

EVEN MORE ELECTRIFYING WOMEN:  
the 'can't lockdown creativity' edition



Edited by Hannah Stone

In collaboration with the University of Leeds project:  
'Electrifying Women: Understanding the Long History of Women in Engineering'

Even More Electrifying Women: the 'can't lockdown creativity' edition  
First edition, October 2020

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Cover image: Women's Engineering Society visit to the Wolf Safety Lamp Company, Sheffield, 1936  
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## Foreword

*What do you like about driving or flying your own vehicle? What was your first thought this morning? Which women will you engage with today?*

These are some of the deceptively simple questions that workshop leader Hannah Stone asked participants at a series of creative writing workshops run by the Electrifying Women project. The questions were designed to help participants imagine what it might have been like to be a woman in engineering in the 19<sup>th</sup> and 20<sup>th</sup> centuries. If the questions appear straightforward, the same cannot be said for the answers, which have taken form in the poems, diaries, letters and other works of fiction that are presented in this volume and the previous volume published in early 2020, *Electrifying Women: From Fact to Fantasy*.

I had the pleasure of being involved in the initial workshops, so I have experienced first hand the creative communion that has led to this sequel. The second series of workshops – and resulting anthology – are all the more remarkable because they took place virtually during the nationwide lockdown following the spread of coronavirus, and they had global reach, being part of an international festival.

These workshops formed part of the Electrifying Women project, which, in conjunction with the Women's Engineering Society centenary celebrations, sought to share the little-known stories of women's role in engineering in a nationwide programme of events, Wikithons and workshops in 2019/20. In spreading knowledge of the versatile contributions women have made to engineering, the expectation is that more girls and young women will be encouraged to see themselves entering the field. This might then improve the UK's current standing, as we are as the country in Europe with the lowest percentage of women engineers.

But what happens when the historical sources needed to tell the stories of past women in engineering are not in the archives? How then do we tell these stories? This is where Hannah's workshops came in. Through the creative responses of the participants, based on the prompts about historical women engineers provided by Hannah, these two volumes build an 'unofficial' archival source for understanding women's place in engineering, using a range of genres of writing including poems, and some very telling correspondence, harking back to a time when letter writing was a crucial medium of communication.

They offer something more than that too. The majority of the workshop attendees, and those who offered work for publication, were women. The stories of previous generations of women, who were repressed, curtailed and under-valued, offer a conduit for women now to express anger, frustration, and the desire for an equal and inclusive future. Still, the resounding cry from the writers is positive: resilience, ingenuity, humour, tenacity – and hope – can all be found in this volume, created during a time when hope might have been hardest to find.

Emily Rees, Research and Engagement Assistant for the Electrifying Women project

## Preface

In 2019, I was privileged to be involved in running a series of creative writing workshops which led to the publication of *Electrifying Women: From Fact to Fantasy*, an anthology of writing by participants in the workshops, members of WES (Women's Engineering Society) and other interested creative writers. The poems and prose pieces contained in this slim volume grew out of responses to an outreach project timed to publicize the centenary of WES (Electrifying Women: Understanding the Long History of Women in Engineering, grant ref. Arts and Humanities Research Council grant ref. AH/S012702/1). The booklet itself (in PDF format), together with all the workshop materials, is available at <https://electrifyingwomen.org/creative-writing-pack/>. As an outreach/impact activity it proved very popular, offering an unusual alternative to factual research by inviting participants to put themselves in the shoes of the earliest women engineers, to imagine, or recreate, cryptic, suppressed or forgotten elements of their history. The majority of the work in the anthology was written by women, although men were not excluded from participating.

During lockdown, in common with many other communities, we needed to find an electronic means of continuing to engage with potential writers who were enthused by this project. Graeme Gooday, Professor of Philosophy, Religion and History of Science at the University of Leeds, facilitated an online version of my workshops, which was delivered as part of the British Society for the History of Sciences festival in July 2020, where I worked with Carol Long, Helen Chase, Jennifer Godfrey and Helen Howard whose work you can see here. Many thanks to Graeme, and Emily Rees who provided help with the editing and administration of both volumes of creative writing. We were so excited by the emergence of fresh creative responses to 'electrifying women' that we decided to publish a second volume. Thus was *Even More Electrifying Women: the 'can't lockdown creativity' edition* conceived. I used some local networks in West Yorkshire to raise more interest. Some of the contributors to the original volume found fresh inspiration, and by the wonderful osmosis of the digital world, our outreach elicited responses from Spain and Germany, proof that you cannot lock down creativity, or quarantine the mind. I hope you enjoy reading our work.

Hannah Stone

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*Bertha Benz Upholds Heroes of the Car Industry*  
 (for June McCarrol, Bertha Benz, Mary Anderson, Florence Lawrence)

Don't tell me to smile  
 your words are stinging flies  
 buzzing in my ears  
 spitting bamboozling poison  
 You wouldn't believe me if I told you  
     men are filled with greed  
     & love to speed over  
     bleeding women's ideas

If I had *stayed put* and not driven 66 miles  
 you would have never become  
     a success  
 I put leather on your worn-out wooden brakes  
 I've discovered somewhere new to stick your gear shift  
     when you feel the urge  
     to go up hills     Mr Benz

Without Florence's auto signalling arms  
 no motorist knew which way to turn  
 Next time you men want a back scuttle  
 notice her flashing stop brake light

I'm tired of hearing *we're weak-minded women*  
 you don't give a damn or know how we think  
 We're nothing more than men's rutting posts

The world looks through men's eyes  
 aroused by curvature of women straddling Model Ts  
 her lips her eyes her hips her stockings  
 but are threatened  
 by women in overalls

holding a nut-tightening spanner  
 or June brandishing a brush  
 to actually paint the centre line herself

You think Mary's windshield wipers dangerous?  
 If it rains or sleets     don't push her buttons  
     there is a world of things  
     that will be lost

Remember spark plugs  
 are ignited by the same fuel as pistons

Kathleen Strafford

*Do Her Ovaries Get in the Way of His Thinking?*

he thinks she doesn't pass the Turing test  
as if she is too queer  
not suitably dressed

he is like a robot  
won't acknowledge her neural networks  
yet she is digital in every limb

while his software claims to be open source  
she climbs heavy ladders  
to get inside the wires

he thinks Occam's razor  
is predicting certain genitals —  
women hypothetical

he's heard she has no spiking  
neural networks mistakes  
her for a sexbot

his opinion too heuristic  
needs open mind common sense  
and superior analytics

fuzzy set: he decrees  
only binary will do  
1 = he 0 = she

not artificially intelligent  
she fully comprehends  
she enhances his humanity  
adding names to his reality  
Ada Amy Laura Annie  
works autonomously is capable  
stays tough and durable  
creates adaptive algorithms  
sister to the pattern of bees

Moira Garland

*Dear George*

My dearest darling George,

My mind is made up. I am off to London. Today. Now. I had planned to discuss it with you over supper this evening but I cannot wait. The matters are pressing, increasingly urgent to resolve. Challenging the Magistrates Court when I stood before them for Hebden is not enough. Their all male constitution is replicated everywhere: the government needs to listen and women must be given equality, including the right to vote.

Whilst I am gone I urge you to continue the completion of our project improving the latest lathe design. As discussed, this one further adjustment could really make all the difference to the engineering capabilities of the machine and therefore our sales. Please see overleaf another diagram for the side fixing that I believe will remedy the difficulties we found in the workshop yesterday. Sorry it is so rushed and that I could not guide you through it, but I'm sure you'll understand my George that my mind has been rather full of late and this idea has only come to light whilst I was going about my preparations for my journey to London. It's strange how one's mind does that, isn't it? When it is thinking about one matter, another rises up and requires one to scribe and draw in order not to forget it. If any further ideas arise whilst I am away I will be sure to record them ready to share with you on my return. I will be back in a few days in time to make the final preparations for our new lathe design demonstration day. If you try this design in the meantime we can discuss any further enhancements when I return. I have high hopes for this design fix!

Oh, and just quickly let me forewarn you. When you sit in your parlour to smoke your pipe this evening my darling, please do not be alarmed by the missing drapes. I have them packed and will be taking them with me to London. Dear Annie Kenney, the Lancashire tenter you will remember I've been corresponding with, sent word that the movement needs some heavy duty fabric to create banners from. These are ideal for such a project and as they are ageing and smoke damaged, it seems a fitting end for them. Oh to see our drapes being paraded through the streets of London! It is of course likely they will only be used a short time, such is the feeling of uprising and hope of success within the union, but they will be very useful nonetheless.

Please make sure you give little George a goodnight kiss from me. I love you both dearly and will see you soon enough.

Your loving wife

Laura

*Notes on this imaginary text: Laura really did participate in a weavers' strike at Hebden Bridge. She was arrested and when she appeared in the Magistrates court challenged its legitimacy because it was exclusively male. She was sentenced to 14 days in prison. On release she said, 'I went to gaol a rebel, I have come out a regular terror.' I invented that she knew and had been corresponding with Annie Kenney, a Lancashire tenter (weaver's assistant) although they could have actually known each other. I wanted to have Laura go to London to participate in a Women's Social and Political Union rally at Caxton Hall, be arrested and imprisoned in Holloway for 14 days. I loved the idea of Laura never knowing that her parlour drapes would, 100 years later, be displayed in the Museum of London's women's suffrage collection. Laura and George Willson really had a son, George, born 1900, so only 7 years old at the time of this imaginary letter.*

Jennifer Godfrey



*Engineering Time with a Mistress*

It is always hard to get you utterly to myself. I bide my time. You are beautiful. Everyday men gather around you. They appreciate your strength and your curves. You gleam and they admire. The governor limits your work rate, we mustn't exhaust you. They feed you often and balance what you consume. They are attentive and careful.

Later, when the rush is gone, it's my turn. I clean your room. Sweeping away the dirt from their muddy boots and removing the detritus fallen from their pockets as they walked around admiring your attributes. I top up your water glass for the last time today and close the door.

Alone, finally, I mop the moisture from you and watch you move slowly to rest. I massage oil into your weary joints. You've hardly slept before it is time to start again. I keep you warm. I wait upon you through the night. We doze within the same space.

In the morning, I make you up for the day. I overhear, 'It has been strange to have women looking after the engines. The lass does as a substitute for your Tommy. Will he be home soon now they've surrendered?'

Carol Long

*The Engineer Regards Her Creation I*

How beautiful he is. He has almost surpassed my expectations.  
 If there were others, they would call him a Miracle.  
 Miracles are for the future.  
 This is simply the way things are.

Omniscience is exhausting ...

Free Will is a mistake, I see that already.  
 He will use this perfect body as a blueprint:  
 his lungs to power furnaces,  
 his heart to drive the machinery,  
 his penis to model the weapon.

How am I to stop this?

I will give him a different hunger:  
 I will fashion him a companion in my own image.  
 I will take a piece of him from the place nearest his heart,  
 so that they will be always yearning to reunite,  
 and they will worship one another,  
 and through one another, me.

Omniscience is exhausting ...

Curl up in my lap, little serpent, while I think.  
 Let me stroke your jewelled head.  
 Don't look at me like that ...  
 I fashioned you too, remember?

Pamela Scobie

*The Engineer Regards Her Creation II*

I draw the sheet back from his sleeping face.  
He is stilled now, after the storm of coming into life.  
How beautiful he is!  
My Miracle.

Free Will was *her* mistake. I shall not replicate it.  
I have reassembled only the finest elements.  
He will not die until I wish it. He is without sin.  
He needs no Redeemer, no companion,  
no other God but me.

My fingers trace the map of my making him,  
the lovely ley lines of his scars,  
the scorch marks on his palms and temples.  
How perfect he is, every sinew, every muscle!  
I know, without turning him, that his shoulders are like scallop shells,  
his back curved like the stem of a cello.

I lean closer, scenting the cordite of his sweat,  
and test his mouth's warmth with my own;  
I breathe in his living breath,  
and his eyelids tremble ...  
I murmur words I never knew before, a mother's words:  
*My sweet, my dear one, my beloved.*  
*Be not afraid. I will let no harm befall thee.*

I feel his heart thumping in all my veins,  
and I am dizzy.  
What power there is in him, even when sleeping!

It may be necessary to make modifications ...

I check the manacles, replace the sheet  
and lock the door behind me.

In the small window, slashed jagged by the rain,  
I catch the glitter of a serpent's eyes.

Am I the monster?

Pamela Scobie

*In Response to a Message in a Bottle*

*If you are reading this then hand immediately to the United States Navy. Navigator Fred Noonan. and I were flying from Lae, New Guinea to Howland Island when we encountered a freak storm and subsequent engine trouble. We completed an emergency landing off Gardner Island some 640 kilometres south east of Howland Island where we are currently stranded in the western Pacific. The United States Navy are fully aware of my expedition to fly around the globe. Yours, with hope, Amelia Earhart (1937)*

*The Search*

Decades on, out goes The International Group  
For Historic Aircraft Recovery (TIGHAR  
For short) to Gardner Island, today  
Named Nikamuroro.

Without a trace was the outcome.  
Then goes ocean explorer Robert Ballard  
(If anyone was going to locate Earhart's  
Aircraft, it would have been him).

Without a trace was the outcome,  
Save for this message in a bottle.

Mark Burrow

*In A Northern Territory*  
*24 May 1930*

Approaching eleven-thousand miles  
With only 'Jason' for company,  
We descend over the teal lustre  
Of the Beagle Gulf.        Ahead,

The Northern Territory welcomes.  
We land on the golden sands, its dust  
Shadowing my glory. I wipe clear  
My goggles, shudder to a standstill

In this Gipsy Moth named 'Jason' where,  
Together, we left Croydon bound for  
This settlement of Darwin:  
   a first for us both.

Mark Burrow

*The Continuing Saga of Sally Smith*

Sally Smith, engineer extraordinaire,  
has set her sights on discovering  
the intricacies of God's mind.  
Over-ambitious, you might think.  
An engineer with an inflated notion  
of her abilities. Perhaps – but she  
has melded physics and practical  
acumen to imagination and formed  
a pact between mysticism and mathematics,  
mechanics and magic.

She has unravelled the knots  
of string theory, pursued time  
back to when the Big Bang was just  
a whimper. And for years she searched  
for the engine of creation,  
the sparkplug of existence.

She wanted to see behind the veil,  
to take a slide rule and measure  
the tectonic movements of the galaxies,  
their shifting drift towards infinity.  
She would not be satisfied  
until she parted the veils of night,  
the dark mystery cloaking the Divine.

We must applaud her ambition,  
her scientific fervour, but we must  
also blench at the scale of her hubris –  
her desire to be on an equal footing  
with the Master Engineer.

Bill Fitzsimons

*Visit of WES to Wolf Safety Lamp Company, Sheffield. 1936.*

A group of women gathers on the step  
in dusty coats of grey and brown and black.  
The photograph commemorates their trip,  
captures the well-worn bags and dodgy hats.

Reared for marriage, motherhood, not careers –  
no proper jobs, no votes, no birth control,  
discouraged from studying for degrees,  
some girls might settle for domestic roles.

But in this group are skilful engineers,  
managers, innovators, inventors  
running engine sheds, shop floors, factories,  
steam laundries, electrical contractors.

So, what this modest photograph reveals  
are women with guts and intellects of steel.

Liz McPherson.

*Note: My sonnet was inspired by a wonderful group photo on the WES website of The Women's Engineering Society visit to the Wolf Safety Lamp Company, Sheffield, 1936 (reproduced by kind permission of the Maurice-Jackson archive. Copyright: Wolf Safety Lamp Archive.)*

*Love's Laces*  
(i.m. Ada Lovelace)

Her *Notes* were the lute that laced the codes,  
the foundation of programming; the lady's *Objection*  
a century ahead of its time.

Never in the footsteps of her poet father,  
she followed Somerville, Babbage, and De Morgan.  
MINT on her mind long before that was a thing,

she provided the basis for Margaret Hamilton  
to have men move into space, set foot  
on our moon safely. Yes, men!

Death spared her the nuisance of witnessing  
this, another, injustice; she, whose interests  
contravened all social norms. Her eye level

encounter with Charles was no matter of course,  
would probably not be one in our day still  
when women have long since moved into space

as well, spiked with computers and computations,  
when we tend to forget: her analytical love was  
the lute that laced the codes.

*Notes: Mary Somerville: astronomer, mathematician, Charles Babbage: mathematician, philosopher, inventor, economist, Augustus De Morgan: mathematician, Margaret Hamilton: leading software engineer for NASA's Apollo programme. MINT is the German equivalent of the English acronym STEM (Science, Technology, Engineering and Mathematics).*

Sven Kretzschmar



*Rain*

*Feel it on my fingertips  
Hear it on the windowpane  
Rain is where the heart sings  
I feel it – it's coming*

A procession of women  
Appearing out of the mist  
Rain, warm, insistent.

An excursion together

*Rain is where the heart sings  
I feel it – it's coming*

Young women at the front  
Unaccompanied by men and dogs.

They must be from a different place  
This women's conference at the banks of the river

*Stone when you are alone  
Stone when you're walking on the street  
Stone when you're walking to the door  
Everybody must get stoned*

*Rain is where the heart sings  
I feel it – it's coming*

All the women had an air of optimism,

Even in the rain  
Nobody is gonna stop them  
Marching, walking forward into a new existence

A break with the past  
Out of the comfort of home.

It's a land army  
Setting fire to the rain.

Can you imagine  
A feminine arm working a lathe  
Turning out parts  
For a future Space Voyager

A female mind  
Working quantum chromodynamics  
In a Cern environment  
While cows mow the field around

Aniko Rakai and Manuela Cirilli  
Worked on the Atlas Detector  
At Cern working on the way things happen.

Aniko considered how air moves in fluid mechanics,

Manuela considers medical applications  
 To develop cancer therapy using hadron beams  
 Italian studies, at 18 visited Cern  
 Both mainly work with men.

*Rain is where the heart sings  
 I feel it – it's coming*

Testing tensions in a ring  
 Women beating a pattern  
 Engineers all the time  
 Writing their signatures with invention

*Notes: Quotations are based on lyrics from Rain by Madonna and Rainy Day Women by Bob Dylan.*

*Manuela Cirilli: 'The nicest compliment I received was from a child who said to me: "You're a normal girl!" and "Follow your dreams: you won't regret it."'*

*Aniko Rakai: 'The only way we can achieve a male/female balance in the sciences is to show young people the full range of scientific professions while they're still at school.' They both worked on the Atlas Detector project at Cern.*

David Cattanach

*Recycling the Past*

Creating a new situation where neutrality  
 is impossible  
 signals sent down the line  
 oscillations  
 leaking over low margins  
 slow speeds  
 high resistance  
 to the immutable colleagues  
 stuck in the 80's  
 Recycling the past  
 they may say she thinks with her hormones  
 The delicate fragility  
 of their sensibilities  
 the unbalanced legs  
 of A and B

She the pariah  
 in her own place of work  
 She the vassal  
 he the superior  
 Duality  
 Her own protagonist  
 Her own character  
 in a real moment of her life  
 the master of herself

Twists in the network  
 noise on the line  
 this circuit is defined as  
 Porous copper, turquoise corrosion  
 nodes  
 jointed by hand  
 Bags of scrap metal  
 melted  
 recycling the past

But atop the telegraph pole  
 the working steps are level  
 Leaning back  
 one must trust  
 the delicate fragility  
 duality  
 of A and B

Steph Jones

*Women's Work*

My friend Alison and I  
stand on the touchline every Sunday,  
watching our boys play football.  
Most of the other parents are dads,  
we're just the mums but turn up  
every week to cheer the team on, rain or shine.

It doesn't matter when or where, we are there  
(though we don't care about the offside rule  
or why the ref gave a penalty just then).

While the boys battle it out on the field  
we talk about music, books, cooking,  
which holidays are the best, how cold  
our feet are and (very rarely)  
we wonder if the ref was looking.

What we don't talk about is work  
and nobody would ever know it  
but she's a Professor of Engineering  
and I'm a poet.

Liz McPherson.

*Things That Need Not Be*

Flick the switch  
the man has installed,  
the electrician capable of the trade.  
You'll need light to read your books

bearing witness to inventions  
by Ford, by Da Vinci and Nikola Tesla.  
Like Yeats with his words you'll have to learn  
your craft and study that which is well-made

for a chance, the dream to be  
the next Alice Parker or an Elion  
for Epson, and to show them engineering  
is not a matter of sex or gender.

An inventor of the unthinkable  
maybe: a new Land-process for digital photography.  
Or a pioneer-engineer of future  
eco-friendly, non-polluting, and sustainable

aerospace engineering. Things that need not be  
related to famous men only. A drafting table  
does not care for your sex and there is no gender  
in 'engineer'; its initial letter the same

as in 'empowerment', 'equality'. The world  
needs women to construct its better version,  
to draw and weld and invent its improvement  
into being. One day, little girl,

the books will bear witness to your name too.

*Note: Gertrude Belle Elion, a pioneer in chemotherapy.*

Sven Kretzschmar

*You Don't Ask an Engineer to Make Coffee*

When the first woman came to work on Apollo 8  
the team had to be briefed.

Concerns were raised and questions asked:

What kind of name is that?

Can she make good coffee?

Does she smoke a pipe?

Poppy is an engineer, you-all. Get used to that.

In a sea of slide rules and Y chromosomes  
her specialism was Return-to-Earth.

Flying craft to orbit for eternity was done  
but, returning men from beyond Earth's atmosphere?

Her trajectory path could bring death near  
or worse. One moon-side miscalculation,  
you just can't bring them back.

Carrying the same burden, 300,000 miles away,  
live on camera for a hungry public feed  
they wait: hardly breathing, hearts barely beating,  
wait for Apollo on the dark side to appear  
every second it is late, terrifying –  
then, a signal beeps. Comms with the capsule restored.  
"I brought them safely home, that's my job," Poppy said.

Wanda Phillips

*Katherine Johnson*

Dissed for getting murderous sums right  
How could she and nurse baby at night?  
Worst of all she's the colour of night  
But she got them to the moon  
On time

Treated like a skivvy  
Sent miles to Black girl's lavvy  
Banned from the whitey's cafe  
But she got them to the moon  
On time

A genius in mathematics sphere  
She bettered all her Houston peers  
Made Spacemen safe through our atmosphere  
And she got them to the Moon  
By '69

Ben Lowe

*The Electricity Deity*

Hertha is Mother Earth  
Enshrined in a laboratory –  
Rays shine from her lamp.

The enigma to solve:  
Hissing, sputtering turbulence,  
Arcing unbounded.

Adventurous mind  
Yearning to elucidate those  
Ripples of shore grit.

Trench gassing dispersed  
Over the vast killing fields –  
Netherworlds undone.

Manuela Palacios



*Rachel Parsons as Atalanta*

A mythical virgin huntress  
Daughter instead of a son  
Difficult woman of her time  
The lure of three golden apples  
Parties, property and power  
Sailed her own Argonaut  
Built her own Leviathan  
Tunnelled her own demise

Helen Howard

*The Lady's Maid*

Dear WES Archivist,

I have been reading your archivist's blog with interest. I see you have been puzzling over some of the founder members' references to a "mysterious Lady Maud and her daughter, Lady Caroline."

Your supposition that they were not members, but part of the social circle is supported by my own research in our family archives. Lady Caroline was my great aunt and her younger brother (the surviving heir, Henry), was my grandfather. Many of the members you mention are also named in our archives.

We continue our 999-year lease of a small country estate in Warwickshire. The archives since 1780 have not been properly catalogued, with each generation simply building a new cupboard for their own material. As a retirement project, it is both a ridiculously large undertaking and a treasure trove of joy. Some of the things in the letters are such a social comment on their period!

I'd be delighted to meet you and show you the archive. Meanwhile, I came across a small bundle of Lady Maud's letters this weekend that I think you will find interesting. While none of the letters are dated, Lady Caroline's reference to Kitchener suggests that letter is June 1916, and it is possible that Ralph's reference to Sappers and new ideas is from his work with the Royal Engineers Tunnelling Companies which correlates in date (May 1916 until Arras in spring 1917). I am attaching images of these documents.

Yours sincerely,

Lady Sophie

*The correspondence*

My dear Lady Maud,

Thank you for joining us at the Officers' Ladies' Luncheon. It does so help the circulation at coffee when all the colonels are represented. Some of the junior officers' wives are now so young, and we have so many widows whose only seemly social outing is to join their regiment's lunches. To think we thought it was a skirmish to be all done in time for Christmas before last.

On a more personal note, I am so glad to help with the search for a suitable maid for your daughter Caroline. I do appreciate why you are reluctant to advertise in *The Lady*. It is perfectly understandable that she should have an interest in her father's profession. However, even in our current world when women are filling places while men are away at the Front, some would say it isn't seemly for a lady of our class to work with mechanicals.

I have spoken to Henderson, who was one of the General's captains at Bloemfontein. He tells me Sally is an able girl. While it is most unusual, I can see that teaching her numbers and letters has helped him recover from his injuries. He is much more the young man I remember from those regimental dinners. Such a time ago when we were all young dancers. He will miss his young helper, but it is now inappropriate that a young woman follows him around the estate. As keen as she is to learn, her mother and I agree it is time for the girl to make her own way in service. Groom is an efficient housekeeper and has taught her daughter many of her skills.

I am delighted to accept your invitation to tea on Thursday and look forward to a turn around your garden with young Henry and Lewis. I shall bring Sally with my party so you may interview her. I instructed her to write her own acceptance for the interview and, in doing so, answer the questions I know Caroline had about the duties she expects from her lady's maid, though they may be unusual.

Until Thursday, your sincere friend,

Henrietta

Dear Lady Maud,

Thank you for your gracious invitation to interview on Thursday afternoon. Lady Henrietta tells me you have asked me to write my life story to show how I trained to become a lady's maid for a lady engineer.

Like most lady's maids, I was born into a family in service. General Sir George and Lady Henrietta are resident in a large country house estate in Warwickshire. My father is a stockman-groom. My mother is assistant housekeeper. The estate's assistant steward returned from engineering in the Boer War. As a child, I was fascinated by counting and he kindly noticed. One of my early duties was collecting and recording the eggs from each coup or barn. Mr Henderson encouraged me to write the egg counts in his ledger and taught me to calculate yield and food needs. He instructed me in penmanship, technical drawing, algebra puzzles and trigonometry.

After I reached twelve years old, the estate started to build a new canal to improve the watering of crops. Mr Henderson gave me many tasks in writing up his notes for design, calculating materials and time. I have recorded the men's work over the past two years and assisted in keeping the accounts for the canal. He has permitted me to make copies of some of the estate records as my apprentice portfolio to bring to you on Thursday.

My mother has taught me the skills of dressing a lady, including hairdressing and make up. I am proficient in caring for and mending ball gowns, ladies' day dresses and work clothing. I know the appropriate ways to clean jewellery, ladies' shoes, and work boots. I have a sampler of my needlework to bring to you. As you will be aware, we had an unfortunate fire on the estate last year. I assisted in nursing the injured and continued as Mr Henderson's mother's day nurse, maid, and companion for as long as she lived.

Mother has also shown me some duties not expected of a lady's maid but which may be useful to you. I know how to clean kitchen utensils hygienically when they have been used for other purposes on the estate, such as making horse liniment from Epsom Salts. I can also cook a breakfast menu, and make cheese from milk, bake bread, and cook soups.

I look forward to meeting your Ladyship and Lady Charlotte on Thursday.

Your respectful servant,

Sally Groom

Dearest Mater,

I can't say life is cheery here, but I am learning many new things. We have some new machines in the works with the sappers. I've passed the details to Caroline through official channels. I'm sure the men (and I now hear women) working in the old place can make something useful.

Talking of my dear little sister, I may have upset her somewhat. I am sorry, I must ask you to smooth things over. It is all rather awkward from this distance. I'm about to ship out and we have been told the mail may not be reliable for a month or so. I'd hate to think she thought my intentions were for other than her benefit.

As you'll remember, I got quite chummy with some of the engineers before this thing started. One or two of them have done their bit here and gone back home into the Works. We have kept the letters going. One of the chaps mentioned that he felt a little pushed aside by the girls. I mentioned it to Caroline. I really didn't understand his comment about her maid, but I passed on the warning. I seem to have stepped on corns. I was only trying to help but it appears that what I might say over dinner doesn't work so well in a letter.

Please tell Henry he can use my cricket bats, boots, and whites. I'm sure the valets will be able to dig them out. He will keep growing out of his own boots. I don't expect to be back for this season, there is still much work to do here. I hear there isn't much cricket being played, except in school. It will a good excuse to buy fresh flannels when I am home. I hope you'll forgive me a little extravagance after years in army boots. I will write to him myself but I'm running short of minutes before the mail goes.

Finally, I know a lot of estate business falls on your shoulders with Papa and me away. Though it might be poor form for a chap to say such, please know that I am immensely proud of you.

Your loving son,

Ralph

Dearest Maman,

Thank you for your note. I was somewhat sharp in my reply to Ralph. I realise he only means to help. I have sent him a note that I hope reaches him soon. As you say, he probably has much to think about, yet he always concerns himself with how we are going along without him. Papa is the same. I received seven letters this morning through official channels reminding me of things we have already done. He knows I can't send a full report back so has given me a code to reply in my letter.

I am heartily glad Henry is still too young to have an opinion. It is good to have one member of the family with whom the conversation is mainly cricket or anything other than the Works. Like us all, he seems downhearted about Kitchener.

We have settled into the Derby house. You will be amazed how quickly we had it organised. I have a housekeeper-cook, Mrs Susan Anderson, and a maid of all work, Ellen Jenkins, to assist. Sally presents a nourishing working breakfast and lunch at the Works. Of course, Sally has not been afraid to work hard with the others on the house. But I can't bring myself to call her 'Groom', which initially annoyed Anderson. Now that Anderson knows it reminds me of fabulous formal dinners with the General and Lady Henrietta, and our frivolous pre-war parties, she is doing her best to cheer us all with her menus.

The Works are a different matter. We are stretched to keep up with the orders. Many of our skilled men are away. Those who have returned are less able than they once were. They are determined to be the engineers and technicians they were before all this started, notwithstanding damaged limbs. The battered minds are more difficult. There are able engineers who have forgotten basic formulae or struggle to manage a tool they used to use instinctively. Now, I insist (blaming the Ministry) that everyone must be shown the prescribed way to use every tool and that work is on the standard reference sheets for every job. Some of the men jump into a fighting stance if the winch handlers mistime their work and drop their load. I had to make a fuss about safety and not damaging equipment or work in progress. It is easier on the men to assume I am being an overly compliant or agitated woman than to realise that I am aware of, and making provision for, their friends' brokenness. I have employed women and apprentices to fill some of the vacancies. Their training is progressing well but far too slowly. Imagine the Works at its busiest but only manned by 14-year olds and you might appreciate the situation. I have had to rely on Sally to teach them some of the basics so the men and I can get on with our work.

Ralph was right about the dissent in the ranks. I called all the men together (not the apprentices) and explained the mountain we are facing. I asked them all to work with me and each take on a section or two. I explained that because there was only one of me working late into the evening, I would frequently get Sally to write up my notes for them. I asked them to treat her as if they were educating me, because, in a way, that is exactly what they are doing. If you suspect I might be a little over-reliant on my maid, you may be right. She picks up concepts that I struggled with when Papa tried to educate me. Now the men understand the situation, they are beginning to see her as useful too. I often find that designs come to me properly drawn and annotated in her hand with one of the men's names upon it. When I walk back to the men to discuss it, they happily countersign without a second glance.

There won't be a summer closure this year. I'm going to miss Groom's parties for a few more weeks. We must keep producing machines to be shipped to the Empire. I wonder if Ralph will see any of them on his travels.

With much love,

Caroline

Dear Lady Maud,

Thank you for your thoughtfulness in passing on the package from Lady Henrietta. Thank you for your own letter of condolence.

I will miss Mr Henderson. His kindness and teaching have given me some most unusual opportunities. It brings comfort that during his last days he was told of my small efforts to help at the Works and was cheered by the news.

The gift of his estate office drawing set I will treasure, and I will use his pens every day. Please accept my gratitude for the time you took in forwarding these. I will send thanks to Lady Henrietta separately.

Your grateful and loyal servant,

Sally Groom

*Notes on the Story*

*The original WES membership showed the number of ladies with courtly or courtesy titles, and I wondered how they found staff suitable to their status and vocation as women engineers.*

*I imagined a researcher stumbling across letters in Lady Maud's archive many years later. These letters illustrate the class divide with the strict etiquette in how people of different classes are addressed: I specifically wanted to show the educational gap which prevented talented women of the lower classes entering any profession. By showing a servant girl getting an unusual education and a Lady wanting such an unusually educated maid with the pointed comments in the correspondence, I hope to draw attention to how remarkable such events would be. All characters are fictional, though specific sources were used to inform my narrative.*

Carol Long

*Twins, or Why a Young Man's Ego is No Match For a Woman's Intelligence*

Father sits at the dining table with his elbows on the edge, hands folded over each other, his nose resting on his knuckles, and eyes closed. I consider waking him, then I realise he is thinking. I leave the dirty crockery where it sits holding down corners of father's drawings not wishing to disturb him.

At the kitchen table my twin brother Tom sits chewing a pencil and staring at drawings. He is more awake. I lean over and need my curiosity fed, 'What are you and Pa puzzling over?'

'Engineering,' the subject was closed as far as Tom is concerned.

I gather his plates and take them to the sink. I find some brass weights from the storeroom and place them on the dining room table so I can retrieve Pa's cups and saucers. He smiles, 'Thank you my little maid'. It's a term of endearment. My curtsy is met with a puzzled frown.

I meet Tom coming through the door waving his pencil and he nearly knocks me flying, 'Sorry old girl! Pa, I've had a thought! What if we ...' I leave.

Back in the kitchen, I continue with the washing up and clean the scullery. We haven't had a maid for a while, not since I left school and Tom went to work with Pa. The cold tap needs fixing. I find Pa's house toolbox and replace the washer. Pa comes into the kitchen as I am putting the box away. 'Is all well?'

'Yes, Pa, I just needed a new washer.'

'An engineer's daughter will make for a practical wife, eh? Will you make some more tea? Tom and I are puzzling away at this water system.'

'Yes, Pa. What's wrong?'

'The pump isn't making enough headway. We'll fix it. It's probably something obvious.'

'I'll bring the tea through.' While the kettle boils, I look at Tom's copy of the drawing. Pa is right. It is obvious. The pump has been fitted backwards because of the odd shape of the platform. I start the tea brewing and double check my theory. Then I lay the tray and take it through to the dining room.

'Thank you, my pet. Can you put it over there while I rake over these coals?'

'Tom,' I ask innocently, 'is this a new type of pump? It looks backwards compared to the one Pa explained last week.'

'No Louise. It's not new.' I watch the penny drop with Pa as he stops raking the fire and walks back to the table. Tom hasn't taken the clue.

'Oh. When you're not so busy Pa, can you explain this one?'

'Yes, my little muse. I will as you have been paying such good attention.' My father's proud smile is for me. 'But first, Tom can you calculate if that platform is correctly positioned please. Then we will look again at the position of the pump.' I pour the tea and take a seat at the other end of the table with my sewing.

Carol Long

*The Engineer's Daughter*

on the concrete factory floor  
steel shavings glint

oxyacetylene flares

machinery grunts, grinds  
to a standstill

the engineer's daughter

returns to her thought-room  
dreams up

an impossibility  
a second-splitting machine

that will transform time

into colossal elongations  
of experience

she wrestles with the design  
the floor – a disarray

of screw-balled paper

and settles for a blueprint  
a fantasy, a poem

the only place

her time-expanding, cranky  
invention can exist

Linda Marshall

*Dearest Nancy*

Dearest Nancy

I simply just had to write  
 I hope you are well  
 And that Bill is alright  
 Things are progressing  
 More slowly than expected  
 With my plans and dreams  
 My designs have been rejected  
 The whole thing with Asters  
 Has been a debacle  
 So I'm going on a Highland adventure  
 On my new motor bicycle.

Much love  
 Verena

Dear Verena

It was terribly good of you to take time to write  
 I'm glad to hear you have a new motor bike.  
 How exciting!  
 Baby Pam's not sleeping and Bill's away.  
 I'm afraid I don't have much more to say.  
 Love Nancy

Dear, Dear Nancy  
 I simply had to write again  
 I'm off to America soon  
 Developing the locomotive train  
 I'm travelling alone  
 Earning money for myself  
 Such exhilarating fun  
 Nothing bad about being "on the shelf"  
 I'm glad to be on the next ship  
 Please write of your news,  
 whilst I'm away on my US trip.

Much love  
 Verena

Dear Verena

Thanks again for your letter  
 I wish I could carry on learning  
 Make my life better  
 But Bill takes very good care of me  
 At home with the baby  
 Is where I must be  
 I'm looking forward to seeing you and Claudia  
 next week  
 A swanky club in London just such a treat  
 Bill's given me an extra allowance to buy a new  
 dress  
 I'll get my hair done if I budget less  
 Love Nancy



Dearest Nancy

It was lovely to see you  
 But I really must say  
 Your lack of confidence  
 Really gets in the way  
 Your mind is still good  
 If you can find purpose to use it  
 But you're married now  
 You're likely to lose it.

And as for watering down your drinks!  
 Just to stay sober?  
 We used to have such frolicking fun  
 Behaving like imbeciles  
 And speaking one's mind  
 Comfortable friendships from college days are hard to find  
 Much love V

Dear Verena

Bill came home  
 We had such a wonderful time  
 Oh Verena  
 What Bliss  
 You simply don't know  
 What passions you miss

Love Nancy

PS I'm pregnant again due in  
 April

Dear Nancy  
 We've argued about this  
 I really can't see the fuss  
 I'm happy as I am walking the hills and being free  
 That's exhilarating bliss  
 That's enough for me

PS Congratulations

Helen Close

### *Engineering a Dream*

"Are you meeting him again tonight, Pol?" asked Ellie, over the noise of the machines. Her arms ached as she pulled the fangle through the widget for what felt like the millionth time. It probably was the millionth time Polly looked up at her sister and rolling her eyes.

"I've really had enough of him, I'm going to tell him it's over." Ellie thought about Bertie. He was a lovely man, slightly older than Polly. Her sister was lucky to have his affections, especially when so many men were away. He'd escaped going to war on account of his limp, so Polly said. He was a good-looking young man, coachman to the owner of the factory where they worked. They had started working there when Polly was 14 and Ellie was 12. Then they had been working as hat girls. On the machines all day, sewing hats for the rich folk. Now the sewing machines stood silent and idle at the back of the factory. Now instead of hat girls they were known as munitionettes.

"Misses Weatherheads! Stop talking and get on with your work" the owner's wife reprimanded sharply with a bash of her baton on the workbench, sending a cloud of powder-dust in the air. Pol coughed.

"Stupid bitch", Pol whispered into her sister's ear.

....

Ellie hid from view as she looked through the dirt of the window above the doorway. The light was beginning to fade. She could see Bertie on the street below and hear her mother's voice at the door echoing up the stairs. Bertie paced back and forth, his limp looking distinctly awkward.

"I will marry her if that's what it takes."

"She doesn't want to see you, she doesn't want you. She's gone to bed."

"Here then, let me give you all I have, help her with whatever she needs ... "

He fumbled in his pocket and thrust some bills in the direction of Ellie's mother. All Ellie could see was her mother's hand pushing the money back at him.

"We don't need your money. Now go before I shout for the constable."

"Oh for goodness sake! Why won't he just go?" Polly had appeared beside her and was looking over her shoulder now, at the scene below. "I don't need him!"

....

"Have you seen this?" Ellie's voice cracked as she waved the torn newspaper at her sister. "They've all but named you" Ellie's blood was boiling.

"What of it?" Her face had paled to the colour of the powder but her face was expressionless.

"A baby, Pol? It says you told him you were having a baby. Is that why he was trying to give you money? Are you? And who is this other man? You've never even been to London ... " Polly shrugged again.

"Well, he wouldn't take no for an answer, when I tried to break up with him. I tried to say I didn't want to be a wife, I can earn my own money. I might even go to college when the war is over. Get a degree in engineering. He wouldn't listen. Couldn't understand why I wouldn't want to be his. Like he was even worthy of being a soldier!"

"So you told him you were with child? By another?"

Polly shrugged. "May have"

"But are you? Is there a baby?" Ellie grabbed her sister by the shoulders, trying to meet her gaze.

"Of course not! What do you take me for?"

"Misses Weatherheads!" The baton thudded down on the bench, clouds of powder puffing into the air. Ellie coughed as she thrust the paper loose in front of her sister's shells.

"You stupid bitch!" Ellie whispered into her sister's ear, as she turned away, tears beginning to fall from her eyes. Polly flinched momentarily as she looked down.

The headline stared tauntingly up from the bench. "Young Man's Sad End - Coroner's Verdict -Suicide."

Helen Close

*A Poem for Mary Elizabeth Anderson*  
(1866-1953)

It takes a certain *savoir fair*  
to put yourself in another's shoes  
and figure out what needs to improve.

On a typical January New York morning  
with snow throwing itself around  
Miss Anderson hails a streetcar  
heading for Macy's in Herald Square.

For a woman managing a vineyard and ranch  
it irritates to watch a driver repeatedly stop  
jump from his cab  
and frantically scrape the windscreen

*left to right – right to left.*

Arriving at her favourite shop she buys pencils  
and a sketch pad –  
this is a Wikipedia fact that requires verification  
but poets with a need for notebooks would not argue.

In 1903 Mary was granted a 17 years' patent on her  
*windscreen cleaning device.*  
Demand proved slight. Henry Ford had yet to tool-up  
for mass production.

I will not bore you with the date but when Cadillac  
began to fit her invention she'd little to gain  
much like being inducted into  
*The International Inventors Hall of Fame*  
almost 60 years after you've died.

Sandra Burnett

*Attagirl*

*'No one had faith in me except myself.'* (Amy Johnson)

I hit the sky corseted in fuselage, throttle out over  
the sea's glass floor and bank until the horizon's upright.

If she stalls, I'll drop the nose, throw her down  
until her engines wake biting snow out of the clouds.

The men are playing cards. Strands of cigarette smoke  
coil blue-grey in fog. We're grounded on orders.

Ancient and tattered are staying put, but I'll fly  
anything anywhere. There's nothing silken about me

save my flight map. It knows the way  
land curves to journey's end. I'll get there.

Rosalind York

Note: The Attagirls were the women who flew planes and cargo for the Air Transport Auxiliary during World War II. From 1943, the women received equal pay to the men. The Ancient and Tattered Airmen were pilots who had disabilities. 'Anything to Anywhere' was the ATA's unofficial motto.

## Author statements

### Kathleen Strafford

Kathleen Strafford is chief editor of Runcible Spoon Webzine and publishing.

Her poem about women engineers in the car industry arose from a desire to write about Mary Anderson who invented windscreen wipers, and upon research, she discovered the other women worthy to be in the poem.

### Moira Garland

Moira's poetry and fiction are published online and in print, including *The North*, *The Forgotten & the Fantastical#3*, *What Next*, a post-pandemic anthology? *Do Her Ovaries Get in the Way of His Thinking?* uses AI terminology to echo contemporary women engineers' experience in a male-dominated work culture.

@moiragauthor

### Jennifer Godfrey

As the author of *Suffragettes of Kent* I have a strong interest in the suffrage movement. Laura Annie Willson (1877-1942) was born in Halifax, and worked from the age of ten in a local factory, later becoming involved in the Trade Union and suffrage movements and being a founder member of the Electrical Association for Women. I enjoyed being able to mix facts and imagination, re-creating missing parts of the story.

[www.jennifergodfrey.co.uk](http://www.jennifergodfrey.co.uk)

### Carol Long

Carol is a Chartered Engineer and WES member, with a career in software, business transformation, and as a board advisor. She is a visiting Fellow at the University of Warwick teaching engineering management topics. She joined the Electrifying Women workshops to be supportive of the initiative and found herself writing historical fiction.

### Pamela Scobie

It's electrifying whenever I discover a woman who has equalled or overtaken a man in any chosen field. The Great Architect/Engineer is the biggest job of all, so here are my subversive takes on the Creation story and a Resurrection tale by Mary Shelley. I'm one of the Otley poets, many of whom are represented here.

### Mark Burrow

Having an avid interest in aircraft since childhood, aviation female firsts is of historical interest particularly today as the industry remains male-dominated. Airline passengers continue to show surprise when a female pilot is seen in the cockpit. Amy Johnson and Amelia Earhart can continue to inspire women into this field and this inspired me to write these poems.

### Bill Fitzsimons

I decided, having written a poem about an imaginary engineer with cosmic ambitions for the first anthology of *Electrifying Women*, to continue in the same vein, hence *The Continuing Saga of Sally Smith*, a fantasy attempt at fusing theology with technology and science, partly inspired by the works of Teilhard De Chardin.

### Liz McPherson

A group photo of WES members (taken in 1936) was the inspiration for my sonnet. I was struck by the determination the women needed to succeed in what was then very much a man's world and by contrast how 'ordinary' they look in the photograph. My second poem picks up the same theme from a personal point of

view – my friend, Alison, is a Professor in the School of Mechanical Engineering, Leeds University and on the touchline, we are just two very ordinary mums.

#### **Sven Kretzschmar**

I studied Philosophy (esp. Medical Ethics) and English, so philosophy of science drew me to this project, mentioned by a fellow poet. *Love's Laces* looks into the historic role women have played in engineering and its theoretical foundations. *Things That Need Not Be* is intended as a general encouragement for young women to study STEM subjects.

#### **David Cattanach**

During lockdown I noticed a group of women walking, spaced out, prompting me to consider songs about women walking in the rain. Quotations are from the Cern website 'Naturally I'm a scientist'.  
[cern/news/series/women-science/naturally-im-scientist](https://cern/news/series/women-science/naturally-im-scientist).

#### **Steph Jones**

Steph currently works as a telecommunications engineer and has been writing poetry for several years, been involved with independent publications, and tried her hand at performing spoken word. Her interest in Electrifying Women was sparked by a friend. This poem is based on experiences working within the engineering sector.

#### **Wanda Phillips**

Frances Poppy Northcutt, born 1943, Rocket Scientist, Lawyer and Women's Rights Advocate, was the first female engineer employed in the US Space Program. NASA employed 400,000 people, many of them women engineers, scientists and mathematicians, to support the first twelve men who walked on the moon. Crater Poppy is named in her honour.

#### **Ben Lowe**

Flying to the moon captured my imagination in the 1960s. The film *Hidden Figures* disclosed how women, especially black women, were central to the moon mission. Katherine Johnson was the key engineer on trajectory, a crucial element. She experienced segregation and racism, but received a Medal of Freedom from President Obama in 2015, when she was 95.

#### **Manuela Palacios**

Manuela teaches anglophone literature and women's studies, and was introduced to the project via a poet friend. This acrostic sequence of haikus spells the name of Hertha Ayrton, a British female physicist who did ground-breaking research on the electric arc, hydrodynamics, and the cotton fan designed to disperse poison gas in WWI.

#### **Helen Howard**

The first President of the Women's Engineering Society, Rachel Parsons in 1920 created the engineering company Atalanta which employed only women. Her private life was the matter of some controversy, revealing the double standards applied to women. In 2017 one of the six tunnel-boring machines for the new London super sewer was named after her.

#### **Linda Marshall**

I wanted to write about an engineer's daughter who invents a fantastical machine. Reading Newman's *The Dream of Gerontius*, I came across ideas about time and splitting a moment into 'its million-million-millionth part.' Aha, I thought, an ideal machine for my talented engineer to design.

### **Helen Close**

I was researching letters written by Verena Holmes (an early member and Presidents of WES) to her lifelong friend, Nancy Johnson. Although we don't have Nancy's replies, the differences in their lifestyles and choices is evident from Verena's letters alone, and show the dichotomy between the newly emerging status of "professional single woman" in engineering and the constraints of married life. *Engineering a Dream* drew on research into newspaper article on women in engineering and discloses the vexed situation of double standards applied to sexual conduct of men and women.

### **Sandra Burnett**

Mary Elizabeth Anderson was not widely credited for her invention, probably due to her seeing a need when the rest of the world was on catch-up. I suspect this still applies and probably more so to women than men. I hope my poem allows Miss Anderson the credit she deserves.

### **Rosalind York**

Rosalind York read Theatre at Dartington before becoming a poet. Her pamphlet, *The flank of a fish*, came out in 2015 from OWF Press and her collection, *The taste of red*, came out in 2020 from Half Moon Books.

### *About the editor*

### **Hannah Stone**

Hannah Stone has published four volumes of poetry since completing an MA in Creative Writing at Leeds Trinity University in 2015 (*Perfect Timing*, *Lodestone*, *Missing Miles* and *Sŵn y Morloi*) as well as publishing extensively in online and print journals, anthologies and collaborative volumes, most recently *Fit To Bust: An unwrapping of female desire and attire* (with Pamela Scobie, Runcible Spoon Publishers, 2020). She also collaborates with composers, most notably Matthew Oglesby, and visual artists. She convenes the Leeds Lieder poets/composers forum, curates Nowt but Verse for Leeds Library, is poet-theologian in virtual residence for Leeds Church Institute, comperes Horsforth's monthly Wordspace spoken word event, and in summer 2020 became Editor of the literary journal Dream Catcher. When not writing, publishing, editing or facilitating poetry, she teaches English Literature and Religious Studies for the Open University. Hannah may be contacted for book sales, workshops, performances on hannahstone14@hotmail.com.