



Birbal Sahni  
centenary, 1991

## Reminiscences

### Uncle Birbal

#### *Reminiscences of a nephew*

I write this drawing from my experiences as a young boy who viewed his uncle not as a great palaeobotanist, but as a friend and companion, and one well versed in the intricacies of kite flying and puppeteering. Now, five decades later, it is difficult to distinguish what I have learnt of Uncle Birbal from my father and what were my own impressions. Here I shall try to recall those days of the turbulent forties, which appeared larger than life for a nine-year-old. It was a time of great excitement, for great wars and great parades. It was also an era of great men, and one of these great men was not merely a name in a newspaper in some distant land. Rather, he was the gentle person who often drove a big black car to our home in Lucknow, dressed in an achkan-churidar, and had a gentle smile—my Uncle Birbal.

The realization that a family member is a leading world authority in science comes slowly to a youngster. It dawns on him gradually after listening to 'boring' adult conversation. However, I remember that Uncle Birbal was different: one of the most striking impressions that I have of him is of his dress. While the other elder family members preserved their London-made suits in naphthalene-balled shelves in cupboards, Uncle almost exclusively wore a well-tailored achkan-churidar, stitched, it was so rumoured, by a leading draper whose patrons included the nawabs of Avadh. Even to a young boy, this distinctiveness added an aura of mystery and charm and emphasized the elegance of our own dress. But more than this, I feel that Uncle, by wearing this apparel, was telling the world that he

was a free Indian and proud to be one.

One of my constant companions in those days used to be a house-helper by the name of Aan Singh. He was previously employed as a man-about-the-house by Uncle but had to 'leave' his employment when he tried his inexperienced hand at driving Uncle's car but succeeded only in denting the fender. In spite of being dismissed from service, Aan Singh had a soft corner in his heart for his former employer. He would narrate incidents of both the Sahnis, Savithri and Birbal, who would personally visit the outhouses if any of the house servants or their children had fallen ill or were in need of money. It was through Aan Singh that I learnt how Uncle was idolized by his staff and how, on numerous occasions, he would stop his car to give a lift to an employee during the blazingly hot summer days of Lucknow. Some twenty years later, when I myself was a B Sc student of botany at Lucknow University, some of the older lab attendants would come to me and tell tales of how Uncle had helped them in their hour of need.

But first, a brief account of the family in which I grew up and the towering personality of my grandfather who was instrumental in shaping his own destiny and the destiny of his sons. Ruchi Ram Sahni started his education with a *pandah* and was paid four annas [one anna was six paise then] for every multiplication table that he learnt. Whether it was this princely incentive or his own natural talent, he excelled in mathematics later on, passing the B A examination of Panjab University in 1884 topping the merit list, and later getting an MA in chemistry from Calcutta. His first appointment was as a meteorologist at Shimla. Later he took over as professor of chemistry at Government College, Lahore. In between, largely to educate all his sons in

England, he undertook a number of business ventures, which included the setting up of a chemicals factory and a scientific-instrument workshop. The acquisition of an industrial base did not diminish his interest in research and academics: while in his late fifties he undertook a journey to Heidelberg on a fellowship, and later moved to England. His work there culminated in two papers (Ruchi Ram Sahni, *Philos. Mag.*, 1915, 28, 836; 1917, 33, 290) on radioactive decay in Lord Rutherford's lab at Cambridge where Neils Bohr was also a student.

Grandfather's disciplinarian ways kept most of his sons at bay even during the roaring twenties of London! But Uncle Birbal was wont to have his way: he preferred a career of research in botany against the wishes of his father, who wanted him to join the Civil Service, but the son won the day. And to Cambridge he went, armed with Hooker's *Flora Indica* and an assortment of specimens collected during his travels in the Himalaya. Among these were specimens of 'red snow' formed by a rare snow alga obtained from the Machoi Glacier at Zoji La Pass in 1911 just before his departure for England.

Family tradition laid great emphasis on the 'hardening theory', applied in large measure to my uncles, with only a filtered, diluted version trickling down to us of the third generation. My grandfather toughened up his children to withstand physical stresses: he himself would take great pleasure in wearing the minimum of warm clothing in winter and the maximum during the hot summer months. For several weeks, my uncles and grandfather would undertake arduous expeditions to remote areas in the Himalaya, sometimes at great risk to themselves. On one occasion at least, while crossing the Machoi Glacier they saw with horror the frozen carcass of a



horse in a deep ice crevasse. The spirit of adventure and daring captivated the imagination of Birbal and Mulk Raj and we youngsters listened to their stories with a lot of interest.

There are people more competent than myself to comment on Uncle Birbal's scientific achievements, but here I am more concerned with the lighter side of his life and such mundane matters (at that time they seemed paramount) as balancing a kite, his love for food, practical jokes and fossils—fossils, not of the kind that are stored and studied in cold, drab laboratories, but those that adorn the living room as curios, or could be found as 'living' descendants in the spacious lawns enveloping his *safed kothi*. Uncle was fascinated by the highly polished surfaces of petrified wood, and there were many examples of his own efforts of sectioning fossil tree-trunk specimens.

Food is an obsession with most people from the land of the five rivers but it is a rarely discussed theme in most commentaries. I do not know why this is the case. At least, I remember that this was not so at home. Father and all my uncles were always 'talking' about food and the various ways of preserving its inherent 'goodness' and their wives had a heavy burden to bear. But for the young ones, the gastronomical 'experiments' were a delight! Uncle was no exception to this rather undying family trait. One incident that I recall vividly and was always recited at the dinner table when the same dish was served too often concerned the pudding prepared by Uncle's landlady when he was staying as a paying guest at Warkworth Terrace at Cambridge around 1920. It so happened that the poor lady (who loved Birbal dearly) used to prepare (nearly everyday) the same bread pudding but to make it more palatable she used to change its name: one day it would be the 'King John Dessert' and the next, 'Lady Anne's Delight'. Unable to bear this situation day in and day out, Uncle Birbal took the law into his own hand one day and the pudding was never repeated. 'Det's wa'e throo me puddin', 'e did' is what she told my father when he moved into the same 'digs' at

Cambridge a year later!

Uncle Birbal was his most natural self with children. Some men and women have the God-gifted ability to scale down their thoughts, ideas and interests to match the level of youngsters and so it was with him. Possibly because he had no children of his own, he would go out of his way to play with and entertain children. His toy monkey, which he used to manipulate as a puppet, was in his hands an animated, thinking and mischievous animal that could pinch your ears or tickle your nose or enliven your entire evening. Few people know that he had scoured all the toy shops of Munich to obtain this very puppet after having seen a performance by a professional puppeteer. He was also an excellent story-teller—not for him the tales of wicked queens and wand-wielding fairies, rather his stories almost always had a historical base. His most favourite was the way Shivaji and his son escaped in a *mithai*-basket from the clutches of Aurangzeb. He had an endless store of anecdotes, ranging from his travels in the Himalaya to the time he had to jump into Dal Lake to rescue Krishna (my aunt), who had slipped from the plank leading to the houseboat. He was also up to playing innocent jokes on others. On some of these occasions, he would serve fossilized cardamoms to his guests, and then explain at length how the fossils were so similar to their recent counterparts. When the Indian students staged a fancy-dress ball at Cambridge, he came dressed as a *sadhu* spouting *shlokas* in Sanskrit a subject in which he obtained top position in the Panjab matriculation examination.

Birbal Sahni was never afraid to be put to the test or to test the injustice of others even it meant putting himself in jeopardy. Another oft-repeated incident concerned Uncle Birbal's reaction to the botany paper set to him in his final BSc examination of Panjab University at Lahore. On reading the paper, he found to his astonishment that the previous year's paper was repeated virtually unchanged, which suggested that the paper-setter had taken no trouble at all to make new questions. Young Birbal stalked out of the examination hall in a

huff while his friends looked on in disbelief at his response. His complaint to the authorities that the examiner had taken the easy way out by repeating question was finally upheld by Panjab University and he came out with flying colours in the rescheduled examination.

Uncle Birbal lived, talked and breathed his subject. There was no fine line to distinguish what was science and what was commonplace conversation. The mention of any fruit, the name of any tree would usually result in a résumé of its geological history, particularly if corresponding fossils were to be found in India. The verandah of his house abounded in *Araucaria*, some attaining a goodly height and touching the ceiling. One could hardly ever eat a fig or a mulberry fruit in his presence without hearing a short account of its ancestry. I think now that it must have heightened the taste of the fruit! I would often stroll on his lawn beside the Gomti River and listen to why he had planted a particular tree here or a certain shrub there. He and his brother Mulk Raj had evolved certain strategies for basic field amenities; these were known within the family circle as the Three R's *roti*, *rupiya*, *rassi*, which, translated, mean bread, money and rope. Another field tip that I still religiously follow concerns drinking tea from a cup, specially if you feel that the eating house is not very clean: hold the cup in your left hand and sip from the side not normally used by others.

Uncle Birbal and Aunt Savitri made a happy couple, involved with themselves, with others and with their common goal to build an everlasting monument for the study of palaeobotany—the Birbal Sahni Institute of Palaeobotany. For them the pursuit of science was an all-encompassing effort for which no sacrifice was big enough, no hurdle high enough that it could not be taken. Science was life and life was for the search of hidden scientific truths.

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# Sterling qualities

## *Reminiscences of a niece*

The *Imambaras* and *Chatter Manzil*, the sentinels of Lucknow, once the *Shan-e-Aradh*, and the ruins of the Residency, where India's first fight for independence against the British took place, were all silent spectators to an event that took place on 3 April 1949, when the foundation stone of the Institute of Palaeobotany was laid, and again when, a week later on 10 April 1949, Professor Birbal Sahni breathed his last.

Birbal Sahni, the third child of Professor Ruchi Ram Sahni and Shrimati Ishwar Devi, was born on 14 November 1891 at Bhera, a small trading town in West Punjab, now in Pakistan. His birth was considered an auspicious event because it rained at the time of his birth, something considered highly auspicious by Hindus.

The family often visited Bhera during school and college vacations and from there uncle Birbal, in the company of his father and brothers, made treks to the surrounding countryside, which included the nearby Salt Range, particularly at Khewra. Maybe it was then that his interest in geology and palaeobotany was aroused, because the Salt Range had plant-bearing formations and was a veritable museum of geology.

Birbal Sahni was not just a scientist and a scholar but also a great patriot and a deeply religious man, though he never discussed his religious views. He was a man of sterling qualities, generous and self-sacrificing. He imbibed these qualities from his father who himself was an embodiment of all these virtues. Birbal Sahni's father was a great scholar and a pioneer in social reform, particularly in the emancipation of women. It was in fact his initiative and inspiration, encouragement and steadfastness, hard work and integrity that to a great extent inculcated an attitude of scientific enquiry in and moulded the character of his son Birbal. This is borne out by the fact that Birbal Sahni never accepted defeat in his research; no matter how hard the problem, he was always ready to tackle it. It was an attitude of taking life as a challenge—the motto of the family.

Birbal Sahni was a great supporter of the freedom struggle. This may again be

due to the influence of his father, who, in 1922, during the days of the non-cooperation movement, returned the title conferred on him by the British Government as a protest against the massacre at Jallianwala Bagh in Amritsar, in spite of threats of termination of his pension. The freedom struggle, at its height, could not but have left an impression on the sensitive mind of young Birbal. Soon after returning to India in 1918 after completing his studies abroad, Sahni gave a practical twist to his political feelings and started wearing hand-spun clothes.

While still a child, Sahni had gained the reputation of having a very humane attitude towards life. He was invariably chosen as the arbitrator in disputes among his sisters and brothers, for he was fair-minded. Lest one gets the

impression that he was a serious-minded young man, I would like to emphasize that he was known for practical jokes and often led his younger brothers and sisters to mischief, which sometimes caused great embarrassment to his father. Even in later life, Sahni was cracking practical jokes on his young nieces and nephews, or telling jokes and anecdotes to his students on botanical tours. He was nicknamed *tamashewala* uncle by us as he had the knack of showing tricks with his hands, a four-anna coin (now 25 paise) and his handkerchief. His pet joke was to play with a glove monkey toy that he had bought in Germany in 1913. The glove monkey would be so held by him that, unless one was aware that it was only a toy, one could easily mistake it for a baby monkey. It was difficult to dissoci-



Birbal and Savitri Sahni in Vienna, 1938



Birbal Sahni (seated, left) with his brothers Bikramjit Sahni (seated, right), M. R. Sahni (standing, left), M. L. Sahni (standing, centre) and Bodh Raj Sahni (standing, right)

ate him from it. This toy monkey with its sad, human expression was a lucky mascot and travelled with him everywhere, even to distant lands and on all expeditions for fossils. The toy monkey, christened Gippy by him, is lying with other precious belongings of Sahni, waiting to be displayed in his room at the Institute of Palaeobotany.

The first time I visited Lucknow was as a child of five or six. The occasion was the marriage of Dr M. R. Sahni, the younger brother of Birbal Sahni. (That was the year when a lion (or was it a

tiger) had escaped from the Lucknow zoo and a red alert was sounded) All the children were given small silver boxes as a souvenir. I still have this little *dabiya*, with an engraving of a grape-vine. My earliest recollection of uncle Birbal is of their Jopling Road house where the entire family gathered for the afternoon tea. What has remained engraved in my mind are the well-kept lawn and a flower-bed of the brightest coloured zinnias and beetles hovering on them.

One met uncle and aunty practically

every year when they visited Lahore, mainly to see his (Birbal Sahni's) father, his mother having died long before that. These trips of his were invariably *en route* to the hills, mainly to Kashmir to look for fossils. I remember the basket-loads of what appeared to be mere stones that would arrive back with him at Lahore on his return journey to Lucknow. He once told us that the Affarwat range overlooking Gulmarg was strewn with fossils and one could just pick them up. This made many of us enthusiastic and we would look for fossils during our summer holidays in Gulmarg. A few times we did succeed in picking up stone fragments with impressions of a leaf on them.

Sahni was not only an eminent academician but a very loving and affectionate husband, and deeply attached to his father. In the spring of 1947, uncle and aunty were to leave on a prolonged trip abroad. Grandfather Ruchi Ram Sahni was very sick and bedridden. Uncle did not wish to leave his sick father, and again and again postponed going abroad. Finally Mrs Sahni stayed back and uncle left for the United States and Europe as his commitments could no longer be postponed. He came back and left a second time, accompanied by Mrs Sahni. He was not destined to see his father again. On getting the news of his father's death, Sahni said to his wife, 'The light in my life has gone out.'

After my father's murder in pre-partition Lahore, it was uncle Birbal who wrote to my mother, his youngest sister, to shift to Lucknow. There I enrolled in the Department of Botany as a student and was in the midst of the MSc examination when he passed away. His memory is fresh in my mind as a loving uncle, a caring brother and a devoted scientist, as a man for whom achievement of his goal was the sole purpose of life. As he lay on his death bed, afflicted with coronary thrombosis, his last thoughts were not about himself and his family. His last words, addressed to his wife before he went to sleep for ever were: 'Nourish the institute.'

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## The ideal teacher

Birbal Sahni was appointed professor of botany at the University of Lucknow in 1921. The university had just then been inaugurated and the botany laboratory consisted of just three rooms, part of the Biology Department of the old Canning College which was till then affiliated to Allahabad University. The teaching staff numbered three, including Prof. Sahni. Immediately after assuming charge Sahni revised the BSc course and organized the postgraduate and honours classes. The first batch of MSc students took their final examination in 1923. He used to teach almost all the subjects of their course to the BSc students, but confined himself to pteridophytes, gymnosperms, morphology of angiosperms, and genetics for the MSc classes. Gradually more rooms were added and the staff strength also was increased. But the increasing number of students, in both MSc and BSc classes, left little room for teachers, and it was not till 1933 that Sahni had a room of his own. He used to sit in the botany museum, which was then partitioned off from the zoology museum by a row of almirahs which constituted the departmental library! An adjoining room, which was nothing more than an enclosed verandah and too hot in summer for anybody to sit in, housed his valuable collection of reprints. I well remember the visit of Sir Philip Hartog to the department. On being shown round the department he casually asked, 'Where does Prof. Sahni work?' He was shown a table in the corner of the museum, and he immediately exclaimed, 'What! Prof. Sahni has no room of his own?' Then he added smilingly, 'Yes, great scientists have worked only in garrets.'

The years 1924-27 were the most formative period of the department, which was growing in size, strength and equipment. Two members of the teaching staff, the late Dr S. K. Mukerjee and Prof. H. P. Chowdhury, had just returned from England after advanced studies, and, with their knowledge of the more recent developments in their respective subjects, the teaching of botany in the department was being reorganized on more modern lines and

a lasting foundation laid for research. Sahni always believed that the junior classes should be handled to a certain extent by the seniormost teachers. This makes for better discipline, balanced and methodical tuition, and provides inspiring and correct guidance to the young and impressionable students. So he always insisted on his lecturing to the BSc classes and sharing the undergraduate-class practical work also along with the junior members of the staff. His junior colleagues, it is needless to say, learnt quite a lot from him even in these classes.

Sahni's lectures to the undergraduate classes were exceedingly simple in style and direct in approach—at first stressing the obvious and important facts and then gathering in the details. But he never missed telling them the latest developments briefly or failed to refer to work in progress in India. He made his BSc lectures far more academic than they usually are. In the practical classes too he rarely left the room but was always busy correcting drawing books, explaining some difficult point, or giving some tips about methodical and accurate practical work. With a word of praise to the diligent and a sarcastic rebuke to the idler he used to make even unwilling students work briskly. Rarely, if ever, did he lose his temper in the classroom. His teaching of the MSc classes was fundamentally different in nature, although here too he adopted the same direct and simple style. He used to teach pteridophytes, gymnosperms, morphology of angiosperms, and genetics until recently. Owing to increased research responsibilities he latterly confined himself to the first two groups, in which he was an accredited authority. In his lectures he would give as much information as he could pack in the time at his disposal. Each group was dealt with thoroughly and comprehensively. All references to previous work and work in progress—particularly in India, all possible problems awaiting research—were mentioned. Gifted with a phenomenal memory he could reel out references almost to the page without looking at his lecture notes, which invariably contained all the latest references. Controversial theories were discussed from all aspects and without prejudice to any view. Being himself a specialist in palaeobotany, and with so much palaeobotanical work in progress

in the department, it is no wonder if the course in fossil botany was quite heavy. In the practical classes the MSc students had perfect liberty. He left the students to work as and when they pleased, with the help, of course, of a junior colleague. But he regularly examined their work and never minced words if criticism was called for. The good and hard-working student readily attracted his attention and received ample encouragement inside and outside the classroom. His lectures, to whatever audience addressed, were characterized by a remarkably simple and lucid style, direct and accurate expressions, and attention to details. Correct accent, a perfect command of the language, and a pleasant voice added to the charm of his lectures. Sahni had two very important qualities necessary for a good teacher of biology—a profound and comparative knowledge of his subject and wonderful powers of delineation. He would illustrate his lectures on the blackboard as rapidly as he was talking without missing any details. Was it any wonder, then, that, gifted with such remarkable abilities, Sahni was considered an ideal professor and his name drew crowds seeking admission to the botany classes, particularly the MSc classes, which, during his lifetime, were representative of the whole of India?

Sahni the teacher was easily eclipsed by Sahni the researcher. Research was the one dominating passion of his life. It was the keynote of his teaching. He expected the same unfaltering devotion to science from his students as he himself tendered. His guidance not only produced good results but also developed in his students a sense of responsibility and self-confidence and induced a love for accurate and methodical work. He expected every one of his students to take up research in one subject or other. To the student of palaeobotany he would offer a wide range of problems after having sized up his abilities and potentialities. Once the problem was selected, he would overwhelm the scholar with literature, material and guidance. As in teaching, so in research he emphasized hard and careful work, accuracy and attention to details. 'Hard work killed nobody' was a frequent saying of his. He liked intensive work on any problem more than extensive work. He was indeed a hard taskmaster but he was hardest to please

Extracted with permission from *The Palaeobotanist*, 1952.



where the writing part of the thesis was concerned. The papers would go into the crucible several times before they emerged in a satisfactory form. He was exceedingly critical in the examination of the students' work and could very quickly and fairly judge its real merits. He always insisted on looking at one's own results from the opposite point of view. He discouraged lengthy and pedantic style of presentation and always commended a logical and direct statement of facts. I have often heard him quote Dr D. H. Scott, whom he admired very much: 'Know what you have to say and say it straight.' The late Prof. Seward—his own *guru*—and Prof. T. G. Halle were the other people to whose papers he would always allude as models of careful and accurate work. He was very meticulous about illustrations and insisted on their being as perfect as possible. He was very particular about research scholars collecting their own material with complete field notes and even photographs. Often, when the scholar was feeling fed up with his problem, owing to slow progress or to the unpromising nature of the material, he would cheer him up and give him another, more promising problem. Change of material, like change of occupation, was in his opinion a kind of rest. He insisted on all his students learning German and at one time he himself used to teach German to the MSc classes after college hours twice a week. He himself could speak fluently in German and French. He was always impressed by originality and initiative in the research students and advised them to give the widest publicity to their work by circulating reprints of their papers and contacting other workers in the same subject not only by correspondence but also by meeting them at scientific assemblies. He himself had a worldwide correspondence and exchange of reprints and his collection was easily one of the best in the East. He regularly attended almost all the international gatherings of botanists, and never failed to draw attention to work done in India. He was never so happy as when mentioning his students' work. Often his junior collaborator got more than his mead of praise. Even the laboratory assistant or the man who ground fossils was gracefully thanked. Numerous students and young workers scattered over the country will bear testimony to the

generous and prompt help they received from him in the matter of advice, literature and material.

Sahni had long been feeling that research students in palaeobotany did not have the necessary geological background for their investigations. He was of the opinion that a student who had studied both botany and geology would make a better palaeobotanist. With this in view he worked hard for the inauguration of the department of geology in the university in 1943. He was the head of this department also and used to teach dynamic geology and palaeobotany. Indeed it was a surprise to many how a geology department had not been in existence in a university where so much palaeobotanical work was being done. Sahni made up for this by invariably giving a few introductory lectures on stratigraphic geology to the MSc students before they started their regular morphology course. He also introduced a special paper in palaeobotany for the MSc examination and latterly accepted for research under him only those candidates who had taken this special paper.

Although he admired academic merit, he was not unmindful of the importance of character and discipline. Always solicitous about the health and academic success of his students he never failed to keep a watchful eye on their moral development.

Curiously enough, Sahni did not take any student formally for research till 1932, although a number of colleagues, including myself, were working under his guidance on one problem or other. Work was all that mattered to him, not degrees. A number of students were, however, admitted into the Ph D classes in 1933. After that there was a continuous stream of students working under him. No less than 16 students have obtained their doctorate under him between the years 1933 and 1949, five of them DSc and eight Ph D. Of these, two worked on the morphology of living plants and the others on palaeobotany. Sahni disliked the old practice of Indian material being sent abroad for work. He often used to say that Indian material should be worked out in India itself and should not be allowed to go out except for presentation and comparison purposes. He has, on more than one occasion, strongly expressed himself in favour of agitating for the return of

Indian material—particularly the type specimens etc. which had been transferred to the British Museum from India.

Sahni was an excellent boss. It was a pleasure to serve under him. His appreciation of hard and honest work spurred his assistants to greater efforts. His treatment of his colleagues—particularly the juniors—was characterized by remarkable courtesy, grace and freedom from snobbery and officiousness. During my twenty years of service under him I cannot remember his having summoned me to his room even once! Whenever he wanted my services he would invariably walk into my room. This was indeed his practice with everybody in the department.

In 1932 the Government of United Provinces sanctioned a grant of Rs 4000 to enable him to purchase for his department a fossil-cutting machine and accessories. This made it possible for the department to turn out more work in shorter time. The UP Government also sanctioned in 1933 a special post of research assistant to Sahni—a post that has continued since then.

Sahni encouraged research not only in his own special field of botany but in every branch of science. One could not speak to him for a few minutes without being drawn into some research topic. It was in no small measure due to his sympathetic encouragement that, apart from palaeobotany, research in ecology, mycology and bryology also progressed in the department. His love of research and desire to encourage it found expression in his instituting a research prize in the name of his father—the Ruchi Ram Sahni research prize—awarded every year for the best piece of botanical research done by a post-graduate student in the Department of Botany. Sahni's monthly allowances as dean of the faculty of science constituted the funds from which this prize was drawn.

Sahni had a unique personality—a rare combination of genius with grace and personal charm. His unfailing courtesy, cheerfulness, keen sense of humour, sincerity, frankness, robust optimism, helpfulness, promptitude, warmth of friendship, profound knowledge of his subject, humility and a modesty that almost affected ignorance, all contributed to the building up of a personality that was as much loved as it



was respected. Intensely national in spirit he was remarkably broadminded and had an international outlook in scientific matters. Indian science has indeed suffered a grievous loss in the passing away of this ardent patriot and distinguished botanist.

Sahni's deep attachment and love for Mrs Sahni and her constant interest in his work and welfare were to us the ideal of a real partnership in life. He received the greatest encouragement, help and support from her—a rare privilege—which he has acknowledged repeatedly.

A. R. RAO

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## An inspiring guru

It is difficult for a pupil to write, in a brief article, all about his teacher, especially when he was a colourful father figure for many of us. Nevertheless I shall try to give my impressions of a great personality, which Professor Sahni was to many generations of students who entered the portals of the botany department of Lucknow University.

It was in 1934, after graduating from Presidency College, affiliated to the Madras University, that I sought admission in the 'Hochschule' of Botany at Lucknow University. Fortunately for me, my teacher, Professor M. O. P. Iyengar, had supported my application for the MSc course in Professor Sahni's laboratory. Having been considered favourably for admission, I made my way to Lucknow. When I sent in a letter I was carrying for Sahni from Iyengar, I was called in promptly. It was an indescribable meeting as I was face to face with a most charming personality who was to play a big part in the moulding of my career as a scientist. It raised in me new hopes and aspirations. Sahni shook hands, made enquiries about his friend Iyengar and put me at ease, as it were, with crisp and kindly conversation. This formality over, I was asked to report to the teachers in charge of the master's classes.

The very first thing I noticed was that the lectures in the various disciplines of botany were delivered in a business-like fashion and the emphasis was very

much on the practicals. This gave one the impression that seeing was believing. It was a different kind of approach to the learning process I was used to. Too much theoretical knowledge, Sahni used to emphasize, was a lopsided approach to learning an essentially field science like botany.

Sahni's lectures were brilliant. With very little notes for the portion he was to cover he would introduce the subject by effective and artistic sketches on the blackboard, drawn beautifully, with dexterity, with both hands. Which of his students can afford to forget his lectures on the origin of plant life, on the evolution of the angiosperms, and in particular, stellar evolution in plants? At once plant anatomy would unravel itself before the student. There was refinement in everything he said and did in the classroom, so much so that recapitulation became easy after the lecture.

For a person who had a large research school to guide and many other duties to perform as dean of the faculty of science, Sahni never sacrificed the practical classes, where he would see every microscopic preparation of each student and run through the labelled drawings in the practical records. Such was his dedication to duty. In fact he introduced us to the need of practising 'work culture' if we were to succeed in life in a fiercely competitive professional world.

Sahni's sense of humour was something we enjoyed and used to talk about amongst ourselves. We were told then that there was a heated debate in the highest administrative body of the university on what part of the funds received for the construction of a new library could be earmarked for the building project and what for journals, back volumes and books. Sensing the general trend of the discussion, which was drifting towards a large portion of the funds being spent on the building, Sahni quietly remarked, 'Gentlemen, we want books, not bricks.' There was a hush, and the decision went right away in favour of a weightage for journals and books.

In 1940, when I returned from England after taking a doctorate from London University, I had brought two letters of commendation from the director of the Rothamsted Experimental Station, Sir E. John Russell, a noted agricultural scientist. One was addre-

ssed to Sahni and the other to Dr W. Burns, who headed the then Imperial Council of Agricultural Research, New Delhi. I sent them to Sahni and he promptly wrote to say that he was passing through Madras on his way to Lucknow from Bangalore and would like to meet me and that I should travel with him and lose no time in meeting Burns at Delhi. It was a memorable trip. He was to alight at Jhansi and take another train to Lucknow and I was to proceed to Delhi. There he was on the platform, at midnight, to wish me a good meeting with Burns. That is an unforgettable picture in my mind. It was during this trip that I learnt from Sahni his philosophy of life. He believed that there were three loyalties for a scientist: loyalty to institution and teachers, loyalty to cause, and loyalty to the nation. They were words of wisdom. Such men are rare, and rarer still are those who aim at perfection in whatever work they undertake. Many of Sahni's students have experienced his meticulous ways of accepting only the very best of scientific papers, the very best of illustrations, and the very best of presentations of scientific papers in a seminar or a lecture. Nothing, in his view, should be done shoddily, because that brought no credit to either the authors or to the institutions they belonged to. It is this quest of excellence that made him a leader in botanical science within a short span of three decades.

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## Charming and large-hearted

I had the privilege of being a student of Prof. Sahni during the years 1936–1940 and later of being elevated to the post adorned by him at Lucknow University at that time. As I was late in applying for admission to the BSc class, I was advised by the registrar to meet Sahni, who was then dean of the faculty of science. The first impression that I got of Sahni is indelible in my mind. When



I entered his room I met a very distinguished, tall, handsome personality, dressed in spotless white khadi shervani and churidar pyjama. This dress was very unusual for that time. The British were ruling India, and wearing of khadi dress was frowned upon. On hearing that I had passed the intermediate examination in first division he readily agreed to create an additional seat and admitted me to the BSc class.

Unlike many heads of departments, Sahni always found time to teach BSc classes. His demeanour and speech were very impressive. He would emphasize the basic points in his lectures and inculcated in the students the habit of consulting books and journals. He would draw very neat diagrams with both his hands. In practical classes he was satisfied if the students could draw diagrammatic sketches only. I was agreeably surprised to receive a letter of congratulation when I passed the BSc examination. He also invited me to join

the MSc botany class. Whether it was his overall charming personality or the deep impression his lectures left on my mind, I decided to join the botany MSc class, in spite of the fact that I had secured the lowest marks in botany in the BSc examination. I had the good fortune of meeting Sahni's charming wife when he invited me to tea at his residence when I was an MSc student. Although Sahni was willing to accept me as a research student under his supervision, I joined research under Prof. S. N. Das Gupta as I was interested in experimental studies.

As assistant secretary of the Botanical Association of Lucknow University I had many opportunities of coming in close contact with Sahni as he was interested in the furtherance of the society. He would even embellish the language of the presentation of proceedings. He left the management of the department to Das Gupta, who was at that time the seniormost reader in the department. When, in 1942, he went

abroad for a short period, a post of lecturer in botany fell vacant. Without my approaching him for being considered for the post Sahni selected me. While a research student I had the opportunity of attending lectures given by eminent scientists at which occasions Professor Sahni was present.

In 1946, when a post of permanent lecturer fell vacant, Sahni again appointed me to the post. In 1949 I had the good fortune of attending the opening ceremony of the Institute of Palaeobotany.

At this function Sahni seemed very happy and mixed freely with the invitees. Little did we realize at the time that, a few days later, this great scientist would be no more.

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## Perfectionist

My earliest recollection of Prof. Birbal Sahni goes back to 1940 when I was a BSc student at Lucknow University. One day when we were doing a botany practical class, he entered the laboratory and started to see everybody's work one by one. By the time he came to me, I had examined a section in the microscope and had made its drawing in the notebook. He looked at the section and scrutinized the drawing made by me. Then, taking a pencil, he quickly made a fresh sketch with outlines broken where they were incomplete and the cells packed irregularly and not of uniform shape and size as I had drawn. Showing it to me he said, 'If I were you I would draw it like this.' Thus he effectively conveyed to me that a scientific drawing should be a faithful representation of the structure as it actually looked. I remembered it ever after.

The next picture that emerges in my mind is of Sahni teaching the BSc class. He would enter the lecture theatre punctually and bolt the door from inside. After a quick roll call, he would

immediately start the lecture and soon get deep into the subject. His vocabulary was so precise and expression so clear and fluent that it was exhilarating to listen to him. Side by side he made profuse drawings on the blackboard, often using both his hands simultaneously. By and by an atmosphere was built up in which he commanded the rapt attention of the entire class. The spell was broken by a knock on the door by the peon posted outside, notifying that the bell had gone and the period was over.

During 1942-43 we were eight students in the MSc class. That year a new paper was introduced in which the students would be required to write a long essay. As it was the first time for such a test and no model was available to go by, we were scared and anxious to know what kind of topics we should study. Having failed to find any solution, we decided to approach Sahni jointly, and request him for some light on the matter. Hesitantly we knocked on his door and sought permission to enter. He was standing at the far end of the room, examining some specimens with his pocket lens. He looked busy and engrossed, with his hair a bit dishe-

velled. Gravely he enquired the purpose of our visit. We mumbled about the newly introduced essay paper and asked for guidance about the sort of topics we should read. Suddenly a faint annoyance appeared on his already serious face and he said rather sharply, 'I am sorry, you have come to the wrong person, because I happen to be the setter of that paper.' We were all dumbfounded, but still lingered there with the hope that he might say something that would provide some broad guidance. But he cut the meeting short by a curt remark, 'Gentlemen, it would be futile to wait here another moment.' We understood his meaning and walked out post-haste.

After a few months, when, after finishing the essay paper, we came to the botany department, we found Sahni waiting outside. He greeted us with a smile and asked: 'How was the paper? I hope you all found it satisfactory.'

He had a knack of finding out who was suitable for which kind of work and trained him accordingly. I was chosen for proof-reading and editing. Once I told him that a particular important person had committed quite a few mistakes in his manuscript. His advice was, 'Don't be overawed by the high



designation or reputation of a person. Point out the mistakes and don't accept anything wrong.'

One day he asked me if I had seen a film based on the life of Tansen. I said I had and thought it was very good. He remarked, 'Yes, it is fairly good, but the hero spoilt it.' I was surprised, because the hero was K. L. Saigal, who was a very popular singer in those days. Later I read in an article by a connoisseur that although Saigal had a very good voice and sang in a free style he sometimes went out of *sur*. Then I realized what a keen sense of Indian classical music Sahni had.

On another occasion he was standing in a pensive mood against the almirah of his books. He took out one entitled *Text-Book of Geology*, by Archibald Geikie. Showing it to me he said, 'It is only after writing a book like this that one can die in peace.'

In the later part of March 1949, all activities were directed towards one major event, the foundation stone-laying ceremony of the Institute of Palaeobotany, to be performed by Pandit Jawaharlal Nehru on 3 April. Sahni had conceived a unique foundation stone

which was to be constructed by embedding fossil plant specimens in wet cement concrete, which, after setting, would become a slab. At that time he was not feeling well, so it was decided to prepare this slab at his house. We assembled there at the appointed time. An experienced mason, whom Sahni had known for a long time, was entrusted with making all the arrangements for this job. He put the wet mixture of white cement, small black and white marble chips and a little yellow colour into a hollow mould of desired dimensions dug in the ground. All the fossil specimens which were to be embedded in this mixture were kept near by. Professor Sahni selected them and put them one by one at different spots so that jointly they would give a well balanced look. The slab in preparation was kept moist for a few days and then it was ground evenly by carborundum stone to expose the surface, showing the fossils in the matrix of marble chips. To everybody the 'foundation stone' looked beautiful, but when Sahni saw it he struck his forehead with his right hand in despair and ruefully exclaimed, 'What will posterity say, that

Sahni did not have the aesthetic sense to use smaller chips to set off the fossil specimens properly?' Actually he had wanted to use chips of '0' size in the cement mixture, but the mason inadvertently put in those of size '2'. He was such a perfectionist that it hurt him to see this undesired change, but it was too late to make another stone with smaller chips in time.

In the forenoon of 3 April 1949, when hectic activity was going on for making final arrangements for the evening's ceremony, Sahni closed himself inside his room for just about an hour. Word went round that he was not to be disturbed as he was preparing his speech for the function. What he wrote in that brief period turned out to be his famous speech, which entranced the entire audience during the ceremony. It was a testimony to his power of concentration and expression of lofty ideas. It was also his swan-song.

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## Generous and deeply honest

When I look back at my association with Prof. Birbal Sahni as his student I cannot help thinking that whatever little I was able to achieve in life has been all due to his excellent training kindness and help. I became his student in the BSc class in 1939. Sahni taught us pteridophytes and gymnosperms in the first year and morphology of angiosperms in the final year. His lectures were a treat. He was always punctual and finished taking the attendance in record time. Drawing multicoloured figures with chalk in both hands, he also illustrated his lectures with demonstration specimens. After the lectures we would often wish that he had continued for some more time. On the days of his lectures I, for one, could miss any other engagement but not his lectures. He would also come to demonstrate in the practical classes and correct our practical notebooks. Other teachers would correct only the books of the students allotted to them but he would go

through the books of all. He would never strike off any mistakes but after politely pointing out a mistake he would ask for an eraser and after rubbing off the error he would neatly and imperceptibly insert the correction. I, for one, would anxiously await his coming to my seat. Elegantly clad in spotless white khadi achkan, churidar pyjama, Gandhi cap and red nagra shoes, Sahni's handsome personality became at once attractive and impressive to all around him. To these he added his unusual grace, courtesy and mastery of the English language and Cambridge-accent delivery. His lectures and even day-to-day conversation contained material distilled out of his vast knowledge. Naturally he became my ideal as a *guru* and I took up botany for the MSc degree. In the final year I became the first student to be allowed to join research under him in part fulfilment of the regulations.

Material for my research was special-

ly obtained by him from Australia and South Africa. I started working on the microfloras of some Lower Gondwana tillites, which had only rarely yielded macrofossils. After about a year, when I showed him the rich haul of microfossils I had recovered from the tillites, he felt so happy that he said to me that he could get the minimum period before submission of the PhD thesis reduced.

Unfortunately, during the summer vacation of that year, I fell ill at my home town in Ranikhet and continued to be unwell for nearly a month. I was advised two or three months rest by the doctor. Since Sahni was staying quite near Ranikhet at his house in Almora, I went one morning to him to take his permission to stay away from Lucknow even after the summer vacation. He agreed at once but he was so kind to me that he asked me to come and stay with him during his stay in Almora so that he could look after me. I felt that I would be a burden on him and Mrs



Sahni and said that it was not proper for me to stay away from my mother and elder brother during my illness. However, he insisted and said that he too had a right as my teacher to take care of me during my illness. I had to yield to his wishes and stayed with him for the remaining period of the vacation, and even later with his revered father, Professor Ruchi Ram Sahni. Every morning during my stay with him, he would go for a walk with me. On my return to his house he would insist that I massage my body with oil while sitting in the sun before taking my bath. He would give me books to read and often discuss the points I had read. Ruchi Ram Sahni and Mrs Sahni were equally kind. A few days after he had left for Lucknow I returned to Ranikhet, but I continued to be in indifferent health even after my return to Ranikhet and thereafter to Lucknow. When Sahni came to know this he asked me to get myself examined by competent doctors after getting admitted as an in-patient in the Medical College Hospital.

As a research scholar I was not entitled to the privilege, enjoyed by teachers, of free treatment in the private ward. However, as I was a research fellow and was working as a part-time demonstrator, he moved the executive council of the university and I was recognized as a teacher.

During my stay in the hospital he would come at least once a week to see me with the superintendent of the hospital, Dr Raghunandan Lal, who was his personal friend. He once told me that his visits were meant, besides encouraging me, to emphasize to the hospital staff that they had to take special care of me.

In the evening of one of the days when Sahni visited me in the morning, Mr Sri Prakasa, who later became governor of Assam and other states, came to my room. He was undergoing treatment in the next room. He told me that he happened to meet his greatest Cambridge contemporary Sahni that morning in the verandah and thanked him for having taken the trouble of

coming to see him. However, Sahni told him that he had not come to see him but was visiting me. Sahni's conversation with Sri Prakasa gave the latter the impression that I was his pet student. After Sri Prakasa left me I felt that Sahni could have taken the credit of visiting Sri Prakasa without telling him that he was actually visiting me. However, frankness and truthfulness were inviolable characteristics of Sahni not only in research but in all his dealings. Indeed, when I think of the greatness of Sahni and other stalwarts of his time against the present-day set-up of Indian botany and science in general, I am reminded of the famous Hindi couplet which compares Surdas with the Sun, Tulsidas with the Moon, Keshabdas with a star, and modern poets with fire flies flickering here and there.

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## Good-humoured and full of concern

I first saw Prof. B. Sahni in March 1931 when he examined me for the BSc botany practical examination at Agra College, Agra. After the examination, I picked up my bicycle and pedalled to Dayal Bagh where I was residing. When I had reached half-way, I noticed that Ram Dayal, a lab attendant, was desperately cycling after me. When he finally caught up, he said that Prof. K. C. Mehta, head of the department and the internal examiner, was calling me. His summons was like a bolt from the blue and I thought something must have gone wrong at the examination. I had no option and returned to the college. The examiners had completed the work. As I entered the laboratory Sahni smiled (very characteristic of him) and put me at ease. He then walked up to me and asked, 'Why have you not written an answer to one of the 'spots' (out of ten)?' At the age of 21, I knew hardly anything about the academic stature and scholarship of the great teacher. He gracefully repeated the question. I hesitated, but, asked again, I

said: 'This is a very bad slide and I did not like it. Therefore I did not write an explanatory note and identification.' He laughed and said; 'But do you know what it shows?' I quietly said, 'Yes Sir.' 'What is it?' 'It is a longitudinal section of the upper part of an old ovule of *Cycas*.' 'Did you talk to anyone after the examination?' 'No Sir.' In fact, none of my class-mates had attempted it. He took out my answer book and suggested that I now write the answer. I did so without realizing the outcome. Then he said, 'What is wrong with the slide that you did not like?' I pointed out that the section was not good and was badly destained. While Mehta became serious (and annoyed), Sahni smiled and said, 'This is a hand section and the slide was prepared by me in 1914 [?] at Cambridge.' He patted my back and I said goodbye. Although a minor (not minor at all as I judge it now) episode, it left a lasting impression, particularly because Sahni gave me full credit. In fact, he was so impressed by my performance that he did not believe that

I did not know the 'spot'. What intrigued him was, why did I not attempt the answer?

Sahni examined me again for the MSc first-year (1932) and MSc final-year (1933) examination. In the MSc final practical examination in physiology, I picked up an experiment which required determination of the osmotic difference between host (mango twig) and parasite (*Cuscuta*). Our teaching in physiology was anything but good. The teacher had never studied physiology nor ever performed an experiment. So I told the invigilator (Dr P. Maheshwari) that I could not perform the assigned experiment. Sahni gave me time to think it over and said I would lose 50% marks if I changed the experiment. I set up the new experiment—evolution of oxygen in response to varying concentrations of carbon dioxide during photosynthesis in a water plant—but there was not enough time to complete it. When Sahni conducted the oral examination on this experiment, I answered almost every question. I am not sure about the marks awarded to me, but I did not lose a first class.

By then, I had come to know Sahni



very well and was a frequent visitor to his laboratory to consult literature for my doctoral thesis on 'Morphology and embryology of Alismaceae and Butomaceae'. He always enquired about the literature I had studied and what my further requirements were.

In *Butomopsis lanceolata*, one of the plants I investigated, I observed pollen grains and bits of pollen tubes in the stylar canal, and pollen grains also in the ovary. One pollen grain had even germinated on the surface of an ovule. I published a note in *Nature* (1935, 136, 338) and asked to be informed if anyone was aware of such a phenomenon. At that time Sahni was away in Europe. On his return, my brief note in *Nature* came to his attention. Within a week, he wrote a short review highlighting the significance of a typical gymnospermous character in a confirmed angiosperm for publication and sent it to *Current Science*. He sent me a copy of his note superscribed 'uncorrected copy'. My colleague Dr Bahadur Singh was working as a guest at Lucknow University and was completing his Ph D thesis. He learnt about Sahni's note and promptly informed me at Agra. Immediately I discussed it with my supervisor (Maheshwari) who advised me to go to Lucknow the same day with all the relevant slides to convince Sahni that the pollen grains in the stylar canal and ovary were indeed those of *Butomopsis* (Sahni had doubted this fact and mentioned it in his note). When I reached Lucknow the next morning and requested Sahni's assistant Mr Ram Singh to inform him that I wanted to see him urgently, Singh was most reluctant to disturb Sahni. I told Singh that if he did not inform Sahni, I would myself go and meet him.

When informed of my visit, Sahni asked, 'Why has Johri come again when he had met me only four days ago?' Singh told Sahni that I did not inform him the purpose of my visit but it was urgent. Sahni then called me and I mentioned to him the purpose of my visit. Since I intended to leave Lucknow the same night, he agreed to see my slides at 2 p.m. But there were occasional visitors, and he said, 'Johri, let us go home where I can examine your slides without any interruption.' We went to his residence and for almost three hours he examined my slides critically, and said, 'I am convinced that the pollen grains in the stylar canal and ovary are of the same species [*B. lanceolata*].' He also emphasized that this fact gave added importance to my observations. I then requested him to permit me to publish a rejoinder to his note. He said, 'What will you write, I will myself write to the editor of *Current Science* that I have examined the slides and I am convinced about the accuracy of your observations.' After a short while, he said, 'All right, you can also write to the editor but send it direct to him and not to me.' However, the editor did refer my note to Sahni, who approved its publication (see Sahni, B. and Johri, B. M., *Curr. Sci.*, 1936, 4, 587-589). The two letters, one dated 24 January (BMJ) and 10 February 1936 (BS), and the other dated 10 February (BMJ) and 12 February 1936 (BS), are now preserved in BSIP.

Sahni was also the chairman of the board of examiners of my DSc thesis (the other examiners were Prof. A. C. Seward and Prof. R. R. Gates). The report was highly commendatory and the examiners exempted me from the

viva voce. This being the *first* doctoral thesis in science submitted to Agra University, the university wrote to the examiners that the thesis *must* be of the same standard as those of London University. This was confirmed by the examiners in their report. I was awarded the degree in September/October 1936.

In 1937 Sahni invited me to Lucknow to work with him on 'primitive angiosperms'. However, I could not avail the offer because of lack of financial support. From 1940 to 1943, for want of a better job, I taught at an intermediate college in Agra but continued research investigations and remained in constant touch with Sahni at Lucknow and Maheshwari at Dacca. Both of them kept on pressuring me to move to a better institution. In great anguish, Sahni wrote to Maheshwari, 'Even the Devil will weep at the loss of talent of Johri.' I moved to postgraduate colleges in Meerut, Bareilly, Bikaner and Agra, and then to Delhi University in August 1948.

In September/October 1947, I had met Sahni in Jaipur. He told me that at the invitation of Sir Maurice Gwyer, the vice-chancellor, he had accepted the chair of botany at Delhi University and included my name in the list of teachers whom he would like to have when he joined. However, owing to the intervention of prime minister Nehru and the UP chief minister Govind Ballabh Pant, Sahni could not leave Lucknow. The vice-chancellor then invited Maheshwari, who joined in March 1949.

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## A gentleman

My first experience of Prof. Birbal Sahni was in 1941 when he was presiding over the biological section of the National Academy of Sciences in Allahabad. I had to present my work on cytological and physiological studies on *Saprolegnia delica*. In the morning session the first paper was presented by Dr K. R. Mehta, who read it from his manuscript. I was the next. This being my first chance of presenting a paper before

a body of distinguished scientists, I, too, began reading from the manuscript. I had hardly started my talk when Sahni intervened and asked me to present the paper without reading from the manuscript. I was really upset but, fortunately, I did not lose my nerve and, as if it was a sort of reflex action, I asked for the lights in the hall to be put off and for projection of my figures on the screen. Thus, without exposing my nervousness, I was able to explain my work with the help of the plates. When I finished my paper Sahni congratulated

me and encouraged me with his nice remarks.

The next occasion I had the opportunity of meeting him was in 1943. Prof. A. Guilliermond, a noted cytologist of France, had published a book, *Cytoplasm of the Plant Cell*, a topic related to one I had been working on for my Ph D thesis. Most of his writings were in French and this was the only comprehensive work available in English. Because of World War II it was difficult to get a copy of the book, but I read a review of it in *Current Science* by Sahni. Naturally I



was keen to see the book and I asked my guide, Prof. R. K. Saksena, to get it on loan from Sahni. He did not agree and instead asked me to go to Lucknow and get the book personally from Sahni. I went to Lucknow by the first train and met Sahni in the botany department. He was kind enough to spare some time and meet me in his room. He not only

discussed my research problem with me, but readily agreed to lend me the book for as much time as I wanted. He also gave me a copy of the reprint of the review he had written and a couple of reprints of general articles on palaeobotany. He personally escorted me out of his room and wished me good luck. During this brief meeting he made a

lasting impression of his helpful attitude towards young scientists and as an embodiment of courtesy and gentlemanliness.

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## Roasted gram and recognition

After passing the intermediate from Ewing Kristian College, Allahabad, in 1929, I joined BSc at Lucknow University. I took botany, zoology and chemistry. The botany classes were taken by Prof. Sahni and the zoology classes by Prof. K. N. Bhal. Both teachers took much interest in teaching their subject. In practical classes Sahni was much pleased with my practical work, so much so that some of the brilliant students of the class became jealous of me.

After BSc I wished to appear for the ICS examination but, as I was using khadi, my warden refused to give me a certificate that I had not taken part in any assembly subversive of law and order. It was necessary to produce such a certificate before appearing in the test. I mentioned this fact to Sahni, and immediately he issued the required certificate. He also told me that if I was keen to pass the ICS examination, he was prepared to send me to London, where it would be easy to pass the test, at his own expense.

Bhal asked me to take zoology in MSc, but as a teacher Sahni had the greater attraction and so I took botany. Sahni took personal care and attention of MSc students and was always present in the practical classes. When I passed MSc in 1933, he wished that I take up research under him, but owing to some family circumstances I could

not do so, and I joined service as a teacher in Darbar College, Rewa. Sahni always kept in touch through correspondence and in 1945 he wrote a letter to the principal of my college that I should be given study leave for research. He offered a Burma Oil Company scholarship, which was of more value than the pay I was getting at Rewa. I joined research under his direction in 1947, and collected fossil plants from various localities of South Rewa Gondwana basin and worked on them.

Sahni generally used to go through my thesis on Sundays. One Sunday he came at 8 am and went through my thesis till 12 noon. Then he said that he would like to take tea. I went to the university restaurant, but it was closed. Then he asked me whether I took tea or any other thing during the day. I replied that I kept roasted gram and took them when I wanted something. I showed him the gram and he relished them very well. Just then the secretary of science and education, Government of India, came in to meet Sahni, and Sahni offered the roasted gram to him also.

Another Sunday, when he was going through my thesis, Sahni's face flushed suddenly. I was afraid but after some time he became normal and said 'Do you know, Saksena, that you are criticizing Sir Cyril Fox, an authority on South Rewa Gondwana Basin?' I politely answered, 'Sir, I know it, but

have strong proof in support of my views.' Then he was pleased.

In 1949 Pandit Jawaharlal Nehru came to inaugurate the Institute of Palaeobotany at Lucknow. Sahni introduced me to Nehru, saying, 'Mr Saksena is my favourite student and I wanted him to come to the institute, but he says that he would start a university and would like to work there'. Even today I feel I could not fulfil his wishes.

One day Sahni asked me whether I wanted only a PhD degree or recognition, and he made it clear that if I wanted only the PhD degree my thesis would be sent for examination in India itself, but if I wanted recognition he would like to send my thesis to some famous scientists outside India. I preferred the latter and the thesis was sent to Prof. J. M. Schopf of America and Prof. T. G. Halle of Norway. It was very unfortunate that before the result of the thesis reached Lucknow Sahni left this world.

After Sahni's death Halle wrote me a personal letter in which he said, 'Since your teacher is no more, you can take any help from me regarding publication of thesis and further research work.'

Mrs Savitri Sahni also wrote several times that I was free to join the institute whenever I liked, but that too I failed to fulfil.

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