Cotgrave and District U3A

Keeping in Touch 20

I hope you all spotted our 'deliberate mistake' in last week's Letter. As Captain Mainwaring would say, "I wondered when someone would spot the duplication of a paragraph." While it says very little for the reliability of my proof-reading, we can certainly claim that it was better than missing a paragraph out altogether – except that no-one would have noticed that! But no matter – we can, of course, hide behind the defence of yet another limerick:

> There was a proof-reader called John
> Whose skills became somewhat 'by-gone'.
> Quite sad to relate
> A 'Word' duplicate
> Quite escaped his at-ten-ti-on.
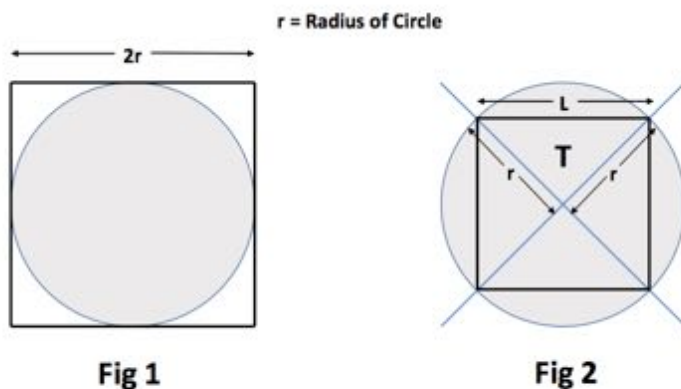
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Pi in the Sky

I am increasingly conscious of the fact that I am neglecting the interests of those worthy souls who constitute the U3A Science Group so, for a change, we shall indulge in something a little different, this week. Once again I fall back on an article I wrote for the Cross magazine some years ago – I have to admit that I quite enjoyed re-reading it myself and I can only hope that it will appeal to a U3A readership. (I have no way of knowing whether it appealed to the Cross readership – I never received even the tiniest response to my well-intentioned writings!). Anyway, here it is:

A Portion of Pi

I wonder if readers are familiar with (or even addicted to) 'The Simpsons', the cartoon television programme which appears regularly on Channel 4 in the early evening. I have to admit that I, personally, am not a watcher but more because I have never developed the habit of TV watching at such an early hour. However, I have to record a sudden burst of interest following receipt of a Christmas book present from a friend who is a keen Simpsons fan. The work is by Simon Singh who writes popular science books. I well remember reading his account of 'Fermat's Last Theorem' just a few years ago so I know him to be an excellent writer with a flair for making abstruse subjects understandable – and, indeed, enjoyable – to the general reader. This later book is titled 'The Simpsons and their Mathematical Secrets' which strikes one initially as singularly improbable. How can this somewhat zany story of a US family contain mathematical secrets, one wonders? The answer lies in the odd fact that probably more than half of the people who produce the programme happen to have serious mathematical interests (some of them have degrees in maths or the sciences!) and they take every opportunity to inculcate those interests into the entertainment, usually without making it apparent! An example concerns an occasion when the family went to a Ball Game and, by way of diversion the crowd was asked to guess the attendance. For guidance, three numbers were offered on the large screen in the stadium: (a) 8191, (b) 8128 and (c) 8208. To you and me these numbers appear altogether random but to the mathematical cognoscenti they have serious significance.

The first is a prime number (meaning it has no factors other than '1' and itself), the second a 'perfect' number (meaning that, if all its factors (excluding the number itself) are added together, they equal the number itself – the smallest such number is '6' – try it) and the third a 'narcissistic' number (and this is really quite surreal – the number is equal to the sum of each of its digits raised to the power of the number of digits – ie $8208 = 8^4 + 2^4 + 0^4 + 8^4$ - it takes a bit of believing, doesn't it!). Anyway, you get the idea – just about anything is possible but most of us would never recognise it.

This brings me to the question of Pi (or π) which, as everyone knows, is simply the ratio of the circumference of a circle to its diameter. It's an odd (by that I mean 'strange') number because it is 'irrational' – it cannot be pinned down to any finite number of decimal digits. Mathematicians have calculated it to more and more decimal places but there is never any end to it. From school days, I remember being taught that a fair approximation was given by the fraction 22/7 which my calculator tells me is 3.14286 but I also seem to remember discovering that a better approximation is 3.14159 though at this point my memory runs dry. Needless to say, the Simpsons couldn't resist making fun of it – Homer Simpson dressed up as a Pie Man (Simple Simpson) and much fun was made from the obvious pun. But, aided by Simon Singh, we can enjoy a bit of first order advanced mathematics ourselves by thinking about how to calculate 'π' – and you can get the kids to help in this! Find a sheet of paper and a pencil. Now draw a circle and draw a square round it so that the sides of the square just touch the circle – ie they are tangents to the circle. It is easy to see that the sides of the square are each equal to the diameter of the circle and we can then calculate the 'circumference' of the square to be just four times this diameter. Obviously, this is quite a bit greater than the circumference of the circle, so we know that π must be somewhat less than four. Now let's draw another square which fits within the circle so that its corners lie on the circle. How long are the sides of this square? Here it gets a bit tricky because we need to use Pythagoras' theorem. The diagonal across the square coincides with the diameter of the circle and Pythagoras then tells us that (if s is the length of the side and d is the diameter of the circle):

$$s^2 + s^2 = d^2$$

In other words: $s = d/\sqrt{2} = 0.7071 \times d$

So, finally, the circumference of this square is just [4 x 0.7071 x diameter] in other words, 2.828 times the diameter. Again we can see that this value of circumference is rather less than that of the circle so we now know that π lies between 2.828 and 4.000. Let's guess that a better approximation might be the average of these two numbers, which amounts to 3.414. As you see, we are already homing in on an accurate value, even though we have used a rather crude method of making our first estimate.

r = Radius of Circle

2r

L

T

r   r

Fig 1   Fig 2

Calculation of Pi

Would you believe that the Greek scientist, Archimedes did exactly what we have just done and that he then went on to obtain a much more accurate value. I won't bore you with the details but it is quite straightforward to improve on this approach by approximating the shape of our circle by fitting it round or within a hexagon and repeating the calculation to obtain a ratio of 3.232, then choosing even more complicated regular figures to improve the accuracy still further. Archimedes eventually 'trapped' his circle within and without a ninety-six sided polygon and obtained a value for π between 3.141and 3.143. Just how he managed this with no knowledge of decimal numbers nor any hint of algebra is a minor miracle but later mathematicians were to take matters a great deal further

In the fifth century AD a Chinese mathematician Zu Chongzhi used a 12,288-sided polygon to show that π lay between 3.1415926 and 3.1415927, which beats my memory by two further decimal places. Much later a Dutch scientist Ludolph van Ceulen used a four billion-sided polygon to calculate π to 35 decimal places! Of course, there are other methods and other mathematicians have left all this well behind – an English amateur mathematician William Shanks claimed in 1874 to have achieved 707 figure accuracy (though it later turned out that he had made a mistake at the 527th place!), while modern day computers have reached several million decimal places. Quite what the point of all this can be is not easy to appreciate save to say that "it can be done". And, in any case, it takes nothing from the satisfaction we derive from our elementary calculation above – we shall therefore rest on our (however primitive) laurels.

John Orton

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The big advantage we have with the Weekly Letter is that you no longer have to draw your own diagram – 'PowerPoint' does it all for us. By the way, there is a prize for anyone brave enough to do the calculation for a pair of octagonal shapes and, even if you don't feel quite up to that, you really do have to admire the audacity of those special numbers. My mind is still boggling at the very thought of that 'narcissistic' number 8208.

> By the way, since we are enjoying a small diversion into science, let me tell you the one about the photon that was going through airport security: When asked if he had any baggage, he answered "No, I'm travelling light."

> As you see, even 'science' has its levity.

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Just a Little More of Cotgrave's History

While struggling to research the past participation of Cotgrave's workforce, I came across the following contribution, written by a gentleman named A D Crampton who wrote several short newspaper articles about Cotgrave round about the year 1950. I thought it might be of general interest so I have taken the liberty of re-writing it in 'Word' format so everyone can enjoy it – and you had jolly well better *enjoy* it now I've gone to all that trouble!

There were several Crampton families living in Cotgrave during the nineteenth and twentieth centuries, mostly farm labourers but Arthur D Crampton is specially interesting in that, in 1911, he worked as a 'Telegraph Clerk' (his father was a tailor). This is the only mention of such an occupation in any of our Census Returns. . He was actually born in Radcliffe (where his mother came from) but seemed to have lived most of his life in Cotgrave

Whether he worked in Cotgrave or not is unclear – he may, perhaps, have worked at Plumtree, where there was a railway line. (In the early days of the Electric Telegraph the lines used to run alongside railway tracks, its being a convenient method of connection which didn't require digging up swathes of the public highway.) I should, perhaps, add that in 1939 he lived at 'Seymour Cottage', Bingham Road.

From One Generation to Another

By A D Crampton

(A newspaper article written about 1950)

A square near the centre of Cotgrave. Not much to look at. Farm implements and scrap iron lying about. Irregular old buildings – anything but objects of beauty – the workshops of wheelwright, smith and saddler, the three trades concerned with the upkeep of farm gear, grouped together around three sides of the square, a combination said to be found in no other village in England. The 'lay-out', whether planned or accidental, would not discredit the most up-to-date exponent of 'time-and-motion study'.


What the scene lacks in artistic appeal, it makes up in interest for those who have any care for the lives of their forefathers. Here horse collars are stuffed and stitched, horse shoes are fitted, farm carts are mended, just as they have been for generations. Not through any survival of obsolete methods, but because no better way has been found of doing these jobs.

Until the untimely death of our saddler, Mr Ernest Walker, a few years ago, the three trades had 'run in families' - father to son. Mr Ernest Hoodless carries on the saddlery in the old tradition of honest-to-goodness workmanship. Mr William Marriott, the father of Albert our present blacksmith was a familiar figure sixty years ago, while the grandfather of Mr George Simpson, today's wheelwright, was making and repairing farm waggons well over a hundred years ago in the clay-walled shop which stood on the site of the one now in use. Both the father and grandfather of George lived to be over eighty, and we trust that George, now 'knocking on' as we say, will keep up the custom.

Sadler, smith, wheelwright – how they drank in those old days! Whether by chance or as part of the plan, the Rose and Crown Inn joins on to the saddler's shop. An ancient pump stands just outside: this is not irony on the part of the original planner, since for many years this pump supplied a good part of the village with drinking water! Every Friday morning, near ten o'clock, a pony and trap from an outlying farmstead would draw up at the 'pub'. Over the pony's head would go the reins. One whistle from the farmer would empty all three workshops and it was usually ten o'clock at night before the merry farmer would be hoisted into the trap by his merry pals, who would then point the patient pony's nose toward home and leave the issue with all confidence, despite the dark roads, to that Providence which is said to watch over children and tipsy men.

But how they worked! For instance, fifteen heavy wheels were once re-hooped between dawn and dusk, each hoop entailing a cut and weld, beside a bonfire.
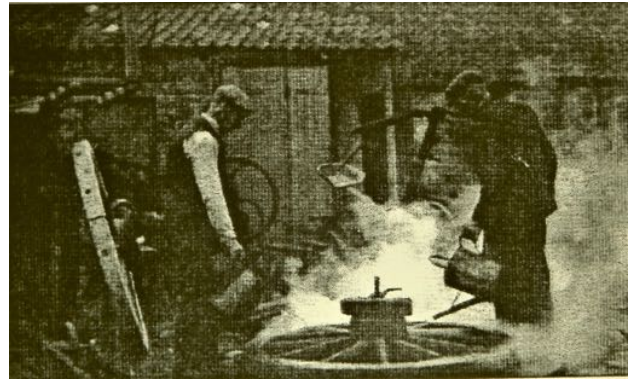
And how too, when in the mood, they joked and gossiped! One parishioner who used to join their group sixty years back, recalls some of their sayings and pranks. But if these stories were set down as told, our respected editors would require a blue pencil as thick as one of their thumbs! And, unfortunately, the joke itself and the Rabelaisian style of its telling 'belong' so inseparably that to refine the tale would be to kill it. The saddler's criticism of the youths who hung about his shop is, however, quotable – "Your einie (eyes) on ye! You young uns are too fawse (knowing) to work hard nowadays. Fawse as a waggon-load o' monkeys!"

Characteristic, too, of their dry humour was the remark of the smith when he went to dun a farmer for an unpaid bill – "He may as well be offended as me."

We hardly know why Father Time, who brings so much good and bad within his 'bending sickle's compass' has spared this little backwater, whose yesterdays rove back so far. But whether he has been intentionally indulgent or just preoccupied, we say "Thank you Father Time".

And today, thanks to the Town and Country Planning Act, the village is no longer powerless to control its own amenities. Our Parish Council, alive to its right of recommendation, has already asked the appropriate authority that this unique site, a vestige of 'Granfether's' village, shall remain undisturbed, not merely from sentiment, but for communal service.

How fitting, after an era of vandalism, for the work of some Georgian or Victorian planner to be safeguarded by the planners of 1950.

And how instructive for a new generation, say fifty years on, if the three workshops, equipped with modern plant and methods – possibly by the aid of the Rural Industries Bureau, which exists to help rural craftsmen – still stand, framing the old square.

I should, perhaps, offer a little explanation about the repair of cart wheels. They were, of course, made of wood but, in the interest of longevity, fitted with an iron rim which had to be replaced from time to time and that was a particularly skilled task. The rim was first made by bending a long, rectangular-sectioned iron rod into a circle, welding the ends together, then fitting it to the wheel by allowing it to shrink onto the wheel as it cooled from something like red-heat. Note the use of the watering can to cool both wheel and rim during the fitting process.

The other matter, of particular interest to the Real Ale Group, is the use of a pony and trap to solve the drink/drive problem. It sparks the thought that the current development of self-drive cars may well be a step in the direction of resuscitating such a procedure – one simply types one's post-code into the Sat Nav and sits (or lies) back while the car returns home on its own! (Provided, of course, that one can remember one's Post-Code - it could be embarrassing if one got it wrong! – but, then, modern technology could surely arrange for the car to remember it for you, just as the pony used to).

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Art

We have no paintings for you this week but plenty of art from the Knit and Natter Group (thanks again to Maureen Johnson) and some delightful photographs of Lesley Sinclair's dog trying on a face mask. Life certainly does get complicated – what would we do without ears to hold spectacles, hearing aids and face masks? Personally, I never know which to put on first!

Puzzle Corner

No new puzzles this week – you may be relieved to hear – but at least we have the answers (together with the questions) to Paul Childs' quiz last week.

<u>Musical pop quiz – Girls names</u>

1) Ritchie Valens sang a sorrowful song about whom? **Donna**

2) Who were the Four Pennies singing about whom ? **Juliet**

3) Neil Diamond sang a sweet song about whom ? **Caroline**

4) Frankie Laine belted out the devil of a song about? **Jezabel**

5) Nat King Cole sang about a famous painting? **Mona Lisa**

6) Paul Anka wrote and recorded this famous early pop hit? **Diana**

7) Frank Ifield singing about a girl 'down under'? **Waltzing Matilda**

8) West Side Story featured a girl called ? ……**Maria**

9) Little Richard sang about whom? **Lucille**

10) The Beatles sang about her 'in the sky'? **Lucy**

11) Buddy Holly had hits singing about this girl? **Peggy Sue**

12) The Batchelors had a hit with this girl's name? **Diane**

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Creative writing

Once again we have to thank the Creative Writing Group for our final contribution. It takes the form of another essay using the words 'van, leaving, brand new £20 note, nature, corset and sundial', this time from Jim Odell in the style of a letter.

6. Clement Avenue.
Bristol,
BS1 1AD.

Dear Bob and Jane.

Thank you for your letter that arrived a fortnight ago. We were just leaving for our holiday when the postman arrived. I doubt if our postcards have arrived yet.

We decided to visit our friends in France again. This time, we took the van. It's easier to deal with than hotels sometimes and there is a lovely caravan site quite close to their house.
We usually go via Dover-Calais but this time we found it more convenient to go from Portsmouth to Ouistreham. It is nearer to Caen and less driving time. Just 12 kilometres.

It was good to hear from you again, with all your news. You say that you have had your garden re designed and that there is one corner to give nature a chance. Perhaps, now that we are back, we ought to have our garden sorted out. Maybe an apple tree and a colourful border. Jane likes your idea of a sundial. She has always wanted one. It certainly would fit nicely in the centre of the lawn. A bit quaint but different. It's a shame, though, that the firm selling them cannot guarantee sun so that the dial worked every day.

I cannot remember how many times Jane and I have been to Caen and meeting our friends, the Bergers. It is usual for these people to visit restaurants. Perhaps more often than we do. So, it was pleasant to join them at Le Tavern. But all good things must come to an end so after spending a very pleasant fortnight with them, we said our farewells and made our way back to the boat and England. Really, I'm always happy to return.

When we arrived in England, I noted that I was short of English money. I called at the bank to collect some. It came as five brand new £20 notes. We had not seen any before as they had only come out a few days ago. 20th. February this year. They were crisp and clean, they were different to the old ones An image of the queen on one side and on the back an image of the painter, J. M .Turner.

Anyway, we hope to come and see you next week so we can catch up with the news.

Until then all the best
John and Joyce.

John took the letter to the post office and handed it to the postmaster. First class stamp please. Mr and Mrs Corset that's a strange name? remarked the postmaster.

Yes, they think it's unique.

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I've always been fascinated by sundials and am reminded of one in particular which I photographed on St Peter's Church Walpole (Walpole is in Norfolk but very close to the border with Lincolnshire). When I took this photo in 2006, it had just been smartened up – a more recent photo on the internet makes it look considerably scruffier! The date 1747 is very unusual (church clocks became available from about 1400), as is the format. Many mediaeval churches have sundials on their south-facing walls (usually near the porch) – it was necessary to keep track of time so that the bells could be sounded at the appropriate hour and to summon the congregation to church services. But I am frustrated by the soubriquet 'ABI FUGIO'. 'Fugio' is the Latin verb 'to flee' or 'to fly' but I'm stumped by the 'ABI' bit. Can anyone remember enough of their school Latin to help out?

However, the mention of Latin reminds me that I should conclude with a couple of Latin jokes, provided by my collaborator/namesake:

> A Roman went into a bar and asked for a 'Martinus'. "You mean a Martini, I suppose" said the barman. "If I'd wanted a double, I'd have asked for that" came the reply!

> Another Roman went into the bar and held up two fingers, saying "Five beers, please."

We have much more for you but that seems quite enough for the moment – thanks for your attention.

Next Week

Next week the Letter will come of age – our twenty-first edition - and we have a rather special article by Chris Soar on his love affair with old cars.

Don't die of suspense before next week. See you then.

John