe means of keeping the trees sound until the planting ing can be done.

#### LAYERING TREES.

If trees are layered and left in this way for any length of time they are almost sure to make young forous roots, so that great care must be son in their

removal or many of the young roots will be destroyed in the operation. In manuring the soil for young trees care should be taken not to place the manure immediately upon the roots. It is better to thoroughly incorporate the manure with the soil, so that as soon as young fresh roots are made they can derive the greatest benefit from its use.



### HORTICULTURE.

Referring to white broom last week the wisdom of discarding old plants for young was mentioned. This suggests some reference to the use of young trees shrubs etc., being used for garden decoration practically as bedders for which many can be used in flower beds and borders most effectively. Small plants of prunus pissardi can by cutting back and severing the larger roots with a spade, be kept quite small for a number of years, its dark foliage being most effective; the small narrowleafed spiraea can be cut back to a few loose sprays and be beautiful both for bloom and foliage. Acuba japonica can be similarly treated, cabbage trees can be grown from seed and used from 3 to five years before rooting out. Selected seedlings of phormium purpurea have dark purple foliage and by carefully reducing from time to time according to the positions they are in can be kept quite small for three to six years. Interspersed with a few small cabbage trees and perennial agrostes they give lovely effect and may he filled in with annuals or geraniums in summer. Viscaria or bright coloured phlox drumondi suit excellently, and from this time on and throughout the winter, when the flowering plants are cleared away lovely autumn and winter effects are retained instead of bare borders. Looking around now we see the beauties of autumn tints in the foliage of many trees and shrubs.

The large leaved Virginia creeper (ampelopsis) with its leaves turning from green and bronze through all shades of yellow, orange and scarlet is a thing of brilliant beauty, quick growing, an excellent house creeper, and excellent for cut-The small foliage variety also gives brilliant colouring and is good for covering brick walls, but not nearly so hardy and of little use for cutting. The purple beech is also putting on its autumn glories of rich gold and browns, and has the advantage of retaining its leaves for a considerable period after colouring.

Perhaps the best flowering house climber is the solanum jasminoides with its light and graceful foliage and large sprays of white flowers from early spring till winter, hardy and very quick growing. The large flowered clematis with its wealth of big flat flowers from pure white and through numerous shades of blue is always charming as a house climber. The jackmani varieties with their masses of various violet and purple shades always call forth exclamations of delight, they are useful and lovely as cut flowers and ladies delight to wear them as dress All fruit-growers know that a certain sprays. For covering large spaces clematis montana is unsurpassed as a hardy blooms in the spring with fine pale green foliage turning to a light yellow before falling in the late autumn. Clematis paniculata is similar to montana in growth and foliage, but gives its wealth of small creamy blooms in the autumn. Alister Stella Gray was recently mentioned as a perpetual flowering pillar rose, it is still full of blooms and buds showing its aut-

> Keep your autumn work well up by cleaning your beds and borders and removing those things that are ready, in particular those perennial and herbaceous plants that are already making new growths.

Take good care of your autumn sown sweet peas, as the leaves now falling from tree- and shrubs are apt to settle round them and provide a shelter for slugs which do much mischief, wholly destroying many of the strongest shoots and weakening others. The soil surrounding the peas should be kept perfectly free from all weeds and rubbish and small twigs inserted to prevent the peas from getting down on to soil.

If spring bulbs and their allies have not yet been planted, get them in with tle least possible delay.

Grocer: "Yes'm, the high price of mustard is due to the scarcity of juel. You see, people are buying up mustard and are keeping themselves warm with poul-

# MOTORING NOTES.

WINGS ON A RACING CAR.

An important Italian maker is experimenting with streamlining up-to-date This racing car will probably look as little like a motor-car as anything ever seen on wheels, for the driver will be completely enclosed in the fuselage-like body, and there will be small wings, not, as might possibly be conjectured to be the case, with the object of taking the machine off the ground, but of holding it down at high speeds.

#### PETROL-ELECTRIC FIRE ESCAPE.

The petrol-electric system, when applied to road vehicles, conviently lends itself to the special requirements of fire brigade work besides that of transport alone. The London Fire Birgade is using a petrolelectric chassis carrying a fire escape extension ladder mounted on a turn-table. The ladder, which can be extended to a height of 85ft., is operated by electricity, the power being obtained by simply connecting the ladder motor with the chassis dynamo by means of a switch, the engine being kept running. The ladder, of course can be used for either fire escape, or as a

#### MOTOR VECHICLES IN BRITAIN.

The highest total ever reached in the United Kingdom for motor-cars, motorcycles, and hackney motor vechicles, was attained in 1915-16, when 362,200 licenses were issued, while in March, 1919, there were in use approximately 75,515 commercial vehicles. The addition of these two figures gives a grand total og 437,715, which may be fairly taken to present the position to-day. This figure is not very imposing when compared with American totals. In New York State alone there are 485,000 motor vehicles, while there are no fewer than 6,400,000 in the whole of the United States.

#### MOTOR TRANSPORT AIDS SPORT.

It is a far cry to the days when M.F.H.'s vented their wrath on every petrol-driven vechicle in energetic terms. Nowadays every M.F.H. is a motorist, the "Autocar" declares, and many of them not only for their own personal comfort, but also for rapid transport of horses and hounds. At one spot in England hunters are boxed and unboxed in a special horse lerry, constructed to carry two horses and four grooms. The Duke of Beaufort uses a hound van for the conveyance of h's grace's hounds. By this means not only are hounds brought fresh to a meet, distant, perhaps, many miles from kennels, but they are immune from innumerable road dangers from passing traffic.

#### STREET SWEEPING MACHINE.

The employment of the motor is being used to perform simultaneously a number of street-cleaning processes which hitherto have each constituted separate operations for horsed vehicles. One of these machines as used in Birmingham, is towed behind a 5-ton steam waggon. Road sweepings are first thrown into a shallow pan by rotary brushes driven by a chain. To the centre of this pan the refuse is passed by helical rubber conveyors, and thence into the boot of the elevator, whence it is carried by buckets on endless chains and dropped into the waggon in front. To follow varying road contours, the brush is made in three sections, with universal joints between each, and the brush pressure is regulated by a balance weight. Tests carried out by certain corporations go to show that at six miles an hour one of these machines, while effectively sweeping, can load a ton of sweepings within

#### WISE MEN SAY-

That efficiency is commonsense sensibly

That if you can't be a star, you needn't

be a cloud. That you can't do justice to your work unless you enjoy it.

That if a man is your friend he deesn't have to tell you so.

That the man without manners is usually the man who needs them most to hide his deficiencies.

That enthusiasm is the lubricant that makes the wheels of trade go round. grouse is sand in the bearings.

That earning a living is the thing which occupies most of our time. So why shouldn't we be happy in doing :: ?

That there are millions of people in the world who never played you a single nasty trick. So why lose faith in humanity?

#### FOR SALE OR EXCHANGE.

12 ACRES FREEHOLD; three miles from Invercargill; two acres bush, balance grass; good four-roomed house, bathroom, h. and c. water; good garden. Price £1300. Terms arranged. This is cheaper than buying a house in

£600 DEPOSIT for a handy little Dairy Farm in the Winton district, consisting of 140 acres freehold; 40 acres bush, 10 acres ploughed, balance stumps and grass. Comfortable threeroomed cottage, three-stall stable, trap shed, etc. Rail and factory three miles by good road. Price for quick sale,

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at £60 per acre. FOREST HILL-173 Acres at £7; 420 acres at £5; 270 acres at £7. On easy

ROSEDALE (North Invercargill) - 15

Acres at £35; 9 acres at £40; 73 acres at £45. The cheapest suburban land on the market to-day. WOODEND-Handy little dairy farm of

66 acres, together with all necessary outbuildings; handy to factory and rail; at £30 per acre.

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