Apiary Department.

Seasonable Operations.

Just now, two of the most interesting questions with bee-keepers, who wish to manage their apiaries on the most approved principles, will be how to control swarming, and how to transfer the combs from old box-hives to movable frame hives. These questions are well answered in the following extracts from "*Bees and their Management*," a useful hand-book of apiculture:—

Swarming.

Bees increase the number of their colonies by swarming. In early spring, all being right with them, numbers of young bees are reared until the hive becomes crowded. Then drones are reared, and queen cells are built, in which eggs from which workers are usually reared, are deposited, and by different feeding and care, are transformed into young queens. When these queen cells are capped over, some fine day, the old queen and a part of the bees leave the hive to seek a new habitation. The hive, however, is left full of brood, which is hourly hatching, and soon becomes as populous as ever. A young queen hatches in about eight days after the old one leaves, and, if she is permitted, will destroy all the other embryo queens. If the bees intend to swarm again, they prevent her from doing this, and then, second, third, and often more swarms come out, led by these young queens. One of the evils attending natural swarming was the uncertainty attending it. In some years bees did not swarm at all, and no increase was secured; in others they swarmed so frequently that all were small, and poor and the parent hive was left so weak as to be worthless. Many of these swarms too, left their owner for the woods, in spite of watching and care to prevent it. It is now found that bees can be controlled perfectly in this matter, divided as much as the owner finds desirable, or swarming prevented entirely if he so desires. This plan of artificial swarming very much simplifies bee-keeping, as it saves long tedious watching, and also enables one to choose his own time and divide his colonies at his leisure. It is best every year to secure a moderate increase,—this may be done and still twice as much honey obtained as if no swarms were taken. But if any swarms are allowed to come or are taken but little if any surplus honey will be obtained. Young bees are nourished and fed with honey, and much is consumed for their use, and it would be as reasonable to expect hens to afford eggs and chickens at the same time, as to look for surplus honey, when all the force of the colony is engaged in rearing bees for new swarms.

Time and Manner of Making Artificial Swarms.

When drones appear, any strong colony may be divided with safety. It is necessary, however, to choose a time when honey is abundant in the fields, and also when the nights are warm. After one has a few colonies in movable comb hives, dividing them is a very simple matter. Have a hive at hand of the same size and pattern as your others. Then from four hives take each two frames and place them in the new hive, supplying their place in the old with empty frames. Then move a hive which you have not disturbed, a rod or more away to a new place, and place the new hive where that one stood. This should be done in the middle of a fine day, when many bees are absent in the fields. These will come in loaded to their old place, and find it strange; but as it contains stores and young bees hatching, and eggs from which to rear another queen, they will at once proceed to rear one and remain and work as contented as ever. This process may be repeated every two weeks until you have secured sufficient increase. The hives from which you take the combs, and the ones which you move to a new place, will lose so many bees that they will not think of swarming, but will energetically make up their loss and be better than if nothing had been taken from them. This is the safest of all ways to divide bees, and can be safely practised by beginners.

As the bee-keeper acquires practice and confidence other ways will suggest themselves. The trouble generally is, that the novice, finding that he can multiply his stocks so easily, does it to excess, and by so doing cripples the strength of all. However many eggs a queen may be able to deposit, her laying is always found to be in proportion to the strength of her colony, and thus the number of bees may be increasing faster from one queen in a good strong colony than from two or three in those that are weak in stores. A bee-keeper is rich not in proportion to the number but the strength of his hives.

How to Change Bees without Loss from Common to Movable Frame Hives.

The best time to do this is about the season of swarming, which season varies with the latitude and climate. In the Northern States, June is the month of swarms, in the Middle and Southern States they come with early and abundant bloom.

About the time when swarms are expected naturally, take the hive which you wish to transfer, and blowing a little smoke into the entrance, remove it a rod or more from its stand, leaving an empty box or hive in its place, into which the bees that are out in the fields may gather. Invert the hive which you have moved, and put over it an empty box or hive, as near the same size and shape as possible, and stop all holes or cracks between the two with grass or weeds that may be at hand, leaving no hole large enough for a bee to escape. Then with sticks keep up a sharp drumming on the bottom hive, at which the bees, alarmed, will fill their sacs with honey and and mount up into the upper hive. In from twenty to thirty minutes most of the bees with their queen will be in the empty box on top. The beginner need not fear driving too many; let all go that will. Then carefully set the box containing the bees in a shady place, and take the old hive back to the place where it stood. While you have been driving, many bees will have come back to their home, and finding it gone, will be roaming in and out of the empty hive in distress. These will at once rush into the old hive when it returns, and gladly adhere to it; then remove it to a location some yards off, when as it contains many hatching bees and eggs, the bees will at once rear a new queen to replace the one just driven out, and in a short time be as prosperous as ever. Now place your new movable comb-hive with its entrances all open, on the old stand, and spread a sheet before it; on this sheet empty the bees you have driven into the box and they will at once take up a line of march for the entrance of the new hive; if they gather there, brush a few in with a wing or twig and they will call the others who enter in a body and accept the new hive as their home.

You have now a nice swarm in your new hive, which will work as well as any natural swarm and quickly stock their hive. You have besides your old hive, in which the bees are rapidly hatching, and in three weeks they will have a young queen and a goodly number of bees, *but no brood* in the combs. Therefore in three weeks repeat the process of driving out the bees; and after this is done, split open the old hive, or carefully take off the side, and fasten all straight nice pieces of the comb into the frames of a moveable comb-hive;—a little melted resin will help to hold them in place, or they may be kept in place with thorns. Comb need not be rejected because it is old or black, as, if it is straight and free from mould, it is quite as good to rear bees in, or to store honey for their use—indeed, it is proved that old comb is better than new for these purposes. No drone-comb should be put in the frames. This may be known by the larger size of its cells.

Arrange the frames containing comb in the hive, set it in its place, and empty the bees on a sheet in front, as before described. They will soon securely fasten the combs, and work on all the better for this necessary disturbance. To the novice it may seem incredible that the bees should be thus driven from hive to hive and directed as you please, but it is now done every day through the summer, by hundreds of bee-keepers, who find not only that it may be done without loss but to great profit. After bees are once in movable comb-hives, little change need be made when all is well with them; their great advantage consists in the power they give their owner to discover when anything is wrong, and apply the remedy, as also the facility they afford for taking surplus honey from the bees in nice shape without trouble.

Rape as a Honey Plant.

I see in nearly every JOURNAL and bee paper, a report of some new honey plant; but what is the use of experimenting with new plants when we are neglecting the old and well tried plants, one on which we can figure the dollars and cents just as well as on wheat, corn, or any other crop. As it is not only a honey producer, nor a noxious weed, as most advertised honey plants are, but is a regular farm crop, it is for several reasons the best crop to raise when a return in honey and seed is desired.

1st. As a honey producing plant, the rape is scarcely second to linden, producing a beautiful golden honey of good flavor, and is in blossom when nearly everything else is out of blossom commencing about the middle of August and continuing a couple of weeks.

2d. As a farm crop, it is as good, if not better, than wheat. The time for sowing it is from the middle to the end of June. This gives time to prepare the soil after the other crops are in; or if wheat or corn should fail in coming up, rape can be sown in their places. It is harvested from the middle to the last of September, after all other grain is harvested. It does not impoverish the soil, but benefits it. From five to eight bushels more per acre of wheat are raised on ground which had rape the previous year. It allows no weeds to grow after it is fairly started, growing very dense, and its leaves completely shade the ground, therefore it does not suffer from drought like other grains.

The seed has a good cash market, oil is extracted from it. From ten to eighteen bushels is generally produced per acre, but is oftener over than under this estimate. Two quarts is sufficient to sow an acre. Thousands of bushels are annually raised, and it is just as staple a crop as wheat. H. O. KRUSCHKE in *American Bee Journal*.

How Plants Purify the Air.

Plants gain their nourishment by the absorption through their roots of certain substances from the soil, and by the decomposition, through their green portions, of a particular gas contained in the atmosphere—carbonic acid gas. They decompose this gas into carbon, which they assimilate, and oxygen, which they reject. Now, this phenomenon, which is the vegetable's mode of respiration, can only be accomplished with the assistance of solar light.

Charles Bonnet, of Geneva, who began his career by experimenting on plants, and left this attractive subject to devote himself to philosophy, only in consequence of a serious affection of his sight, was the first to detect this joint work, about the middle of the eighteenth century. He remarked that vegetables grow vertically, and tend toward the sun, in whatever position the seed may have been planted in the earth. He proved the generality of the fact that, in dark places, plants always turn toward the point whence light comes. He discovered, too, that plants immersed in water release bubbles of gas under the influence of sunlight. In 1771 Priestly, in England, tried another experiment. He let a candle burn in a confined space till the light went out, that is, until the contained air grew unfit for combustion. Then he placed the green parts of a fresh plant in the inclosure, and at the end of ten days the air had become sufficiently purified to permit the relighting of the candle. Thus he proved that plants replace gas made impure by combustion with a combustible gas; but he also observed that at certain times the reverse phenomenon seems to result. Ten years later, the Dutch physician, Ingenhousz, succeeded in explaining this apparent contradiction. "I had but just begun these experiments," says that skilful naturalist, "when a most interesting scene revealed itself to my eyes: I observed that not only do plants have the power of clearing impure air in six days or longer, as Priestly's experiments seem to point out, but that they discharge this important duty in a few hours, and in the most thorough way; that this singular operation is not due at all to vegetation, but to the effect of sunlight; that it does not begin until the sun has been some time above the horizon; that it ceases entirely during the darkness of night; that plants shaded by high buildings, or by other plants, do not complete this function, that is, they do not purify the air, but that, on the contrary, they exhale an injurious atmosphere, and really shed poison into the air about us; that the production of pure air begins to diminish with the decline of day, and ceases completely at sunset; that all plants corrupt the surrounding air during the night, and that not all portions of the plant take part in the purification of the air, but only the leaves and green branches."—*Popular Science Monthly.*