



## News Release

Monday 26 June

# DO YOU WRITE LIKE A 'GREAT BRITON'?

- Royal Mail today reveals the most common handwriting traits of Great Britons.
- The company partnered with leading handwriting analyst Tracey Trussell, to study 10 handwriting samples from Great Britons such as Florence Nightingale, Isaac Newton, Queen Victoria and Ignatius Sancho.
- Common traits include narrow right margin, marked right slant and long and high T-bars.

Royal Mail today reveals the most common handwriting traits of Great Britons. The company, along with leading handwriting analyst Tracey Trussell, studied letters and notes from some of the country's defining figures to determine common writing styles.

Ten different handwriting samples were analysed from Claudia Jones, Rosalind Franklin, Isaac Newton, Queen Victoria, Ignatius Sancho, Florence Nightingale, Millicent Fawcett, Charles Darwin, Isambard Kingdom Brunel and Elizabeth Fry. The subjects were chosen as they were all keen letter/note writers and appeared in the 100 Greatest Britons/ 100 Great Black Britons lists.

**Tracey Trussell, handwriting analyst**, said: "Handwriting is like 'brain writing' because it comes through the central nervous system. It's a snapshot in time. My job is to interpret every swirl, stroke, slant, flourish, space and loop on the paper, enabling the true character of the individual to step off the page."

According to Tracey's findings, the most common handwriting traits of a Great Briton are:

### 1. Marked right slant

Slant is an emotional barometer that measures people's social stance. A marked right slant such as that in the writing style of Queen Victoria, Isaac Newton, Isambard Kingdom Brunel and Ignatius Sancho indicates that a person is enthusiastic and responsive. It also shows that they don't want to hold back and tend to be highly proactive.

## **2. Rhythmical writing style**

This is the movement, or lively flow of handwriting across the page. It is the regularity in the rhythmic pattern or natural free flow of the pen - like clockwork - across the page. If writing is rhythmical the writer is mature, well balanced and generally comfortable in their own skin, like Elizabeth Fry and Millicent Fawcett.

## **3. Large 'upper zone'**

Writing consists of three zones - upper, middle and lower - and each zone reveals a different section of the writer's inner character. The upper zone focuses on the parts of the letters that extend upwards like b, d, f, h and k. People with a large and dominant upper zone have rich imaginations, creative mind-sets and big aspirations. They're also intellectually savvy, ethical and have high standards, like Claudia Jones, Ignatius Sancho and Charles Darwin.

## **4. Narrow or non-existent right margin**

This is when the end of a sentence leaves no space on the right hand side of the page. Words appear to fall off the edge of the page or dip down like in the cases of Millicent Fawcett, Isaac Newton and Charles Darwin. The size of the right hand margin shows the writer's real feelings towards the future. Those that leave no right margin are outgoing and engaging. They are also impulsive, goal-orientated and driven.

## **5. Small and diminished 'middle zone'**

The middle zone covers everything that sits on the baseline and reflects how people view themselves internally - the ego area. People with disproportionately small middle zones are selfless, productive, and much more interested in things that are going on around them. All of the 'Great Britons' have small and diminished middle zones.

## **6. Broadness**

This is where the letter 'n' is stretched horizontally across the page so it becomes wide and rectangular-shaped, revealing people who are open minded, unprejudiced and generous, willing to embrace change. Broadness is a common denominator between all our 'Great Britons', and particularly noticeable in Elizabeth Fry's handwriting.

## **7. Large 'lower zone'**

Lower zone is the space underneath the baseline and can be seen in the letters that extend downwards such as g, j, p, q and y. The lower zone is a deeply personal area focusing on people's primal instincts. People with exaggerated lower zones - such as extended curls like Florence Nightingale, Queen Victoria and Rosalind Franklin - are practical. People who have lots of variation in the size of their lower zone tend to be restless and like keeping busy.

**8. T-bars long and high**

This is the horizontal stroke that crosses the t-bar. A person with long and high t-bars is a take-charge sort of person, like Queen Victoria and Millicent Fawcett. They are decision makers and perfectionists.

**9. Large letter 'k'**

A noticeably large (or inflated) letter 'k' shows people who are resourceful and defiant like Charles Darwin, Ignatius Sancho and Claudia Jones. They like to get their own way and follow their own path in life.

**10. Joined up writing with connectedness between words**

Connectedness in joined up writing reflects the writer's thinking process and ability to function in social relationships. If a person's writing is connected they are likely to be purposeful, single-minded and opinionated, with an indomitable spirit. When words are connected too, this means the writer is articulate, outstandingly logical and thrives on adventure. All the samples have connectedness. An example of connectedness between words is particularly noticeable in Brunel's sample.

**Tracey adds:** "It has been enthralling peeking behind the writing of these Great Britons! Graphology is a little bit like piecing together a jigsaw to build a complete picture. While it is difficult to be too prescriptive, these samples have thrown up some strong clues as to what underpins a Great Briton.

"Letters make up part of our history - they are a memoir of our individuality and presence - ensuring that we don't disappear forever. These samples have done exactly that, they are a fascinating way of connecting with individuals that have helped define and shape the way we live today."

**David Gold, Director of Public Affairs & Policy at Royal Mail,** said: "It is amazing to think that something we do every day can reveal so much about us. There have been many Great Britons throughout the years and we hope this list helps identify the next Great Britons."

Ends

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Notes to editors

Graphological breakdown of each Great Briton

**Charles Darwin (1809-1882)**

- Darwin was a naturalist, geologist and biologist, best known for his contributions to the science of evolution.
- Handwriting sample was written in 1864 when Darwin was 55 years old.

of yours very truly  
 Sunday June 2/6  
 My dear Hooker. The last few weeks  
 has been bad ones with exception  
 & vomiting, but I am now better  
 again somewhat. - So poor Mr  
 Booth is gone: I never knew him  
 much; but his kindly nature  
 excited love from the first sight.  
 Emma has written a few lines  
 to Mr Booth - Do you know her  
 maiden name: I suspect she is

**Handwriting movements:** Small-medium size (with large and dominant upper zone and small, diminished middle zone, upper zone and lower zone fluctuating greatly), marked right slant, aerated or wide spatial arrangement (pools of space between words and lines), light pressure with some vertical emphasis, sharp penstroke, non-existent right margin (words falling off the page), simplification, rising and convex baselines, leanness, thready letters, part connected with connectedness between words, good clear secondary width (wide letter spacing), some broadness, high Form Standard, originality, defiant 'k', potlids (potlids are where the start of the down stroke - above the letter 'p' construction - extends upwards into the upper zone), vanity loops on 'd's, t-bars long, high and fine, fast speed, Jungian Thinking type.

Jay 1886. 3

Dear Bromley Kent

My dear Sir

Wednesday 7th May 1886

I must write to thank you for your last letter, & to tell you how much all your views & facts interest me. - I must be allowed to put my own interpretation on what you say of "not being a good arranger of extended views" - which is that you do not indulge in the loose speculations so easily started for every smattering & wandering collector, - I look at a "strong tendency to generalise as an actual evil" -

What limit shall you take in the Patagonian side - has d'Orbigny permitted, I believe he made a large collection at the R. Negro, where Patagonia extends to usual forlorn appearance; at Boca Blanca the features of Patagonia increase by view into the mountains of La Plata. The Botany of S. Patagonia (as I collected every plant - flower & the season when there) would be worth comparison with the Patagonian collection of d'Orbigny. - I do not know anything

**Tracey Trussell says this means:** Radical, out-of-the-box thinking was Charles Darwin's bag. He was a self-possessed loner for whom personal freedom mattered. He was restless, impulsive and exceptionally curious - an inquisitive man who needed constant stimulation and the opportunity to keep his mind occupied so that he could learn new things. He embraced a challenge and had a good perception of reality, but was primarily interested in the intellectual possibilities in all things. His modus operandi was pioneering, and reason ruled his imagination. Darwin was a visionary, thoroughly objective, logical and innovative. But he needed plenty of elbowroom, and lots of breathing space in order to operate effectively. In his pursuit of freedom of thought and action, there could be no constraints, and he wanted to be the one calling the shots. He didn't like to be wrong.

Claudia Jones (1915 - 1964)

- Jones was a journalist, feminist and political activist who founded Britain's first major black newspaper, The West Indian Gazette and the Notting Hill Carnival.
- Handwriting samples were written in 1955 and 1956 when Jones was 40/41 years old.

-8-6-  
 for heart pain --which I have used not for 2 months  
 and only used on two occasions during the last  
 year when imprisoned. Now on drugs (super  
 cil) for control of hypertension. If you summarize  
 the medical status you ~~should know~~ that that at  
 the time of my imprisonment admitted by a court  
 appointed physician--contrary to the attitude of  
 the first women physicians I was diagnosed as  
 suffering from essential hypertension, cardiac  
 disease and coronary arteriosclerosis--the exact  
 diagnosis of my personal physician.  
 I wrote this quite fully in the full knowled  
 ge, dear Comrade Pester that your extracts would  
 contain only what you consider pertinent, but I  
 gave it as fully to facilitate that end.  
 Best personal regards  
 to you and Comrade Esther.  
 Comradely yours,  
 Claudia Jones

P.S. I was married to Abraham Scholnick  
 in September 1943 in NYC. I was  
 divorced Feb 27, 1947. My plans are  
 to remarry in England within the next  
 few months.

P.P.S. At the age of 23 I applied and received  
 my certificate for final papers for American  
 citizenship--but this was denied me by the US  
 government since I was politically active  
 from the age of 18.

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**Handwriting movements:** Medium-large size (marginally dominant and greatly fluctuating upper zone with loops, large lower zone, diminished rounded middle zone, pointed zonal loops in upper zone and lower zone), marked right slant, bold distinct pressure, rising baselines, connected with connectedness between words, compact spacing, narrow right margin, primary thread with angles and garlands, upwards endstrokes, some broadness/ some contraction, vanity loops, big pot lids, long blunt high t-bars, variety of ovals - closed, open, squeezed, flooded - defiant 'k', fast speed, good horizontal tension, Jungian Feeling type.

**Tracey Trussell says this means:** People mattered to Claudia Jones, as did beliefs, principles and justice. She worked boldly, tirelessly, vigorously, restlessly, defiantly, wholeheartedly and zealously. She was often tense and incapable of relaxing - she put herself under a lot of pressure. She was also socially sensitive with an exuberant passion for life - a hedonistic streak - and she liked to enjoy herself and see other people enjoying themselves too. Bold self-expression was her forté - both written and oral - so a flair for preaching and writing is evident. Claudia also had an excellent imagination with a good handle on reality. She was an intellectually bright, street-wise woman, who dreamed big dreams, and did her best to implement them in the real world.

Elizabeth Fry (1780 - 1845)

Sandgate 8/23.1843.

My dear and kind Friend,  
 I am truly grateful  
 for my invitation which  
 I may one day accept  
 if it should please  
 Providence to continue  
 my life but at present  
 I feel bound here and  
 if able I then look to  
 visiting Norfolk -

I feel very much thy  
 kind regards and am  
 ever  
 thy  
 friend

- Fry was a prison and social reformer who was a major driving force behind new legislation to make the treatment of prisoners more humane.
- Handwriting sample was written between 1834 and 1843 when Fry was 54-64 years old.

**Handwriting movements:** *marked right slant, medium-large size (dominant lower zone, slightly diminished middle zone and greatly fluctuating upper zone), variable pressure heavier on the downstrokes, compact, widening left margin and non-existent right margin, no tangling, very good horizontal tension, rising baselines (stable, straight and falling off at end of sentences), broad, good clear secondary width, primary thread with garlands and angles, fast speed, rhythmic with lack of exaggerations and extortions, upwards endstrokes, pointed lower zone loops, Jungian Feeling type.*

**Tracey Trussell says this means:** Elizabeth Fry placed the highest value on human relationships and cared greatly about people, in a way that was beneficial by being practical. She always considered the people impact of any decision-making, and always recognised the practical realities of any situation.

Elizabeth was a capable, powerful, yet down to earth type of woman, who could be quite hard-headed. She had the ability to express herself and she didn't pull her punches, which made her a brilliant campaigner. She didn't listen, because she thought she knew best.

Her focus and motivation in life was practicalities, material needs and security. She was personally tough with a hard work ethic and she liked keeping busy. She could also see the bigger picture meaning that her ambitious determination, dedication, focus and drive were spun with caring undertones.

#### **Florence Nightingale (1820 - 1910)**

- Nightingale was an English social reformer and statistician, and the founder of modern nursing.
- Handwriting sample was written in 1855 when Nightingale was 35 years old.

**Handwriting movements:** *Marked right slant, large size and some decreasing size (large, dominant and right-tending lower zone, large and pointed upper zone loops, diminished middle zone), connected with connectedness between words, aerated with narrow margins - widening left margin and narrow right margin - angles and garlands, very good horizontal tension, stilted rhythm, wide secondary width, upwards endstrokes, some broadness, long t-bars, vanity loops.*

**Tracey Trussell says this means:** Florence was pioneering and enterprising, wildly ambitious and strong-willed, with an almost aggressive and rebellious desire, drive and determination to make a difference. She saw the big picture and was genuinely interested in people. She was incredibly hardworking, needed constant activity and plenty of variety, and she was happy to take responsibility for herself and commit to her cause.

She placed a high value on human relationships and people's feelings - always weighing up the people-impact of any decisions she made - whilst never losing sight of the reality and the facts of situations, just because she was realistic and recognised this was the way the world works. She was strict and authoritarian, with exceptionally high standards, but fair and diplomatic, wanting to do good deeds, always with people's best interests at heart.



of the British Aborigines  
at home.

God bless you -  
I wish I could have  
helped you more -

You will do a noble  
work in New Zealand.

But pray think of  
your Statistics. I  
need not say, think  
of your Schools -

But people often  
despise Statistics  
as not leading  
to immediate good.

Believe me  
Yours very sincerely  
Florence Nightingale

Barrack Hospital  
 Cutari  
 April 1. 1855.

My dear Mrs. Sewe

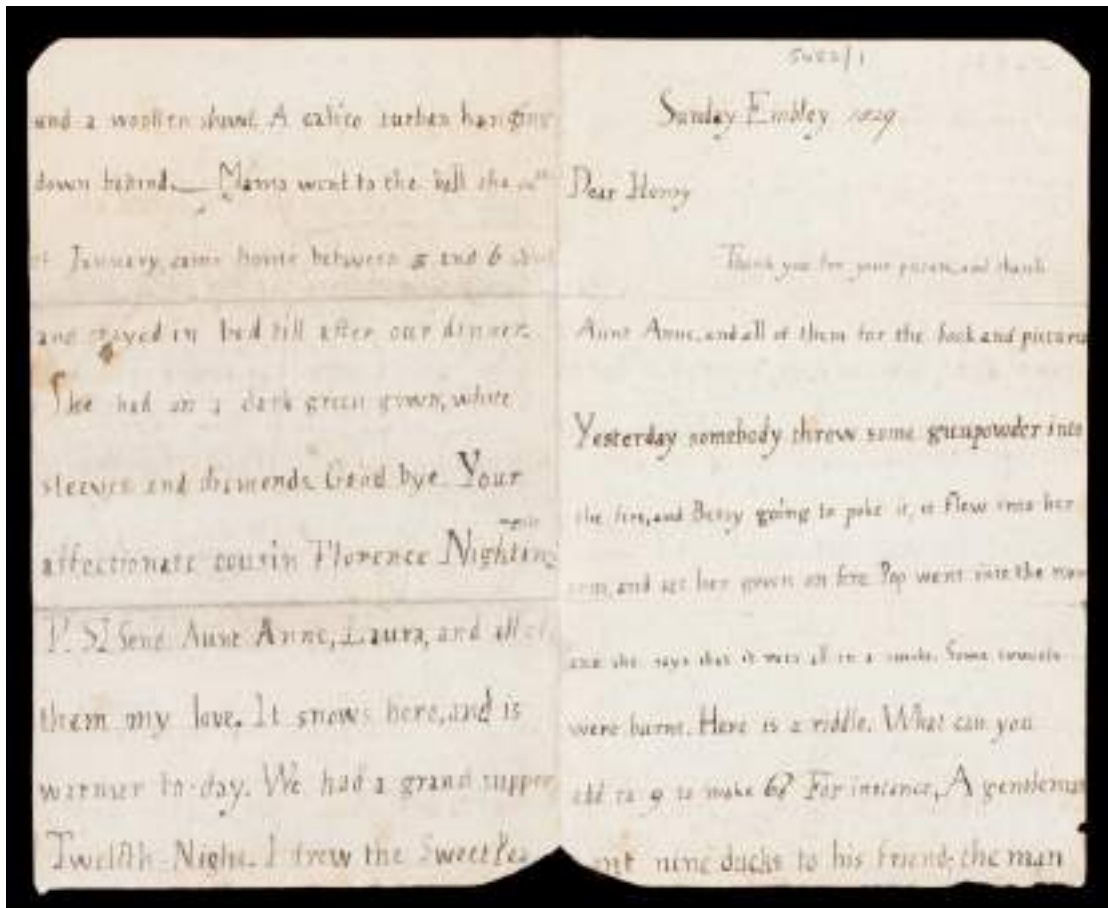
I am sooo happy to  
 be able to inform you that  
 your friend, Charles Knight,  
 of the G. G. Co. is gone home  
 & that Byrnes is so too.  
 So they will be seen  
 again by their poor wives.

Alas! Lowden is dead.

of Byrnes's - here on the  
 20<sup>th</sup> Feb. so is poor Parfitt.

I have no time but  
 to say that I am ever yours

Horace Lightfoot



(Florence aged 9 years old)

**Ignatius Sancho (1729 - 1780)**

- Sancho was a composer, actor, and writer. He is also the first known Black Briton to vote in a British election.
- Handwriting sample was written in 1779 when Sancho was 50 years old.

**Handwriting movements:** large size (dominant upper zone, diminished and greatly fluctuating middle zone), compact - close word and line spacing/ no margins - marked right slant, pressure on the vertical, rhythmic, connected with words running into each other, some broadness/ some narrowness, contraction and covering strokes, primary thread with angles and arcades, a few garlands, stable and straight baselines, long t-bars and extended horizontal endstrokes, misplaced angles on the baseline, mixture of ovals - open and squeezed - hooks/ lassoes in upper zone, suspendu, extensions into lower zone, large and slightly elaborated capitals, strong left tending 'd's with vanity loops, Jungian Extravert Sensing Feeling type.

**Tracey Trussell says this means:** Sancho was a realist with high ideals and big aspirations. He was proud and charismatic, and exuded self-confidence. He was also an emotional, deeply passionate, conscientious and sensitive man, with a rebellious streak when it came to authority figures. His drive and ambition stemmed from misfortune in his childhood, and we can see the guilt and the resentment, making him revisit the past in his mind. He also had strong instincts and was motivated by a need for security, so practical considerations mattered. Sancho was highly expressive and articulate, eloquent and principled with strategy, and wasn't one to mince words. Although he was frank, he had a nice way about him, and he chose his words carefully, diplomatically and sensibly, trying to influence through intellect.



N<sup>o</sup> 12 April Day - 1779

No — That was your Mistake,  
 — tho a kind one — I have no  
 Irish Salt — wish I had — but by  
 the folly of our buying every Lett:  
 in the way of Irish Commerce  
 the Duty is so Extravagantly  
 high — as to preclude every Idea  
 of National Profit — Read the  
 Crisis — & Wash. for the Chads.  
 Barbarity, & Madness of the  
 Countrymen — Read the Transactions  
 of both Houses — & then Reply — I  
 am Sir an Affrican with two off  
 of your Pleas — & proud am I.

Isaac Newton (1642 - 1726/7)

- Newton was a mathematician, astronomer, and physicist who is widely recognised as one of the most influential scientists of all time and a key figure in the scientific revolution.
- Handwriting sample was written in 1682 when Newton was 40 years old.

**Handwriting movements:** Small size (diminished middle zone, dominant and disproportionately large lower zone, right tending upper zone and a smattering of upper zone pointed loops), marked right slant, wide word spacing, high Form Standard, stable and straight rising baselines, connected, pasty, narrow right margin (sentences run off the end of the page), wide and widening left margin, broad primary width, very good horizontal tension, primary and secondary thread, jumped up letters, loops (large and full in the lower zone y's and small in upper zone), huge

Personal Pronoun 'I', strong and long left-tending letter 'd', T-bars fly up from the baseline (or are missing completely), large signature with big arcade starting stroke in upper zone and pseudo arcade, elaborate capital letters, Jungian Extravert Empirical Thinker.

I have perused your very ingenious Theory of Vision  
 in which (to be free with you as a friend should be) there  
 seems to be some things more solid & satisfactory, others  
 more disputable but yet plausibly suggested & well  
 deserving of consideration of your ingenious. The more  
 satisfactory I take to be your asserting of us see  
 with both eyes at once, your speculation about your  
 of your musculus obliquus inferior. your enquiring every  
 fibre in your optick nerve of one eye to have its  
 correspondent in that of other, both will make all  
 things appear to both eyes, in one & of same place  
 & your solving hereby of duplicity of your object in  
 double eyes & confuting of childish opinion about  
 splitting of optick cone. The more disputable seems  
 your notion about every pair of fellow fibres being  
 unisonous to one another, records to your rest, & this  
 sense making of object, even with two eyes, appears  
 but one for your same reason that unison sounds seem  
 but one sound. I did think to have sent you what  
 I fancy may be objected against this which is so thin  
 for time to write it down, but upon second thought  
 I had rather reserve it for discourse at your next  
 meeting, & therefore shall only say thanks for  
 your kind letters & present.

From Coll. Cambridge  
 June 20<sup>th</sup> 1682

Yours much obliged & humble  
 servant  
 J. Newton.

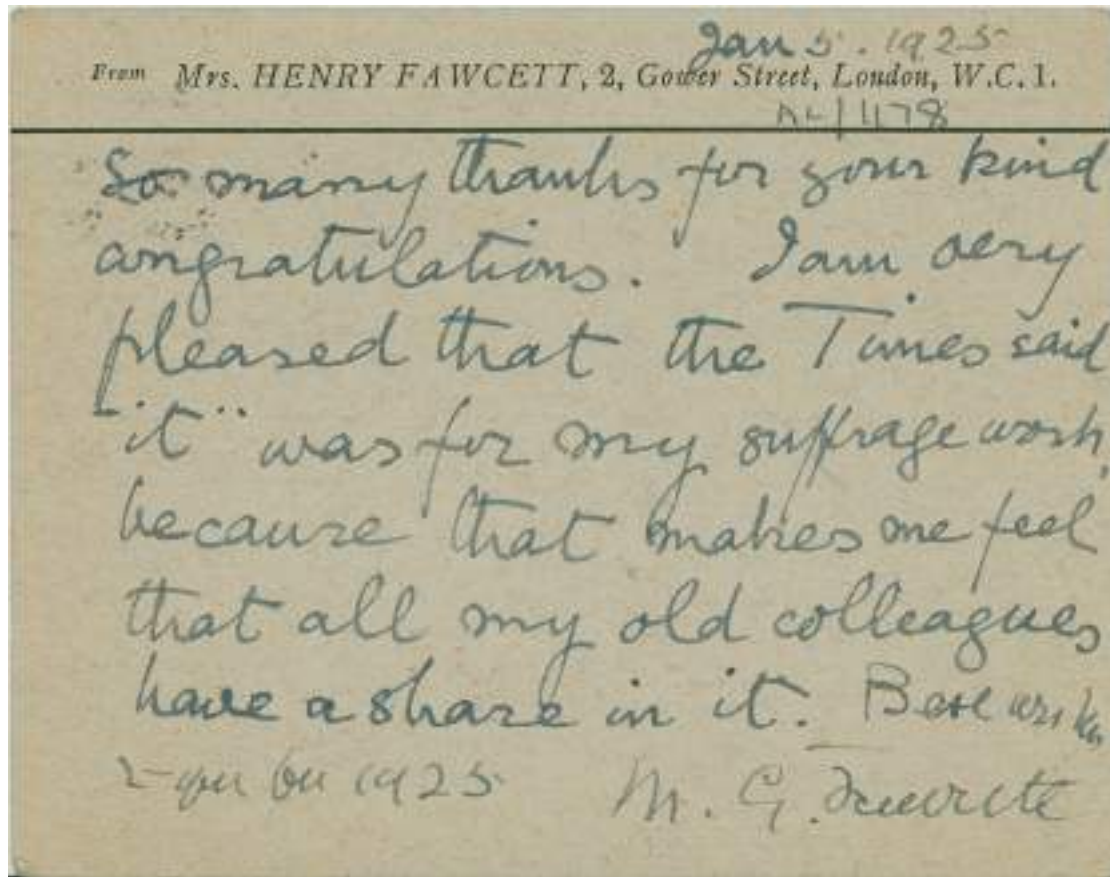
Tracey Trussell says this means: Isaac Newton was highly evolved with more than a dash of creative genius. He was a philosophical man for whom intellectual passions, innovation, and freedom of thought were key to his very existence. Newton emotionally invested in his work at the expense of everything else, in order to achieve these far-reaching goals. He had a naturally enquiring mind, and a common sense approach underpinned

considerable creative thinking and reflection. Energised and excited by his scientific findings, he worked methodically and logically with precision.

Isaac also had a big ego and loved showing off his superior knowledge. He was self-important - locked into who he was - and sometimes he acted quite bizarrely, petulantly, completely 'out of character', in order to indulge himself and get the attention and recognition he craved.

**Millicent Fawcett (1847 - 1929)**

- Fawcett was a feminist, intellectual, political and union leader. She is primarily known for her work as a campaigner for women to have the vote.
- Handwriting sample was written in 1925 when Fawcett was 78 years old.



**Handwriting movements:** Lively fluid rhythm, marked right slant, small-medium size (slightly diminished middle zone but with positive regularity, large and right tending upper zone - upper zone and lower zone both fluctuating greatly), pasty, connected with connectedness between words, compact, narrow margins with left margin widening, wavy baselines with sentence ends falling off page, broadness, mixed form of connection (primary thread with arcades and garlands and a smattering of angles - a healthy mixture of angles and curves), horizontal emphasis, very long and some downward slashing T-bars, good horizontal tension, positive irregularity, originality, High Form Standard, rounded forms, simplification, altruistic right tending lower zone 'y's, pseudo arcades, fast speed, potlids, some open ovals, vanity loops, lack of starting strokes.



2 Goun Street. W.C. 1. Jan 11.  
 AL/1148

Dear Lady Tracey,

Isn't this 2 L-1 majesty magnificent? ?

I shall be very interested in the division list and I don't  
 think I<sup>d</sup> Salisbury voted with us. Jimmy Lord  
 Grey was very keen. Lord Selkirk surprised  
 himself and made a really splendid  
 speech. We had an anxious time almost up to  
 the end. But of course Curzon's speech made it quite  
 evident that we were safe. Lady Lytton got us  
 the loan of a can<sup>ce</sup> room at the H of L. so the  
 whole can<sup>ce</sup> was there. Mr Strachey & I were inside  
 the House & Mr S kept running all day <sup>most of time</sup>  
 till we can<sup>ce</sup> had we were getting on.

Yours ever affectionately,  
 M. Fawcett

**Tracey Trussell says this means:** Millicent Fawcett was a warm and selfless woman, who was single-mindedly devoted to her cause. Her ability to give practical support undoubtedly lends great weight to her altruism and humanitarianism. She was imbued with a sense of fun and adventure, enthusiasm and exuberance, and was diligently proactive, needing constant stimulation and involvement with society. Millicent's powerful handle and love of life underpinned her confidence, and endowed her with a resilience to inject natural spontaneity into her passion for freedom with choices, and a genuine desire to help mankind. She was mature and highly evolved; non-conformist and forward thinking.

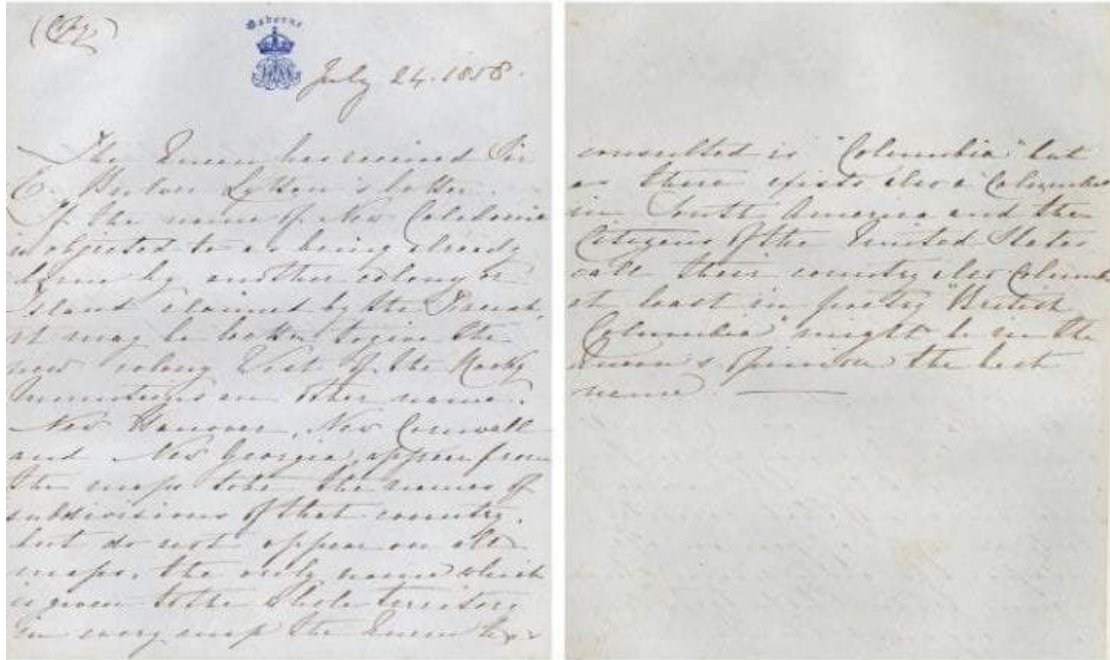
Millicent also thrived on expression and loved indulging in discussing opinions close to her heart. She was highly articulate, logical and rational. She was quick to respond to emotional stimuli, acting on gut instinct. Although she had the ability to see other people's points of view,



she was ebullient and influential, inclined to be bossy, and excelled at imposing her will.

#### Queen Victoria (1819 - 1901)

- Victoria was Queen of the United Kingdom of Great Britain and Ireland from 20 June 1837 until her death.
- Handwriting sample was written in 1858 when she was 39 years old.



**Handwriting movements:** marked right slant, medium size (diminished middle zone, dominant and large lower zone, large and greatly fluctuating upper zone), stilted rhythm, over connected with connectedness between words, fast speed, good horizontal tension and horizontal emphasis, pressure on vertical, straight baselines and words hugging the baselines, crowded spacing (no margins and right margin dips), primary thread (with angles, angular connecting strokes and clothes-line garlands), long high and some crucifix t-bars, lean and simplified (with a few elaborations on starting strokes only), illegible, altruistic right tending lower zone 'y's, angles on the baseline, overly wide secondary width, ink-filled or flooded ovals, vanity loops.

**Tracey Trussell says this means:** Queen Victoria was undoubtedly a strong character, imperious, assertive, and proud - a real take-charge sort of woman - and she saw life through the prism of authority and devotion to duty. Her status mattered and she craved respect. She embraced tradition and duty, uncompromisingly. She was hard-lined and strict and didn't do emotion. Although her behaviour was outwardly governed by these principles, under wraps she was quite different. She was incredibly sensitive, tense, and capable of flying off the handle in a blink. Queen Victoria had a sharp tongue, but a sensual passionate heart, and she preferred writing to speaking, perhaps because she hated being interrupted.

The 'stilted' quality of her writing, where the natural rhythmic flow of the handwriting is restrained or held back in check, demonstrates on paper the control, repression and self-discipline the writer was placing on her natural enthusiasm, communion or rapport with life. She needed structure and security in her life - she couldn't cope with change. She also didn't like making mistakes or getting anything wrong. She loved keeping busy and being involved in everything that was going on, and she was interested in progressive achievement.

**Rosalind Franklin (1920 - 1958)**

- Franklin was an English chemist and X-ray crystallographer who made contributions to the understanding of the molecular structures of DNA (deoxyribonucleic acid), RNA (ribonucleic acid), viruses, coal, and graphite.
- Handwriting sample was written between 1951 and 1954 when she was 30-33 years old.

**Handwriting movements:** *small-microscopic size (large and dominant lower zone with fluctuating in all zones, excessively so in the upper zone), mixed slant, rounded, broad, part connected, some printing, wide word spacing (tendency to aerated), legible, broad secondary width, primary thread (garlands hugging baseline and angles), small upper zone loops, stable straight baselines (some rising, in spite of lined paper), good horizontal tension, potlids, Jungian Empirical Thinking type.*

**Tracey Trussell says this means:** Rosalind was a highly intelligent, sensible, kind, down-to-earth, independent and genuine woman. She had a strong practical nature, a contentious streak and an unexpected sense of humour. She was also happy to keep a low profile. Her head ruled her heart, and she wouldn't do anything she didn't want to do. However, this meant that sometimes she couldn't make up her mind in her search for the answers to life's perplexing questions.

Rosalind had the drive to convert her thinking processes into action after a period of intense concentration. She particularly excelled in the realms of scientific research, and would have enjoyed discovering and analysing things appertaining to everyday life in the 'real' world. She enjoyed working hard and playing hard, but was always adaptable, versatile and devoted to her cause.

Brief Summary of main conclusions & Result on D.N.A.

From I.R. Spectra

1. Purine & Pyrimidine rings preferentially oriented  $\perp$  to direction of Shear.

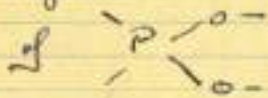
axis  
Nature



Results set limit  $\sim 30^\circ$  from  $\perp$  but probable that nearer to  $20^\circ$ .



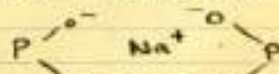
2. Absorption bands corresponding to symmetrical & antisymmetrical vibrations



indicate equivalence of the

P-O<sup>-</sup> bonds. Dichroism indicates that POO plane is within  $30^\circ$  of  $\perp$ .

3. Failure of NH, NH<sub>2</sub>, GeOH, of bases to exchange with D<sub>2</sub>O at room temperature indicate that solution leaves these H-bonds intact. i.e. The solution involves rupture of



type of attraction.

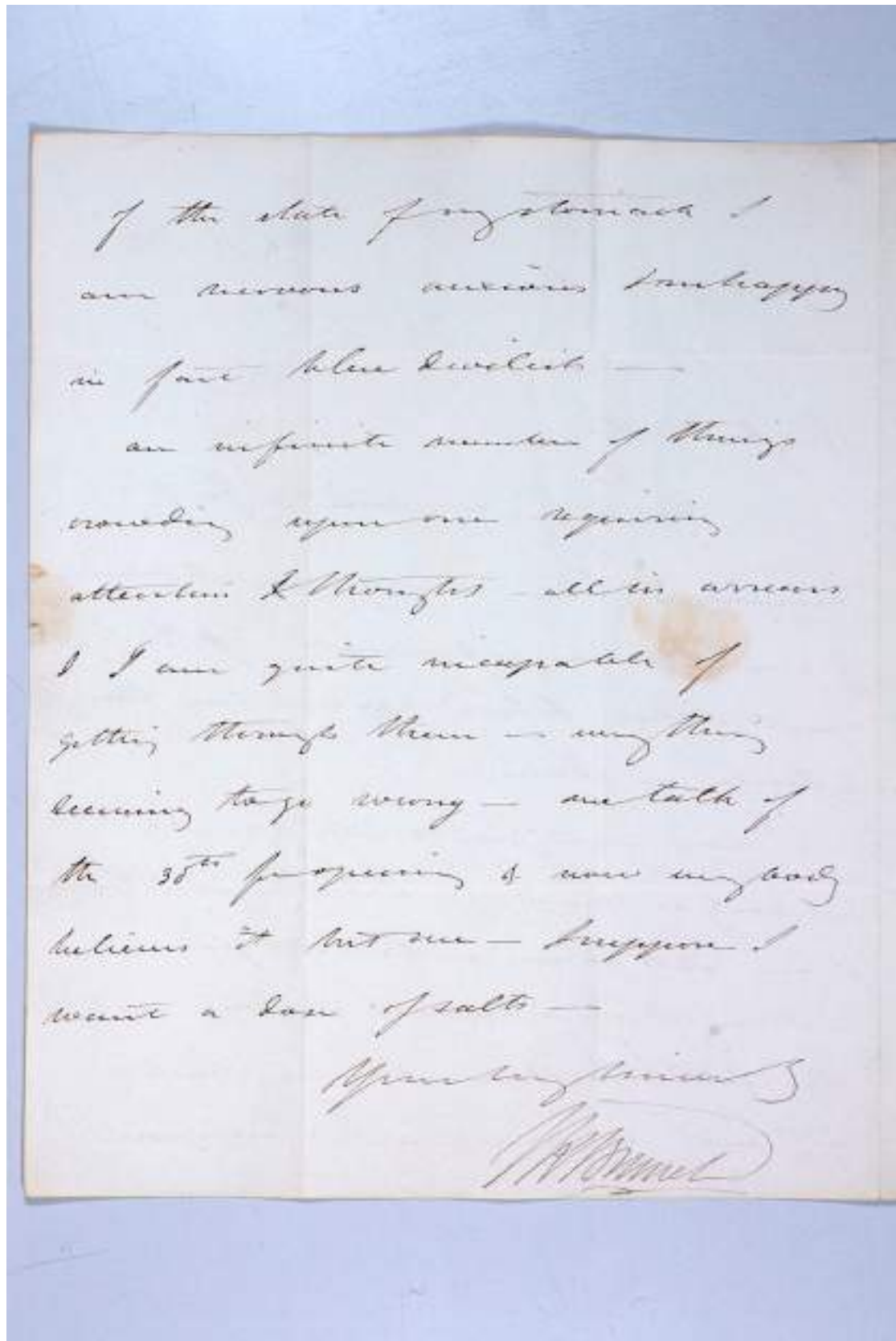
ergo phosphates outside held by H-bonds & v.d. Waals. forces.

4. Approximate calculations show that energy to be expected from:-

- a) H bonds  $\sim 7$  k.cal. per mole of nucleotide  
 b) Van der Waals (Bases)  $\sim 16$  k.cal per " " "  
 c) Sodium-Phosphate-Bonds - No exact calculations but estimated considerable say  $\sim 20-30$  kcal per mole of nucleotide.

Isambard Kingdom Brunel (1806-1859)

- Kingdom Brunel is a mechanical and civil engineer who is considered "one of the most ingenious and prolific figures in engineering history".
- Handwriting sample was written in 1838 when Brunel was 32 years old.



**Handwriting movements:** Sharp and spiky, marked right slant, simplification, small-medium size (with marginally dominant and fluctuating lower zone, large and variable upper zone and diminished middle zone, pointed zonal loops), over connected with connectedness between words (although still manages to be 'aerated!'), narrow left margin (there is some avoidance of right margin, but this could be because Brunel was in poor health at the time of writing this letter, so he may have been concerned about what the future held in store for him), baselines slightly rising (stable and straight) and widely spaced, broadness, angles and garlands, fast speed, good horizontal tension, long light and high T-bars, good clear secondary width, angular starting strokes from middle zone and a few arcade starting strokes in the upper zone rhythmic, vanity loops, bows, clever connecting strokes, open ovals, signature angular and very large with diminishing size, Jungian Empirical Thinking type.

**Tracey Trussell says this means:** Isambard Kingdom Brunel was outspoken, assertive, hard lined and highly persuasive, yet with diplomatic aplomb. He had a mature attitude, a self-disciplined, indomitable nature, a common sense pragmatic approach, and was an extraordinarily clear thinking man - open-minded, long-sighted and perceptive - with the ability to grasp essentials and follow through his logical thought processes. Brunel was also meticulously diligent, with exceptionally high standards; skilled at planning, and single-mindedly focused in his desire for progressive achievement in the world of engineering. Brunel was wildly ambitious, but also a realist, so his ideas were above all practical and utilitarian, founded on functionality and built on the firmest of foundations.

About Royal Mail plc

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