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12 ACRES FREEHOLD: three miles from Invercargill; two acres bush, balance grass; good four-roomed house, bathroom, h. and c. water; good garden. Price £1500. Terms arranged. This is cheaper than buying a house in town.

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Six ROOMS: gas, electric light, bathroom, asphalt paths, ¼-acre. Immediate occupation. £675.

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SCIENCE NOTES.

UPSETTING THE UNIVERSE.

THE NEW LIGHT DISCOVERY.

The revolutionary discovery, announced at a joint meeting of the Royal and Astronomical Societies in London, that light has weight, recently created a great sensation in the worlds of science and philosophy. It upsets in a moment all the theories that have arisen since the days of Euclid, and brings the "fourth dimension" almost within touch.

The universe no longer extends indefinitely in every direction. All straight lines are really curves. If a "straight" line is projected into space it will not continue indefinitely, but will return to its starting point. Human thought, in fact, must start afresh on an entirely new road.

Dr. Davidson, of the Royal Observatory, Greenwich, who was in charge of the British Solar Eclipse Expedition to Brazil, explains in the following article how the discovery was achieved:—

BENT BY THE SUN.

(By Dr. Charles Davidson, F.R.A.S.)

The result of the British eclipse expeditions to Sobral, in Brazil, and the island of Principe, off the west coast of Africa, stated in non-technical language, is to prove that light has weight in proportion to its mass, as matter has; but it takes an appalling amount of light to weigh an ounce.

The cost of light as supplied by gas and electric light companies works out at something like \$10,000,000 an ounce. This points the moral of daylight saving. The sun showers down on us 160 tons of this valuable stuff every day and yet we often neglect this free gift and prefer to pay \$10,000,000 an ounce for a much inferior quality.

There are two theories of light—the corpuscular and the undulatory. The corpuscular supposes that light is composed of a stream of particles shot across space with great velocity. This is not accepted now, but was the theory held by Sir Isaac Newton, who himself suggested that it would be in conformance with the law of gravitation that light, in passing the sun, would be deflected from the straight path.

THE WAVE THEORY.

In the early part of the 19th century the corpuscular theory gave place to the undulatory theory, which supposes that light is a wave motion in the ether. Either is a medium hypothesized for the transmission of light.

Light is a form of electro-magnetic energy and therefore has mass, but the question to be solved by the eclipse expeditions was whether light had weight. If light had weight as well as mass it would be deflected on passing near the sun.

The only way in which this could be tested was by observing stars close to the sun, and the only time at which this could be done was during a total eclipse.

The eclipse of May 29 last was a favourable one for the purpose, as at the time of totality the sun happened to be in the midst of a group of bright stars called the Hyades.

GRAVITY.

If light were subject to gravity, following the Newtonian law, a star grazing the limb of the sun would be displaced outwards by a quantity rather less than the two-thousandth part of the diameter of the moon. Of recent years, however, a new gravitational theory has been put forward by a Swiss mathematician, Professor Einstein, and, according to this theory, the deflection would be twice as great. The eclipse expeditions went in order to determine whether light was deflected at all or not, and, if deflected, whether it was according to the Newtonian or the Einstein law.

Having secured the eclipse photographs of the Hyades, it was necessary for the Sobral observers to remain a couple of months in order to secure the same field of stars in the night sky, the whole test consisting in whether the presence or absence of the sun made a difference in the apparent relative positions of the stars. These photographs were secured in July, and the observers returned to England. The photographs have now been measured and the result is in accordance with the theory of Einstein.

Gum-nut Babies! Gum-nut Babies!
What's your secret, little ladies?
It is true, what we've been told,
That you cannot catch a cold?
When the weather's damp and breezy,
Are you really never wheezy?
We kindergarten kids are sure
You take Woods' Great Peppermint Cure.

GARDEN NOTES.

ASPARAGUS.

When the tops are dead, or nearly so, they should be cut down close to the surface of the soil, rather below than above, because the dead tops become hollow, and unless they are covered with soil they afford harbours for woodlice and other vermin. When the tops are cleared off the surface soil may be lightly broken up. Further treatment, manuring, etc. will be dealt with in next month's notes. Anyone intending to plant asparagus next spring should select a site for the plantation at once and get it cleared of weeds, particularly any with perennial roots. It is not now the custom to expend a large amount of labour and material in the preparation of beds, clean soil of fair depth and moderately well manured is all that is required. The culture of asparagus is not yet so general as it should be. This is due partly to the reluctance some people have to plant anything that it not immediately productive, and partly to the erroneous idea that it is an expensive crop. The latter idea is quite wrong; it is, in fact, one of the cheapest crops. The only bar to its general adoption is the fact that it occupies the ground permanently and produces but one crop each year. This prevents those with only small cottage-gardens indulging in it, but is no bar where the area is such that a square rod or two can easily be spared. The advantages are that with modern methods it costs little to establish and once established it requires very little attention, and every year it automatically supplies liberal gatherings of the finest of all vegetables at a time when other supplies are always short. It is, in fact, the greatest asset of any vegetable-garden, and no good garden should be without it.

CARROTS AND TURNIPS.

Make a sowing of these as soon as possible to supply fresh succulent roots during late winter, and early spring. The turnips will get away free from "fly" now. Rich ground is required so as to get a quick growth, for the turnip is no good unless grown quickly. Sow in drills a foot apart and thin out the seedlings as soon as large enough to handle. At the first thinning space them about three inches apart. In two or three weeks every other bulb can be pulled and used as a vegetable. In a few weeks the same process can be repeated, and the small bulbs used, and it then leaves the crop with plenty of room to grow. Carrots can be treated in a similar manner, except that no fresh manure should be added just previous to the sowing, and at the first thinning out space them to about an inch or an inch and a half apart. Small carrots and turnips are a very useful vegetable, but few ever think of using them till they are quite large. Used when they are about the size of the finger, the roots need no peeling, simply topping and tailing and washing.

EARLY VEGETABLES.

An experienced and successful gardener was asked how he managed to get his produce so early, and said that in his opinion the following factors were necessary: Sheltered position, warm soil, proper method of cultivation, a liking for the business, combined with attention to details and industry.

By sheltered position he did not indicate a garden enclosed between buildings and walls; on the other hand, it must be open, but protected against the cold winds. It must be open to the sun under whose influence the plants first wake up and grow robust.

A "warm soil" is a gardener's useful expression; by it is meant a soil which attracts and retains warmth. This character is possessed by good loamy soils, but all soils kept under careful cultivation and supplied with plenty of stable manure will gradually acquire it. Compost manures are most useful to bring land into a suitable condition to produce early vegetables. In general it may be said "the darker the soil the better will it retain warmth."

The judicious use of artificial manures is a great help. Farmyard or stable manure is essential to maintain the good physical character of the soil, but such bulky, slow-acting manure does not stimulate to early growth and maturity.

SPINACH.

A good sowing of this should be made now, so as to follow the beans, and to come in before the winter cabbage. The greatest mistake made with spinach is that it is sown too thickly, and not thinned. Ground well manured and in good heart is necessary. A position in full sun, but in the case of cold, bleak districts, the protection of a hedge is valuable. Let the rows be fifteen to

eighteen inches apart, and if the ground is in want of manure give a good dusting of blood and bone at the time of sowing. A piece of ground that has had a crop of potatoes, peas or beans, and is now idle will be all right. There are two principal sorts—one known as "round" and the other as "prickly." The "round" gives the largest leaves and is the best for warm districts such as Auckland; the "prickly" is more hardy and is useful for the colder districts for winter use. As soon as the seedlings are up, thin so that each individual plant stands a foot from its neighbour.

MOTORING NOTES.

THE ENGINE.

Too much stress cannot be laid upon the subject of oiling. Use the correct oil in correct quantity. Too little oil will cause wear of bearings and overheating. Too much oil will result in a dirty and sluggish engine, and may cause the exhaust valve to stick or work sluggishly. But of the two, too much oil is the lesser evil. If the machine is not fitted with a "drip feed" lubricator, but just a simple hand pump, it is better to give a quarter of a pumpful every two or three miles rather than a pumpful every 8 or 12, as the case may be.

I have often been asked "How often do you decarbonise, and grind in your valves?" And to that I reply: "As seldom as possible." No hard and fast rule can be laid down, since every engine has its own peculiarities. The best judge of "when to decarbonise" is the actual rider. He can soon tell how his engine is by taking the machine out on a familiar neighbouring hill, and noticing how she climbs, and how she accelerates when nearing the top.

As a rule, an engine will run from two to three thousand miles without overhauling at all. At the end of that distance she may have lost a little speed and power and possibly the compression may be less. Then the valves should be "ground in," and the stems cleaned. At the end of about 5,000 miles the engine should be completely taken down and cleaned.

If however, you have been over-oiling, it may be necessary to clean the engine after 1,000 miles, or even less. So don't forget—oil correctly.

THE CARBURETTER.

Before petrol can be burned in an engine it must first be turned into vapour, and mixed with air in the correct proportion to make an explosive gas. This operation is carried out by the carburetter.

There are, of course, many makes and types of carburetters, but the general principle is the same. There are two stages in the operation—firstly, the petrol is split up into a number of small drops, in the shape of a fine spray, and secondly, the evaporation of the drops, and their mixing with air.

The petrol is fed into a small cistern fitted with a "ball-valve," known as the float chamber. From here it is sucked through a small hole, called the jet, by the suction of the engine, and is turned into spray. There is a current of air rushing past the jet, and this splits up the drops into still finer spray, and finally into vapour. (The object of the float chamber and valve is to prevent waste of petrol by keeping the normal level just below the top of the jet. The valve works on just the same principle as the one in the domestic hot water cistern, cutting off the supply when full enough).

In most carburetters, the supply of air is controlled by a lever on the handlebar; as also the amount of gas which can enter the engine.

CARBURETTER TROUBLES.

There is really very little that can go wrong with this part of the machine. Trouble is often caused by water or dirt getting past the petrol filter, and stopping up the jet, or causing the float valve to stick; in which case the instrument should be taken to pieces, and well cleaned out.

This may be prevented by carefully filtering all the spirit put into the tank, but sometimes in spite of all precautions, dirt will get into the carburetter.

Some time may be usefully spent in trying different jet sizes. Too large a jet means a large petrol consumption, and a hot running engine. Too small a jet will mean loss of power, and misfiring. Find the smallest jet which will give you enough power for your district. If you intend touring that country later it is easy to slip in a smaller jet. Remember that benzole requires a smaller jet than petrol to give the best results.

CURIOUS EPITAPHS.

In Carisbrooke Churchyard, Isle of Wight:—

The World's a city full of streets,
And Death's the market-place where
men meet;
If Death were merchandise that
could buy,
The rich would live, the poor
would die.

At Lincoln, "on a blacksmith":—
My sledge and hammer lie reclined,
My bellows, too, have lost their wind;
My fire's extinguished, forge decayed,
And in the dust my vice is laid;
My coal is spent, my iron gone,
My last nail driven, my work is done.
Finis coronat opus.

In the old kirkyard at Roslin:—

Underneath this stone doth die
As much beauty as could die,
Which, while it lived, did vigour give
To as much virtue as could live.

On the south wall of Streatham church:

Elizabeth, wife of Major-General Hamilton, who was married forty-seven years and never did one thing to disoblige her husband.

On the tomb of Sir John Grahame, Falkirk Churchyard:—

Heir lyes Sir John the Grahame, bairn wight and wise. Ane of the chieft raskewitt Schotland thirre. Ane Deller Knigght not to the world was lew— was guid Grahame of Truth and llandment. Sir John was slain by the Eng, 22nd July, 1293.

In Melrose Abbey:—

Earth walketh on the Earth,
Olistening like gold;
Earth goeth to the Earth
Sooner than it wold.
Earth buildeth on the Earth,
Palaces and towers;
Earth sayeth to the Earth,
"All shall be ours."

The following lines were engraved on the lid of an ancient sarcophagus discovered many years ago in Glasgow Cathedral:

Our life's a flying shadow, God's the Pole,
The Index pointing at Him in our Soul,
Death's the Horizon where our Sun sets,
Which will through Chryst a Resurrection get.

SONG OF THE AIRMAN.

I sail the air as a yacht the sea, when
the waves are combing and singing;
I know the glee of the screaming gull as
she rides the plunging blast;
The motor's roar is the thud of my
heart, and the planes are plumes of
my winging;
I am sail and wing and storm and tide,
as I toss the townships past.

I have done with the weight of the lab-
ouring world, and time and space and
resistance;
I drive the clouds like frightened sheep,
I catch and loose the wind;
The spires and chimneys dive and run,
the rivers wink into distance;
I worry the trains like a frolicsome dog
till they drop with a pant behind.

The wondering winds come gathered
round, like cattle snuffing and loing
A turn of my hand, a shake of my
wings, they butt and scatter and fly.
I thread the lights of the station-sites
in a necklace glowing and growing;
I fling the beats of my heart behind
measure the rounded sky.

The song of the lark comes spangling
down, like rain on my open fingers;
I swoop between the swooping
and the dove she has all but caught;
I dodge the teeth of the lightning
as it hisses and turns and lunges;
I am free in the void as a shouting
let loose when the worlds were born.
—Frederick Langbridge.

New Zealand's revenue went up by about another £2000 on Tuesday, says the Wellington paper, when a score of Chinese, mostly young men, lined up at the Customs office. All were from Sydney. It is reckoned that the Oriental population of the Dominion has been increased by the number of about fifty by the three steamers from Sydney.