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GARDEN NOTES**THE GREENHOUSE.**

Begonias.—Many admirers of this beautiful flower when they see them in perfection and in full bloom, imagine they are difficult to cultivate. To grow them to a great size and to such perfection as I have seen does require a great deal of special knowledge and skill, but to grow really serviceable and nice-sized plants is quite another thing. Any good all-round amateur may grow these well who has a greenhouse. Very few plants indeed give such a beautiful display during the late summer and autumn months as does the begonia. Even as a bedder, if planted in good rich, well-prepared ground and given good shelter, few things surpass it. Many times have I seen begonias come through very severe storms scathless, when many of our so-called hardy plants have been utterly spoiled. What they like best is a moist, even temperature, good soil and drainage, light shading, and frequent waterings with liquid manure when they are well established in their flowering pots. I will now in brief give a few words on their final potting, which should be about now. From the time they start they should never be allowed to become dry. In this final potting the soil should be rammed in. The best material for this purpose is good turfy loam, leaf mould, and manure in equal parts, with sufficient sharp sand to keep it open. As water has to be given very often, care must be taken to give plenty of drainage, or the soil turns sour. At this last potting the tubers should be placed a little deeper in the pots. That is, after the bulb has been turned out of the pot, place it sufficiently low to allow a little more soil—half an inch on top of the tuber, well rammed in. When flowers are showing feeding should commence. Liquid made of sheep or cow manure is best, with a little horse droppings added diluted with clear water, once or twice a week. These first buds should be pinched off when the plant is small. This allows all the strength to be employed in producing a strong and vigorous plant. Stake and tie as the growth demands. The size of pot used must be according to the size and age of the plant. For an established tuber with three or more strong shoots, a 9in or even a 10in pot should be used, but for smaller plants the first season's ones (6in) and upwards, according to age and size, will be large enough.

Chrysanthemums should be in their final or flowering pot by now. After potting has been completed they should be removed to their summer quarters, which should be in a well sheltered place, but yet where they can get plenty of sunlight and fresh air. Stakes should be inserted to secure them against wind. Watering must be carefully done, not giving them too much, so that the soil is kept wet. Neither must they be allowed to become very dry. A good guide for watering and when they require water is when they have a clear ring when rapped with the knuckle. If the pots have a dead sound when rapped they do not require water.

THE VEGETABLE GARDEN.

Peas may still be sown, but care should be taken to sow the dwarf early kinds, so that they may mature before the frost sets in.

Sow also French beans, turnip, lettuce, radish, mustard and cress, and spinach of the prickly kind to stand the winter.

Early potatoes that are showing signs of ripening may be lifted to make room for winter crops, but do not lift them when the ground is wet. Select a fine day, so that they come up clean.

THE VINERY.

Pinch out laterals, as overcrowding should be avoided, or it will assuredly cause damage and probably bring on mildew. Thinning should be finished as speedily as possible, if this has not already been done. The berries swell very rapidly after thinning, and in a fortnight or so after this takes place it will be wise to look over them again to see that some are not overcrowded. It is often found desirable to remove berries from some bunches that may be crowded. Attend carefully to ventilation. The amount of watering required will depend upon the season.

THE FLOWER GARDEN.

The grand spikes of Brompton stock justify its inclusion in all gardens, whether large or small.

East Lothian stock, though not so fine in the spike as the Brompton, is perhaps more useful as a bedding plant, being exceedingly free in flowering and more compact, and it comes into flower earlier than the Brompton, therefore it is advisable to use both varieties. There is still time to

sow the seed, but those that are well up now will be the best. Stocks are better pricked out into boxes, and kept in shelter until they become well established; then place them out in the open to mature and harden before planting out.

Violets should now be in their flowering beds, and if any more planting is to be done the sooner this takes place the better—whilst the ground is cool and moist.

MOTORING NOTES.**REMOVING A SPARK PLUG.**

Using a monkey wrench to remove a sparking plug lays the plug open to liability of being broken. A socket wrench should be used for this purpose. It just fits around the plug and protects the core from accident.

USES FOR AMMONIA.

Keep a bottle of ammonia handy in the garage, for you might need it, especially when testing the battery or putting in water. A drop spattered from the battery solution will eat your clothing or leave a bad spot on the machine. If ammonia is applied promptly it will neutralise the action of the acid. Ammonia can also be used to clean corrosion from connections and battery terminals.

CARE OF THE CAR'S SURFACE.

Is hot water good for the surface of the car? It is not, according to "American Motorist," which goes on to say: Hot water has a markedly deteriorating effect on the varnished surface of a well-finished automobile body. Tepid water is ideal, although cool water may be used without harm. After the car has been properly washed and wiped with chamois, it is time well spent to go over it thoroughly with a high-grade automobile, or piano polish. Use good grade cheesecloth, and be sure to rub until the last trace of wet polish has been removed, as a film of polish left on the surface of the car quickly collects a heavy coating of dust.

SCRAPING THE PISTON.

When the cylinder head of a motor is detached for the purpose of removing the carbon deposit, it will be noticed that during the process of scraping the piston, etc., the tapped holes on the top of the cylinder casting soon get full of oily carbon, water, etc., causing trouble to remove when it is decided to insert the holding-down set screws. "To obviate this," writes an American correspondent, "I have used short screws without heads, but with a screwdriver slot cut in them, and I screw them in flush with the top of the cylinder casting before scraping operations are commenced. After decarbonising is completed, the grub screws can be removed, where holes will be found to be free from dirt."

OVERCHARGING THE BATTERY.

The overcharged storage battery overheats, a condition which is anything but good for it. The active material in the plates loosens and falls to the bottom of the cells causing the battery to operate at reduced efficiency. Although practically every car's electric system is fitted with an automatic cut-out to prevent such overheating, nevertheless it is often the case that this device does not stand guard over the battery as it should. The safe way is to turn the lights, at least part of the time, when on a long drive. This helps to take the load off the battery and to prevent overheating. When we see a motorist going along in the daytime with his lights burning we can consider that he is a wise driver instead of a careless individual who has forgotten to turn off the illumination of the night before.

THE CLOSED CAR.

One of the marked evidences of the trend in motor car demands as indicated by the various displays at automobile shows is in the growing popularity of the closed car, or all-year body types. A few years ago the volume of enclosed cars built by even the largest producers was relatively small, and those that were manufactured were turned out largely as a concession to the limited demand. To-day many manufacturers are building as many closed as open cars, and, in some cases, the proportion of closed cars to open is in favour of the former. The public viewpoint as regards the closed car has changed. In the old days the closed car was looked upon as a protection against the cold. To-day it is regarded as just as desirable in the protection it offers against dust, dirt, wind and rain without sacrificing any of the advantages of the open car.

SCIENCE NOTES.**DE-TANNING CHROME LEATHER.**

A British patent has recently been issued covering a process whereby scrap leather may be de-tanned and the resulting material used for the manufacture of glue and gelatine. The chrome leather is first immersed in a solution of an organic acid, such as phthalic, lactic, tartaric, oxalic, or other organic acids containing two or more hydroxyl groups. The chromium may be recovered from the resulting solution and the de-tanned material treated in the usual manner for making glue or other similar products.

TEST FOR CONCRETE MIXTURE.

As the strength of a concrete mixture is much affected by the amount of water contained, the novel apparatus of the United States Bureau of Standards is designed to give an accurate test of the fluidity or flow. A circular table-top mounted on a plunger is raised and dropped half-an-inch by a cam on the shaft of a hand-crank. A sample of the mixture, moulded into a truncated cone six inches tall and eight to twelve inches in diameter, is placed in the centre of the table, and the crank is given fifteen revolutions. The average diameter to which the sample is spread out is divided by the original diameter and multiplied by 100. The result is the flowability number—150 indicating a strong material for bricks, and 225 one suitable for reinforced concrete.

TUNNEL ATMOSPHERE.

The Bureau of Standards in the United States has been requested to undertake an investigation of the atmospheric conditions which would be likely to exist in such a tunnel as is projected to connect Manhattan Island with New Jersey. In this study particular account must be taken of the exhaust gases from motor vehicles, in which, as is well known, carbon monoxide is to be found. Road tests have been begun with some eighty motor vehicles of different classes, and the results obtained from these tests differ somewhat from the block tests which have heretofore been conducted. In the near future a series of chamber tests on human subjects will be started and these chambers will be designed to represent cross-sections of the tunnel as it is now designed. Inasmuch as there are similar tunnels under consideration for other cities, the work in question assumes increased importance.

IMPROVED STEELMAKING.

An improvement of the acid Bessemer steel process which aims to reduce the cost of making steel and to decrease the possibility of low quality steel in the process has been recently invented by a member of the department of mining and metallurgy at the University of Wisconsin. The purpose of the invention is to use basic material for the lining of the Bessemer converter instead of the acid lining now used in order to prevent corrosion of the interior of the converter and to reduce the amount of air pressure and engine power now required. With the basic lining, composed of lime, magnesite, dolomite, oxide of iron, or the like, the inventor believes it will be possible to use lower pressure and cut down the time of blowing about 30 per cent. To prevent corrosion of the converter bottom the inventor proposes a number of different kinds of linings for various acid Bessemer converters and details the particular parts of the converter that require such a basic lining, while the remainder of the converter has an acid lining to resist corrosion by the acid slag.

INDUSTRIAL USE OF GAS MASKS.

Gas masks of a nose-breathing type with canisters containing special chemicals are used in the digester house of the Forest Products Laboratory, America, to give protection against sulphur dioxide. These masks enable the operator to make repairs under conditions otherwise unbearable and soon pay for themselves in time saved. Masks of this type are reported by the Bureau of Mines to hold up against a 5 per cent. concentration of sulphur dioxide for about 15 minutes. When it is realised that five parts of the sulphur dioxide to one million parts of air can readily be detected, and that at a concentration of 150 parts of sulphur dioxide to one million parts of air, the air becomes unbreathable, some idea can be gained of the life of a canister even under adverse mill conditions. In addition to their use in the sulphite mill, these masks are of great assistance in the bleach room, where they are worn continuously during the mixing of the bleach liquor. Aside from monetary considerations, the increased comfort and safety of the workmen is sufficient argument in favour of the addition of gas masks to the regular mill equipment.

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