

Chapter Two - HOW THE GLADIOLUS GROWS

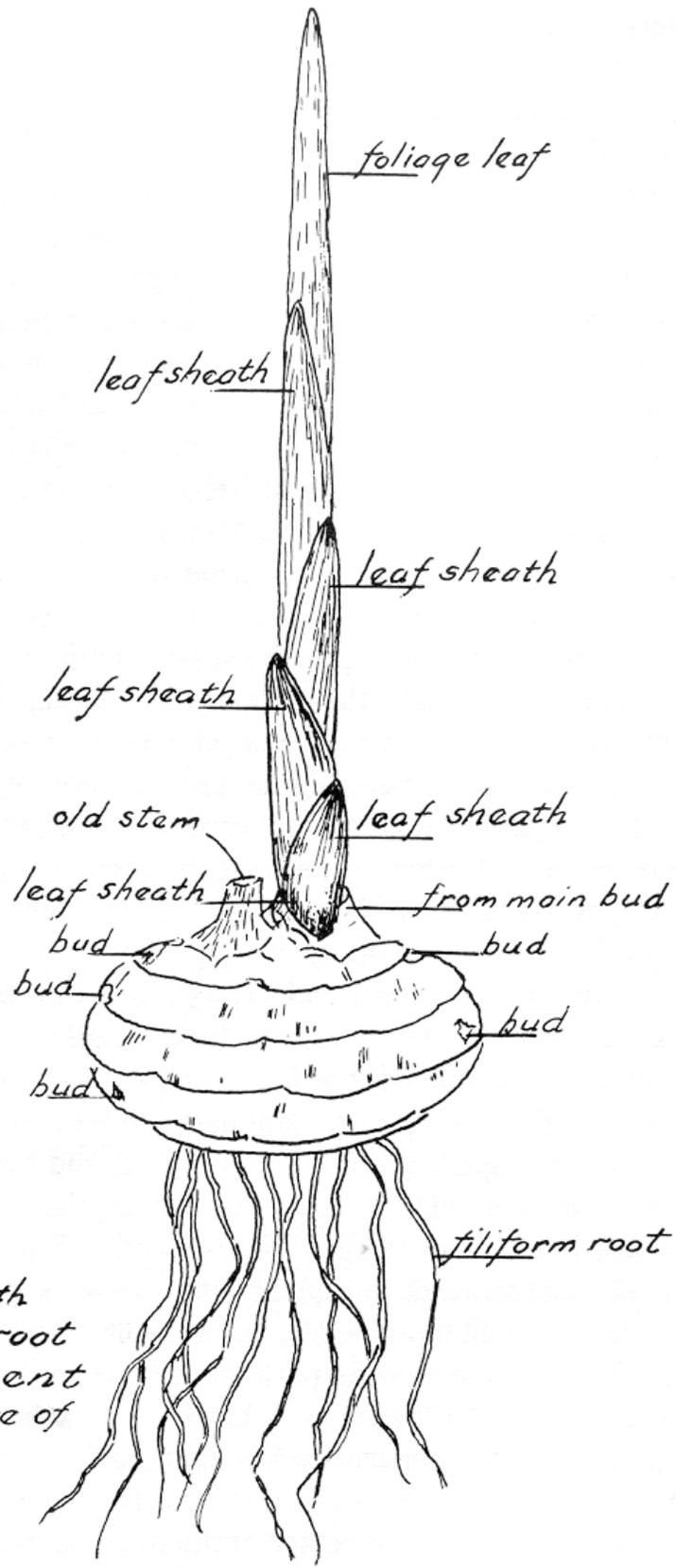
This is a difficult story to tell in proper order for right away the question presents itself: From a corm or from a seed? Which comes first? It is the old question of the chicken or the egg. It is a question that the evolutionary theory doesn't answer, not to the satisfaction of the layman.

For practical purposes probably the wisest thing to do is to start with the corm. That is the way most plantings will begin. The corm holds within its structure the promise and much of the reality of the gladiolus plant and flower. The bulk of the corm is made up of the fleshy substance that serves as a food supply for the growing plant. The top of it is somewhat dome shaped, the base is more flattened, and at the center of this base is a depression, the scar left when the old corm was removed at cleaning time. Around this old scar are the little nodules from which the first series of roots will grow, and are readily seen after it has been stored for some time. The corm is covered with a series of husks, which is really the base of the old leaves, that appear in a series up the sides of the corm. These husks overlap each other, covering the corm, and meet together at the top around the dried up base of the old stem, that is, last year's flower stem. They call the place where each of these husks leaves the corm, the node. At the nodes, or at each of them, two small buds are in evidence at opposite sides of the corm. Thus, each corm has a series of buds up each side of it. Usually only the top one or two are well developed, and it is from these that the new plants will grow. Each bud is an embryo plant.

The original purpose of the corm as the gladiolus grew in its native South Africa, was to tide the plant over the dry season and to start it off again with the coming of the spring rains. Perhaps thinking of the corm as the plant gone to rest, is best. The essential parts are all still there. This rest period is part of the natural cycle through which the gladiolus grows. Some cultivars need longer rest periods than do others, and hastening the period artificially by placing the corms in cold storage for a month or so, is possible. In any event, the rest period must be taken into account, and it is because of it that taking up the corms in the fall and storing over the winter months, is possible.

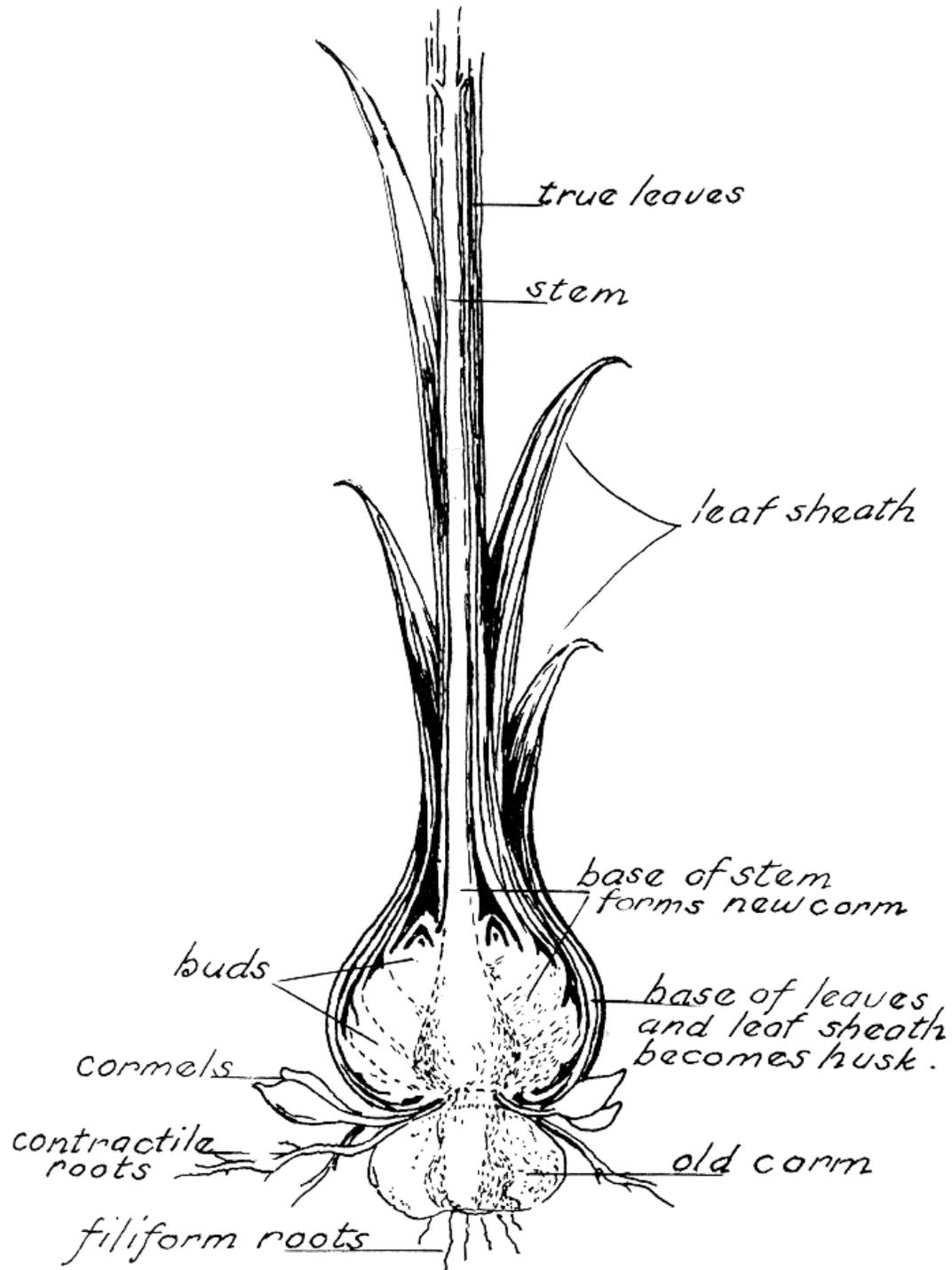
When the gladiolus corm is planted in warm moist soil, it will usually start growth promptly. Many corms will have already started growth to some extent in the latter part of the storage period, at least to the extent of swelling the nodules from which the first roots are to come. What happens on planting then is that the growth is hastened, and soon begins at what may be considered a normal rate. Roots first grow from the base of the old corm, the filiform roots. To these is soon allied a new series of roots, the contractile roots. They grow from the base of the stalk, which is in reality the new corm beginning its development. Their purpose seems three fold: to anchor the plant, to carry nutrients from the soil, and to act as a reservoir for water.

Before these contractile roots develop, and soon after the filiform roots begin growth, the stronger buds from the upper part of the corm begin to push through the soil to form the new plant. The first parts to push through from the bud are the sheathing scales, usually three to four in number. They serve the purpose of protecting the tender leaves as they in turn make their venture toward the light. These sheaths are flattened and folded double so each enfolds the next. Their open edges face opposite each other. Each succeeding sheath pushes its way up through the folded base of the preceding one, facing in the opposite direction.



Corm with
shoot and root
development
First stage of
growth.

The Growing Plant



The leaves then grow in the same manner as the sheaths. About the only difference between the leaves and the sheaths is that the sheaths are much tougher and they do not grow much above the level of the soil. They act as guardsmen for the leaves, and the later flower. While the

first leaves are appearing, the others are forming down inside the sheaths. They are already formed and are simply making new growth there before pushing on up toward the sun. The first true leaf usually appears about twenty days after the corm has been planted and the others follow in rapid succession. The leaves soon reach full size and go about their business of manufacturing food for the gladiolus.

At the base of the sixth leaf is formed the beginning of the flower stalk. This is, at first, very tiny in size, and as it grows, flowers are developed on it, from the first one upwards so the stem pushes up through the older leaves, first the last formed buds, then the earlier formed ones, and the last formed leaves and the base of the stem itself. Since the flower stalk begins to develop within about a month after growth starts, and since all buds seem to develop within a period of a week or ten days, it seems that this is a critical period in the determining of the final composition of the spike. It is during this period that the number of buds will be determined. The buds will not appear above the foliage until quite an interval after this, about two weeks before the first floret opens. The spike has been formed quite a while before it begins to swell the stalk, as it pushes itself upward through the sheath. Later care will determine the health and to some extent the size of the flowers. The number of buds cannot be increased by late care, only at this comparatively early stage.

Something will be said about the development of the flower and seeds, but it may be best to look again to what is taking place underground while the leaves and flowers are forming above it. For one thing, the contractile roots are continuing to grow and to bring food to the plant. At the same time, a swelling of the base of the new flower stem is taking place. This ultimately will become the new corm and the bases of the leaves surrounding it will become the husks of the new corm. While this process seems to be a continuous one, it is hastened after the flowers have bloomed. This then becomes the critical period in the development of the new corm. After this new corm is well on the way, and in some cultivars only late in the season, underground runners appear at the base of it. Finally the ends of these swell, developing into little cormels, each of which is a tiny corm having one leaf bud at the top and tiny root nodules at the base. These, instead of being covered with husks as are the regular corms, are covered with a shell like substance that becomes quite hard either as the cormels reach maturity underground, or after digging. These cormels, are true to cultivar and is the basic planting stock for increasing the supply of a cultivar.

While this underground growth is taking place, and while the leaves are continuing their work of food manufacturing, the flowers are opening, beautiful indeed, but for the basic purpose of producing seed. Each flower is made up of several parts. First there is the pair of small green sheathing spathes. Enclosed in these, and fastened to the stem is the ovary, at first small in size. Each ovary has three compartments inside which are the first undeveloped seeds. From the ovary grows a short stalk which spreads out quickly into the six segments of the flower. They commonly call these petals, but in reality three are sepals and three petals. These are the colorful parts of the flower, and by their shape and colorings, determine the flower's beauty. Attached to the base of the three petals are three stamens each comprising filaments and anthers. The filaments are really little stems that hold the anther, the pollen bearing sacs. Growing up from the center of the ovary is the pistil. This is made up of the hollow tubelike stem, the style, and the three part stigma at the top. This is the part of the flower to receive the pollen which will pass down through the style to fertilize the egg cells of the ovary. Usually the pistil is longer than the stamens and is carried slightly above them in the flower.

For the flower to serve its basic purpose, which is to produce seed, the pollen must fertilize the tiny egg cells of the ovary, at the base of each flower. This is accomplished when birds, insects, wind, or artificial means carry ripe pollen from the anthers to the stigma from where it germinates down through the style, there to join with the egg cells. Once fertilization has taken place, the seeds will begin their development. The ovary will swell as they grow, and the segments and the sexual organs of the flower, except the ovary, will dry up and fall away leaving only the seed pods, or ovaries, on the stem. After these ripen, the seed will either be carried naturally from the pods, or be gathered by the grower where it is wanted for growing into corms, and thence again, through the whole cycle. Seeds become corms, and the corms develop into more corms by the described process. It is from the seeds that new cultivars originate, but that is the story of a separate chapter. We still don't know which came first, the seed or the corm. It doesn't really matter so long as we keep in mind their separate purposes, which aren't so separate after all. *It is only from seeds that new cultivars spring, from corms and cormels accepted cultivars are propagated.*

After the plant has made its seed, or has been denied the privilege, either because the flower was cut or the pollination did not take place, the gladiolus gets back to the business of wrapping up in the new corm developing at the base of the flower stalk next year's gladiolus plant. In this corm, food is stored, buds are developed in embryo form, the bases of the old leaves become the protective covering, the old leaves die back, and the new corm enters its period of rest to grow again with the coming of warm moist days. As a final measure, apparently to assure that all will not be lost if the fleshy corm is somehow destroyed, the cormels with their tiny corm of one bud will be wrapped in their hard shell like coating. Each cormel will grow into corms once this coating is broken down by nature's warmth and moisture, letting into the cormel the earth's life giving elements.

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