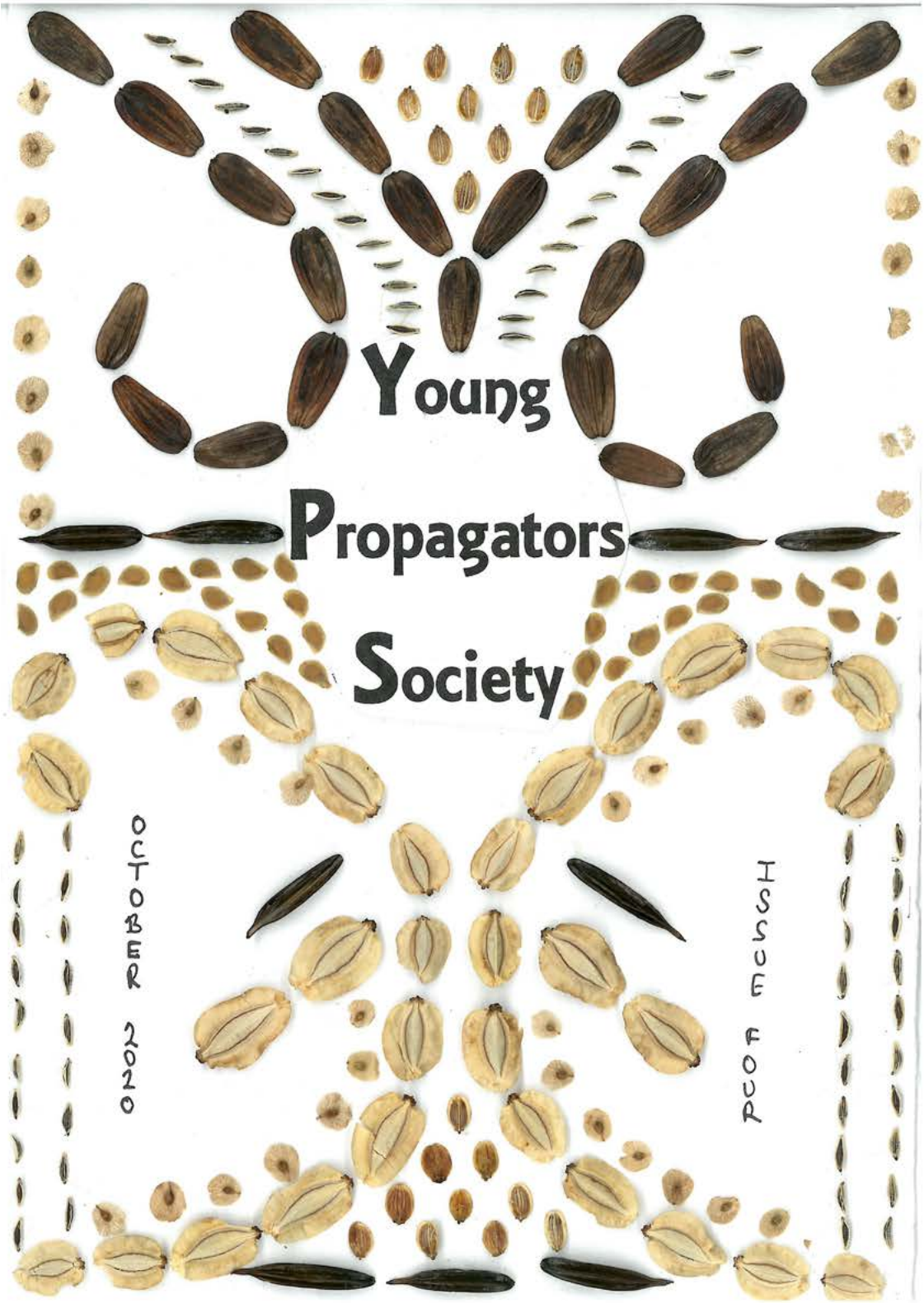

Young
Propagators
Society
OCTOBER 2020
PUSA MESSH

Editors

Sophie Cook

Working abroad and observing the outdoors occupied my early twenties, until I began a BSc in Environmental Science focussing on ecology and soil microbiology. This was the beginning of almost a decade of perpetual studentship, pursuing scientific fact behind the everyday, moving between ecology, biochemistry, horticulture, propagation and sustainability. I am now Assistant Nursery Manager at Great Dixter Nursery where I continue to observe and learn from all that surrounds me. Follow me @sophiecharlottecook

Ellie Pay

I started my professional career in nursery work when I got the position of Nursery trainee at Great Dixter. I then went on to work at De Hessenhof, did the Propagation Specialist Certificate at RBG Kew and am now the propagator at Crûg Farm. These have been some of the best years of my life as I am constantly learning everyday and meeting the most interesting people. It's why I'm excited about YPS so I can keep learning and meet more interesting people. Follow me @elliepotplants

The Young Propagators Society Manifesto

The Society was formed with three intentions; to aid the dissemination of knowledge through the generations; to encourage more young horticulturalists into propagation & nurserymanship roles; & to inspire learning of all areas of the natural world. Our focus is on smaller scale but specialist & scientific knowledge of propagation. Alongside the YPS zine, we also have a facebook group for discussions on propagation, an instagram account to keep up-to-date with zine releases, & we hope to have an annual symposium of workshops, talks & discussions.

Illustrations by Jamie Todd. Follow him @jamiejohntodd

Young Propagator Feature

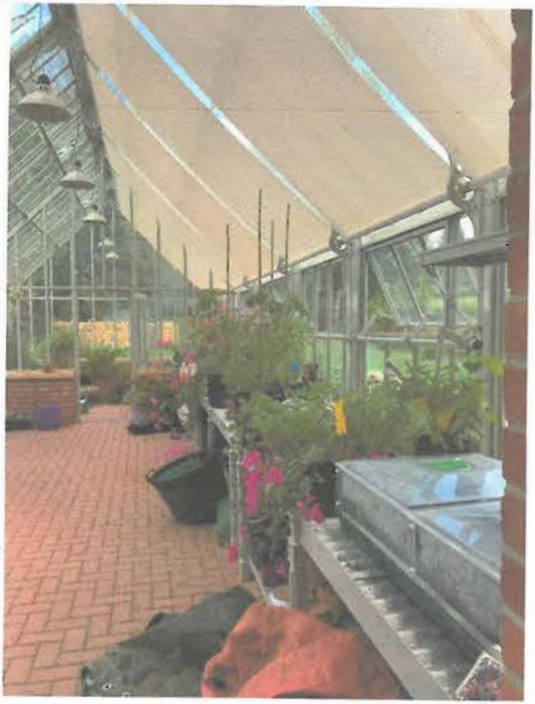
'Propping Up' by Kate Burtonwood

I wouldn't now describe myself as an expert propagator. But I like to see myself in terms of how far I have come. I started as a volunteer at Inner Temple Garden six years ago; I had the general notion that scattering seeds created plants. I remember the moment on my subsequent traineeship at Oxford Botanic Garden that I had to admit to having never taken a cutting.
The horror...

So it has taken several years, of training, experimenting, seeing the context of what different horticulturalists do, and wrangling with RHS exams to get me to a point where I happily manage the propagation for a larger garden. I have been Head Gardener at The Chase - a five acre garden in the Cotswolds - for two and a half years now. A large Hartley's Glasshouse had just been added when I arrived at the garden in late August 2017, to assist with propagation. There was no real blueprint, however, for what to produce or the direction the garden would take, just the happy notion that plants could be overwintered and some edibles grown. I was used to being a trainee or assistant, being given instructions and lists of what to do, and soaking in tips from amazing, generous head and deputy-head gardeners. I realised I had to step up now I wasn't getting immediate orders.

I was gifted some Pelargoniums by a local head gardener friend, to "start things off", which quickly became the backbone of floral display in the glasshouse. My botanical training kind of kicked in, with a bell going off that it was time to take cuttings, and I threw myself into the routine of keeping a rolling stock of fresh young plants from these pelargoniums. I used the smaller partitioned end of the house to keep the cuttings slightly warmer, giving them a mist with a hand sprayer when I passed them.
When early spring approached, I suggested we could add a propagation unit, as the glasshouse had been built more to the spec of a display house, rather than having heated benches or mist units. We still didn't envisage large scale or complex propagation and so we agreed on the Vitopod heated propagator, a simple plug-in unit with thermostat which would give me half a square metre of precious bottom-heated space. The unit has worked brilliantly and allowed me to get an early start on propagation for ornamentals and edibles for the garden. We can't make

the ideal conditions for everything, but our success rate is reasonably high and, as any propagator will feel, it is a joyful thing to be able to create the new plants for the garden.



The other thing my training and previous jobs had taught me was to keep records. I set up my own spreadsheet of which seeds I was buying, from which suppliers and when to sow. And then I kept notes on how I had sown them, whether they had performed well and any adjustments I thought would help the next year. I also realised that with limited space and staffing I had to plan carefully around capacity.

Figure 1: View from the Potting Bench

I couldn't always manage to grow the number of plants I had envisaged in my mind for an area as it would take up too much time and bench space. Sometimes we simply didn't have enough pots and trays. So I had to adapt plans and grow something different, or bulk up numbers of perennials over several years.

Through this, those pelargoniums kept coming back into focus. They have always been there, providing a flash of colour in the glasshouse from early

spring through summer, or magically providing an extra plant to add in to a pot display that was starting to look tired or less bountiful. Last year I went on a propagation course at Fibrex nurseries, which showed me not just their mass propagation techniques and plant care, but how you can still take stem cuttings from those awkward pelargoniums which only produce short, stubby stem nodules from a woody base. The greenhouse has therefore stated to swell once more with cutting of my favourite *Pelargonium* - *P.* "Ardens" - alongside species *Pelargonium, P. australe* and the new hybrids in the zonartic Rushmoor series. Visitors tend to think I am a bit obsessed, but I see it more as a mutual relationship, with the plants often propping up my efforts, and getting me out of sticky horticultural situations as long as I keep them well looked after.

Figure 2: Echinacea pallida, Perilla frutescens, Eustoma grandiflorum seedlings.

I realise I have been very lucky in my job, with hands-off, but supportive garden owners who let me run a garden with the feeling that it is OK to experiment. As we all are, I am still learning every day and I never lose the joy (and sometimes relief) from seeing new plants coming from seeds and cuttings.

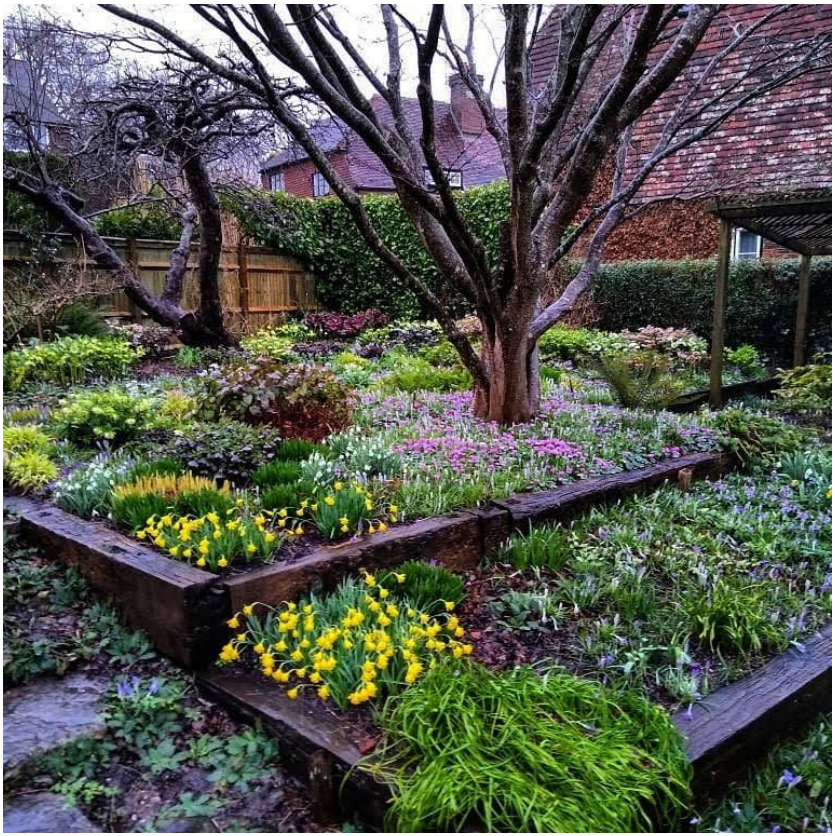
Instagram: @cultivatedgardener
Blog: www.cultivatedgardener.co.uk

Elizabeth Strangman
An interview by Sophie Cook

Elizabeth Strangman is a distinguished plantsperson who is best known for her ground-breaking work on breeding Helleborus*, having travelled extensively to look for wild forms to study. She ran the renowned Washfield nursery until from 1968 until 1999, during the heyday of independent nurseries, at which she and her plant selections were at the centre. I interviewed her to hear her advice and experience on running a nursery and selecting garden-worthy plants.*

The first time I visited Elizabeth Strangman's garden was in late February 2020. Islands of *Helleborus* in a sea of *Galanthus*, *Narcissus*, *Cardamine* and *Crocus* flowered with such loud volume, of the kind you can only ever experience at the onset of spring. Today, the bright swathes had given way to finer details of woodland treasures – *Trillium rivale*, *Erythronium hendersonii* and *E. dens-canis*, and a healthy dose of *Pulmonaria* varieties. "Look at this *Pulmonaria* 'Blue Ensign', what a good form. Most plants you find of this are mícropropagated, and micropropagated plants usually don't turn out as well as traditionally propagated plants."
This particular plant had the clearest rich blue flowers I had ever seen on a *Pulmonaria*, with clean, neat plain leaves. With Elizabeth, you realise it is not enough to merely know the name

of a plant and be able to identify it, but also to know what a good form looks like, taking plantsmanship up a level. After a walk around the garden, Elizabeth and I headed inside where she told me her experiences of nursery-ownership and propagating.



Elizabeth's garden is packed with spring bulbs.

“There is no rule that says you should do things the same way as everybody else, it depends on the facilities you have. Success is down to how you work it. As a nurseryman don’t be tempted to give a second-rate plant a name in order to make your list more interesting, you will get a bad name. You must trial new plants before you propagate and sell them. Having Trial Beds is very important.

“When you have a Stock Bed (or Motherbed as they call it on the Continent), plant three of each species so each year one plant can be used for propagation material to increase your numbers.

“People say it’s ok to lose a lot of plants as a grower, but you should hardly ever lose a plant. It might be ok when you work as a grower as part of a larger establishment, but as a small independent grower it matters. When it comes to cuttings, only do a fraction more than you need as you shouldn’t be losing lots of cuttings. It’s easy to over propagate, any idiot can over propagate. You want to know how many plants you need and write it down because by next year you will have forgotten.

“Cuttings must be taken from healthy stock. The aim is to get an even batch of plants. Pinch them out as you pot them up, this is very important, so that they save their energy for rooting. If you strike your cuttings into a tray, then there isn’t the time pressure to pot them on as soon as they’ve rooted – they will have space to root. Don’t be tempted to get them out before they have rooted well.

“Heat benches aren’t everything. They’re useful to get you through the winter. But double frames are just as good for the rest of the year. Cleanliness is next to godliness. Pick off any dead leaves that drop from your cuttings.

“With seed sowing, some seeds do better when you have an even space between them, for example *Paeonia*. Again, this means you can leave them for a bit longer before pricking them out because they won’t be set back as much as if they were crammed in. It’s better to sow into two pots than to sow the same amount into one pot. Again, know your plant! And making mistakes is good as long as you learn from them.

A selection of *Helleborus* that Elizabeth grows and which she gave to me during my visit.

"There's no substitute for good knowledge of plants. This knowledge helps you to understand when and how each plant should be divided. Whether you do the divisions early or late also depends on your facilities; the plants should be divided, potted up and then put under glass, or in a polytunnel, for a week or so. If you don't have cold frame, a layer of horticultural fleece will also work, something to keep the humidity up. It takes about a week of this treatment so that the foliage doesn't wilt."

As someone who is fairly new to working in a retail nursery, I wanted to ask Elizabeth how she anticipated what plants people will want to buy in the following season, and thus what needed to be propagated in the current season. "In terms of anticipating fashion and which plants will be in demand, you begin to develop a sixth sense for what will be popular if you listen to people in the know. It's like the fashion industry; they all go towards the same thing. People will write about a plant in the newspaper and they don't tell you they've written about it, so everyone wants it but you won't have enough. There's nothing you can do about that, it's so frustrating! You've got the nursery, trust your own eye. You can't sell plants you don't like. Become passionate about the plants you grow and be proud of them. It could be a plant that isn't widely available anymore, not new, but a good form. I visited Helen Dillon in Ireland, she had a super form of a double *Anemone blanda*, and

Libertia ixioides and many other good forms of interesting plants. It's important to look for good forms. Helen told me I picked out the same form of Libertia as Christopher Lloyd!

Elizabeth is one of the most talented plantspeople of her generation. She has decades of experience in growing and selecting plants, paired with a fiery enthusiasm for good plantsmanship. This article is just a fragment of her extensive plant knowledge, for which I am grateful to Elizabeth for allowing me to share with readers of the Young Propagators Society. Elizabeth and Graham Rice published a book 'The Gardener's Guide to Growing Hellebores*' which pools together their decades of knowledge on breeding and growing* Helleborus*. It was a conversation with Elizabeth on this subject that I will leave you with, which I think shows her unwavering passion and love of plants;*

"People say you should plant hellebores on a bank so you can look directly into their centres. I don't agree. Banks drain too well to suit hellebores, besides the moment of turning their flower upwards and seeing what lies in their centre – that is the magic."

Robert J Garner: An iconic plant propagator

By David Francis @david.w.francis

When I was working as a horticulture lecturer at Capel Manor College, I found it an interesting exercise to encourage my students to think about who inspired them as horticulturists and then discuss it in class. They often picked well known horticulture luminaries such as esteemed gardeners, garden designers, plant collectors, television presenters and even parents. I always finished off by telling them about my inspiration as a horticulturist, a man I anticipated most of them would be unfamiliar with but, nonetheless, a hugely significant person in the principles and practice of plant propagation. Robert John Garner.

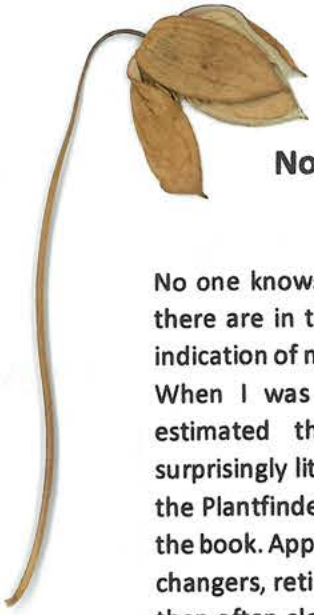
Robert Garner was born in Cambridgeshire in 1907. He worked at East Malling Research Station (EMRS) in Kent (now NIAB EMR) from 1926 to 1972 and became an international authority on vegetative propagation of woody plants. He is probably best known for his seminal work 'The Grafter's Handbook' published in 1947 and updated in six subsequent editions, the most recent in 2012 by Steve Bradley. It's been essential reading for generations of plant propagation students. Robert was also the author of the book 'The Propagation of Tropical Fruit Trees' published in 1976.

During his time at EMRS, he was a scientist and chief propagator in charge of rootstock production. In 1921, EMRS produced 15,000 rootstocks for the UK fruit industry, in 1936 it produced 500,000. All top-fruit cultivars (apple, pear, plum and cherry) are propagated by grafting. Rootstocks are needed to graft the scions of desired fruiting cultivars on to as the rootstock can offer a range of traits which the fruiting cultivar does not itself possess including control of vigour(dwarf trees are easier and safer to prune and pick from,) good anchorage, precocity

(length of time from planting to flowering), resistance to pests and diseases, tolerance of drought and saturated soil, freedom from producing suckers, reliable cropping and ease of propagation.

A range of clonal (genetically identical) rootstocks were bred at EMRS and then propagated under Robert's management. The range of 'M' (Malling) cultivar apple rootstocks were developed there and the 'MM' (Malling-Merton) cultivars were developed jointly with the John Innes Institute, then based at Merton Park. These rootstocks are still used throughout the world where apples are grown commercially. EMRS estimates that 90% of apple orchards in Western Europe are grafted on to the M9 rootstock. In addition to the apple rootstocks; Quince A and C rootstocks for pear; Myrobalan, Brompton, St Julien A and Pixy rootstocks for plum and Colt, Cob and Charger rootstocks for cherry were all developed at EMRS, many of them during Robert's time or as a direct result of his work after he retired. The most recent EMRS rootstock introductions were in 2001, they are M116 for apple and Quince EMH for pear. Both these cultivars are results of crosses originally made in the 1960s. It's a slow process!

Propagation of clonal rootstocks has to be undertaken vegetatively in order to retain the clone's desired characteristics. Traditionally this was undertaken by layering in stool beds, a time-consuming process. Robert developed the much quicker and effective East Malling Cuttings Bin ('Garner' Bin,) a facility which allows mass propagation of rootstocks from hardwood cuttings in winter by inducing root initials on the cutting's base in the heated bin while the rest of the leafless cutting remains dormant prior to lining out in the field; hardwood cutting was previously not a viable method for propagation of rootstocks of shy-rooting species such as apples.



Notes on Sustainable Nurseries

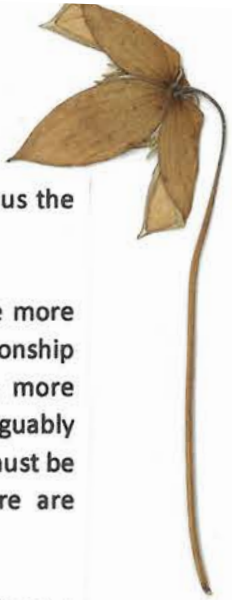
By Maggie Tran

No one knows just how many small independent nurseries* there are in the UK. The RHS is the only body who has any indication of numbers (found in their Plantfinder compilation). When I was first researching the subject in 2016, they estimated that there were over 600 nurseries, with surprisingly little variance in numbers year on year. This year, the Plantfinder listed 530 nurseries of which 52 were new to the book. Apparently this is a common occurrence, with career changers, retirees or hobbyists registering new nurseries (and then often closing them again after a short while) accounting for the fluctuations.

My love for brilliant, small independent nurseries was nurtured early on in my career when I was training at Great Dixter (2012-13). I was shown how important it was to have good quality, healthy, garden-worthy plants that perform well. I grew to understand that the art of achieving this was down to cultivar selection and usage, propagation and care. Coming from a fine art background, I understood as comparable to artists choosing quality materials and tools to work with.

Whilst on the Wisley Diploma (2014-16) I decided to do my dissertation on small independent nurseries, looking in particular at the sustainable** business strategies that they adopted. The reputation of excellent horticulture in Britain has been built on the foundation of an exceptional nursery heritage especially in the late 1800s - a golden era of





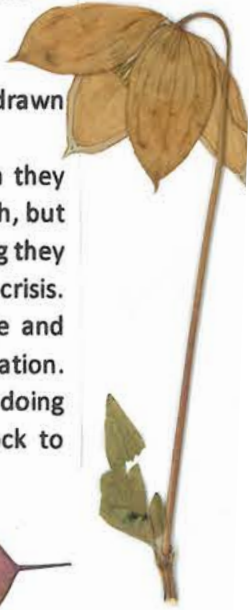
ornamental nurseries and plant exploration that gave us the rich flora and gardening culture that we have today.

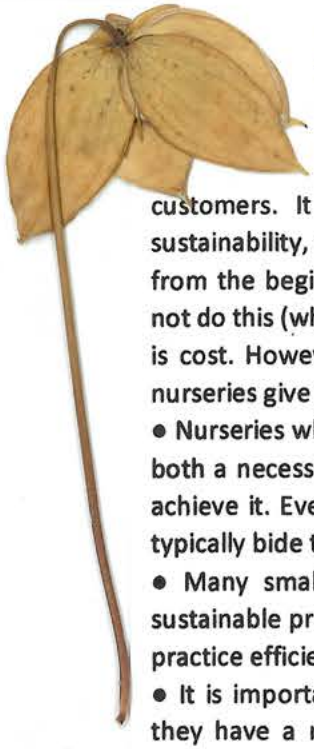
Yet that era is evidently long over. These days we are more likely to observe that due to cultural shifts in our relationship to plants and growing, we have generally become more disassociated from natural processes, which has arguably resulted in a decline in the nursery trade (although it must be said, that due to the lack of cohesive records there are therefore few metrics to support this argument).

Interestingly, during the Covid 19 lockdown, there has been a notable resurgent interest in gardening with many nurseries selling out of stock, enjoying consistent high demand. However, there are doubtless other nurseries who have been detrimentally impacted, perhaps due to being less well equipped to deal with sudden change. Given the lack of data around these kinds of business, it stands to reason that we may never know the true scale or overall impact of lockdown on them.

Nevertheless, here are some salient points that I have drawn out from my research:

- Small independent nurseries are more resilient than they seem. Running one can be hard work and hand to mouth, but as they have been working out ways to survive for so long they are actually well placed in knowing how to deal with a crisis. Also their small scale often allows them to be flexible and lightweight enough to make changes to respond to a situation. E.g. during Covid19 some nurseries turned their hand to doing local deliveries so that they could still get their stock to





customers. It would seem that if there is a desire for sustainability, it has to be written into the business strategy from the beginning. The main reason most nurseries would not do this (where they feel they cannot be more sustainable) is cost. However, this seems to be the default reason that nurseries give if sustainability is not a priority for them.

- Nurseries who prioritise sustainability, who emphasise it as both a necessity and economically meritorious, find ways to achieve it. Even if they don't have the initial resources they typically bide their time and figure it out in stages.
- Many small independent nurseries already operate on sustainable principles and can give you great lessons on best-practice efficiency and economy.
- It is important that small independent nurseries see that they have a responsibility in sustaining not just their own culture, but have a part to play in sustaining and developing people's relationships with gardening and nature through education and community based projects.
- A successful nursery is about people care as well as plant care.
- Small independent nurseries have shown that they can be as diverse in their business strategies as the plants that they grow; that diversity improves resilience and therefore makes sustainability possible.

Maggie Tran is a head gardener at Bramdean House in Hampshire. To have full access to her research on this go to www.hortiventure.com. You can follow her on Instagram @hortiventure

*It is obviously debatable of what constitutes a small independent nursery as they are so varied in their form and sizes.

** Sustainable in all meaning of the word from processes and materials used to the aspects I am particularly interested in - creativity, social equity, people care and legacy. Thinking ahead, I think with all the troubles that we face today (such as climate change, animal extinction and human welfare), it has become an unavoidable task to think about every aspect and process of what one does in order to be part of trying to find solutions, rather than adding to the problems.

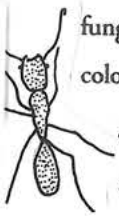
'Annoying' Little Creatures

by Sarah Liodl

You can find ants almost everywhere, in the woods, in the desert, the jungle and at my favourite reading spot at De Hessenhof. The only places free of ants are small isolated islands and Antarctica. As gardeners we know ants as seed distributors (Myrmecochory). So last January, when I stumbled over two books about ants, sadly only available in German, their way of living got me so fascinated I wanted to share it with others.

Ants are insects, this means they have 6 Legs and their body is parted into head, thorax and abdomen. They belong to the family of Formicidae, with 12 500 classified species of 22 000 in total with even more species to find. A colony always contains at least one queen (sometimes more), workers and soldiers (they are all female) and in the spring time a few drones (male ants) and young queens. Their bodies differ in size, this all depends on their role in the colony. Soldiers are the largest with the smaller workers dividing into minors, median and major ants.

There are so many different ways of living it 's impossible to talk about all of them. Ants can build nests; with the queen and their nursery protected in the middle or they can also be nomadic with even more different ways of building nests. For example the ants start holding on to each other, forming a big ball, so they can travel on rivers. Similarly ants can get over many different obstacles by building living bridges.



But what are ants eating? This is also a difficult question to answer. They can hunt insects, "milk" greenflies and also be completely vegetarian. The Leaf Cutter Ant is the most famous vegetarian, they cut leaves and bring them to their nest to feed a special fungus. Here the minor ants are the head gardeners and the most important part of the colony. They keep their garden really clean, check if the leaves are good for the fungus

and if not throw them out. They later eat the fungus and that is why their role in the colony is so important. When the fungus dies that is the end for the colony.

Ants do everything to save their colony. Every ant has a specific role in the colony but they all start at the nursery. The youngest take care of the larvae, protecting them, feeding them, and assessing which will become a young queen or a normal worker. After the larvae state they go through a pupal stage (these are the "eggs" we sometimes see) then they evolve to young adult ants and take over the nursery. Meanwhile the other ants protect, build and clean the nest, while others "garden" or go on a search for food. This is a role only the oldest and the most experienced ants are fulfilling. If an ant gets lost on her way to find food for the colony despite marking their way with their scent they will die in a matter of hours. The only lazy ants in the colony are the drones (male ants) who only live for a few weeks in spring and the young queens who usually leave the nest after their "wedding flight" anyway.

Figure 1: Pupal stage

A young queen has to overcome many obstacles to build her own colony. She has to find a suitable place to build her nest before producing the first eggs, feeding and protecting them to allow their organized way of living. The way these ants get through every imaginable obstacle together is something that I now about every time those "annoying" creatures - once again - occupy my reading spot.

Acer from Cuttings by Maurice Foster

It may not be widely appreciated that Acer species are generally quite easy to root from cuttings using simple procedures. Many species, forms and cultivars are not readily available commercially and the advantages of do-it-yourself propagation are obvious. Success can be achieved without mist or special facilities, with simple conventional methods using polythene, bottom heat and semi ripe summer cuttings.

A significant problem is to bring the rooted cuttings through their first period of dormancy when food reserves may be inadequate to sustain them. If the following principles and procedures are followed the chances of success are good.

The Cutting

A 'semi-ripe' state of growth is difficult to define. The base of the cutting should be 'fresh', but firm rather than soft or sappy. The earlier the date the cutting is taken the better, to allow more time for development before dormancy. The end of May if preferable to the end of July. However, the key is the condition of the wood, not the calendar.

Cuttings may be 10-2-cm long, taken either nodally or with a heel. Thinner cuttings are better with a heel. Juvenility and/or vigour seem to affect rootability.

It is best to remove the soft growth tip and 2-3 pairs of leaves should be retained for preference. Leaves are best reduced by about a third to a half to reduce moisture loss and facilitate handling.

Root production appears to be enhanced by a shallow wound at the base of the cutting, some 2.5-3cm long. The reason for this is not entirely clear. Better water uptake and stronger callousing have been suggested, though in practice the strongest roots appear at the base, rather than along the wound. Commercial rooting compounds are said to promote the strength and quantity of roots.

Cuttings should be inserted shallowly, and firmly but not beyond the depth of the wound, leaving a small 'church window' above the compost. For whatever reason this seems to reduce the risk of infection, but the portion of the wound

remaining visible also gives a good clue to healthy healing and callous development, an encouragement to anxious or impatient propagators.
If cuttings are allowed to wilt, losses are inevitable. They are best taken fresh in the cool of the morning and transferred immediately to the propagator. If they need to travel they will keep fresh in damp, not wet, tissue and kept as cool as possible.

The Environment

The principle is to provide high relative humidity to maintain turgidity until roots are formed while at the same time avoiding fungal infection and subsequent decay, which of course is encouraged by precisely these conditions. Temperature should be as constant as possible which means that shading is essential. Overshading cuts light levels and as cuttings have little stored food light is important for photosynthesis and root development. A balance is required and the aim should be maximum sunlight without inducing wilt. On a very hot day misting with a fine spray will keep the temperature down and maintain turgidity.
Good aeration in the rooting medium provides oxygen at the base to allow respiration and good root development. Any conventional peat/sharp sand/perlite mixes are suitable. Easy to manage for moisture content is a 50/50 mix of peat and perlite by volume.
Small rigid plastic trays about 20 x 15 x 5 cm deep are convenient for small batches and easier to manage for aeration than pots. Compost temperature should be 68-70F. If bottom heat is too high it may encourage excessive callousing or induce decay.
DIY structures to provide this environment are simple to build but a purpose built propagator, available cheaply, will suffice. For the seriously idle, a pot, a polythene bag, an elastic band and a north facing windowsill is not too technically demanding, though not first choice.
Cuttings should be inspected and aired regularly and fallen leaves removed without disturbance. Airing for short periods is important. They should root well in 8-10 weeks. If roots appear through drainage holes at the bottom of the tray, they may be cut away to induce further branching in the tray.

Aftercare

After rooting, the second critical phase is to bring the cuttings successfully through winter dormancy. This is where many losses occur, with cuttings prone to die, probably through an insufficient reserve of carbohydrate. The shoot is withered and dead, while the tray is full of healthy roots with nowhere to go.

It is essential not to pot on or disturb the cuttings, unless you have supplementary lighting or heating. Potting on should be delayed until the cuttings begin to come into growth the following spring, in practice usually in April when buds are pushing.

Absolutely critical is to keep the cuttings dry, once dormant. This is a key factor for success. A light, airy and frost free environment is also essential. A damp compost plus a dark wet winter is lethal.

Cuttings must be carefully weaned when removed from the propagator. A useful way is to drape them with a very light gauge of polythene, progressively allowing in air. Until September they may be watered with a very dilute solution of organic fertiliser such as dried blood.

When potting on in spring the compost should be at low nutrient strength and well aerated. It is vital not to pot on too deeply. This is another common cause of failure. It may mean the cuttings are not self-supporting and need the help of a small cane. The temptation to press them more deeply into the compost should be avoided.

Overpotting should be avoided as it can lead to wet composts. Repotting once or twice during the following summer is best to maintain good root action and vigorous growth.

These procedures achieve good results. 50% for the professional is a failure; for the amateur two out of four is happiness. On that basis everything is worth a try. Here are examples of Acer cuttings successfully raised, grown on and planted out;

argutum, campestre Red Shine, *capadocicum aureum, cissifolium, crataegifolium veitchii, daviddi* forms, Karmen, Rosalie, Serpentine, Sich 630, Guiz 42, x *hillieri*, Laevigatum, *pectinatum* ssp *laxiflorum, micranthum, negundo* ssp *mexicanus*, Flamingo, *violaceum, palmatum* various, *pentaphyllum, rubescens, rubrum pendulum*, October Glory, *spicatum, stachyophyllum, tataricum* ssp *ginnala, tegmentosum*.

Quick Questions with Ed Bowen

Ed Bowen runs Issima nursery with his partner in business Taylor Johnston in Rhode Island, USA. There they grow unusual, rare and uncommon herbaceous perennials and shrubs. You can follow him @ed_bowen on Instagram

YPS - *What's your most useful tool?*
EB - X-acto knife. A former employer got me in the habit of using one for cuttings and I've maintained the practice as they're easier to manipulate than either a razor blade or a knife.

What is your most important piece of advice for successful cuttings?
Don't keep pulling them out to see if they've rooted yet!

Name your technique for cleaning seeds.
We use multiple- we don't approach seed in fleshy fruit as though they were in dry capsules for example.

What medium do you use for cuttings?
Sand and perlite, in a ratio suited to the water needs of the plant I'm taking the cuttings from.

What is your most proud moment as a propagator?
Hasn't yet happened!

How did you get into propagation?
Poverty. I really got into plants and gardens after leaving graduate school, I was skint, and the idea that I could buy one of something and make as many as I needed had great appeal.

What is it that keeps you hooked?
On a daily basis the nursery has plants rooting or germinating or flowering, and every day feels like Christmas. I love what I do.

What's the hardest thing you've ever had to propagate?
I've never been able to germinate the restio *Cannomois virgata*.

What are your thoughts on rooting hormones?
We use a 1% concentration powder, as I find powder the fastest method for sticking cuttings, but that's perhaps because we have an old fashioned approach of rooting cuttings communally in a flat rather than into individual cells in trays that suits our small scale -we simply don't have the space to do otherwise. As we grow mostly herbaceous plants we likely don't need to use, but the low concentrations generally don't hurt, and the routine is familiar and comfortable. If we were growing more woody plants we would definitely need to use, and in higher concentrations.

Do you use bottom heat?
We have cuttings rooting 365 days a year at the nursery. There's a month where the weather is warm enough that it doesn't require bottom heat, but otherwise, yes, we do.

Do you have advice for successful seed germination?
We constantly collect and sow seed, and at any given time have hundreds of pots/flats sown. The biggest challenge is watering; neither overwatering nor underwatering. To avoid having to individually assay each pot every day, I find it's easier to use a mix that has perfect drainage that allows us to water daily without fear of overwatering, and so we use a 50/50 mix of seed starting mix and turface (high fired clay particles).

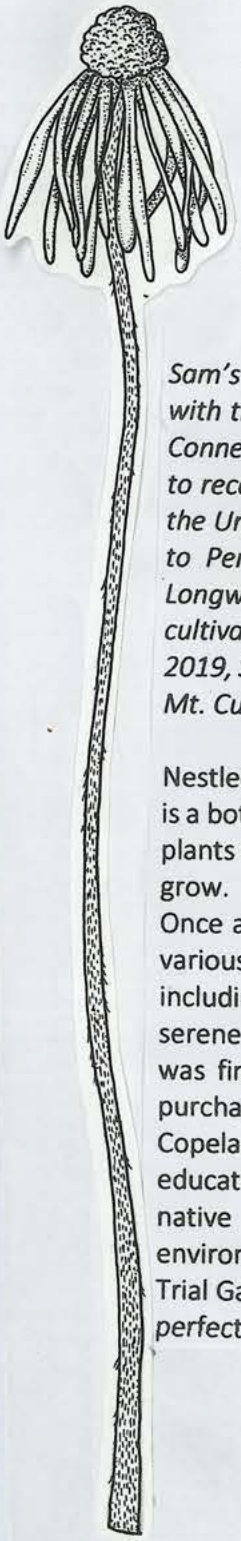
Do you prefer seed or vegetative propagation? Why?
I prefer seed. As a U.S. nursery friend once observed, clones are boring. Having said that however, clones are what people generally want to buy, and as a nursery we have to sell plants to be able to continue to grow plants, and so the reality is that we do considerable amounts of both. Long ago (I'm not a young propagator!) I realized that the added burdens of growing plants in pots provided added benefits, in that I could isolate pots to be able to collect true to type seed and reliable "sameness". Since then I've realized that I can also use this portability to foster conjugal visits between plants and actively try to create miscegenation, and in these circumstances we're growing out the seedlings looking for difference, looking for good clones that we can then vegetatively propagate.

Can you give us a cool propagation fact?
I'd rather point out that the facts are relatively few, that propagation is also an art, and that it's the ability to extrapolate from the facts that make the propagator

Do you use chemicals at any point in your propagation process?
Very few -the auxins and the fungicide in the rooting powder, and occasionally gibberillic acid and smoke.

Do you clean your pots before reusing?
Occasionally.

Do you have a piece of advice for someone beginning their career in propagation and nursery work?
Learn enough to open your own nursery, and use your nursery to make your own contribution to horticulture.



Mt. Cuba's Trial Garden by Sam Hoadley

Follow him @sambhoadley

Sam's interest in gardening and the horticultural world began with time spent in the woods and family garden in East Granby, Connecticut. Eager to turn his passion into a career, he went on to receive his degree in Sustainable Landscape Horticulture from the University of Vermont. After graduation in 2012, Sam moved to Pennsylvania to begin his professional horticultural life at Longwood Gardens where his primary duties included designing, cultivating, and reinvigorating the Hillside Garden. In March 2019, Sam began his role as Manager of Horticultural Research at Mt. Cuba Center.

Nestled in the piedmont of northern Delaware, Mt. Cuba Center is a botanic garden that aims to inspire an appreciation for native plants and a commitment to protect that habitats in which they grow.

Once a fallow corn field, Mt. Cuba is now a curated example of various landscapes and habitats of eastern North America, including rocky outcrops, lush forests, sweeping grasslands, and serene ponds and bogs. The seeds of the Mt. Cuba Center that was first planted in the early 20th century when the land was purchased by Mr. and Mrs. Lammot du Pont Copeland. The Copeland's legacy lives on today as a place of beauty and education where guests can come to admire the elegance of native plants, naturalistic gardens, and learn about environmentally conscientious gardening and conservation. The Trial Garden at Mt. Cuba Center, once a cut flower garden, is the perfect intersection of native plant gardening and education. It

offers a unique opportunity to inform guests and the broader horticultural community about top performing natives for our region and the ecosystem services that they provide.

The trials are planned out years in advance to ensure plants can be sourced either commercially or seed can be collected from natural populations. Mt. Cuba's talented greenhouse staff sow these seeds timing their germination and growth for the beginning of the new trial. This process requires tremendous behind-the-scenes coordination and talent from our research and conservation department before any plants ever begin the evaluation process.

Data is collected weekly from May through September focusing primarily on physical attributes of the plants. Quantitative data points include height, width, floral diameter. Ratings are also

assigned on a weekly basis on a scale of 1-5 (1: very poor, 5: excellent) for qualitative features such as disease resistance, quality of the floral display, and the all-inclusive plant rating. At the end of the trial these data points are compiled to generate a final rating that is used to compare and rank plants in the trial. Our publications often include the top ten performers from each trial and some honorable mentions. Detailed descriptions for every evaluated plant, not just the top performers, can be found on our website. However, to be a real winner in our eyes, a top performer has to be more than just a pretty plant. While different methods have been employed in past trials to determine the ecological value of our trialed plants our most recent efforts are made possible by our very own Pollinator Watch Team. This group of volunteer citizen scientists are the boots on the ground that collects the raw data for pollinator visitation. When our trial plants are in bloom, our watch team members are there to record pollinator visitation, often in multiple shifts per day. In most cases a single plant is observed for 60 seconds and all or specific (depending on the trial) pollinators that visit that single plant are tallied and recorded. This data is entered into a spreadsheet and analyzed at the end of each year. Interestingly there is a fair amount of crossover

between horticulturally superior plants and plants that are attractive and beneficial to pollinators. This spells good news for gardeners who want the best of both worlds in their home landscape.

Occasionally, the top performing plants are scarce or non-existent to the horticultural market. Mt Cuba then works with partners in the growing industry to get these superior plants into cultivation and in some cases, we are able to introduce out very own cultivars.

If you would like to know more about the research programs and past trials at Mt. Cuba Center, check out our website at mtcubacenter.org/research.

Past trials include *Helenium*, *Phlox*, *Monarda*, *Baptisia*, *Coreopsis*, *Heuchera*, *Echinacea*, and asters. Currently the trials are home to a second evaluation of *Echinacea*, *Hydrangea arborescens* (and their allies), *Carex*, and *Vernonia*.

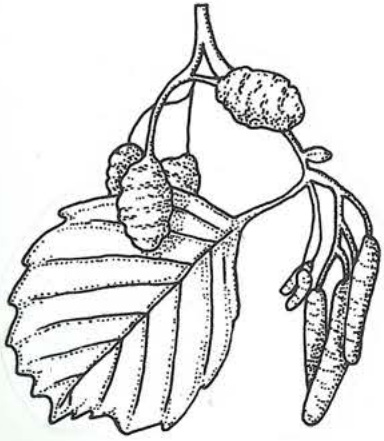
BASICS

by Ellie Pay

The Sexual morphology of flowering plants

Monoecious:

Seperate female and male flowers but on the same plant. Typical on wind-pollinated plants.

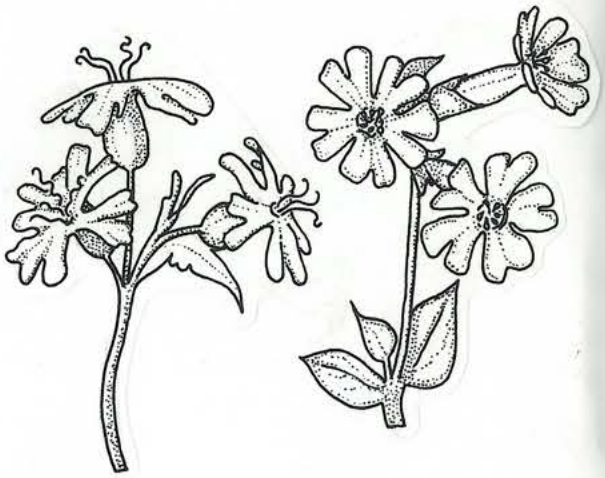


Alnus sp.

Monoecious

Dioecious:

Female and male flowers are on seperate plants altogether, meaning you need one of each for fertilisation.

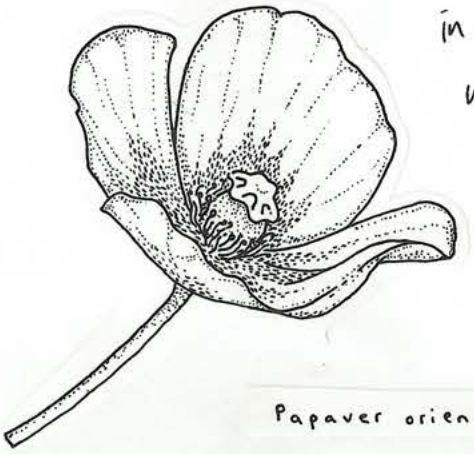


Silene dioica

Dioecious

Hermaphrodite:

Female and male sexual organs contained in the same flower, which means they have potential for self-pollination (inbreeding)



Papaver orientale

Hermaphrodite

The Black Lives Matter protests have highlighted subjects that desperately need addressing in horticulture; diversity and representation in the sector, the industry's history and how it is told, and disparity in land ownership and access. The gardening world needs to inwardly critique these issues, and others, in order for the industry to evolve.

Our vision for The Young Propagators Society is to create a space where anyone can freely access knowledge on propagation skills, and to create a community to cultivate friendship and support from people with similar interests. We want this society to be inclusive of anyone who has the passion so that they feel like they have a platform to express their interests. So we work toward reaching out to people in places that don't usually have access to this kind of information, ensuring we represent all people through their contributions to the zine and tell the history of people overlooked in horticulture through Naturalis Historia.

As 'young propagators' we are the future of the industry so we need to focus on how we affect it. This may be through hiring people of colour through positive action, paying trainees fair wages, reconsidering the origins of our garden practices and breaking down barriers of information sharing. We hope this encourages new ways of thinking and is the start of a new golden era in horticulture.

A good place to start following the conversation is #decolonisethegarden on Instagram.

Written by Ellie Pay

Many thanks to our contributors

Ed Bowen
Kate Burtonwood
Stuart Cairns
Maurice Foster
David Francis
Sam Hoadley
Sarah Liodl
Elizabeth Strangman
Jamie Todd
Maggie Tran

Issue 5 out in

JANUARY 2021

A huge THANK YOU to everyone who has donated on our gofundme page!

Thanks also to our sponsors Mallards Estate, Isle of Man

CALL FOR

SUBMISSIONS!!

email youngpropagatorssociety@gmail.com

'Sow and Tell Mondays' - every Monday share your propagation stories on our Facebook group @ Young Propagators Society

GROUP EXPERIMENT!!!

Join us for a group experiment into how different coloured glass can affect the rooting potential of cuttings. A completely unempricial study!
You'll need a coloured bottle, cuttings of a non-variegated Fuchsia and a north-facing window.

Find out more details on our social media pages and contribute to the findings by posting on our Facebook group and using #YPSrainbow on Instagram

‘Hinterlands’ by Stuart Cairns
Follow him @stucarinsmaker