

#PARENTING

Getting Kids Into Science

"Some of the greatest challenges and opportunities our society is faced with will be solved by teams rather than by individuals"



To get kids into science for the long haul, new findings suggest it's best to engage them alongside their families.

The finding runs counter to the current framework, in which children attend science-related summer camps and after-school programs apart from their families. That approach may diminish the long-term potential of what they learn.

"We wanted to see if we could support families as a whole, as opposed to giving a student a really amazing one-off experience and sending them home to parents who potentially aren't familiar with the content or don't know how to help them pursue classes they could take on the subject," says lead author Megan Ennes, assistant curator of museum education at the Florida Museum of Natural History. Ennes and co-authors report their findings in the Journal Research in Science Education in partnership with North Carolina State University, the researchers based their study on a family science program hosted at three museums.

Over the course of 10 months, families met on weekends for science-themed events, beginning each day with a communal meal.

Afterward, the cohort participated in hands-on activities and attended an information session led by professionals with careers in science, technology, engineering or mathematics (STEM), giving families first-hand accounts of what it's like to work in those fields.

A local teen coding club demonstrated the nuances of programming by having families construct a Rubik's Cube machine in one session, and an astronaut visited to discuss the promise and perils of space travel in another.

During an event with a focus on local wildlife, an ornithologist helped families capture birds with mist nets and band the ones that hadn't been caught before to monitor their populations. Shared experience strengthened these formative activities.

"After the bird banding, one of the parents bought a feeder so they could continue talking about birds at home," Ennes says. "Our goal wasn't to convince students to become scientists, because not everyone wants that. But if we can help families see science as something they do for fun together, then we can help ensure they have a lifelong engagement with it."

"Most kids have an innate interest in science," Ennes says. "For them, it's about curiosity and wonder, but research shows that as they make their way through middle school, there's a significant decline in who remains interested and chooses to take optional science classes in high school.

So we wanted to focus on upper elementary school, where children still have that curiosity, so that we could build a support system around it." Children who participated in the program were more likely to envision themselves as scientists in the future than the students in the control group, who attended regular after-school programs during the same time period. Program participants also increasingly saw science as something they'd continue to use and engage with in the future, compared with children in the control group, whose perception of the science education experience waned throughout the year.

And despite the focus on younger students, the program benefits also extended to other family members. Through exit surveys and personal correspondence, the authors noted that families began visiting other museums in their free time, and the program sparked or renewed an interest in science in siblings and parents.

One parent told Ennes that their seventh-grade student had failed their science classes through most of their schooling. After engaging in science activities with their family for a year, the student not only brought their grade up to an A but also received an award for academic achievement from their school as well.

A sibling from another family applied to become a museum volunteer, and three parents made the decision to go back to school and potentially obtain a degree in science.

Scientists are often portrayed as lone mavericks who make ground-breaking discoveries, but according to Ennes, engaging as a community is much closer to how scientists actually operate.

"Some of the greatest challenges and opportunities our society is faced with will be solved by teams rather than by individuals," she says. "Helping families see science as something they do together with a community can help build 21st-century skills needed to be successful in science and society, such as collaboration and flexibility."



Thomson Engineering College Roorkee now an IIT where Mohammad Ali Khan studied. The college was founded by Capt Proby Cautley who built the Ganges Canal. An account on Cautley was carried in Arbit some years ago.

Mohammed Ali Khan Executed Without Trial



Maj Chandrakant Singh VRC (Retd) Military Historian

Mohammed Ali Khan, a trained engineer, had gone to England twice as a part of diplomatic delegations. Having just quit service with the East India Company in disgust at its racist discriminations against him and other Indians, he first joined in 1850 the entourage of General Jung Bahadur Rana the de facto ruler of Nepal, who was going to England. Treated well by the British in England, Jung Bahadur supported the British in 1857. Soon after Jung Bahadur's return to India, Mohammed Ali Khan was recruited by Nana Sahab to join the delegation led by Azimullah Khan, which was going to England to plead the Peshwa's case with the Privy Council. A Scottish army man Forbes-Mitchel who captured him recorded his statement before he was executed without trial.

"I am the chief engineer of the army of Lucknow, and came out on a reconnoitring expedition, but Allah has not blessed my enterprise. I intended to have left on my return to Lucknow this evening, and if fate had been propitious, I would have reached it before sunrise tomorrow, but I had got all the information which was wanted, but I was tempted to visit Unao once more, being on the direct road to Lucknow...and it was my misfortune to encounter that son of a defiled wretch who, to save his own neck from the gallows...wishes to divert attention from his former rascality by selling the lives of his own countrymen and co-religionists."

"You ask me what my name is, and state that you intend to write an account of my misfortune to your



Rebels being blown off by canons.

#HISTORY

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From Bareilly College I passed to Government Engineering College at Roorkee (now IIT Roorkee) and studied engineering for the Company's service, and passed out the senior student of my year, having gained marks in excess of all European pupils, both civil and military. But what was the result? I was nominated to the rank of Jemadar of the Company's engineers and sent with a company on detached duty on the hill roads as a native commissioned officer, but actually subordinate to a European sergeant, a man who was my inferior in every way, except perhaps, in mere brute strength, a man of little or no education, who would never have risen above the grade of a working-joiner in England. Like most ignorant men in authority, he

exhibited all the faults of the Europeans which irritate and disgust us, arrogance, insolence, and selfishness.....I wrote to my father and requested his permission to resign, he agreed with me that I, the descendant of princes, could not serve the Company under conditions such as I have described. I resigned the service and returned home, intending to offer my services to his late Majesty Nussar-ood-Deen, King of Oude; but just when I reached Lucknow I was informed that His Highness Jung Bahadur of Nepal, was about to visit England, and required a secretary well acquainted with the English language. I at once applied for the post, and being well backed by recommendations both from native princes and English officials, I secured the appointment, and in the suite of the Maharajah I landed in England for the first time.

Among other places we visited Edinburgh, where your regiment, the Ninety-Third Highlanders, formed the guard of honour for the reception of His Highness. Little did I think when I saw a kilted regiment for the first time, that I should ever be a prisoner in their tents in



Kaiserbagh Palace Lucknow.

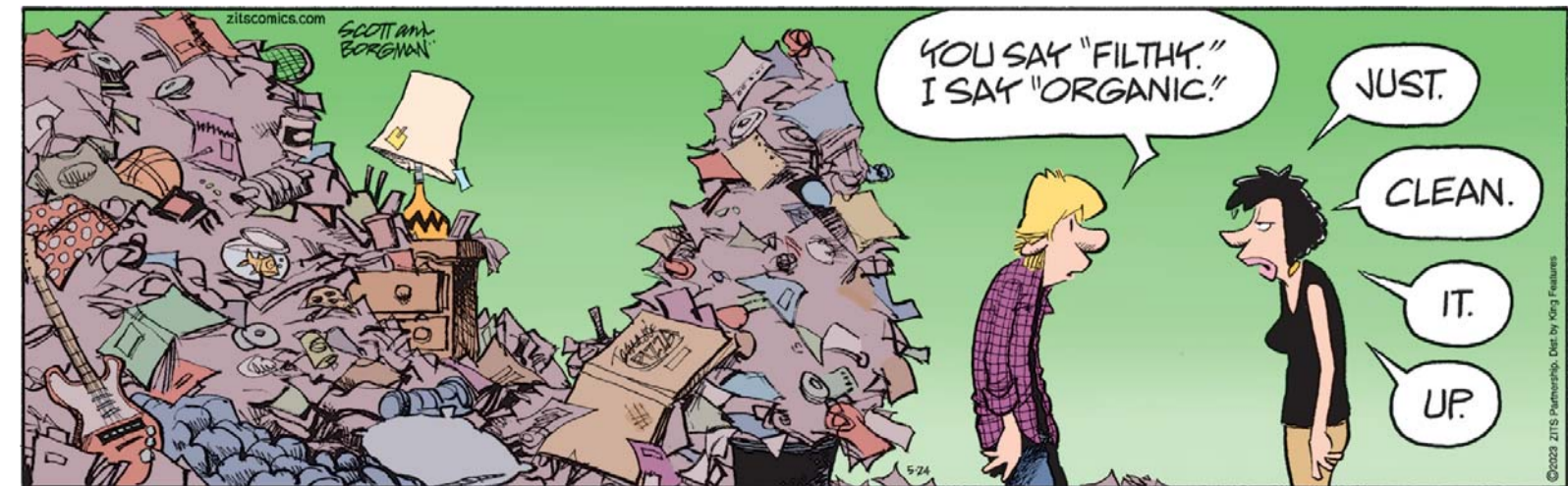
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BABY BLUES



By Rick Kirkman & Jerry Scott

ZITS



By Jerry Scott & Jim Borgman



Sense Of Smell

Your sense of smell warns you of dangers such as smoke and poisonous gases. It also helps you appreciate the full flavours of food and drink. Your sense of smell is 10,000 times more sensitive than your sense of taste. You are able to detect thousands of different smells. The receptors that sense smells are called olfactory receptors. When your olfactory receptors are stimulated, they transmit impulses to your brain. This pathway is directly connected to your limbic system. Smells also leave long-lasting impressions and are strongly linked to your memories.

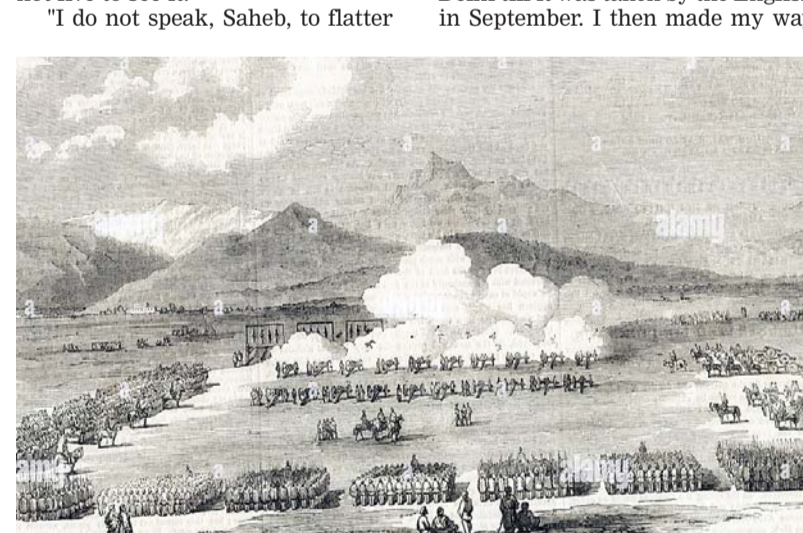
"I do not speak, Saheb, to flatter you or to gain your favour. I have already gained that, and I know that you cannot help me any further than you are doing, and that if you could, your sense of duty would not let you. I know I must die; but the unexpected kindness which you have shown me has caused me to speak my mind. I came to this tent with hatred in my heart, and curses on my lips; but your kindness to me, unfortunate, has made me, for the second time since I left Lucknow, ashamed of the atrocities committed during this rebellion. The first time was at Kanpur a few days ago, when Colonel Napier of the Engineers was directing the blowing up Hindu temples on the Kanpur Ghat, and a deputation of Hindu priests came to beg that the temples might not be destroyed. 'Now listen to me' said Colonel Napier in reply to them; ' you were all here when our women and children were murdered, and you also know that we are not destroying these temples for vengeance, but for military considerations connected with the safety of the bridge of boats



Humayuns Tomb in 1957 where the sons of the last Moghul were killed by Codson.

the plains of Hindustan; but who can predict or avoid his fate?"

Military Considerations
"Well I returned to India, and filled several posts at native courts till 1854, when I was again asked to visit England in the suite of Azimullah Khan, whose name you must have often heard in connection with his mutiny and rebellion. On death of the Peshwa, the Nana had appointed Azimullah Khan to be his agent. He like myself, had received a good education in English, under Gunga Deen, headmaster of the Government School at Kanpur. Azimullah was confident that, if he could visit England, he would be able to have decrees of Lord Dalhousie against his master reversed, and when I joined him he was about to start for England, well supplied with money to engage the best lawyers, and also to bribe high officials, if necessary. But I need not give you an account of our mission. You already know that, so far as London drawing-rooms went, it proved a social success, but as far as gaining our end a political failure. We left London after spending 50000 pounds sterling, to return to India via Constantinople in 1855. From Constantinople we visited Crimea, where we witnessed the assault and defeat of the English on 18 June, and were struck by the wretched state of both armies (English and French) in front of Sebastopol. Thence we returned to Constantinople, and there met real or pretended Russian agents, who made large promises of material support if Azimullah could stir up rebellion in India. It was then Azimullah and I formed a resolu-



Anyone who has recently seen the Queens funeral, Charles coronation and the trooping of the colour parade, would have been impressed by the grand show and ceremony the British can put up. They were good at even making the mass executions into a grand spectacle.



Jama Masjid Delhi after in 1957

tion or to gain your favour. I have already gained that, and I know that you cannot help me any further than you are doing, and that if you could, your sense of duty would not let you. I know I must die; but the unexpected kindness which you have shown me has caused me to speak my mind. I came to this tent with hatred in my heart, and curses on my lips; but your kindness to me, unfortunate, has made me, for the second time since I left Lucknow, ashamed of the atrocities committed during this rebellion. The first time was at Kanpur a few days ago, when Colonel Napier of the Engineers was directing the blowing up Hindu temples on the Kanpur Ghat, and a deputation of Hindu priests came to beg that the temples might not be destroyed. 'Now listen to me' said Colonel Napier in reply to them; ' you were all here when our women and children were murdered, and you also know that we are not destroying these temples for vengeance, but for military considerations connected with the safety of the bridge of boats. But if any man among you can prove to me that he did a single act of kindness to any Christian man, woman, or child, nay, if he can even prove that he uttered one word of intercession for the life of one of them, I pledge myself to spare the temple he worships.....I was so impressed with the justness of Napier's remarks that I too turned away ashamed."

Strengthening The Defences

On this I asked him, "Were you in Kanpur when the Mutiny broke out?" To which he replied: "No thank God! I was in my home in Rohilkhand, and my hands are unstained by the blood of any one, excepting those who have fallen in the field of battle. I knew the storm was about to burst, and had gone to place my wife and children in safety, and I was in my village when I heard the news of the mutinies at Meerut and Bareilly. I immediately hastened to join the Bareilly Brigade and marched with them for Delhi. There I was appointed engineer in chief, and set about strengthening the defences by aid of a party of Company's engineers which had mutinied on the march from Roorkee to Meerut. I remained in Delhi till it was taken by the English in September. I then made my way

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to Lucknow with as many men as I could collect of the scattered forces. We first marched to Mathura, where we were obliged to halt till I threw a bridge of boats across the Jamuna for the retreat of the army. We still had a force of over thirty thousand men under the command of Prince Feroze Shah and General Bhukt Khan. As soon as I reached Lucknow I was honoured with the post of chief engineer. I was in Lucknow in November when your regiment assisted to relieve the residency. I saw the horrible slaughter in Secunderabagh. I had directed the defences of that place the night before, and was looking on from the Shah Nujeff when you assaulted it. I had posted over three thousand of the best troops in Lucknow in the Secunderabagh, as it was the key of the place and not a man escaped. I nearly fainted; my liver turned to water when I saw the green flag pulled down, and a highland bonnet set up on the flagstaff which I had erected the night before. I knew that all was over, and directed the guns of Shah Nujeff to open fire on the Secunderabagh. Since then I have planned and superintended the construction of all defensive works in and around Lucknow. You will see them when you return, and if the sepoy and artillery men stand firmly behind them, many of the English army will lose the number of their mess, as you call it, before you again become masters of Lucknow."

To be continued...
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A Rare Story - The Sepoy Perspective

One of the classics to come out of Indian writing in the nineteenth century is a book 'Sepoy to Subedar' the memoirs of Sita Ram Pandey a sepoy who served in 31st Bengal Native Infantry, later renamed as 2nd Queen Victoria's Rajput Light Infantry and now 4 Guards the battalion I had the honour to serve.

He had taken part in the first Afghan Wars and the Sikh Wars after which he was transferred to the newly raised Punjab Regiment in which he served during the Mutiny or call it by whatever name one will. His story is recounted in his memoirs 'From Sepoy to Subedar' first translated into English and published in by Major later Major General Norgate. This is the only account by an Indian soldier of military service with the East India Company. Sita Ram Pandey:

"One day in one of the enclosed buildings, a great number of prisoners were taken. They were nearly sepoys. They were all brought in after the fight to the officer commanding my regiment, and in the morning the order came in that they were all to be shot. It happened that it was my turn to command the firing party. I asked the prisoners their names and regiments. After hearing some five or six, one sepoy said he belonged to a certain regiment which was my son's regiment. I naturally enquired whether he had known my son Anant Ram, of the Light Company. He answered that that was his own name, however this is a very common name, and because I had always imagined that my son must have died from the Sindh fever, since I had never heard from him, it did not first strike me. But when he told me that he came from Tilowry, my heart leapt into my mouth. Could he be my long lost son?"

There was no doubt about it, for he gave my name as his father, and fell down at my feet imploring my pardon. He had mutinied with the rest of the regiment and gone to Lucknow. Once the deed had been done, what else could he do? Where could he have gone, even if he had wanted to escape?

The prisoners were to be shot at four o'clock in the afternoon and I must be my son's executioner! Such is fate! I went to the Major Sahab and requested that I might be relieved of this duty as a very great favour. He was very angry and said he would bring me before a court

martial for trying to shirk my duty. He would not believe I was faithful servant of the English Government- he thought my real sympathies were with the mutineers-and would not listen to me any further. At last my feelings as a father got the better of me, and I burst into floods of tears. I told him that I would shoot every one of the prisoners with my own hands if he ordered me but I confessed that one of them was my own son. The Major declared that I was only making up an excuse to avoid having to shoot my own brethren but at last his heart seemed to be touched. He ordered my unfortunate son to be brought before him and questioned him very strictly.

I shall never forget the terrible scene. Not for one moment did I consider requesting that his life should be spared-that he did not deserve. Eventually the Major came to believe in the truth of my statement and ordered me to be relieved from this duty. I went to my tent bowed down with grief which was made worse by the gibes and taunts of the Sikhs who declared I was a renegade. In a short time I heard a volley. My son received the reward for mutiny! He showed no fear but I would much rather that he had been killed in battle. Through the kindness of the Major I was allowed to perform the funeral rites over my misguided son. He was the only one of the prisoners over whom it was performed, for the remainder were all thrown to the jackals and vultures.

I had not heard from my son since I went Kabul, and thus I met him again, untrue to his salt, and in open rebellion against the master who had fed his father and himself. But I have said enough and more is unnecessary."

Some may be surprised at the fact that the father and son did not recognise each other when they first saw each other on this fateful day. The fact is that the father and son had not met for fifteen years from the time the boy as an eighteen year old had joined his regiment as a recruit and Sita Ram Pandey had left for Kabul to take part in the First Afghan War 1839-45 and the Anglo-Sikh Wars 1845-49. There were no selfies and such things in those days nor were yearly furloughs granted to British Officers of the East India Company, nor a postal service as we know today.



The daughter of Brig Wheeler shooting one of the rebels. She herself was killed later in trying to escape in a boat on the Ganges.