Many of us regard Celandines as rather a problem in the garden, for their ability to spread at speed. Wim Boens, however, is determined to convince us that the double varieties available present little risk and are worth considering as a plant for early colour. Reports from various fans of these plants suggest that they are much “better behaved” than their single cousins!

On the eve of the Czech International Rock Garden Conference, Zdeněk Zvolánek writes about his friend Jiří Papoušek - a man with a garden full of remarkable plants and habitats. This garden will be one of those visited by the conference tours. Both ZZ and Jiří are speaking at the event, which promises to be every bit the success of the two previous conferences. Many pages in the SRGC Forum recount the memories of visitors to these events and I hope these will soon be joined by similar reports from the third conference. As many gardens are just emerging from winter snow - or are even still covered, it seems timely to tell of another new snowdrop via Krzysztof Ciesielski.

Cover photo: Ficaria verna ‘Nathalie’ – photo Wim Boens.

Ficaria verna in the wild in Norway, showing how widespread this plant can be – photo Trond Hoy.

Ficaria verna, a weedy menace? The double flowered lesser celandine: by Wim Boens, Belgium.

Far too often lesser celandines are considered a weed and maligned as being terribly rampant. There are however forms which do behave, they don’t make any (or hardly any) bulbils on the leafstalks and they don’t set any (or hardly any) seeds. In this article, I will give an overview of the double flowering (and more “well-behaved”) forms.

Many people will know this plant under its former name; Ranunculus ficaria. Several molecular and genetic studies have shown that this genus does not belong in the clade of Ranunculus and that’s why they have been assigned their own genus. Ficaria had been published as a separate genus in 1754 and that name has been re-used. A complete review of the complicated taxonomy of this genus falls outside the scope of this article and would lead us too far off track. For the moment, there are 7 recognized subspecies: Ficaria verna subsp. calthifolia, Ficaria verna subsp. chrysocephala, Ficaria verna subsp. fertilis, Ficaria verna subsp. ficariiformis, Ficaria verna subsp. ficarioides, Ficaria verna...
subsp. kochii and *Ficaria verna* subsp. *verna*. In this article, I will limit myself to cultivars of either *Ficaria verna* subsp. *verna* (formerly *Ranunculus ficaria* subsp. *bulbilifer*) (tetraploid: 2n=32) or *Ficaria verna* subsp. *fertilis* (formerly *Ranunculus ficaria* subsp. *ficaria*) (diploid: 2n=16). They do hybridize, and those hybrids can be triploid (2n = 24) and therefore sterile.

The biggest difference between these two subspecies is the presence or absence of bulbils on the stalks; subsp. *verna* has bulbils in the leaf axils and subsp. *fertilis* has none. Another difference is that almost all seeds of subsp. *fertilis* are viable (hence fertilis), while a lot of the seeds of subsp. *verna* are not. The natural habitats of both subspecies overlap. *F. verna* subsp. *verna* grows from Ireland in the west to Russia in the east and from Macedonia/Bulgaria and Spain in the south to Norway and Russia in the north. *Ficaria verna* subsp. *fertilis* grows from Great Britain in the west to Denmark and Italy in the east and from Spain in the south to Denmark in the north. Both subspecies are present in Great Britain in the wild.

‘Leo’ (photo Wim Boens) is not considered a full double.

‘Salad Bowl’ just opening (photo Wim Boens)

In English, this plant has some interesting common names, Small Celandine, Figwort, Smallwort and Pilewort. Most of these names refer to the shape of the tubers. In Latin, *Ficaria* means 'like a fig'.

In the past, this plant was used for a whole bunch of things, the crushed leaves and tubers are a vesicant (causing blisters) and were used as such in the Middle Ages by beggars to elicit pity. The crushed leaves were used to whiten the teeth, but the blistering properties can’t have been very enjoyable on the gums. Sometimes the plants were blanched and eaten as a vegetable. And some people used them boiled or raw as a source of vitamin C (as a cure for scurvy). The protoanemonins and saponins, which are present in the entire plant, are poisonous, so it is not advisable to eat any of the plant (since even when blanched, some remain). Before flowering the amount of poisonous agents in the plant is lower and they are digested better, but I still wouldn’t recommend nibbling the leaves. The plant was once used to treat piles too (hence the name pilewort). To treat this condition with a plant causing blisters does not appeal very much, luckily there are better ways nowadays.
The cultivars:

‘Bunch’ (photo John Sirkett)

Small double flowers, yellow with a green sheen on the central petals. The leaf is spotted with silver and has a darker central vein. Found by Roz Robson in the 1980s by the road next to her house and named for her dog. Sterile.

‘Claudine’ (photo Joe Sharman)

Bred by Joe Sharman. Double orange coloured flowers, with a green sheen on the underside of the relatively small petals. Flowering stems of +/- 10 cm keep the flowers completely above the leaves. Green leaves with silver spots. Fertile.

Probably selected in the garden of E.A. Bowles at Myddelton House. Propagated by P. Corbin in the 1960s. Double yellow with an outer ring of short, rounded, yellow petals and a heart which looks like an anemone, with its closely packed yellow, bowl-shaped petals. The centre is green-tinged especially when young. The leaves are triangular and big with a purple irregular stain in the middle, on top of a silver foundation and with a green border. Sterile.

‘Crimson Damson’ (photo Joe Sharman)

Discovered by Ruby Baker. Pale cream-coloured flowers with short petals and an intense red underside. Leaves are green with silvery spots. Grows to be 10 cm tall. Fertile.
‘Damerham’ (photo Joe Sharman)

Discovered by Mary Noble in the village of Damerham (Hampshire, England). Like ‘Flore Pleno’, but with a green, irregular heart which remains for a longer time. The narrow, pointed petals are grey-bronze on the underside. Green, round leaves with purple stalks. Sterile.

An older cultivar, similar forms to this one are found regularly, but the original form was acquired by P. Corbin through Christopher Brickell from Bowles’ Corner at Wisley in 1982. Yellow flowers with a bronze underside to the petals, which give the flower a darker appearance. The central vein of the leaf is darker coloured. Fertile.

‘Double White’ was discovered in 1997 in the rock garden at Wisley by Allan Robinson. Similar to ‘Double Mud' but with paler whitish flowers and with a blueish underside to the petals. We have no photo of this cultivar.
‘Double Mud’ (syn. ‘Double Cream’) (photo Joe Sharman)

An older cultivar, named by Alan Leslie. Double cream-colored with a muddy, grey underside on the relatively short petals. Flowers are borne high above the leaves. Green leaves with silver spots. Fertile.

‘Elan’ (photo John Sirkett)

Discovered by Pam Gossage in her garden at West Coker (Somerset, England) in 1993. Cream-coloured flowers with petals with a grey-green underside. Triangular leaves with a darker median vein and silver stains. The earliest flowers are fertile, later flowers are double and sterile.
‘Florence’ (photo Joe Sharman)

Bred by Joe Sharman. Double, cream-coloured flowers with a grey/purple underside to the petals. The round leaves are purple, but not as dark as in ‘Coppernob or ‘Brazen Hussy’. Green stalks with a purple sheen, grows to be +/- 10 cm tall. Fertile.

‘Flore Pleno’ (photo John Sirkett)

This cultivar was first described and propagated in 1670 by John Rea but the official name Flore Pleno was used for the first time (late 18th century) by David van Royen in his function as director of the Hortus Botanicus at Leiden. In the meantime, a lot of similar forms have been sold under this name. This is the description of the original named form: Big double, yellow flowers with a grey-green underside on the petals. The flowers open up completely and have a green heart when in bud, the colour of which fades as the flower ages. Green, round leaves with occasionally a light purple margin. Sterile. A good growing clone of this form is being sold as ‘Ockenden’.
‘Graham Joseph’ (photo Joe Sharman)
Discovered in 1997 by Graham Joseph Luerden at Wisley. Big, double, cream-coloured flowers with petals which have an intense purple blue underside. A unique combination. Grows to be 6 cm tall. Flowers held above the leaves. Leaves are almost completely green with some silver-coloured spots. Fertile.

‘Greencourt Gold’ Discovered and named by Allan Robinson in 1975. Pointed petals, green heart, bronzy-grey underside of the petals. Sterile. We have no photo of this cultivar.

‘Green Petal’ (photo Wim Boens)
Double, green coloured flowers with almost completely green, broad, leaf shaped petals. When in bud, completely green, as the flower matures it turns a bit more yellow. The stigma and stamens are broadened and distorted too. Leaves triangular, dark green with sometimes a purplish and/or silvery sheen. The leafstalks are purple. Flowers relatively late. Grows to be 5 cm tall. Sterile.
‘Jacqueline’
(photo Joe Sharman)

Bred by Joe Sharman. Filled orange flowers with a reddish-brown underside to the petals. Sometimes with a green heart. The triangular leaves are coloured a deep, rich purple (as in ‘Coppernob’), with some silvery spots. Grows to be 10 cm tall. Mostly sterile, sometimes it can give a few fertile flowers.

‘Ken Aslet’
(syn. ‘Starry White’) (photo Joe Sharman)

Discovered by Dr. Alan Leslie in 1993 in Bowles’ corner at Wisley. Named by Christopher Brickell for a former head gardener of the alpine division at Wisley. One of the best cream coloured double flowers. The underside of the quite small, slightly transparent petals is coloured blueish grey. The flower turns a darker yellow/green towards the heart. Round leaves, green with a few silvery spots. Some flowers are sterile, some are fertile.
‘Melanie Jope’ (photo Wim Boens)

Low growing, intense dark yellow/pale orange, double flowers. Fertile.

‘Mimsey’

(photograph John Sirkett)

Discovered by Roz Robson in Cornwall in the 1980s and named for her cat. Closely resembles ‘Collarette’ but with different colours. The outer petals are yellow with an olive-green underside, while the inner ones are yellow with a green heart. Green leaf with silver spots and a purple central vein. Sterile.
‘Montacute’ (photo Christian Kress)

Discovered at Montacute (Somerset, England). When the local council decided to do some roadworks in 1994, this plant was rescued. Big double, yellow flower, bronzy when in bud. Small leaves with a bit of silver around the edges. Fertile.

‘Nathalie’ (photo Wim Boens) (also our cover photo)

Bred by Joe Sharman. Double, intensely orange coloured flowers with a reddish-brown underside of the petals. In the sterile flowers, the petals are packed to create a green heart. Very short flowering stems which keep the flowers in between the leaves. 3-4 cm tall. Triangular, green leaves with silvery spots. Good grower. Some flowers are sterile, some fertile.
‘Nicole’ (photo Joe Sharman)

Bred by Joe Sharman. Big, double, butter yellow flower with a grey-green underside to the petals. Green, round leaves with some silvery spots. Grows to be 7 cm tall. Fertile.

‘Picton’s Double’ (syn. ‘Bowles Double’) (photo Wim Boens)

This form is presumably named for Percy Picton of Old Court Nurseries but they deny ever selling this form. They did sell some lesser celandines from a garden in the same village though and it is very well possible that someone else named this form in his honour later. Sometimes incorrectly sold as ‘Bowles Double’, just like ‘Double Bronze’, but they are completely different. The plant has a uniform pompom-like flower with a green heart. Completely green leaf with silver spots. Sterile.
‘Quillet’ (photo Wim Boens)

Discovered by Roz Robson in Cornwall (England). The name means “a small patch of land” in Cornish. Double yellow. The undersides of the petals are grey coloured and this is quite striking on the partly opened flowers, which makes them resemble small arrows. The very uniformly double flowers are smaller than in any other cultivar. Low growing. Triangular leaves with silver spots. Sterile.

‘Ragamuffin’ (photo Joe Sharman)

Discovered by Roger Hoskin in 1995 in Devon (England), near to the cultivar ‘Salad Bowl’. Double green flowers with broad petals, like ‘Green Petal’, but more yellow in colour and without a purple colouration on the leaves and leafstalks. Completely green when in bud. The flowers are produced earlier than in ‘Green Petal’ and are borne well above the leaves which makes the flowers stand out more. Fertile.
‘Salad Bowl’ (photo Wim Boens)

Found growing near ‘Ragamuffin’. Double green flowers, outer row of petals is broadened and green. Yellow small middle petals and in the heart the broad, elongated, green petals are repeated. When the flowers open, they resemble a perfect crop of lettuce. Sterile.

‘Silver Collar’ (photo John Sirkett)

Selected by Joe Sharman as a sport of ‘Collarette’. The flowers are the same, double yellow with an outer ring of short, rounded petals and a heart of bowl-like petals and a green heart. The larger leaves are almost entirely silver with a small purple spot on the central vein. Sterile.
‘Sulli’ (photo Wim Boens)

Selected and named by Maret Vähejaus, who found this form on Kassari Island (Estonia). In the beginning, it resembles a green button; but as the flower matures, some long petals develop around the edge of the flower. Sterile.

‘Sylvie’ (photo Joe Sharman)

Bred by Joe Sharman. Double cream-coloured with a muddy purplish underside on the petals. In bud, the petals are folded inwards. Purple-green leaves, greener when grown in the shade and later in the growing season. Fertile.

‘Valerie’

Double cream-coloured flowers with strongly cream splashed and spotted leaves. Discovered by Richard Bashford and Valerie Bexley. We have no picture of this cultivar.
‘Trenwheal’
(photo John Sirkett)

Discovered by Roz Robson in Trenwheal, Cornwall (England) in the 1980s. Here the petals are arranged neatly around a loose, irregular heart with a small green middle.

‘Vanessa’ (photo Joe Sharman)

Bred by Joe Sharman. Double, light orange flower with long petals and a dark green/brown underside to the petals. Large flowers, which are kept well above the leaves. Fertile.
‘Nathalie’ left and ‘Vanessa’ right (photo Joe Sharman)


Light straw-coloured flower with a few olive-green streaks. The underside of the petals is dark grey coloured with some bronze shades. Fertile. The flowers close every evening (but not as completely as in the cultivar ‘Smudge’).

Double flowered cultivars which are probably no longer in cultivation:
Cultivation.
Regarding cultivation, I can be very brief. There are very few soils in which *Ficaria verna* doesn’t grow. They’ll grow in clay, loamy and sandy soils. They dislike calcareous soils and very acid soils but do best on slightly acid soils (pH 4.4 to 6.9). In the wild they are most common on sandy soils which are seasonally wet, both in the shade and in open areas. They do flower more abundantly in open areas. In the garden, they like slightly humid soils in part shade and they will increase very willingly there. I grow a lot of them in full sun against a south facing wall on a sandy soil and they flower very abundantly. They are just a bit slower to clump up in full sun. Similarly, in the rock garden, under a layer of grit, they grow quite well and are just a bit slower to spread. The leaves of most cultivars emerge in late Autumn and stay visible until May/June, after which other plants can take over. The cultivars above form a clump which steadily gets bigger, but most of them (see sterility) don’t set seed, which will be seen a big advantage by a lot of gardeners.

Propagation.
The fertile cultivars set seed and the seeds sown from these will very often not come true to type, especially when there are other forms growing nearby. You might get interesting new varieties, though. From seed, it will take 3 years before you see the first flowers. In the first year, there will only be one fused cotyledon, followed in the second year by the first true leaves. The sterile forms can only be propagated by dividing the clumps. If you want to divide a clump, I find that the easiest to do when they are in growth, so you can find the correct plant and split it up. Just lift the clump and you can cut or tear pieces off it. Even one small tuber can grow to be a new plant. If you know where they are, you can divide the tubers when they are dormant too. It’s best to replant them as soon as possible to stop desiccation of the tubers, especially when in growth, they don’t like to dry out. When dormant they are more resilient to drought.

Pests and disease.
There are very few pests which attack this plant, slugs and snails may graze them a bit, but they are very quick to make new leaves. Later in the growing season, the blistering properties make them less attractive to slugs and snails and most certainly not to rabbits who very occasionally might nibble a young leaf. An early leaf-miner fly (*Phytomyza ranunculivora*), can mine the leaves. The biggest problem is often the (wood) pigeons who like to pick at the plants. Especially as the leaves die down and the tubers become more visible, they resemble small maggots and as such they are very attractive to birds. Voles can also target this plant, destroying whole clumps.

In humid conditions, the leaf can be infected by *Botryotinia ficariarum*. It parasitizes the growing leaves, but will never kill the plant completely. The apothecium (cup-shaped fruit body of sac fungi) of this fungus pops up in spring from the hibernating sclerotium (the resting phase of the mycelium of the fungus). Another fungus (*Sclerotinia sclerotiorum*), causes white mold on the root, which can weaken the plant very much. A third common fungal infection (*Uromyces ficariae*) causes rust on the leaves. Other species of fungi which can infect them are: *Peronospora ficariae*, *Urocystis ficariae* (smut), *Entyloma ficariae* and *Uromyces dactylidis* (another kind of rust fungus), but these are significantly less common. I myself have never seen any of these infections on my plants.

In general, they are quite easy in cultivation and very resilient to pests and diseases. In summer, they go dormant so they don’t compete with other garden plants. They combine extremely well with early flowering bulbs (Galanthus, Eranthis, Anemone…) in the winter garden. In short, they are extremely well adapted to be planted in any garden! W.B.
Sources

Personal communication: Ruben Billiet, John Carter, Dr. Alan Leslie, Allan Robinson, Dr. Janis Ruksans, Joe Sharman, John Sirkett.


The Scottish Rock Garden Club welcomes members from around the world.

There is much of interest in the SRGC Website - news of Student Study Grants from the Diana Aitchison Fund; Exploration Awards to help finance projects or trips pertaining to rock garden plants; the Archibald Archives of the late seed collector, Jim Archibald; a weekly diary, Ian Young's Bulb Log (about much more than bulbs!); the schedules of all shows, local group meetings and other Club events; reports of the shows from Sandy Leven; this monthly e-magazine International Rock Gardener - and, of course, the Forum - it is possible to read the forum without registration as part of our open access ethos. The SRGC Forum is a virtual "coffee shop" where members around the world can "meet" and talk plants and share their experiences of their plants, gardens, travels, the plants at the shows and much, much more. One need not be an SRGC member to register for the forum.

It is possible to have a postal version of membership, where the twice yearly journal, "The Rock Garden" and other club notices are sent by post, or an electronic version, where members access all the publications of the Club online. Access to the yearly Seed Exchange, where around 5000, often very rare, taxa are offered, is open to all members. It is also possible to send a membership application by post, of course - all the details are online.

Should you wish to support the work of the SRGC in spreading knowledge of and enthusiasm for the alpine, mountain and wild plants of the world you are most welcome to join the Club. You can find all details on the website.

You may also support the Club by making a donation via the Donate button on any of the website or forum pages.
My intention here is to give a brief sketch of my rock gardening friend Jiří Papoušek (the ‘Alpine Parrot’) who is steadily flying to be the leading Czech rock gardener for next 25 years (the period of my slow departure from the blooming stage). This relatively young man has some very good qualifications: Prague university, very nice knowledge of English, good position in international parcel service, sense for putting stones together in the noble and practical way, green fingers for propagating alpines, contacts with the best growers abroad (including Scottish wizard Cyril Lafong), in his homeland and (the most important) having tender start as an intelligent disciple of myself. Jiří Papoušek has his focus clearly on his family and his garden. He is very active in building his own garden in Roztoky near Prague; this is a great project with a rich future which already shows much success in design and planting. I say God bless him and keep his body and mind in the best shape!

Jiří discovered a huge heap of dark metamorphosed schist near the entrance of the new car tunnels, which are part of the motorway bypassing Prague and made many transports of large (one man) flat stones in his trailer. I helped him to start one outcrop with vertical layers and plenty of crevices. Later he constructed himself other outcrops with inventions and master’s style. I like his design of low outcrops with many nice peninsulas surrounded by fine scree for easy access to photograph plants. A scree is the perfect bed for the seeds of all active mother plants. Other features of his playground are raised beds with peat blocks in vertical walls in semi shade, where it is possible to grow Cassiope, dwarf Himalayan rhododendrons and Gentiana, Shortia soldanelloides and all desirable small woodlanders. Development of trees and flowering shrubs to give shade is now the part of his landscaping which needs a longer time for the happiest evolution of the garden.
Views in the Papousek garden
Behind his house is a new, long alpine house with his miniature fragile alpines, firstly his collection of species and hybrids of the genus Dionysia (he collected some himself recently in Iran). Here is a suitable place for grafting difficult Daphnes and miniature conifers. He is skilled at taking cuttings at the best time. Jiří has fine connection with Czech seed collectors (namely Vladimír Staněk and Vojtěch Holubec) and it helps to bring many new alpines for a trial here.

Everywhere in the garden there is something of interest in the many different beds.

Part of the garden, by one fence, is long frame edged with railway sleepers (a gift of mine) serving as a small nursery for selling plants and keeping some tender stock plants for propagating. There is an unfinished (unplanted) limestone crevice garden with nice limestone grit top dressing, which was built by his talented friend Martin Brejník in the front of the family house. Brejník was his regular partner for exploring the natural habitats of *Daphne petraea* and *Daphne x hendersonii* near Mt. Tremalzo in Italy.

Jiří Papoušek is an extremely busy man and somewhat reluctant author. He is the keen organiser of the Czech International Rock Gardening conferences. I performed two of them with him together with the Master of our Stone Art Vojtěch Holubec; the third conference, which has a full complement of delegates booked to attend, is nearly upon us - in early May in Průhonice near Prague.
From the garden....... to the tunnel in construction ....
It is my privilege to write something about a new growing technique developed by Jiří Papoušek: it is a tunnel with tufa wall benefits. It is actually a hybrid of two techniques: a tufa (soft travertine) wall, placed in large tunnel providing better cooling and ventilating the space (here it is 50 m³).

The basic design of this kind of alpine house filled with tufa was made by the guru of Dionysia breeding Michael Kammerlander from Wurzburg, Germany. The drawback being that one summer day he forgot to shade the glass roof and half of his collection was burnt.

The Papoušek tunnel, now with doors at each end, must be shaded in hot days too, but the air is naturally drawn through the tube of tunnel and so cooling of the alpines is easier. The throughput of air is based at different temperatures of air inside and outside the tunnel. The temperatures inside the tunnel are from 1°C – 39°C.

It is practical to stress some advantages of the growing plants in tufa holes and natural-looking tufa crevices in the tunnel in comparison with uniform pot culture in alpine houses. Plants have free root run into porous softer tufa stone with neutral chemical reaction. Saxatile plants’ cooperation with bacteria and fungi inside the rock is utilized here and life of the plants is prolonged without need of regular repotting. Evaporation of tufa boulders is a bonus for its occupants. The tunnel has closing side walls provided for winter frost free comfort without need of artificial heating. Everybody can enjoy earlier flowering because of the glass house effect here.

The soft travertine (tufa bought in Slovakia) wall forms west oriented slope with some boulders offering southern or northern nooks. The wall is 10 m long, 3 m wide and 1.5 – 1.8 metres high. It accommodates about 300 plants. Tunnel covers 20 m².

Disadvantage: Dionysias, Primula allionii, Saxifrages, smallest Daphnes and classic alpines from alpine lands have different needs for watering during our crazy seasons: so a general watering system of the area is impossible and some troubles with drying of thirsty plants or their wet rotting sometimes occurred. The owner has a trial with controlled spot watering now.
Plants from the tunnel…….below: *Campanula zoysii*
Dionysia afghanica
Daphne malayana
Jiří Papoušek in his garden

It is always a pleasure to visit this place, like a great theatre with many attractive actresses seasonally changing dresses. It is a kind of slow and quiet ballet for me and always a dancing place for friendly insects.

Jiří Papoušek is a well-known lecturer who will soon be covering our northern hemisphere from Sweden to Canada and I wish him a pleasant tournament in season 2017.

Z.Z.

Shortia (Schizocodon) soldanelloides on peat blocks in the Papousek garden.
Galanthus nivalis 'Fairy Tail' is a completely poculiform galanthus discovered in Poland in 2015 and since then it increased very well. It is a tolerant, beautiful and charming plant with slender flowers, which can flower for three weeks in moderately sunny spot. During the good weather it has its flower stalks standing up, but during the rain they lay on the ground, just to stand up again when the sun dries out the excessive moisture. The name came from an impulsive thought, that if fairies had tails, they would definitely hide them under a dress made of this plant's petals.

DESCRIPTION

Flowering height 120 - 175mm.
Leaves, two - linear, narrowly lanceolate, greyish-green and erect. Length at flowering 130-170mm and 6-9mm wide.
Scapes upright. Ovary cylindrical, length:width approximately 4:3(2).
Flower shape when opened – conical, when closed drop-shaped.
Flower length including ovary 30-40mm.
Pedicel: 70% the length of the straight spathe.
All six petals of large (younger) plants are fusiform, navicular, 31-35mm (25mm) long and 6-9mm (3-5mm) wide, entirely white on the outside. Three petals on the inside have faint traces of green, which shows as a light smudge.

Flowers from the plant in three different gardens have been dissected for the following pictures. K.C.
Galanthus 'Fairy Tail' shown on 1mm grid paper