

SCIENCE NOTES.

SOME USES OF WOOD.

Here are some of the strange uses made of wood and its by-products, recently exhibited by the American State College of Forestry:—"Silk" sox, made from wood fibre, which look like silk, feel like silk, but are far cheaper, than the real thing. Sawdust sausage casings, in which wood is converted by chemical processes into viscose. Wood-flour phonograph records compressed under enormous power, to help make music from sawdust. Tanbark shingles, made from the waste hemlock bark, after it has been through the tannery, and lastly, paper milk-bottles.

MICROSCOPE OF ENORMOUS POWER.

Seated in the Council Chamber of the India Office, recently an audience watched the growth of a plant and the effects of various stimulants upon it, as recorded upon a screen by a cressograph. The latter is the invention of Sir Jagadis Chandra Bose, the Indian savant, who gave the demonstration. The cressograph is composed of a single magnetic lever which by its movements rotates a delicately poised astatic needle actuating a small mirror. This causes a spot of light to be reflected upon the screen, giving a magnification of from one million to a hundred million times. A tree contracted, the lecturer declared, when struck, much as an animal would contract its muscles, while even inorganic matter was more or less responsive. Upon the room being darkened a mysterious "hook" of light passed rapidly across the screen. It showed the actual growth of a plant as projected from the cressographic mirror. Subsequently, the "hook" reappeared, slowed down in its course across the screen and finally halted. This, as the lecturer said, illustrated the effect of electricity upon the plant, too great a power having an opposite effect to the stimulation afforded by a reasonable amount. Particularly interesting was a record showing the curiously erratic effects in the growth of a plant caused by the use of alcohol.

A NEW "KEY" INDUSTRY.

The Nitrogen Products Committee, appointed in England in 1916, have advised the starting of operations for nitrogen fixation and allied processes on an industrial scale. The committee recommends the establishment of the cyanamide process, to an annual output of 60,000 tons, without delay. Calcium carbide, which is used in this process, at 800-900deg. C absorbs nitrogen—obtained from the fractional distillation of air—to the extent of about 20 per cent., the product being technically termed cyanamide. This is a valuable fertiliser, but by treatment with steam yields its nitrogen as ammonia, which may then be fixed as sulphate, or, by passing with air over platinum gauze, be converted to nitric acid and other similar products. The committee also recommends the establishment of a synthetic ammonia plant with an output of 10,000 tons of ammonia per annum. This process is effected by catalysing a mixture of hydrogen and nitrogen under a considerable pressure. In conjunction with the synthetic ammonia plant, an ammonia oxidation plant should be erected equal to 10,000 tons of 95 per cent. nitric acid or the equivalent of nitrates per year. Every encouragement, moreover, should be given to the more complete recovery of ammonia from all existing carbonisation processes, and to the diminished use of raw coal.

TREASURE FROM THE OCEAN.

The ocean is indeed an infinite treasure house of living gold in the diverse flora and fauna which it contains. Some time ago the French scientist, M. A. Chatelier made a study of the marine plants capable of being used as a source of cellulose and paper. More recently M. P. Gloess has shown in the "Bulletin" of the Oceanographic Institute that such plants can be used in general for fertilisers and as sources of nitrogen, potassium, phosphate, oleomargarine, etc. He also treats of the *Zosteres* from which cellulose and paper can be made with a by-product of a fertiliser containing both nitrogen and potassium. He next speaks of the red algae or *Florideae* from which agar-agar is extracted. But the largest part of his article is devoted to the brown algae from which the foodstuff alginate can be extracted, while both this and the alginates can be used in industry for various purposes as a mordant.



HORTICULTURE.

ANNUALS.

Some good annuals to sow now are as follows:—

Antirrhinum (snapdragons).—These should be found in every garden. There are dwarf, medium and tall varieties, being respectively about nine, eighteen and thirty-six inches high. The colours of some of the newer strains are most varied and beautiful, and a bed of well grown plants will continue in bloom for many weeks.

Candytuft.—These are rarely seen at their best unless they are sown in the open. For massing as an early spring flower they are unequalled, and some of the later varieties have immense spikes of flowers, the plants growing from nine inches to eighteen inches high.

Clarkia.—These are seldom seen, but seed sown in the autumn produces plants that will grow two feet six inches to three feet high, and which will carry immense spikes of bloom. Firefly and salmon beauty are two varieties that should be grown by every gardener. For decorative purposes they are unequalled.

Coreopsis.—Without this genus of plants our borders would often be very dull, but easily grown, their bright yellow and brown flowers are among the showiest plants we have. They are unequalled for cutting purposes, and will bloom over a very long period. They vary according to variety from nine inches to three feet in height.

Dianthus.—These are very bright and showy flowers and in form are like carnations, of which they are a variety. The plants are about one foot high.

Dimorphantheas.—This takes a prominent position in our gardens. They are of easy culture, and will succeed in almost any soil. They need to be planted in a very sunny position. *D. Aurantiaca* has flowers of a brilliant orange gold colour, in form similar to a maguerite. The hybrids vary from white to reddish and bluish white tints, and are very pretty. They grow about one foot high.

Gypsophila Elegans.—This is well worth growing for its value for mixing with other cut flowers. Mixed with sweet peas it is delightful. The plants should be allowed the space of a foot or more between them. The plant grows about eighteen inches high. If successive sowings of this are made it is possible to have it in flower most months of the year.

Mignonette.—Most people know this, in fact, we should not be wrong in saying that everyone knows this delightful old-fashioned sweet scented annual. It is not altogether an easy subject to grow in Southland but with good treatment it can be done well. Give the plants plenty of well rotted manure, sow in autumn; thin out seedlings to at least six inches apart. Seedlings will transplant if weather is dull and moist, but as a general rule, mignonette is a bad subject to transplant, and failures are very frequent. The best procedure is to sow the seed thinly and to thin out the seedlings when large enough.

THIS IS LAW.

A water company in Florida was being prosecuted on the charge of furnishing water unfit for ordinary domestic purposes to the public. A lady consumer was a witness for the state. After stating her name, residence, etc., she was asked:

Prosecutor: Do you use this water on your lawn?

Witness: No, sir.

Prosecutor: Why do you not?

Counsel for defendant objected on the ground that the witness's reason did not constitute evidence, and that it was irrelevant, immaterial, incompetent, etc.

The jury was instructed by the court to retire from the room and the point was exhaustively argued pro and con.

The Court decided that the question was proper, overruled the objection of counsel for defendant and noted the exception. The jury instructed the witness to answer the question.

Witness: I haven't got any lawn.

Women are not allowed in mosques in Moslem countries, but permission was recently given for an American lady to give a political address in the famous Azhar Mosque at Cairo.

MOTORING NOTES.

SWANK.

There are not a few drivers in Invercargill who are a danger to the public. Leaning back on the cushion, their knees up about their chin, accelerator pressed down, what chance have they of acting in an emergency? It is high time we had an inspector to prohibit "swank" and secure at least safe driving.

REPATRIATION.

Many returned soldiers have been started on a course of motor-engineering by the Repatriation Department, and it is pleasing to note that positions have been found for soldier mechanics in our local garages. The men are picking up the work well and hitherto unskilled workmen will eventually become very handy about the garage.

PETROL SHORTAGE.

The present petrol shortage has caused the Board of Trade to examine the oil deposits of New Zealand with a view to future development. It is certain that America cannot long continue to supply us with ample fuel, and so there are those who believe that the New Plymouth bores are not by any means the proved failure that some would have us believe. It is reported that a number of motor lorries are running on fuel derived from a Taranaki oil well.

MOTOR CYCLES.

The nerve racking noises made by motor cyclists in the streets of the town were mentioned at the last meeting of the Palmerston North Borough Council. The Mayor remarked that when the by-law came into force at the end of the next month the noise would be stopped. He felt convinced that the police would get a dozen convictions in the main street the next day. Our local authorities should act likewise and so banish the nuisance.

GEAR CHANGING.

How few motorists really master the art of gear-changing. It is a fine thing to effect a change at the right moment, and without jar or sound. Nowadays the high horse-power of cars and the almost perfect change of speeds system renders a change so seldom that the motorist does not really get the same practice as was the case with earlier models. Yet it is an art that will pay the purchaser of any car to learn thoroughly.

Wear and tear of the transmission system and all gear trouble may be wholly laid to faulty gear changing. Let the motorist pause to think that the teeth of two separate pinions cannot be forced into mesh, but must be allowed to engage without unnecessary wear and tear and he would give a little more attention to his gear-changing. What a pleasure it is to both driver and passengers to see the change slip from one speed to another and not to hear the ground and crash that so often grates on the ear as one hears cars going by.

THE CAUSE OF ACCIDENTS.

A fruitful cause of motor accidents, says a critic, is the tendency of inexperienced beginners to purchase high-powered cars. They quickly master the steering and general management, and within the first month they are careering along at a speed which rivals even that of an expert. Having failed, however, to serve their novitiate on slower cars, they have not gained that instinctive capacity for instant action which is essential in case of sudden emergency. Consequently, when this emergency arises, they either lose their heads completely or else pause for an appreciable interval before deciding what to do. The majority of accidents arise from this cause. For this reason it should be urged on all beginners to adopt as their motto "Festina lente" and make a start on a small car of moderate horse-power.

PERFECTION IN LITTLE.

It is not growing like a tree,
In bulk, doth make men better be;
Or standing long an oak, three hundred year,
To fall at last a log, dry, bald, and sore.

A life of a day
Is fairer far in May:
Although it fall and die that night,
It was the plant and flower of light.
In small proportions we just beauties see,
And in small measures life may perfect be.

—Ben Jonson.

GARDEN NOTES.

ONIONS.

Most crops are harvested before now, but there are sure to be some backward crops. Rain following a dry spell may make available fertilizers that were inert for want of sufficient moisture, and this may lead to late growth and consequent delay in ripening-off. An overplus of fertilizer may have this effect without interference by the weather. If the bulbs are properly grown the necks should become thin and lose substance, and the tops fall over from their own weight. If this does not occur the bulbs have not finished properly, and they will not be good keepers. The cause may be too much manure, untimely rain, or an unsuitable variety; or, lastly, they may have been lifted too early. Giant varieties should be sown in autumn; if sown in spring they will not finish properly. Ripening occurs earlier in some places than in others, but in cases where the tops have not withered lifting should be left till March in order to give the bulbs a chance to finish ripening.

TURNIPS.

Where the winter supply is of consequence it is a good plan to sow two varieties at this time—Snowball or a similar white variety for first use, and Golden Ball or Orange Jelly for later. The yellow varieties stand better through winter than the whites, and are at that season better in flavour. The yellow variety should be well thinned, as they are to stand. Thinning the white variety is mostly done when roots are pulled for use or market. This enables the taking of a large crop from the ground, and is the usual method of market-gardeners.

CELERY.

Late crops should be moulded up; they are better so than exposed to winter weather. The moulding-up protects them from heavy rain, the heads keep better, and are gaining crispness. Celery leaf-spot is causing losses as usual. Losses would be smaller if growers realized the early beginning of the disease. A very frequent cause is infected seed. When this is the case the disease attacks the seedling plants, but at this stage it may not be noticed unless it is looked for. Later on, when the disease has obtained a firm hold, it may be impossible to save the plants; certainly, badly affected leaves cannot be saved. Spraying with Bordeaux mixture should begin with the seedlings and be continued as long as may be necessary. Growers are known to obtain complete control by this means. Some authorities state that the spores of the disease present on seeds die within two years, and advise that seeds less than two years old should not be used. The seeds retain vitality for eight years. The fungus may be killed by steeping the seed for a period of three hours in dilute solution of 1 part formalin to 600 parts of water. The seeds should afterwards be quickly dried on sheets of blotting paper.

Autumn sowing of cauliflower, cabbage, onion, and lettuce: These seeds should be sown during the last week of March or early in April. This sowing is one of the most important operations of the whole year, particularly so in reference to cauliflower, cabbage, and lettuce, because it provides for the spring crops, the most valuable of all both to the market-gardener and the private grower. Two kinds of cauliflower should be sown—Early Snowball or Early Paris for first cutting, and one of the Autumn Giant types for succession. In the warmer parts of the Dominion another lot may be sown about 1st May, and the combined sowings will carry the supply till the New Year. Heads from the first sowing should be ready during September, a month earlier than in other parts, rendering the growing of broccoli almost unnecessary. This is a great advantage, as broccoli has to be planted in summer, when the moth may make it impossible to grow it.

With onions autumn sowing applies most properly to the giant kinds. These cannot be brought to maturity if sown in spring. The young plants must be transplanted in spring, 1½ lb of seed will provide plants for an acre. In some circumstances it is advisable to sow the smaller keeping kinds in autumn. In some districts mildew attacks the plants early in the year, and this prevents the bulbs maturing in a proper manner. By sowing in autumn the plants are so far advanced in growth when the disease attacks them that they suffer little or no injury. It is not absolutely necessary to transplant these kinds in spring—in fact, many growers do not. There is, however, greater risk of the plants bolting to seed when not transplanted, and in some cases the ground becomes so weedy during the winter months that transplanting to clean ground becomes imperative. The small kinds being planted closer than the large varieties, 2½ lb of seed should be sown to plant an acre. If not transplanted, 3½ lb will sow an acre.

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