

पुष्पाञ्जलि

THE SANSKRIT WORD " PUSHPANJALI " MEANS AN OFFERING OF FLOWERS.

THE FOLLOWING TRIBUTES ARE SUCH AN OFFERING

IN MEMORY OF A BELOVED FRIEND AND TEACHER.

ADIEU, A KIND ADIEU!  
IN MEMORY OF BIRBAL SAHNI

R. R. SRESHTA  
Professor of English, University of Lucknow

From dawn to dark and dawn the hours are slowly drawn,  
Another and another day so goes since he is gone;  
Each season bears its name, the months their weeks proclaim,  
And as before seems everything, but nothing is the same.

No more will April be a welcome month to me,  
And of all moons is April moon the saddest moon to see,  
For it was on a night when such a moon was bright  
That his bright life did suffer sudden eclipse and darkened quite.

No more does summer please, nor summer's show release  
The melancholy mind from grief and give it a poor ease;  
No more does evening upon her quiet wing  
For all her instant glory aught of former rapture bring.

All things that once were fair are no more what they were,  
A joy has vanished thence and left no comfort anywhere;  
Nature has yet her art to calm or else dispart  
The weeping sky, the wailing wind, but not the moaning heart.

The few whom the world rates above its loves and hates  
Know him beloved of the Gods and envied of the Fates:  
His life the Gods did crown with worth and high renown.  
The Fates untimely in his height, alas! did cut him down.

Seekers the wide world through of knowledge old or new,  
Who Learning's steep and arduous paths with single mind pursue,  
To this my doleful song, whose strains my dole prolong,  
Attend, and judge what hideous hurt the Fates have done, what wrong!

They, by a horrid hap, have ventured to affrap  
A Being bright and beautiful, and caused a gloomy gap:  
Mankind has lost, O hear! a man without a peer,  
Science her prince has lost, and Truth her own preux chevalier.

His country mourns his loss, his fame his country's was,  
*Sahni*, a name that India's made esteemed the globe across;  
Let all on Learning's quest, men of goodwill, attest:  
In serving Science loyally he served his Country best.

In vain does Youth desire the voice that could inspire,  
The eye that cheered, the hand that led, and fed the sacred fire;  
For he possessed his theme, how complex so it seem,  
Expounding or exploring it with elegance supreme.

Skilled to investigate and patient to await  
The infinitely small unfold the infinitely great,  
Vision he had and tact the secret to extract  
From Earth's most ancient signs, and seize the myth become a fact.

Were it not lacking him the world were not so dim —  
A faultless friend, a manly man Nature herself did limn,  
In each his lineament each trait did well present:  
Greatness of mind, beauty of soul, and rightness of intent.

Communion half-divine and shared delight were thine,  
O Comrade of his happy years, who made his home a shrine  
At whose fair portal Care was bidden to forbear,  
Within whose guarded threshold dwelt a joy beyond compare.

As whirling stars round sun, round axle spokes that run,  
Around his fixed memory my waking thoughts are spun:  
O might these fallen tears, or even this broken verse,  
Outlast the rocks, outlast the seas, a million million years!

I cannot seek him here, he cannot come anear;  
Until I meet and greet him in some far-removèd sphere —  
No Shade of pallid hue but a Radiant Shape to view —  
Adieu, I say; adieu, sweet friend; adieu, a kind adieu!

**SHRI CHAKRAVARTY RAJAGOPALACHARI, Governor-General of India**

Although I am totally incompetent to make any contribution to a scientific journal of this kind — and more than that I dread the appearance of snobbery that any contribution from me would by reason of my office take — I cannot refuse Mrs. Sahni's invitation that I should write a few lines for the Commemoration Number as one who knew the man even though altogether ignorant of the science to which he was devoted.

Like most men of science whose special labours enable them to see things in right proportion, Dr. Birbal Sahni was gentle, kind and most amiable as a man. He had not even the failings which in the case of some men of science unintendedly mar their amiability. Birbal was beloved of the gods, and so was the saying fulfilled by his untimely death. I am glad that Shrimati Savitri Sahni has pledged herself to work for the Institute of Palaeobotany and its journal. It is rare that the unfulfilled aspirations of a scientist devolve on his widow, and that she takes up his task forgetting personal bereavement. I hope that eminent men in the field will help to make this journal of palaeobotanical research a success.

Government House  
New Delhi  
22nd September 1949

**RAJA MAHARAJ SINGH, Governor of Bombay**

Birbal Sahni was one of the greatest scientists of Asia in his time. His name and work were well known not only in his own country but also in Europe and the United States of America. He was devoted to his work and trained hundreds of the younger generation of India to love botany and scientific work. He had a large number of friends and admirers, and he was, throughout his life, a great nationalist, eager to see India free and independent. He lived to see that day, but, alas, was taken away soon after the achievement of freedom. His married life was supremely happy and he had the advantage of a learned father. Prof. Birbal Sahni's work and the Institute of Palaeobotany, which he founded and inspired, will remain a lasting testimony to his great talents.

Government House  
Bombay  
10th November 1949

**SHRI SRI PRAKASA, Governor of Assam**

There are some in this world who make a lasting impression on others; and shy, retiring and unassuming as he was, Birbal Sahni was among those who can be easily counted among these few. Very nearly forty years back — thirty-eight to be exact — I first met Sahni as a fellow student at Cambridge. Later,

I used to meet him off and on in each other's rooms or in the rooms of common friends, or at meetings of fellow Indian students; and everybody felt strongly drawn to him by his quiet and pleasant manners; by his deep devotion to his own work; by the intense sincerity of his nature. He came back home a year or two after I did, and joined as a professor in the Hindu University in my home-town of Banaras.

We quickly renewed the old contacts; and we often used to meet each other, his wife and mine having struck up a warm friendship. The Hindu University had been established only a short while earlier. It was Pandit Madan Mohan Malaviya's gift to the country. It had really flowered out of the old Hindu College which had owed its birth and inspiration to Mrs. Annie Besant, my father and others, and where I had received all my own school and college education in the earlier years. Pandit Malaviya, one of the most outstanding figures of the last generation and one of the most arresting and attractive of men, eagerly and enthusiastically collected the best human material that he could get in the Hindu world, which seemed to have lost all its initiative and its fundamental virtues in its struggle to come to its own during a thousand years and more of repressed existence; and no wonder that Sahni, though so young, also attracted his attention and was pressed into his service.

His association with the University, however, did not last very long, for all sorts of irreconcilables — all eminent individually and of very special merit personally, but perhaps not blessed with the capacity of carrying on with others that alone helps in the long run, and in which the Hindu is more deficient than perhaps anyone else in the world — had been collected together; and not seldom, instead of pulling together, they pulled one against the other. Curiously enough, I myself had something to do with the University in its earliest days, but had already retired quietly before Birbal appeared on the scene. He also soon left; but the manner of his departure would bear mention, as it gives an indication of his character which, after all, is the most important thing in one's life.

Dr. Ganesh Prasad, the Pro-Vice-Chancellor of the University, was the most unique person one can imagine. He was an eminent mathematician — a genuine scholar — and an exceptionally good administrator as well. This was a rare combination, though the fundamental qualities of the two are not always reconcilable — nor were they so reconciled in him. He knew the names of all the students of the University and was proud of the fact that he did so. He would often give a test of his remarkable memory to the discomfiture of his visitors, by calling up by name any student that happened to pass his way at the time and then sending him away, casually asking his visitor to admire his characteristic. He was an exceedingly punctual person and very particular about his engagements. Pandit Malaviya was eminently not this, as all who have had to deal with him know to their cost. Once I remember at the house of our common friend Shri Shivaprasad Gupta, where Malaviyaji was staying, I found Dr. Ganesh Prasad uncomfotably fidgeting about in the verandah, where he was being kept waiting to be called by the great founder of the University on some business.

It was long past the time appointed; and as I happened to meet him, I found him looking at his watch. Turning to me he said: "I am paid so much for so

many hours of work per day; and the University has already lost so many rupees by my being detained here unnecessarily for so many minutes. I should be there and not here." That was indeed a remarkable way of calculating one's worth and work! He knew the exact number of rupees, annas and pies that were to his credit in his bank at any particular time, which he offered to stake for anything whenever he got into any dispute with anybody. He was very keen about his Doctorate in Science; and always signed his name with 'D.Sc.' attached. Birbal had this peculiar person to deal with as his immediate official and academic superior.

Something happened between the two one day — I do not know what it was — but I was authoritatively informed that after that tiff, Birbal left the Doctor's room, calling in his intense irritation, an elongation of the letters 'D.Sc.' in a most unparliamentary manner, and sent in his resignation immediately afterwards. Other universities were not likely to let him remain idle; and he was soon caught by Lucknow where the rest of his dedicated life as a teacher was spent, and where he did all his great creative work in the service of science, leaving a great name behind when he passed prematurely away from the scene of his labours. Long afterwards, when he became F.R.S., a very coveted academic distinction indeed, which very very few in India have been able to obtain, I wrote to him a letter of felicitations and wished Dr. Ganesh Prasad had been alive to see the day and regret the earlier one when there was that unfortunate quarrel.

Birbal's reply was characteristic of the man. While thanking me, he roundly chided me for recalling that incident and asked me to forget it at once in fairness to all concerned. He was full of praise of Dr. Ganesh Prasad's greatness and goodness. In that letter, he told me how much he owed to the great man for all the help spontaneously and generously offered in his own work later on. I was very deeply struck by the magnanimity of the writer. Birbal was among those very few persons one may hope to meet in life who do not soil their mouths or the ears of their friends by talking ill of others; and even though he had reason to be aggrieved at the conduct of various persons in this world, he had no words against them. He was so completely engrossed in his own work that he had really no time to look for anything but good in others.

I regret I cannot speak with any personal knowledge about his work itself, as I am unfortunately an absolute ignoramus in science; and he was devoted entirely to her service. What, however, did strike me was the simplicity and purity of his personal life; his affection for his family, friends and pupils; his pleasant manners towards everyone; his efficiency in all that he undertook; his burning patriotism; his innate goodness; and his genuine human sympathy and understanding. His mind was analytic and his habits were prompt and methodical. He invariably came to see me whenever he happened to be in Banaras; and once his sharp eye caught some rare and out-of-the-way creeper on my walls, and plants in the flower-beds, the botanist was immediately at work, and he took samples of these for his own collection and experiment at Lucknow. I was happy that a small garden of an ignorant person like myself was useful to this eminent man of science.

His interest in the movement for India's freedom was intense; and often would he send substantial cheques for the helping of the cause. I remember a meeting



at Lucknow when we were trying to collect money for a suitable memorial to the dear lady Kasturba Gandhi who had died some time before while in internment with Mahatmaji in the Aga Khan Palace at Poona. Almost the first thing that was announced by Dr. Katju, the President and the main sponsor of the movement in the U.P., was Birbal's substantial gift to the fund. He himself always wore *khadi* and was a stout-hearted Congressman to his fingertips. His intellectual interests were also varied; and I remember a collection of seals that he had discovered in one of his wanderings in some part of the Punjab, which he had carefully studied and arranged, and the historical value of which he explained to me when he showed them to me.

The last time I saw him was at a tea-party at Government House, Delhi, when Rajaji was presiding both over the destinies of India and at that table, with that rare dignity that is all his own. Birbal and his wife had arrived before I did; and as I went up, he warmly embraced me, asking Rajaji to permit him to do so, despite the formality of the occasion, as he was meeting a very old and dear friend. I was then the High Commissioner for India in Pakistan, and Birbal had just then come back home after one of his many visits abroad winning for his country fresh and further laurels in his own field of activities. I was never destined to meet him again, for from Karachi I was shifted to Shillong — from the new-found State of Pakistan to the ancient kingdom of Kamarup — and my visits to Lucknow, and even to Banaras, practically ended.

It was not long after that I received a letter from him asking me for a message for the Institute of Palaeobotany that he was founding. I sent the message telling my dear friend that I knew neither palaeo- nor neo-botany, but I knew him; and I was sure that whatever work he did was bound to be good, and in which I, along with his numerous other friends, would always wish him well. I later read in the papers the proceedings of the opening of the Institute by Jawaharlal, our great Prime Minister, a good friend alike of Birbal's and mine; and then within a very very few days, the radio standing by my side announced one morning, as I was working early in my office, that Birbal was no more, that he had suddenly passed away during the preceding night.

I was stunned and could scarcely believe the staggering news. Newspapers that followed only confirmed it. It seemed as if he had just lived to see the Institute established, as a monument of his industry and as a symbol of his life's mission; and then he felt he had nothing further to do and so passed peacefully away. His friends, however, cannot think the same way. We all feel that he went away all too soon, that he had much useful work before him which he alone, perhaps, could do. The sudden disappearance of his personality is a blow to knowledge generally; and his friends and his family, his students and his colleagues will never cease to mourn the terrible loss. In his wife, who was always a true comrade to him in every way, he has left to us a very noble representative of all that he himself stood for; and the alacrity, the courage and the devotion with which she has taken upon herself to carry on his good work is something that is worthy of all admiration and respect; and should attract every co-operation and assistance from all of us.

I pray that the Institute that Birbal has left behind will grow from strength to strength, and will serve the great purpose that he himself had in view. On us



devolves a special responsibility; for we cannot forget the fact that though it is recognized that our country, in her chequered existence, has made the greatest possible contribution to the varied branches of philosophy, we have been singularly lacking in a scientific outlook; and thus our work in a most important branch of knowledge has been negligible. We live in a pre-eminently scientific age. Its discoveries and inventions of all sorts make giddy the thoughts of mankind, and give him power over the forces of Nature and enable him to utilize these for his own behoof. With the opportunities we now have of shaping our own destinies in our own way, as we breathe the air of Freedom, may we also fully share in the glory of the present and actively help in the shaping of the future.

May science, in the plenitude of its greatness, soon stand for the enhancement and not the destruction of life; for the bringing of the nations and peoples of the world together in bonds of true brotherhood, and not for keeping them apart, each from each, in constant dread, one of the other. When science stands for love and not for hate — as it should and is meant to do — then the work of the great scientist Birbal Sahni and many another moved by the same ideals as he was, and working for the same goal as he did, be fulfilled. It is up to all of us to help to make the noble dream a reality. Let us not fail.

Governor's Camp  
Baguri ( Assam )  
26th April 1950

**MAULANA ABUL KALAM AZAD, Minister for Education, Government of India**

I met the late Dr. Birbal Sahni only once, but this one meeting was enough to impress me with his superb qualities of mind and heart. When he left, I felt as if I had known him for years.

Sometime after this the post of Secretary to the Education Ministry fell vacant and I offered it to him. He declined the offer with regrets, and wrote that as he had dedicated his life to the work of his Institute, he would request that I should not ask him to leave it for any other work. His refusal made an indelible impression on my mind and deepened my regard for him.

New Delhi  
24th November 1949

**SHRI C. D. DESHMUKH, Minister for Finance, Government of India**

Birbal Sahni was one of the most outstanding of my contemporaries at Cambridge during 1915-17, many of whom have distinguished themselves in life. He was my senior by two or three years but we had common friends and came to know each other intimately. The qualities in him that impressed me most were his scholarship, indomitable spirit and dogged determination and independence of judgement. I was not surprised at the name he made for himself in the world of science in his chosen subject, and as a friend I took pride in the international recognition that his work received.

His scientific achievement was matched by his ardent patriotism, which was in evidence even in his Cambridge days and which occasionally brought him into conflict with authority.

Whatever he undertook he pursued with untiring zeal. I well remember his fighting tennis. It is a tragedy for the country that a career like his should have been cut short in its prime on the morrow of the realization of a long-planned and cherished objective—the foundation of the Indian Institute of Palaeobotany.

**PANDIT GOVIND BALLABH PANT, Chief Minister, Uttar Pradesh**

Professor Birbal Sahni was a scientist of international renown. His valuable researches in the field of palaeobotany were appreciated not only in India, but also in other advanced countries. He was not only a scientist but also a man of great erudition, culture and refinement, who devoted his whole life to the progress of science.

Professor Sahni's life is a rare example of devotion to the cause of learning, and should be a source of inspiration to our younger generation engaged in the pursuit of science.

Shortly before his death Professor Sahni endowed his entire fortune for the establishment of the Palaeobotanic Institute at Lucknow. It was most unfortunate that he was taken away from our midst so suddenly. The work started by him has now fallen on his devoted and brave wife who is conducting it in an admirable manner with the help of his colleagues and co-workers. I am confident his last will will be carried out and the seed planted by him will grow into a mighty tree.

Lucknow  
14th February 1950

**SHEIKH MOHAMMAD ABDULLAH, Prime Minister of Kashmir**

Professor Birbal Sahni's untimely death was a severe blow to growing science in India. An eminent scientist and India's greatest botanist, Professor Sahni was also an unrelenting nationalist. His profound contributions to the different scientific fields, in which he interested himself, helped considerably to put India in a distinguished place on the map of the scientific world.

Professor Sahni's striking personality, unfailing courtesy and a fine sense of humour were appropriate attributes of his great intellect. The void he has left will be difficult to fill. The Institute of Palaeobotany has high responsibilities, and the greatest tribute that can be paid to Professor Sahni will be in the form of researches which this Institute will carry out.

**DR. SITA RAM, High Commissioner for India in Pakistan**

As I never had the benefit of a science course at the university, having been an arts student throughout, I regret that I am absolutely incompetent to say any-

thing about the scientific eminence of the late lamented Dr. Birbal Sahni. His passing away so suddenly in the bloom of his life and the zenith of his glory gave a shock to everyone.

A son of a learned professor himself and, therefore, an educationist by heredity, Dr. Birbal Sahni's name came to my notice about thirty years ago. He was a well-known figure in the scientific world when he was in the Banaras Hindu University. Later, he shifted the field of his activities to the Lucknow University, where he did such a lot to organize his department. He did me the honour of taking me round several of the scientific exhibitions which he, with great taste and ability, used to organize at the Lucknow University before the convocations. From year to year it was a pleasure to mark the progress which, under his quiet and assiduous attention, the department was making. He was also interested in antiquities. I recall with gratitude a number of samples of fossils, as also a sample of old wheat from Mohenjodaro, which he gave me. These are my cherished possessions. I have benefited a lot from his private conversations on scientific subjects, specially those pertaining to biology and antiquity. Though such an eminent figure in the scientific world, Dr. Birbal Sahni, as a man, was simply lovable owing to his unassuming nature, quiet manners and pleasant conversation. He had a charm of his own to which the charm of his talented wife was added with a grace of her own. While in his company, he never made one feel that one was in the company of a distinguished scientist of the world. Of late, he was busy in organizing a special department of palaeobotany at the Lucknow University, quite a unique feature in India. Not only India, but also the world, have lost in Dr. Birbal Sahni a brilliant scientist who showed plenty of initiative in addition to a regular craze for research. His life in every way is, I can emphatically assert, a life which could well be an example to many budding scientists or educationists of ours.

Karachi

14th September 1949

**GENERAL K. M. CARIAPPA, Commander-in-Chief, Indian Army**

I have been asked to send a message for the Commemoration Volume of the Palaeobotanical Society, Lucknow. I send this short message with much pleasure prompted by the very high regard, admiration and affection I had, and still have, for the late Professor Sahni, the founder of this Society.

Science has come into universal recognition of late, in view of its manifold applications in peace and in war. The practical importance of science to warfare has long been recognized. In fact, very often the needs and stress of war have influenced the progress of science itself, particularly applied science.

In the application of scientific methods of operations of war, I do not think palaeobotany has come into the picture so far. However, I feel certain the operational research work in scientific matters, which is being carried out so methodically and so efficiently in our country, although still in its infancy, will, at some future date, find something of material scientific value in palaeobotany both in peace and in war.

I need hardly say that the very early death of the late Professor Sahni has deprived the world of a most eminent palaeobotanist.

I wish the Palaeobotanical Society of India every success under the directorship of Mrs. Sahni, the devoted wife of its great founder, the late Professor Sahni.

New Delhi  
24th October 1949

**DR. SAMPURNANAND, Minister for Education and Labour, Uttar Pradesh**

It would be sheer presumption on my part to attempt an appraisal of the position of the late Dr. Birbal Sahni in the world of science. The expression of genuine grief and sense of loss which the news of his death evoked all over the world bears testimony to the esteem in which he was universally held by those competent to understand the value of his researches and the significance of the science of palaeobotany whose name itself is unfamiliar to many otherwise well-informed people. What struck me most, apart from the profundity of his knowledge of his own branch of science and its relationship to science in general, was the humanness, if I might so call it, of his character. His sociability at once put at ease those who might be disposed to feel shy in the presence of such a great scholar. That he was a nationalist to the core might not be known to many, but public workers can never forget the very generous way in which he responded to any call for help. Knowing the catholicity of his interests, I ventured to solicit his help, in 1939, in connection with certain intricate problems which were facing me when writing my book *Aryon ka adi-desh*, the original home of the Aryans. According to my interpretation of the relevant Vedic mantras, the Aryan homeland was surrounded by water on the north, south and east. That the Gangetic plain and Rajputana were once under the sea is very well known. It is also a well-known geological fact that the Himalayas rose from the sea not very long ago, and are a comparatively younger mountain chain as compared to the Vindhyas. But I was not aware of any geological evidence to the effect that the region north of the Punjab and adjoining south-western Kashmir was at any time covered by water. Dr. Sahni readily responded to my request for help and placed a wealth of geological material at my disposal with whose help I have tried to reconstruct the map of what that part of India probably looked like some 25,000 years ago. Incidentally, this reconstruction bears out the Vedic reference to a sea on the north. I, of course, acknowledged my debt to Dr. Sahni in the book itself, but I must say here that but for the information he gave me my work of exposition would have remained very incomplete, even in my own eyes. It is a tragedy that we should lose him at the moment when his cherished dream of years materialized, and he was able to give to the world what was its first Palaeobotanical Institute. I can only hope that the work which he inaugurated and the spirit in which he approached his task will continue. Before finishing this tribute to that noble soul, I wish respectfully to tender my sincerest sympathies to his life-long companion and help-mate, Shrimati Sahni.

Lucknow  
28th October 1949



Science in India could ill afford the loss of Dr. Birbal Sahni and is poorer by his death. The news conveyed to me in the early hours of the morning of Sunday the 10th April 1949 came as a stunning shock. It was only a week since I had gone to Lucknow to witness our Prime Minister lay the foundation-stone of his Palaeobotanical Institute, and who could at that time have dreamt that Professor Sahni would be taken away from us so soon after the fulfilment of his life-long ambition? Considering that his father, Professor Ruchi Ram Sahni, had passed away a few months earlier, after a long span of life extending over 85 years, we had thought Birbal would be allowed to carry on his work for many years more.

I have known the Sahni family for more than 40 years, and had been intimately connected with them. Birbal inherited the love of science from his father, Professor Ruchi Ram Sahni, who was probably the first Punjabi to take an interest in science. Botany attracted his attention, and sitting at the feet of the late Professor Shiv Ram Kashyap at the Government College, Lahore, he imbibed his *guru's* teachings in systematic botany. Later, at Cambridge, he came under the influence of the late Professor Sir Albert Charles Seward and specialized in plant morphology. The influence of Sir Albert Seward was responsible for creating in him an interest in palaeobotany, and by dint of his systematic study he attained a pre-eminent position in the world in this subject. Honours came his way and in 1936 he was elected a Fellow of the Royal Society of London, the fifth Indian to obtain this coveted distinction. These spurred him on to further hard work and the impress is visible in the permanent place which palaeobotany has come to occupy in Indian science.

The science of palaeobotany is closely connected with geological investigations, and an examination of fossil plants throws a flood of light on the age of strata and formations where they are found. The data so obtained provide useful information about geological times and their measurements. Like the sister science of palaeontology, which deals with fossils of animal remains, the practical applications of palaeobotany lie in their utility in correlation problems connected with the search for oil and coal. This is well exemplified by the micro-palaeontological work which Birbal carried out for correlating the oil-bearing rocks of Assam for the Burma Oil Company.

Professor Sahni's interest led to the formation of the Palaeobotanical Society which had as its object the promotion on an all-India basis of higher study and research in fossil botany in its widest sense, in its purely academic aspects and in its application to the problems of economic geology. It was laid down that so far as the object can be promoted by researches in the related fields of geology and palaeontology they shall be regarded as a part of the object aforesaid. An active and flourishing school of palaeobotany came into existence at Lucknow, solely as a result of Sahni's efforts, and the Palaeobotanical Society sponsored the Palaeobotanical Institute at the Lucknow University for two years. This Institute made many useful contributions to the advancement of knowledge in palaeobotany but Professor Sahni was not satisfied with its temporary location and for some-time had been planning to provide it with a permanent home.

We discussed the matter several times and an approach was made to the Government of India and the U.P. Government. The response was generous and the words of the Prime Minister, in laying the foundation-stone of the Institute, are indicative of Government's interest in the advancement of science. " Science, scientific approach to problems and scientific outlook must be developed if India is to progress in the modern world. We may have plans, schemes and so many 'isms' but what is most essential is to understand the fundamental principles of science. I have participated in this function because I believe that now the attention of all in India should be concentrated on science. There will be retrogression if we do not develop this mental attitude", said Pandit Nehru.

The property gifted by the U.P. Government is valued at rupees three lakhs and the University of Lucknow are understood to have agreed to transfer to the Institute the adjacent piece of land to improve the lay-out. The Government of India have recognized the importance of supporting the Institute and sanctioned a non-recurring grant of rupees one and a half lakhs.\* Recurring grants totalling Rs. 1.65 lakhs have already been paid and further assistance has been promised.

Securing this support for the Institute, the first of its kind in the whole world, had meant for Professor Sahni a considerable amount of intensive work and devotion to the objective in view. To further this project Professor and Mrs. Sahni contributed substantially in cash and his life-long collection of material and books.

Professor Sahni by his life-long work made considerable contributions towards raising the stature of India in the scientific world. His prominent position in the field of palaeobotany was responsible for his selection as Honorary President of the 7th International Botanical Congress held at Stockholm in July 1950. Sadly enough, this laurel was to see the sudden termination of his brilliant career also.

#### DR. SACHHIDANANDA SINHA

It has been my privilege to have known, and been connected with, the family of the late Dr. Birbal Sahni for more than half a century. I had the privilege of being introduced to his revered father, the late Rai Bahadur Ruchi Ram Sahni, when I was married at Lahore in 1894, when he ( having been a co-student of my father-in-law ) was present at the wedding. From that time onwards he extended to me great kindness and affection until he passed away. Dr. Birbal Sahni was probably not even born at that time, but I came to know him as a child during my frequent visits to Lahore when, on each occasion, I made it a point to call at the house of his father. I have a distinct recollection of having met him on several occasions while he was a student at Lahore, and before he went to Europe several years afterwards. In India, too, since he came to settle down at Lucknow to carry on his scientific work, I met him both at Lucknow and at Patna, when he came to attend the Science Congress and other University functions and stayed with me with his highly talented wife as my honoured guests.

Dr. Birbal's attainments, achievements and distinguished record in various departments of scientific activities brought honour to India in the scientific world, since he was recognized as a scientist of international fame, and one of the fore-

\* The Government of India have since given further non-recurring grants amounting to Rs. 4,29,800.— *Ed. Comm.*

most students of science not only in India but also in the whole world of science. The fact that at a comparatively young age he was elected a Fellow of the Royal Society which, I believe, is the highest scientific honour, redounded as much to his credit as to that of the country where he was born. The additional fact that he was elected as Honorary President of the forthcoming International Congress of Botanists at Stockholm, but, was prevented from doing so by the cruel hand of death, added to the poignancy of our grief. His premature and sudden death within a week of the foundation of the great scientific Institute, which was inaugurated by the Prime Minister of India, and which is Dr. Sahni's legacy to his country, was truly tragic.

I earnestly hope that the Government of India, the Government of the United Provinces and other Provincial Governments will all co-operate in making this great scientific institution the success that its founder wanted it to be. I have naturally expressed my views about the scientific and public achievements of Dr. Sahni, and advisedly refrained from saying anything about his private life, with which I was privileged to be brought into contact. Suffice it to say that his life was pure, unselfish and marked by a profound and fervent love of scientific research and true scholarship. He represented the true ideal of a devout student of science and learning, and has left us not only his mantle of inspiration, but also a name and a fame that should inspire our young men to pursue research and learning with zeal and enthusiasm.

Patna

October 1949

#### SIR T. VIJAYARAGHAVACHARYA

Others more competent will write with understanding and knowledge about Birbal Sahni's work as a palaeobotanist. All that I can say in this regard is that when I heard that he had been elected a Fellow of the Royal Society, I rejoiced, not only because he was a personal friend, but because from my previous knowledge of him I felt that he was rightly honoured. A true scientist, modest, patient in investigation, cautious and careful in drawing inferences, an infectious enthusiast, he was the kind of man to bring honour to the society. His heart was in his work.

As a man it is difficult for me to speak of him with the proper degree of restraint. So tragic were the circumstances in which his life came to an untimely close! The news of his death burst on me with all the force of a Greek tragedy. At the height of his fame, within ten days of the fulfilment of his life-long ambition, the foundation of an Institute of Palaeobotany, the envious fate struck him down. My only consolation lay in the old classical saying, "Call no man happy till the last day of his life". He died happy.

I had spent many happy days with Sahni and his equally talented wife in Calcutta and Lucknow. What a rare combination! Both husband and wife had the same scientific interests and were equally deeply immersed in them. At their hospitable table students from all parts of India — Hindu, Muslim and Christian — congregated. How they adored them!



I had looked forward to many a long talk with him at the Institute in Lucknow. But the gods are jealous of mankind and so much unalloyed pleasure was perhaps too much for me to expect.

I value this opportunity of paying my last tribute of respect and admiration to a man whose life will, for a long time to come, be an inspiration to scientific workers in India.

Madras  
3rd December 1949

\* \* \*

**DR. W. A. BELL, Acting Director, Department of Mines and Technical Surveys,  
Geological Survey of Canada**

I first had the pleasure of meeting Dr. Sahni at Cambridge in 1919, when we were both studying under Dr. Seward. His charm was irresistible, and in succeeding years I watched his progress up to a leading position in palaeontological research with an interest heightened by delight in, and appreciation of, his achievements. Having myself approached the study of palaeobotany entirely from the geological side, I was particularly impressed by Dr. Sahni's application of palaeobotanical research to the interpretation of some of the major structural problems of northern India and Indo-Malaysia. His presentation of the palaeontological evidence for the age of the Punjab salt deposits was an impressive demonstration of the clarity of thought and wisdom of this leader, of his innate modesty, and of his respect and consideration for opposing opinions that were honestly conceived, although derived from field observations that neglected that most vital factor, the testimony of age presented by the microscopic fossils.

Dr. Sahni's personality, coupled with that of his equally able and charming wife, his outstanding scientific ability, and his constant, self-sacrificing endeavour, has placed India today in the forefront of palaeobotanical research. He will long continue to be an inspiration to those who have taken up his torch in the search for truth, and who will strive to carry out his fondest hopes for the Institute of Palaeobotany as a guiding light in that science to students of all countries.

Ottawa  
27th October 1949

**MADAME CECILE-PAUL BERTRAND**

Je ressens la disparition soudaine du Professeur Birbal Sahni comme un deuil personnel, après la perte subite de mon mari, le Professeur Paul Bertrand, survenue à Paris, en 1944.

Les travaux de P. Bertrand: "*Classification des Zygoptéridées, d'après les caractères de leurs traces foliaires*" (C.R. Acad. Sc. Paris t. 145 p. 775, 1907) et "*Etudes sur la fronde des Zygoptéridées*" (Thèse de doctorat ès-Sciences Naturelles 1909), avaient mis en relations les deux jeunes paléobotanistes, qui échangèrent

de nombreuses lettres, surtout à partir de 1929, toujours émerveillés de découvrir leurs mutuels points de vue sur des questions qui les passionnaient également.

Les visites du Professeur et de Mme B. Sahni en Europe, leurs séjours à Lille et à Paris auprès de nous, les rendez-vous aux Congrès Internationaux, les enthousiasmes stimulants des deux chercheurs comme leurs succès avaient cimenté cette haute amitié, confiante et délicate, admirative et sure, fidèle et dévouée. J'ai pu encore, devenue seule, mesurer le prix d'un tel attachement.

Birbal Sahni meurt ayant créé le premier Institut International de Paléobotanique qui, avec son musée, ses laboratoires, sa bibliothèque, son centre d'accueil aux étudiants du monde entier, doit favoriser le développement de cette jeune Science. Il se préoccupait aussi de fixer, " en un exemple permanent ", le pieux souvenir des Paléobotanistes qui en furent les fondateurs. Puissent ses disciples et admirateurs honorer son nom illustre, et réaliser pleinement ses vœux dans l'oeuvre magnifique qu'il avait rêvée.

Je salue avec émotion la mémoire de Birbal Sahni, plus unie que jamais, par le deuil de nos coeurs, à Madame B. Sahni, sa digne compagne, si étroitement associée à ses généreux projets et à ses travaux.

Paris

20th November 1949

**DR. Y. BHARADWAJA, Principal and Professor of Botany,  
Jaswant College, Jodhpur**

I have been requested by the Secretary, Editorial Committee of " The Palaeobotanist ", to write a few lines about the late Professor Birbal Sahni, F.R.S. I take it as a great privilege, and so pay my homage to the great Indian botanist in the following few words:

Dr. Birbal Sahni took his early education in botany at the Government College, Lahore, under the late Rai Bahadur Dr. Shiv Ram Kashyap. He had a very brilliant career all through. After taking his B.Sc. in 1911 from the Government College, Lahore, he joined the University of Cambridge and took its B.A. degree in 1914. A year later, he took the B.Sc. degree of the University of London and in 1917 he was awarded the M.Sc. degree of the same University. In 1921 he was awarded the M.A. degree by the University of Cambridge, and eight years later he got the highest degree, i.e. Sc.D., of the same University. Few years later, he achieved the great distinction of being made a Fellow of the Royal Society of London. Professor Sahni had the unique distinction of having continuous study in England for about 7 years (1912-1919), during which period he received thorough grounding in various aspects of botany under top-ranking botanists, including the late Professor A. C. Seward, F.R.S., one of the leading palaeobotanists, not only in the United Kingdom but also in the whole world. While in England, it was a great pleasure to me to hear in very glowing terms about Professor Sahni's great scholarship from several leading botanists, including the late Professor Seward and the late Dr. D. H. Scott who considered Dr. Sahni as one of their best pupils. Professor Sahni later amply justified it by doing investigations and research of a very high order which made him an authority on palaeobotany.

Although Professor Sahni was a specialist in palaeobotany, he had up-to-date knowledge in most of the other aspects of botany as well. He was a scholar in the real sense of the term, and it was a pleasure to discuss with him any botanical topic. In every discussion he had something original to suggest. He was always inquisitive to know new things, and was thorough in every bit of what he did. He is rightly considered as the Father of palaeobotanical research in India. In earlier times he published several papers on fossil plants, and one of his notable papers was on the petrified plant-remains from the Queensland Mesozoic and Tertiary formations. Another important paper published by him was on "The Structure and Affinities of *Acropyle Pancheri*", published in the Transactions of the Royal Society of London. By far the most important of his researches was on Indian Gondwana plants. His memoirs on *Williamsonia Sewardiana* gen. et sp. nov. from the Rajmahal Hills, and *Homoxylon rajmahalense*, gen. et sp. nov. are well-known publications. The result of this work had a great bearing on several geological problems. Mention should also be made of his work on the flora from the Deccan Intertrappean beds of the Nagpur-Chhindwara area. His latest work referred to the discovery of microfossils in the Salt marl and associated beds of the Punjab Salt Range, and this had a great bearing on the controversy regarding the age of this Saline Series.

Professor Sahni was one of the founders of the Indian Botanical Society and was also a foundation-member of many of the scientific societies in this country. His visits to foreign lands were frequent, and they were mostly for attending congresses and conferences, especially those concerned with palaeobotany. He presided twice at the Botany Section and once at the Geology Section of the Indian Science Congress. In 1940 he was the General President of the Indian Science Congress held at Madras. He had received great honours from abroad. He had been the Vice-President of the International Botanical Congress and a Corresponding Member of the Botanical Society of America. He was elected Honorary President of the 7th International Botanical Congress at Stockholm only a few days before his death. Besides being a scientist of very high merit, Professor Sahni was a very kind friend. Those who have had the privilege of knowing him intimately can never forget his great hospitality and affection. Although Professor Sahni is no more amidst us, his glorious scientific record and lovable nature will ever remain fresh in our memories. May the Institute of Palaeobotany, which he founded at Lucknow in 1949 before his death, prosper from day to day, and prove to be a fitting monument to his achievements and future aspirations, not only in palaeobotany but also in all related subjects.

14th February 1950

#### **PROFESSOR C. Y. CHANG, Botany Department, University of Peking**

The sudden decease of Professor Sahni is a cause for keen personal regret. While I knew him by his scientific work for some time, my personal acquaintance with him was comparatively recent. I looked forward to a long-continued friendship beginning with my visit to Lucknow in the autumn of 1945.

Naturally enough Professor Sahni had attracted to Lucknow students of palaeobotany not only from various parts of India, but also from other lands.

His laboratories were a veritable beehive of activity. The quality and diversity of researches that were being carried on was impressive. I was also very much impressed by the friendliness of personal relations there. In addition to giving his students scientific guidance, Professor Sahni was very solicitous of their welfare. The case of Dr. J. Hsü was a good illustration. At my instance, Hsü sought to go to Lucknow to study under him. Professor Sahni readily consented to have him, provided him with a good scholarship and helped him in securing admission papers. During his stay in Lucknow, Professor and Mrs. Sahni constantly looked after his comfort, took him along to their summer home in the hills, and did everything to make him feel at home. Association with Professor Sahni not only made the younger people better scientists, but also better men and women.

Characteristic of a first-rate scientist, Professor Sahni was a cosmopolitan in his outlook. At the very conception of an Institute of Palaeobotany Professor Sahni had intended to make it an international research centre. When the Institute came into being, Dr. Hsü was invited to be its first curator. When I expressed the hope that Professor Sahni would some day come to China to help us with the building-up of palaeobotanical research, he was all willingness. It is with infinite regret that I find my cherished hope can never be realized. His coming to China would surely have given a great stimulus to that field of research.

My brief stay at Lucknow was enjoyable as well as profitable. Professor and Mrs. Sahni invited me to be their guest. Their hospitality and cordiality made me feel at once overwhelmed and at ease. And I had the opportunity to see something of their home life. Professor Sahni led an extremely busy and active life and yet an atmosphere of serenity pervaded their home. To this precious atmosphere Mrs. Sahni evidently contributed her full measure. I found her to be a highly gifted and truly educated lady, who had the rarest ability of extracting and distilling the best out of the Oriental and Western cultures, and making a harmonious blend of them. Their home was restful and refreshing for the spirit as well as for the body. This happy home life must have been a major factor in Professor Sahni's brilliant career

1st February 1950

**COLONEL R. N. CHOPRA, Director, Drug Research Laboratories, Jammu-Tawi**

Professor Birbal Sahni was the second son of Professor Ruchi Ram Sahni — an eminent Indian chemist. He thus came of a family with high traditions in the field of science. Educated at Lahore and Cambridge, Sahni came under the influence of the famous palaeobotanist, Professor Sir Albert Charles Seward of Cambridge. This started inspired researches of a high order and brought out the best in young Sahni. After his return from England he worked successively at Banaras, Lahore and Lucknow. He headed the Botany Department of the Lucknow University for over a quarter of a century, and produced work of the highest merit. A botanist, a palaeobotanist, and a geologist, Sahni distinguished himself in each field with a brilliance that won him the esteem of scientists everywhere. His contribution to the study of Zygopterid ferns, Indian Gondwana plants, structure and affinities of various Indian fossil plants from the Palaeozoic



to the Quaternary beds, morphological and structural aspects of fossil plants dealing with the geographical distribution of fossil floras against their climatic, physical and evolutionary background — all carried the impress of a profound researcher. In his last days he founded a new group of gymnosperms, the *Pentoxyleae*, and this constituted perhaps his last, and one of the finest, contributions in the field of botany.

All through his career, Sahni distinguished himself as a lover of knowledge, an initiator of research, a motive power in scientific pursuits, and as a great organizer of scientific investigations. His eminence as a front-rank scientist maintained high position in the international field. For his great achievements he was fittingly honoured by his country and by the scientific world. He was elected General President of the Indian Science Congress in 1940, a Fellow of the Royal Society in 1936, a Vice-President of the Palaeobotanical Section of the International Botanical Congress, Cambridge and Amsterdam, in 1930 and 1935. A little while before his death he was elected Honorary President of the Seventh International Botanical Congress at Stockholm for 1950. This was the highest honour that a botanist would aspire to and an appropriate tribute to Professor Sahni.

I had known Sahni intimately for over a quarter of a century. He had a most charming manner. His vigorous personality endowed with giant intellect produced on me a lovable impress, and I always looked forward to seeing and talking to him. With a personal interest in the botanical field, I followed his researches with great admiration, I had confidently hoped that with the setting up of the Institute of Palaeobotany at Lucknow a new era of fruitful contributions to science would start under Sahni's dynamic direction. This was, however, not to be; and India lost one of her top-most scientists at a time when her science was beginning to be organized along new lines. His death removed one of India's ablest sons at a time when the country needed him most. He has left behind him a high tradition of fearless, dynamic and profound scholarship, and his colleagues and students have to carry through the unfinished task of this great man. India looks to them and his devoted wife to carry their master's torch with courage, integrity and devotion.

**PROFESSOR H. P. CHOWDHURY, Botany Department, University of Lucknow**

The death of Dr. Birbal Sahni on April 10, 1949, came as a shock to his friends, admirers and students. Of those of us who saw him on the 3rd April, the day on which the foundation-stone of the Palaeobotanical Institute was laid by Prime Minister Nehru, who could even dream that such an eminent botanist, whose star was still in the ascendant, could be snatched away from the Institute for which he had worked so hard. What a pity that although his life's mission and aspirations culminated in the sowing of that seed for which he worked so hard and sacrificed his health, his life was not spared to see the tree grow and flourish! Such is Fate; it is inexorable.

I had the privilege of being his colleague and friend for the last twenty-eight years. At the root of his success lay his industry and perseverance. Himself a hard worker, he could be a hard task-master. He expected his collaborators to keep pace with him. A great characteristic of his, so rare in

men, was that he could withdraw himself, like a tortoise in its shell, and work in the midst of multifarious disturbances around him. He could work with ease anywhere and a good deal of his work was done even while travelling in the train.

He remained very detached at first, and minded his own work of teaching and research, but afterwards he was drawn by force of circumstances into the whirlpool of academic affairs. In 1933 he was elected the Dean, Faculty of Science of the Lucknow University, and continued to be in charge of the Faculty till his death. Under his able guidance many developments took place, not only in the Department of Botany but also in the whole of the Science Faculty.

He was a critic of the first order not only in his scientific pursuits but also in his everyday life. Orderliness and method were so deeply ingrained in him that wherever he saw disorderliness or slackness in work he at once showed his disapproval, but in such a gentle and composed manner that it left no trace of disagreeableness behind. When he started writing anything, he used his pen freely over sentences or clauses till he was quite sure that what he meant was there in writing. His eye was so critical that nothing escaped, and till the thing came up to his standard he would not rest.

His personal dealings with people were of a high order. Extremely courteous and exquisitely polished, his speech and manners won for him the admiration of all.

The occasions when we disagreed were few indeed. He had a knack of persuading people. His colleagues felt quite at ease with him and he never tried to impose his superiority over them. Whenever he had anything to say, seldom did he call his colleagues; he would himself come to the room and would have a talk. His régime was free from interference, and we all worked together like a happy family. I have never seen him to be rude even when angry, though when very much excited, his face would turn red.

Many a time did he help his students unobtrusively. Whenever a needy person approached him, if he was convinced of the case, he was quite liberal but he never made a show of it.

Such was the man whose loss has created a void not easy to fill.

Lucknow

10th October 1949

**DR. K. A. CHOWDHURY, Wood Technologist, Forest Research Institute, Dehra Dun**

It was in February 1933 that I came in contact with Professor Birbal Sahni. From then on we often corresponded on research matters. The subject of our common interest was naturally the anatomy of the Gymnosperms and the Angiosperms. I have on many occasions worked in his laboratory, taking full advantage of that wonderful library of his. In fact, whatever little I have been able to publish on palaeobotany was mostly due to the access he gave me to his library. The co-operation was mutual. Some students of his have also received the facilities of our laboratory and the library at the Forest Research Institute, Dehra Dun. Whenever I met Professor Sahni, I always found him ready for a discussion on the best way that we could co-operate on some of the problems he had on

hand at that time. The last time I saw him was the day after the foundation-laying ceremony of the Palaeobotanical Institute. Our talk was confined to some new lines of research work he had planned to take up in co-operation with me. But alas! I never knew that it was the last meeting I was to have with him.

Wherever Sahni went, he left a strong impression. His keen intelligence and wide knowledge of plant morphology impressed one and all. In addition to these, his smart appearance, polished manners and fluency in German and French were responsible for his popularity at international gatherings. His was a scientific personality to be reckoned with. It was, therefore, no wonder that he was considered to be one of the most outstanding botanists of the present time.

When Sahni started research on palaeobotany in India, it was almost an unexplored field. He had easy access to the vast collection of fossil plants of the Geological Survey of India. The problem for him, then, was what to choose. It must be said to his credit that he chose his research material extremely well. Firstly, he confined his activities to only those fossil specimens which were likely to supply data for solving some outstanding controversial problems of botany and geology. The results of these researches are now known to all. Secondly, whatever he took up, he pursued with diligence and perseverance, often taking many years over a single specimen. When necessary he took the help of various specialists working in different parts of the world. He never published anything hurriedly. His published papers bear witness to this. Anybody can see the amount of thought and energy that he spent on every paper that came out from his laboratory. His was not a mind to be satisfied easily. He always aimed very high, and it is no wonder that his achievements were also very high. Here is something he has left behind for us to admire and to follow.

4th December 1949

**LT. COLONEL L. M. DAVIES, Grant Institute of Geology, Edinburgh**

The sudden death of Professor Birbal Sahni has come as a great shock to all who knew him. The loss is great, both to science as a whole, and to us his personal friends.

I first got into touch with him twenty-five years ago, when I was trying to determine the stratigraphy of the Kohat district, and the exact correlations of Mr. Pinfold's Chharat sequence. Being no botanist, I could not identify the occasional plant-remains which I found in the Upper Chharat beds, so I sent them to Professor Sahni, who most kindly gave me his expert comments on them. Although these plants could not afford exact zonal indications, they confirmed the general conclusions as to the age of the beds; and I was struck by Professor Sahni's genial readiness to do everything possible to help me. We afterwards met at the Indian Science Congress of 1925, and last saw each other when he and Mrs. Sahni visited Edinburgh in 1948.

It is characteristic of scientific research and particularly noticeable in geology that studies of the most different kinds tend to interlock. Thus the conclusions



formed by Professor Sahni regarding the late Mesozoic or Tertiary age of the Punjab Salt, which were based on the appearance of botanical fragments throughout that formation, agreed with my conclusions which were based on the changing distributions of the foraminiferal successions in the northern Punjab and adjoining areas, that an inland sea which once covered the Kohat-Potwar region had desiccated out in Eocene times. That the Kohat (Bahadur Khel) Salt is of Eocene age is generally admitted; but the Punjab Salt is now again regarded as being much older. Not having seen the Salt Range sections which have convinced some other geologists as to the accuracy of Dr. Gee's later views, I cannot comment on them. I only know that the foraminifera, which Dr. Gee sent to me for determination in 1931, and which both he and Dr. Cotter then regarded as being undoubtedly *in situ* in the Salt marl, were of Ranikot and Laki age (*Rec. Geol. Surv. Ind.*, Vol. LXVI, 1932, p. 32). And no satisfactory answer has ever been given to Professor Sahni's plea, based on the saturation of the salt itself with long post-Cambrian vegetable spores, etc.

As matters stand at present, I see little prospect of Professor Sahni's case ever being effectively answered; but however that may be, the fact that his work and mine, based on such different data and methods, should thus correlate, is both interesting in itself, and also pleasing in that it brought me again into touch with this very eminent scientist and personal friend.

I am thankful that Professor Sahni lived to see the foundation-stone of his Institute of Palaeobotany laid on the 3rd April; and my sincerest condolences and good wishes go to his talented widow, Mrs. Savitri Sahni, who is so bravely continuing his work by officiating as the President of the Palaeobotanical Society at that Institute.

12th October 1949

**MR. P. E. P. DERANYAGALA, Director, National Museums, Ceylon**

Birbal Sahni has won his place among great palaeobotanists and in doing so focussed the attention of the world upon modern Indian intellectual achievement. A man of striking personality, Sahni could have risen to great heights had he chosen to utilize his personality in fields where this is an asset, but he hated ostentation. The search for knowledge for its own sake claimed his entire life, although the highest scientific honour that England could confer was his. Honour and fame, however, had little attraction for Sahni who endeavoured to kindle the sacred flame of research in India to the utmost of his ability. His final attempt was the founding of the Institute of Palaeobotany and in its foundation-stone is incorporated a fragment of 'Andigama shale', the oldest Jurassic bed of Ceylon. Sahni's work did much to enhance the respect of the outside world for India and will continue to be quoted so long as geologists and botanists work on these branches of science in southern Asia. The research he has handed over to his pupils will doubtless yield valuable results in due course, and his Institute's work will be a memorial to one of India's great sons.

Colombo

4th January 1950

## PROFESSOR J. HADAMARD

It has been quite a luck for me to meet Professor Sahni in London in 1946, to see him again at Lucknow and, especially, to find him another time when he spent a few days — too few for us — in our town.

Though not qualified in the branch in which he made such beautiful work and was so useful to science, I was able to appreciate, not only the charm of his personality, but also the nobleness of his character and of his ideas, his keen devotion to his scientific ideal. Nobody could approach him without feeling the superiority of his thought.

His disappearance has been a cruel loss for India and for the world of science, and for every scientist who has learnt to know him; and having learnt to know him will be for me a valuable recollection which I keep from my coming over to your beautiful country of India.

Paris

14th November 1949

## DR. SVEN HEDIN

From Professor Birbal Sahni's and Mrs. Savitri Sahni's visit to Stockholm and to my home I have the most precious and valuable memories, and I am very happy indeed to have had an opportunity to meet at close quarters two so distinguished and charming persons. I knew Professor Sahni as a very deep and genuine seeker of truth, a man who sacrificed everything for penetrating the immeasurable ocean of scientific knowledge. With indomitable perseverance and indefatigable determination he strove to make the Institute of Palaeobotany an active centre of very serious research; a creation that should be indispensable for all the palaeobotanic scholars all over the world. He was the Founder of that already famous Institution and its Director, and never has a man so given up all his forces and the whole of his strength for the spirit and service of science.

In the beginning of June 1948 I had the great pleasure and honour to meet Professor Sahni in our Royal Swedish Academy of Sciences where he had been invited as an honoured guest at our evening meeting, and where Professor T. G. Halle of our Palaeobotanic Institute and Museum was a great friend of his. At the supper we had a long and unforgettable talk together, and on that occasion Professor Sahni told me a very touching story. When in the beginning of September 1908 I came down with my last caravan of horses and Ladakis from Tibet on the road to Simla, I was met at Kotgarh by a deputation of the authorities of that place. Amongst them was the father of Professor Sahni who had brought his little boy with him. Forty years had passed by since then and the little boy had grown up and had become the famous and noble Professor Sahni. At the meeting of the Academy of Sciences in Stockholm I made a speech in honour of Professor Sahni and told the members of the Academy the story that just had been told to me by Professor Sahni, and I pointed out the extraordinary fact that I had met our guest of honour 40 years ago.

On the same occasion Professor Sahni and his charming wife came to my house, where my sister Alma and I had the honour to entertain them for a couple of hours.

July 13, 1948 Professor Sahni sent me the following letter which I keep amongst my most precious documents.

“ Dear Dr. Sven Hedin,

Tomorrow my wife and I are to leave this beautiful city. We are going away to Copenhagen for a day or two and then we move on to Switzerland for a few weeks before going to England in August for the Geological Congress. ‘

Before leaving Sweden we wish to thank you and your good sister Alma for the privilege you gave us of receiving us in your wonderful house, full of mementos of your eventful life of travel in far lands. I shall always carry with me pleasant memories of this visit to you nearly 38 years after I had, as a boy at college, seen you near Kotgarh coming back from one of your treks in Tibet. I am sorry I cannot tell my father, who also saw you at the same place, that I have had the pleasure of meeting you in Sweden, because, alas! he passed away on the 3rd of June in Bombay, while we were away from home.

Please accept also our thanks for the photographs and our kindest regards and best wishes for you both.

Yours sincerely  
B. Sahni ”

Professor Sahni had told me about his great plans in connection with the Palaeobotanical Institute in Lucknow and its inauguration in the spring next year, so I asked him to let me know the exact date when the foundation of the Institute was to take place, because at that occasion I would absolutely send him a message of congratulations and good wishes for its future.

Professor Sahni was good enough to promise to wire me and he kept his promise. On the 29th of March 1949 I got the following telegram from him:

“ Foundation-stone of Institute of Palaeobotany will be laid by Prime Minister Pandit Nehru at Lucknow third April. The Palaeobotanical Society would deeply appreciate a message of encouragement from you on this auspicious occasion, regret unavoidably short notice. Sahni Palaeobotany Institute.”

April 1st I wired:

“ Palaeobotany Institute, Lucknow. Most hearty congratulations to foundation of Institute by great Pandit Nehru. My warmest wishes for your glorious contributions to world's scientific research. With heart and thoughts I am present on this auspicious occasion. God bless beloved India for ever. Sven Hedin.”

Only four months later I got the most wonderful and well written letter I have ever got in my life. It was dated 5th August 1949 and written by Mrs. Savitri Sahni. However, it contained the very sad and tragic news that our dear and distinguished friend, the great and famous scholar Professor Birbal Sahni had just died, just at the threshold of his great work, the fulfilment of the dream of his life, the start of his Palaeobotanic Institute. In the letter mentioned above Mrs. Sahni said:

“ As you know my beloved husband's life was dedicated to the service of science and it was his cherished ideal that this Institute should grow into a great

International centre of Palaeobotanical research and of goodwill and cultural co-operation, where men of all nations will co-operate in the spirit of science and of service — thus he used to say he wanted to make this into, and towards this end he and I always worked. This, alas, he did not live to fulfil, and on my frail shoulders has fallen the heavy burden of continuing his great work.”

I am deeply sorry that Professor Sahni should not live for many years to witness the future development of his magnificent Institute which now remains for ever as a noble memorial of its famous creator. I am so happy to be joined with him by bonds of everlasting friendship, and I am sure India will love and honour and bless his memory for ever.

I am also very happy to know that Mrs. Savitri Sahni is President of the Governing Body of the Institute of Palaeobotany at Lucknow. This great responsibility could never have fallen into more able and worthy hands than hers.

Stockholm

17th December 1949

### PROFESSOR JAICHANDRA VIDYALANKAR

स्वर्गीय बीरबल साहनी से मेरा पहला मिलना स्वर्गीय काशीनाथ नारायण दीक्षित के बंगले पर नई दिल्ली में १५ नवम्बर १९४० की संध्या को हुआ था। दीक्षित मेरे विषय में उनसे पहले कह चुके थे। “तुम दोनों पंजाबी एक-दूसरे को नहीं जानते ?” दीक्षित ने अपने सहज मजाकिये ढंग से हँसते हुए कहा था। हाँ, हम दोनों पंजाबी थे, और पच्छिमी पंजाब के ठीक उन दो कस्बों — भेरा और कमालिया — के, जिन्हें पंजाब के लोग पिछली पौन शताब्दी में अनेक मेधावियों के जन्म-स्थान रूप में जानते रहे हैं।

साहनी को १९३६ में रोहतक के पास खुदाई से मिट्टी के जो हज़ारों साँचे मिले थे उनका बारीक अध्ययन कर वे प्राचीन भारत में सिक्के ढालने के शिल्प का पुनरुद्धार कर चुके थे। आरम्भ में उस कार्य में उन्हें स्वर्गीय जायसवाल जी से सहायता मिली थी। वे चाहते थे इतिहास की दृष्टि से अब कोई उनके तैयार निबन्ध की पांडुलिपि को जाँच दे। दीक्षित ने इसी प्रसंग में मेरी चर्चा की थी। उस प्रसंग में आगे जो हुआ उसका उल्लेख साहनी ने अपने निबन्ध में किया है और उसे यहाँ दोहराने की आवश्यकता नहीं।

पर हमारा सहयोग एक निबन्ध तक सीमित रहनेवाला नहीं था। बीरबल साहनी के मुखड़े पर आदर्श परायणता और सच्चाई की खोज के लिए निष्ठा ऐसी स्पष्ट लिखी हुई थी कि पहले ही दर्शन में वे मेरी आँखों में समा गई। मुझे प्रतीत हुआ हम दोनों का सहयोग एक और बड़े कार्य के लिए हो सकता है, और जैसे ही मैंने उसकी चर्चा छोड़ी और हमारी दो-चार बातें हुई कि मैंने देखा साहनी भी उसे अच्छी तरह समझते और उसमें लगने को जी जान से तैयार हैं।

भारत की जनता तक विश्व के नये ज्ञान की ज्योति पहुँचना हमारे राष्ट्रीय पुनरुत्थान का अत्यंत महत्त्वपूर्ण पहलू है। जनता तक वह ज्योति जनता की अपनी भाषाओं में ही पहुँच सकती है। पर जिन्होंने उस दिशा में समझ-बूझकर कुछ काम किया है वे जानते हैं कि वह काम केवल अनुवाद कर देने का नहीं है। वनस्पतिशास्त्र पर युरोपी भाषाओं में जो कृतियाँ हैं उनके उदाहरण प्रधानतः और मुख्यतः युरोपी वनस्पति के हैं, उनकी परिभाषाएँ युरोपी विचार की परम्परा के अनुसार नियत हुई हैं और यदि कहीं उनमें वैज्ञानिक विचार का क्रमविकास टटोला जाता है तो युरोप के वनस्पति-विषयक विचार का ही। भारतीय भाषाओं में प्रमाणिक और स्वाभाविक वनस्पतिशास्त्र तैयार हो सके इससे

पहले भारतीय वनस्पतियों के विस्तृत और वारीक अध्ययन की, उस अध्ययन के परिणामों के संकलन की, तथा भारतियों के पुराने वनस्पति-विषयक और उससे सम्बद्ध ज्ञान और विचार के ऐतिहासिक शृंखला में संकलन और मथन की आवश्यकता है।

बीरबल साहनी इस दिशा के पहले अंश में अर्थात् भारतीय वनस्पतियों के अध्ययन में उच्चतम कोटि का कार्य कर रहे थे। बचपन से संस्कृत की शिक्षा न मिलने के कारण वे दूसरे अंश का कार्य स्वयं और अकेले न कर सकते थे, पर कुछ मिनटों की चर्चा में ही मैंने देख लिया कि वे उसके महत्त्व को पूरी तरह समझते हैं, और यदि कहीं से सहयोग मिले तो उसमें भी तन्मय होकर लगना चाहते हैं। स्वयं किसी भारतीय भाषा में लिखने की शिक्षा बचपन में न पाए होने के कारण वे अंग्रेजी में लिखने को लाचार थे, पर यदि उन्हें अच्छे विद्यार्थी मिलें जो अपनी भाषाओं में वैज्ञानिक विचार व्यक्त कर सकें तो वे उन्हें ठीक राह पर डालकर उनके द्वारा भारतीय जनता तक ज्ञान पहुँचाने को उत्सुक थे। उस दिन की बातचीत में यह ठहरा कि मैं ऐसे विद्यार्थी सहयोगी उनके लिए ढूँढ़ूँगा तथा उन विद्यार्थियों को भारत के पुराने वानस्पतिक ज्ञान का पता देने और उस ज्ञान की ऐतिहासिक शृंखला बनाने में सहायता दूँगा। मैं उस समय बड़ी आशा और उत्साह से भारतीय-इतिहास-परिषद् का संघटन खड़ा करने में लगा हुआ था। मैं सोचता था उसके खड़े हो जाने पर इन सब दिशाओं में कार्य करना तो हमारा नित्य का धन्धा होगा।

प्रायः दो बरस इसी आशामय संघर्ष में बीत गए। उस बीच जापान का युद्ध छिड़ गया और हमें अपने संघर्ष को एक तरफ रखना पड़ा। १९४३ के वसन्त में मुझे अंग्रेजी सरकार का मेहमान बनना पड़ा। तीन बरस उस मेहमानी में निकल गये।

जेल से निकलने के छः मास बाद नवम्बर १९४३ में जब मैं फिर साहनी से मिला, तब तक मेरी आशाएँ पूरी तरह टूट चुकीं और देश की वस्तु-स्थिति के प्रति आँखें खुल चुकी थीं। साहनी ने इस बार पूरा एक दिन मुझे अपने साथ रक्खा और अपने पुस्तकालय और परीक्षणशाला का प्रत्येक अंश दिखाया। हाय, वह हमारा अन्तिम मिलन था! साहनी को आश लगी थी कि उनका प्राचीन वनस्पतियों का खोज प्रतिष्ठान खड़ा करने का स्वप्न पूरा होने की राह पर है। पर मेरे सहयोग से जो उन्हें काम करना था, उसकी सम्भावना पहले से भी अधिक दूर चली गई थी! मेरे चेहरे पर की चिन्तारेखा उन्हें चुभ रही थी, उसका मुझे भी दुःख हुआ। बड़ी खीझ के साथ साहनी ने देश के कुछ नेताओं का नाम लेकर कहा—“वे हिन्दी-हिन्दी करते हैं हमें अंग्रेजीवाला समझते हैं, पर हिन्दी में विज्ञान किस तरह आएगा उसे कुछ भी नहीं समझते!”

हमारे देश में ऊँची प्रतिभा आज धक्के खाती फिरती है। एक विदेशी भाषा में सोचने की चेष्टा करने से अधिकांश लोग कुछ भी स्पष्ट सोच नहीं सकते, वे वास्तविक प्रतिभा और ढोंग में विवेक नहीं कर पाते। मैंने वामनदास वसु, काशीप्रसाद जायसवाल और गौरीशंकर ओझा जैसे व्यक्तियों को बरसों इसके लिए तरसते देखा है कि ज्ञान के जो नये मार्ग उन्होंने चट्टानों काटकर निकाले थे उनपर अपने पीछे चलनेवाले उत्तराधिकारी तैयार कर जाएँ। पर वे अपने अरमान अपने साथ ही ले गए! किसी जीवित देश में ऐसे एक-एक विद्वान् की छाँह में एक-एक विद्यापीठ उठ खड़ा होता। हमारे इतिहास में आज उनकी स्मृति मरुभूमि में खड़े हुए अकेले-अकेले महावृक्ष की सी लगती है। लोगों को ह्याल होगा बीरबल साहनी को तो सब सुविधाएँ प्राप्त थीं। किन्तु भारत की युनीवर्सिटियाँ जिस साँचे में ढली हैं, और उनमें जैसा वातावरण है, उसके रहते एक विभाग का अध्यक्ष होने पर भी साहनी जैसा वैज्ञानिक क्या अपने इच्छानुसार सर्जन कर सकता था? आज यदि मैं न बताऊँ तो लोगों को पता भी न चले कि अपनी भाषा की सेवा करने की कैसी साध साहनी के दिल में थी। क्यों वे उसे पूरा न कर पाए? और अपनी सारी आयु की कमाई लगाकर जब उन्होंने एक वैज्ञानिक प्रतिष्ठान खड़ा किया, तब उस प्रतिष्ठान को खड़ा करने के सम्बन्ध का सब क्रिस्म का काम उनपर



ऐसा पड़ गया कि उसी के बोझ से दबकर वे चल बसे ! यदि देश ने साहनी की प्रतिभा का ठीक मूल्य आँका होता तो क्या ऐसा बोझ उनपर पड़ने दिया जाता ? इतिहासकार को कहना होगा कि इस युग के अन्य अनेक प्रतिभाशाली भारतियों की तरह वीरबल साहनी भी हमारे राष्ट्र की मोहनिद्रा की वेदी पर शहीद हुए ।

पर राष्ट्रों की नींव शहीदों के खून पर ही खड़ी होती है । साहनी अपने पीछे जो छोटी-सी शिष्य-मण्डली छोड़ गए हैं उसके ज़िम्मे यह काम है कि जब तक उनका राष्ट्र पूरी तरह चेतकर साहनी के कार्य को नहीं संभाल लेता तब तक उनके आदर्शों की ज्योति को जगाए रखें ।

बनारस

१३ मार्च १९५०

[ I first met Birbal Sahni at the residence of the late Kashinath Narayan Dikshit at New Delhi in the evening of November 15, 1940. Dikshit had already spoken to him about me. " You are both Punjabis and do not know each other ? " he had remarked in his usual jocular manner. Yes, we were both Punjabis, hailing respectively, from the two towns of West Punjab, Bhera and Kamalia, known to the people of the province, for the last three-quarters of a century, as the birth places of many distinguished men.

Sahni had by then described the technique of casting coins in ancient India after a detailed study of the thousands of clay moulds found by him in an excavation near Rohtak in 1936. He had launched upon this study with the help of the late K. P. Jayaswal. He wanted now someone with the requisite historical knowledge to check his manuscript. Dikshit had mentioned me to him in this connection. What happened further in the matter has been recorded by Sahni in his monograph and need not be repeated here.

But our collaboration was not to be limited to the writing of one monograph. Sahni's idealism and his devotion to the quest for truth were so clearly reflected upon his face that they profoundly impressed me at our very first meeting. I felt that we could collaborate for a bigger object ; and when I broached the subject, I found him sympathetic and willing to extend his wholehearted co-operation.

Taking scientific knowledge to the door of India's masses constitutes a very important aspect of our national renaissance. This knowledge can reach the masses only through their own languages. But those who have done any work in this direction with understanding realize that the task is not one of mere translation. The treatises on botany in European languages draw their examples chiefly from European plants. Their terminology has been determined by their own traditions ; and wherever these works afford an insight into the evolution of scientific thought, it is in relation to the plant-lore of Europe. Before we can produce standard works in botanical science in Indian languages, it is essential not only to make a careful and exhaustive study of the Indian plants but also to collect and arrange in chronological sequence the ancient literature on the subject.

Birbal Sahni had been rendering valuable service in this direction so far as the part relating to the study of Indian plants was concerned. But having not been imparted sufficient knowledge of Sanskrit in his early days, he was not

in a position to apply himself unaided to the second aspect of the work. However, a few minute's talk convinced me that he realized its importance fully well, and was willing to devote himself to it if he could get the necessary assistance. From his youth Professor Sahni was more accustomed to write in English than in any Indian language; but if he could get good students capable of expressing themselves on scientific subjects in their own languages, he was only too eager to help them to carry scientific knowledge to India's masses. It was settled that evening that I would try to find for him such scholars and assist them in getting acquainted with the old botanical works of India, as also in arranging these works in their chronological sequence. I was at that time very hopefully and enthusiastically engaged in the organization of the Indian Historical Academy. I believed that the coming into being of this academy would provide a great impetus for work of this kind.

About two years passed in this hope. In the meanwhile, the Japanese war started and we had to shelve our ideas. In the spring of 1943 I was incarcerated for three years by the British Government.

When six months after my release from the prison I met Sahni again in November 1946, my hopes had been falsified, and I was greatly disappointed by the prevailing situation in the country. This time Sahni kept me with him for a whole day and showed me his library and his laboratory. Alas! it was to be our last meeting. Sahni was hopeful of seeing his dream of establishing an Institute of Palaeobotany realized. But the possibility of the work he wanted to carry out with my collaboration had receded more than ever before. The look of disappointment on my face pained him. Sahni referred to certain political leaders and remarked with obvious irritation: "They glibly talk of Hindi and think we prefer English, but do they know or even understand how Hindi should be used for the propagation of Science?"

Talent rots in our country today. One of the results of the imposition of an alien language on our people has been that most of them are unable to think clearly, and to discriminate between genuine talent and otherwise. I have known men like Baman Das Basu, Kashi Prasad Jayaswal and Gaurishankar Ojha longing in vain for someone to continue the work they had accomplished after immense labour. But their dreams and desires died with them. In any country an institution would have grown around every such learned man. But for us they remain like gigantic but solitary trees in a vast desert. People may think that Birbal Sahni had all the facilities he required. But cast in the mould in which India's universities are and with the atmosphere that prevails in them, could a scientist like Sahni, even as the head of a department, work unhampered on the lines he liked? If I were not to disclose it today, no one will ever know how Sahni longed to serve his own language. Why could he not fulfil his desire? And when at last he was able to found an institute with the help of his life's savings, he was so completely overwhelmed by all sort of work connected with its foundation that it proved too great a burden for him. Had the country assessed the value of Sahni's talent correctly, should such a burden have been allowed to fall upon him? The historian will have to record that, like many other talented Indians of his time, Sahni also became a martyr to the mental stupor of our nation.



But a nation's foundation is laid with martyrs' blood. It is now up to his pupils to keep the torch of his ideals burning until their nation becomes fully awakened to the value of his mission.]

Banaras  
13th March 1950

**PROFESSOR SUZANNE LECLERCQ, University of Liege**

There are men whose example must be extolled. The Lucknow Palaeobotanical Institute understood this when they dedicated the first number of the periodical, *The Palaeobotanist*, to the memory of its creator, Professor Birbal Sahni. All those who met him have kept vivid memories of his attractive personality.

He belonged to a family of intellectuals, and his outstanding qualities expanded under the enlightening guidance of his father, for whom he had a deep veneration and a loving piety.

Professor Sahni's manners were exquisitely courteous; his brilliant intellect, his uprightness, the deeply human touch in his character awoke sympathy, which spontaneously rose to friendship. Among his merits was a vivid sense of duty, coupled with simplicity and modesty which is the characteristic of true gentlemen.

His students loved him. Those of his disciples whom I had the pleasure to welcome in my laboratory praised his gifts as a professor, the clearness and elegance of his lectures, his contagious enthusiasm and, above all, his uncommon friendliness. His students, conquered by his kindliness, honoured in him a master and a friend.

Professor Birbal Sahni's energy was extraordinary, his power for work uncommon. He was entrusted with the teaching both of botany and palaeobotany, which he welded into a harmonious whole. His views on palaeobotany deserve mentioning. It represented to him a link between botany and geology, to which it closely joins but from which it cannot part to the advantage of one or the other, without falsifying or restraining the message owing to science.

In the field as well as in the laboratory he studied fossil material, anxious of the double care of the evolution stage which might represent old plants, and the approximate age of the sedimentary formations from which they came out. These coupled assumptions give full value to his work and an ample object for botanists, geographers and geologists. The latter have proclaimed his fruitful collaboration when they elected him President of the Geological Section on the occasion of the Thirteenth Indian Science Congress in 1926.

Professor Sahni personally attended a large number of great international gatherings. His growing influence was based on the consideration in which he was held as a man and as a scientist. He had no greed for honours, and received those that were awarded to him with thankfulness but with the detachment of a man who knows the true value of things.

Birbal Sahni's work deals with botany, palaeobotany and geology, but the greatest part of his publications lay in the domain of fossil plants. A detailed account of his work is given in this Commemoration Volume, for that reason I should like to give here in short only of the main features of his scientific spirit.

*He was never disheartened by a long and exacting labour* — During twelve years and more he had been engaged in a re-investigation of the extensive collection of fossil plants preserved in the Indian Museum, Calcutta. The material ranges in age from Carboniferous to Cretaceous. As we know, plants found in coal measures horizon and in Jurassic rocks can be treated neither by the same techniques nor studied by the same methods. That wide field of research undertaken by Birbal Sahni taught him to master difficulties of different kinds and saved him from narrow specialization.

*He liked to study the most complex structures* — Here special mention must be made of *Homoxyylon rajmahalense* Sahni, that Jurassic wood of a primitive angiosperm which shows anatomical features with a fairly close resemblance to the modern homoxyulous Magnoliaceae; then the *Austroclepsis australis* (E. M. Osborn) Sahni comb. nov., that astonishing Zygoterida which reveals *Clepsydropsis*-like foliar bundle, *Ankyropteris*-like stem and *Tempskya*-like false stem; and, above all, the Pentoxyleae, that new group of Jurassic gymnosperms " which defies classification and presents a new problem in our understanding of the evolution of gymnosperms ", as Sahni himself has written.

*He had an open mind to new enterprises* — Latterly the microfossil investigations had occupied his attention. Considering in this new field an increasing application of palaeobotanical activity, he suggested that apparently unfossiliferous rocks should be explored in that way. He and his disciples had already worked on the Saline Series in the Salt Range of the Punjab. But looking forward, he exposed in a brief but substantial account the lines of an investigation through the sedimentary formations of India.

*He worked shoulder to shoulder with the geologists* — Many of his publications acknowledge the debt that botany owes to geology and the aid that palaeobotany has to try to give to geology. In that mind he studied the Gondwana flora and brought his contribution to the discussion of the Wegener's theory of continental drift, in the light of palaeobotanical evidence. He also periodically published the advances in Indian palaeobotany in a stratigraphical order.

*His work reveals great and deep knowledge* — He was an enthusiastic traveller endowed with a vast scientific culture, and could thus observe with equal interest and profit the various researches carried out in foreign laboratories. Those who looked through his travel notes and read those pages, darkened by his small nervous hand, interspersed with explanatory sketches, discovered an enlightening method of investigation and one of the sources of his fine erudition.

*Nothing of what he learnt fell into oblivion* — This living documentation, plucked out of laboratories in full activity, was meant to profit all men, for he had thought out a new and audacious scheme, for the fulfilment of which he requested the collaboration of palaeobotanists of the whole world. No one but he could succeed in this work, the creation of the Palaeobotanical Institute, for his fame had spread far beyond the frontiers of his country, and the nobility of his character had won him universal sympathy.

The laying of the first stone of this Institute is an outstanding event in the palaeobotanical history; it symbolizes its autonomy. It is known that formerly palaeobotany was incorporated either with botany or geology as a corollary of these two sciences. Nowadays it commands a vast field which is studied by several

techniques of its own, suitable for different kinds of materials. Knowledge has been controlled and corrected, consequently strong hypotheses have been expressed and certainties reached which enlarge the part played by palaeobotany among biological sciences. Convinced of the truth thereof, Birbal Sahni endeavoured, with the help of his Indian colleagues, to bring the enlightened governmental sphere of his country to the same views, and he succeeded.

On April 3, 1949, there took place at Lucknow an imposing function in which participated representatives of Indian and foreign academies, institutions and universities, erudites and delegates of the intellectual world. Birbal Sahni's Institute of Palaeobotany is a first-rate institution, open to research workers whose activity is closely or loosely related to palaeobotany. There is a chair, from which they are invited to tell of their successes and failures to men who have chosen the service of similar discipline. There are working tables for them; a choice library and collections brought to continuous development by judicious exchange, at their disposal. Birbal Sahni established this Institute for all, with a view of the scientific quality of the research which would be carried out there and of the generous and open-handed international collaboration which was to reign there.

As soon as he understood, then accepted Fate's decree, he requested that the Palaeobotanical Institute, whose existence was dear to his heart, might be "nourished". For that reason, palaeobotanists feel themselves jointly responsible for this work, left unfinished in spite of his steadfastness and courage. They owe to the memory of our colleague a participation in completing it and sharing the heavy responsibilities faced by the young team of scientific workers so soon bereaved of its leader.

To Birbal Sahni we owe the harvest of fervent homage contained in the first number of *The Palaeobotanist*, to his rare merits as a gentleman and a scientist. Those qualities he mastered at an early age, but there are exceptional environments which by permitting their harmonious growth are favourable to their development. Our friend's home was such an environment; he knew there happiness made of things unutterable because of too intimate a nature, a helpful collaboration to his work as well as a shared impulse in his effort towards success. He was pleased to acknowledge this and admitted it with a tactful soft gratitude.

Birbal Sahni fulfilled his mission with authority, grandeur and kindness. His life was unfortunately all too short. Under the leadership of such a man, the young people who had the privilege to enjoy his teaching or to be closely associated in his undertakings, will have learnt self-discipline, disinterestedness and self-sacrifice. They will know that a life of toil and care reaches its fullness through its tendency and spirit.

**PROFESSOR C. MAHADEVAN, University of Andhra**

The privilege of sitting at the feet of the late Professor Birbal Sahni, although for a brief period of about two months in 1943, is an important event in my life. I spent five full years between 1925 and 1931, soon after taking my honours degree, at the feet of Professor Sir C. V. Raman, and this was responsible not only for shaping my career, but my outlook on life and attitude towards work. After that, I

entered service in the Hyderabad Geological Survey, where we did scientific work of a kind but where the research spirit was not much in evidence. Though I had been meeting Professor Sahni off and on, from 1930, and I had heard his learned and masterly discourses, what really brought me into intimate personal contact with him was the collection of fossil plants from the intertrappeans of Hyderabad State by my colleague, Syed Kazim, and myself, from 1935 and onwards. Professor Sahni saw these and was greatly interested in them. With his characteristic generosity and a genuine desire to inspire others to work, he offered to help me to work with them. If I was not interested in the collections myself, he suggested that these could be given to others, but that he would prefer my taking up the work. I was only longing to spend some time in an atmosphere of research and readily accepted his offer of guidance and facilities at his research laboratories at Lucknow, and went there with the collections on two months' privilege leave in August 1943. The more I knew Professor Sahni, the greater grew my respect and admiration for him. He gave me, without fuss or ado, a large room to sit and work in, the equipment I required, material from the stores, the help of section cutter, a typist and a draftsman, and permission to take any book or reprint from his library. I was accustomed to this type of generosity only from my revered *guru*, Professor Sir C. V. Raman, and had not known that there was yet another greater teacher in this country who was equally generous. Professor Sahni was very busy in those days with his administrative work as Dean of the Science Faculty, the direction of a number of research scholars and fellows, his own research problems and the normal teaching work for B.Sc. and M.Sc. classes — which he did not neglect. Still he managed to give me almost every day some time to go over the work that I had done and to confirm or question my observations and conclusions. I went to Lucknow with the notion that if I stopped there for two months, I would be able to complete the work, and come back with materials to publish a paper. Professor Sahni guessed what was at the back of my mind; a lesser man would have scoffed and ridiculed such an idea. But Professor Sahni was far too noble a gentleman to do that. He gave me the best guidance that he could, and I should say that I too put forth my effort. He initiated me into the technique, referred me to literature on the subject and gave me to read the latest book he had received, even before he would go through it himself. I gradually realized that palaeobotanical research was not easy as I had subconsciously thought, but a real understanding of the fundamentals of botany and related subjects, a mastery of technique, precision of the highest degree and intuition and patience were essential to do any good work. At the end of two months, I learnt this very important lesson, besides carrying out some work on my collections. If it was just for learning this lesson, I feel that my visit to Lucknow was worth my while.

I had taken rooms near the Lucknow University, but was a constant guest at Professor Sahni's place, where it was given to me to see something of his home life. I do not know of a more devoted and affectionate couple than Professor Sahni and Mrs. Savitri Sahni. In spite of her English education and frequent visits abroad with her husband, she always appeared to me to symbolize the noblest in Indian womanhood, as her worthy name signifies. I could see that she was a real *sahadharmacharini*. There was nothing, even in scientific work and ideas,



that Professor Sahni did not share with her. I was amazed to find how well informed she was of the research work under progress in his laboratories. There was peace, hospitality, very refined aesthetic taste, culture and beauty in their home such as I have seen in very few places.

Professor Sahni was an embodiment of several virtues that made him outstanding, loved and respected. The first was his intellectual generosity. He believed in sharing the gifts of knowledge with all those who would care to learn. There was nothing secretive in research for him. The second was his intellectual honesty; he was thoroughly objective in his approach to scientific truths. If errors in conclusions or observations were pointed out, and he was convinced of them, he would not stand on prestige, and was ready to be corrected. He would not, however, jump to hasty conclusions, and was most cautious to see every side of a question before forming an opinion, and kept an open mind. In the propagation of his ideas, specially in controversial matters, he was emphatic without being dogmatic, gracefully humorous without being sarcastic or cynical, and clear-cut and forcible in putting forward his case, without distorting that of his opponents. One of his finest qualities that appealed to me most was that his advocacy of a viewpoint free from personal rancour or bitterness; I have often seen him exchange friendliest and most cordial greetings with individuals whose views he might have mercilessly criticized just a few moments before. This trait of his won universal esteem.

He was one of the few I knew who did not think of individuals in terms of community, province, race and religion. I may record here an incident that filled me with the greatest admiration for him. We met in Professor Bhatnagar's room for a committee meeting in the later part of 1947, when the great killings had just ended. A professor from the Punjab who had come there was in tears about the loss of his property in Lahore. A very near relation of Professor Sahni had been stabbed just a short time before that in the streets of Lahore, and it was such a personal loss that he was visibly moved to recall it. But I found that not one word of anger or recrimination or hatred on communal lines came out of his mouth; even when personally afflicted, he could keep his thoughts and mind high and pure.

Professor Sahni was closely associated with the Andhra University for a number of years as member of the University Commission, Board of Studies, Appointments Board, etc., and his advice and guidance were most valued by our Vice-Chancellor, Dr. C. R. Reddy. He was awarded the highest honour that the Andhra University can bestow — the Cuttamanchi Ramalinga Reddy National Prize, the other notable recipients of this prize being Professor Sir C. V. Raman for physical science, Professor S. Chandrasekar for mathematics, and Sri Aravindo Ghosh for philosophy. He delivered at the University, in 1947, the Alladi Krishnaswamy Memorial Lectures; his exposition, mastery of technique, and his personal charm and simplicity of life created a very profound impression in the University. These lectures and demonstrations were a source of inspiration, not only to the Natural Sciences Departments, but to the University as a whole. Only a few days before his tragic demise, I had written to him that I intended to go during this summer to the Birbal Sahni Palaeobotanical Institute, with one or two colleagues, to be initiated into the recent developments in technique, to put palaeobotanical work

on a permanent footing in our research scheme. One of the first M.Sc. by research from this University was in palaeobotany, and it was the training I received at Lucknow in 1943 which emboldened me to suggest the subject and undertake the direction. Professor Sahni gave us every help in these studies in the Andhra University. The late Professor Ramanujam, Professor Sir C. V. Raman, and the late Professor Sahni achieved for India an honoured place in the scientific map of the world. Though he described himself as a botanist, his contribution to geological knowledge was profound and classical. It is tragic to feel, that at a time when our country needs him most, the cruel hand of fate has snatched him away. Honours came to him unsought, and he wore them lightly. He was the recipient of the great honour for a botanist by his election as Honorary President of the International Botanical Congress; he did not live to give that lead from India to the rest of the world in botany that we eagerly looked forward to.

Sahni is an idea, Sahni is an institution; the physical body of Professor Sahni is not with us, but Sahni lives eternally.

Waltair  
16th February 1950

**DR. S. K. PANDE, Reader in Botany, University of Lucknow**

It is now just a year since the icy hand of death removed from among us our revered *guru*, Professor Birbal Sahni, Head of the Department of Botany and Geology, Dean, Faculty of Science, University of Lucknow, and Founder-Director of the Palaeobotanical Research Institute in India. His sudden and tragic demise on the 10th of April 1949 caused an irreparable loss to science and is deeply mourned by his numerous students, friends and colleagues all the world over.

The ways of the Almighty are mysterious! Hardly did a week elapse from the day Professor Sahni achieved one of the greatest and the noblest mission in his life, the establishment of the Palaeobotanical Institute at Lucknow, when, alas! his noble soul left suddenly its earthly abode, leaving the onerous task of nursing the struggling sapling on the shoulders of his devoted wife and life-long companion, Shrimati Savitri Sahni. May God spare her life for a long time and give her fortitude and endurance to carry out the mighty task now left to her.

I had the proud privilege of being closely associated with my illustrious professor for a fairly long time. In September 1919, more than 30 years ago, I first met at the Banaras Hindu University this graceful and charming personality, tastefully dressed in silk suit and turban. He advised me to join the University of the Punjab for my M.Sc. training in botany, and wrote a strong recommendatory letter to the late Professor Shiv Ram Kashyap. A year later, when I met the latter at Lahore, he received me very kindly and said, "Pande, I am glad you have come. Sahni already wrote to me about you."

The above advice of Professor Sahni I shall always treasure above all, as it not only gave me the unique opportunity to sit at his feet and listen to his highly illuminating lectures, while he adorned the chair of Botany in the University of the Punjab, but also led me to discover my own line of investigation.

He was a highly talented teacher. With his profound knowledge of the subject, masterly way of presentation and lucid style, combined with great skill in sketching, he would hold the students spell-bound, and they would listen to his lectures, even on most difficult topics, with rapt attention. His discourses on fungi, angiosperms, genetics and, in fact, on any branch of botany, were as inspiring and full of information as on gymnosperms or pteridophytes, of which he had made a special study and in which he was an acknowledged authority.

In 1921 Dr. Sahni joined the University of Lucknow as Professor of Botany, being one of the four professors then on the cadre of the university. He held this office till the end of his life.

Professor Sahni's years in Lucknow coincided with the earliest development of the department. When he assumed office, there was hardly one-third the accommodation now enjoyed by the department, and one lecturer and a demonstrator on the staff to assist him. In 1922, a year later, when he gave me the honour to work with him as a colleague, the department had one professor, two lecturers and one demonstrator on its cadre, with hardly half a dozen of students in the post-graduate classes and scarcely over 30 enrolled for the B.Sc. From such a small beginning he witnessed the growth of the department to one of the leading botanical departments of India, attracting students from all parts of the country. At the time of his death it had on its cadre two professors, three readers and four lecturers, besides one reader and three lecturers in the newly added section of Geology, and included more than one and a half dozen of research scholars preparing for doctorate in the various branches of Botany or Geology, over two dozen of students in the postgraduate classes and more than 200 students attending the B.Sc. classes. It provided special facilities for original investigations in Palaeobotany, Mycology, Bryology, and certain branches of Geology and had attained high distinction and worldwide reputation for researches in some of these branches.

He also took a keen and active interest in the growth and development of the University. He held the office of the Dean of the Faculty of Science for over 16 years, and was a member of the University Executive Council for about 19 years. In both of these capacities he wielded a potent and wholesome influence and never failed to advocate the rightful cause. He recognized merit and did everything in his power to reward it. His régime of Deanship will ever be remembered as one of the most prosperous periods in the history of the Faculty.

Professor Sahni was an outstanding figure in the scientific world. His contributions to science, embracing various aspects of botany and geology, are well known to students of these branches. His numerous researches, extending for more than 35 years, dealing with some of the most important botanical, palaeobotanical and geological problems, are far too many to be enumerated here. These have been published in some of the leading periodicals of the world and will be treasured and highly appreciated by all the coming generations of students of these sciences. He had an ardent desire to raise the standard of research in India to the highest level and worked passionately for it. His name will shine prominently among the makers of Indian botany when the history of this science is written in this country.



Though avowedly a palaeobotanist, he did much to further the researches in various branches of botany. The number of research workers, from among his students, devoted to various branches of botany stands as a testimony to this. As early as 1922 when I first sought his advice for research, he said, "Pande, you have the advantage of the excellent training of Professor Kashyap in Bryology. I would like you to continue your work in liverworts. I will always do my best to help you. I want young men in India to take to various branches of botanical research." I already had the benefit of his kind supervision at the very initial stage of my research career. While at Lahore, he entrusted to me the study of a rust on *Euphorbia tibetica* Boiss, collected by him from Ladhak in the summer of 1920, and it was indeed due to his great ability for guiding research that this investigation was completed in my early M.Sc. days and the results communicated to the Lahore Philosophical Society in 1921. With the knowledge that I had gained of his versatile talent and great genius for guidance of research I hardly needed any assurance from him. The die was thus finally cast. My talk with Professor Sahni that day ultimately decided my career of research, and for the right lead he gave me I am indeed deeply indebted to him.

Professor Sahni had a wonderful knack of inculcating a desire to carry out research in all those who had the opportunity to work under his supervision. His never-failing guidance, kind interest, healthy criticism and helpful and timely suggestions not only inspired love and zeal for research in young workers, but also created confidence. Indeed, he possessed a special ability to get the best and maximum from a research worker.

In recognition of his scientific contributions, various learned societies, both in India and Europe, showered honours on Professor Sahni. He was one of the founders of the Indian Botanical Society and held the office of its President in 1923. He was President of the Lahore Philosophical Society in 1921, President of the Botany Section of the Indian Science Congress in 1921 and 1938, President of the Geology Section of the Indian Science Congress in 1926, President of the National Academy of Sciences in 1937-1938, President of the Indian Science Congress in 1940, Vice-President of the Palaeobotany Section of the International Botanical Congress in 1930 and 1935, and just a few days before his death was elected as the Honorary President of the Seventh International Botanical Congress for 1950, thus attaining the highest honour conferred on any botanist.

He possessed a very pleasing voice and was an eloquent speaker, and those who had an occasion to listen to his public addresses or popular talks will always remember them.

He was a man of cheerful disposition, calm, just, gentle and modest in every way. In him were combined the three divine virtues — सत्यम्, शिवम्, सुन्दरम् (the true, the good, the beautiful).

All his work was characterized by conscientiousness, thoroughness, originality and accuracy. He was a great patriot and a true nationalist. He had a very generous heart and was sincere, kindly and helpful to his colleagues and subordinates who could always depend upon him as their true friend. All those who ever came in contact with him will always cherish through their life the memory of this great man.

It is not possible to express adequately my appreciation of our kind *guru*, the late Professor Birbal Sahni. His influence on our science and thought will remain for a long time. In his sad demise the sciences of botany and geology have suffered a loss, the magnitude of which it is difficult to assess. To our country his premature death is a great national calamity. To me, as also to all other of his students, his passing away is a great personal loss, the shock of which will remain fresh for ever.

Lucknow  
15th April 1949

**PROFESSOR PIERRE PRUVOST, University of Lille**

Je voudrais apporter ici à mon tour un pieux hommage à la mémoire du Professeur Sahni, dont la mort brutale, en pleine activité scientifique, a été douloureusement ressentie par les naturalistes du monde entier. Certes, en tant que géologue, je ne me crois pas autorisé à prononcer un jugement sur son oeuvre de paléobotaniste, bien qu'elle ait une répercussion féconde sur nos généralisations relatives au passé de la planète. Mais je désire exprimer simplement l'admiration que nous avons en France pour la belle figure d'homme et de savant que fut le Professeur Sahni.

Nous avons eu à plusieurs reprises, à l'Université de Lille, grâce au fait qu'elle est un centre d'études paléobotaniques, la joie d'accueillir le Professeur B. Sahni. Nous conservons avec piété, mon collègue le Professeur P. Corsin et moi-même, ainsi que nos collaborateurs, le souvenir vivace des entretiens que nous eûmes avec lui et l'image du couple harmonieux que Mrs Savitri Sahni, sa fidèle collaboratrice, et lui même offraient à nos yeux. J'ai eu souvent de plus le privilège de les recevoir à mon foyer familial et, souvent aussi, celui de les rencontrer au cours de nos Congrès Internationaux.

C'est ainsi que je fus témoin de l'autorité et de l'estime dont il jouissait dans nos assises scientifiques internationales, en tous les points du globe, et je mesure aujourd'hui la perte que font la science mondiale et l'Université de Lucknow par sa soudaine disparition. D'autre part, ayant eu, à l'Institut de la Houille de Lille, comme étudiants, d'anciens élèves du Professeur Sahni à l'Université de Lucknow, j'ai constaté avec émotion quel culte ces jeunes gens avaient pour leur maître.

Cet homme d'un commerce si affable, d'un abord si séduisant, d'une exquise délicatesse de coeur et d'un esprit si pénétrant, a laissé au cours de ses voyages, un peu partout, des admirateurs et des amis fidèles, dont je suis, et qui le pleurent aujourd'hui.

Ce rayonnement de sa personne était dû en grande partie aux traits attachants de son caractère, qui lui conféraient une autorité considérable, puisée dans l'ordre moral, à côté de celle qui émanait de sa valeur scientifique. Car il était surtout un homme loyal fidèle à ses principes et courageux pour les défendre.

Un trait suffira à mettre en évidence cette droiture d'âme. Je fais allusion à une de ses interventions, lors du Congrès Géologique International de Londres, en Août 1948, qui fut la dernière fois où j'eus la joie de le rencontrer.

Nous étions, tous deux, membres de la délégation officielle de nos pays respectifs et la France avait présenté au Bureau du Congrès une invitation définitive pour que la prochaine session du Congrès Géologique International se tienne en territoire français, à Alger, en 1952. Elle renouvelait ainsi une invitation antérieure, faite au précédent Congrès à Moscou, en 1938.

Les délégués de l'Inde présentaient aussi une invitation officielle pour que les prochaines assises internationales de géologie aient lieu aux Indes en 1952. 'Ils faisaient valoir d'excellentes raisons et l'Assemblée du Congrès était hésitante.

A ce moment le Professeur Sahni fit observer que, bien qu'il fut très désireux que son pays accueille les géologues du monde entier aux Indes en 1952, la constante tradition des Congrès Géologiques Internationaux était que les pays invitants prissent rang à l'avance, aux congrès antérieurs; que le gouvernement français s'était déjà inscrit comme pays invitant en 1938 à Moscou, tandis que l'invitation du Gouvernement des Indes était nouvelle. Et le Professeur Sahni déclara que, par conséquent, bien que regrettant profondément de devoir se séparer de ses compatriotes sur ce point, il voterait en faveur de l'invitation française. Ce qu'il fit, seul parmi les membres de la délégation des Indes. Ce geste de courtoisie internationale, de loyauté envers ses principes et de courage devant la responsabilité à prendre, a profondément impressionné les géologues français, qui savaient que pour l'accomplir le professeur Sahni faisait un énorme sacrifice; ils savaient combien il aurait été heureux d'accueillir, dès 1952, ses collègues à l'Institut de Paléobotanique qu'il était en train d'édifier à Lucknow.

Hélas! les savants de tous les points du monde, ses amis et admirateurs, n'auront point le joie de le retrouver, lorsque le Congrès Géologique se réunira aux Indes. Mais ils constateront alors avec émotion que son oeuvre est vivante, grâce aux élèves qu'il a formés, grâce à ses successeurs, dans l'Institute of Palaeobotany qu'il a fondé et où ils font fructifier le patrimoine que son exemple, ses efforts et sa lucide intelligence leur ont légué.

Lille

15th November 1949

#### **PROFESSOR SHRI RANJAN, University of Allahabad**

Nature sometimes showers numerous riches on one sole favourite — treasures which are usually distributed over a long period of time and among many individuals. This is clearly shown in the case of the late Professor Birbal Sahni. Handsome of mien, gentle and graceful, he was really 'beloved of the gods'.

My first contacts with him date back to 1919 when I was a student in his first B.Sc. batch at the Banaras Hindu University. Even at this early stage, his method of teaching and his scholarship at once created a profound impression on me and my contemporaries. Later when I went to Cambridge and sat at the feet of the same masters who had taught him, I learnt that they too had been greatly impressed by his talents.

In later life, I came to know him much more intimately as a distinguished colleague and as a thoroughly dependable friend. This nearness further enhanced my love and regard for him.

His most outstanding quality was his undying love for science, and for that cause he readily gave his *all*. As a teacher he had a wonderful faculty of infusing the spirit of research amongst his students, and to his numerous students scattered all over the country he was like the central sun from whom they could draw their light and warmth and round whom they revolved, each in his own orbit and at his own distance. The feeling of devotion that he was able to inspire in his students reminds one of the *guru* and *shishya* relationship of the *rishis* of ancient India.

One of the few all-rounders in botany, he has made rich contributions not only to botany but to geology and archaeology as well. The part that he played in the advancement of scientific study in this country, and the Institute of Palaeobotany that he founded, have already secured him an honoured place in the annals of science in India.

Endowed with a rare mastery of the English language, he was capable of making even the layman understand highly technical scientific topics in his own unique and dynamic way. Alas, it is his rich and melodious voice that many of us are missing today.

His was a life richly and nobly lived through its brief span, and as he embellished the world with his talents, so it is sure that his soul is now adorning heaven.

Allahabad  
23rd February 1950

#### **DR. K. P. RODE**

The passing away of Professor Birbal Sahni has been a tremendous blow not only to science in India, but also to the academic and cultural life in India as a whole. The charming personality that was Professor Sahni's was a noble embodiment of all that was best in the culture of modern India, a beautiful synthesis of the material and scientific civilization of the west and of the spiritual and humane culture of the east. His intimate knowledge of Sanskrit and Persian and of many of the Indian and European languages, including French and German, had given him an access to the rich treasures, both spiritual and scientific, which developed in him a breadth of outlook seen only in few individuals. His sharp intellect, his critical judgement born of deep scientific training, his erudite scholarship had all been haloed by a rare philosophical temperament, and had also been sweetened by an innate love for his fellow-beings. He had acquired a poise in his mental attitude by which, in his behaviour towards others, he was never swayed by feelings of high or low and everyone felt homely in his company.

I came in intimate contact with the revered Professor in 1929. Though I never had the good fortune to be one of his regular students in any college, nor even of botany as such, a chance discovery of a highly fossiliferous plant-bearing Intertrappean horizon brought me in close association with Professor Sahni. During the summer of 1929, while on a short visit to Mohgaon Kalan in Chhindwara district, C.P., I happened to see a few blocks of cherty rock containing a fine impression of dicotyledonous leaf and a number of thin fossilized twigs caught up in the rock mass. A careful search revealed a wealth of material remarkable for its abundance and perfect preservation. The



collection which included roots, stems, leaves, fruits and seeds of both the groups of Angiosperms, and also some of unknown affinities, was brought to Banaras for further studies. The late Professor K. K. Mathur, who was then the Head of the Geology Department, Banaras Hindu University, suggested to me to seek advice of Professor Sahni at Lucknow in the study of this plant material. Professor Sahni had, about the same year, described a few plants from the Intertrappeans of Sausar. On seeing the Mohgaon collection, however, he was immensely impressed at the discovery of such a rich plant material from the Intertrappeans only 40 miles north-east of Sausar. He took the first opportunity to visit the locality, and during the Science Congress Session of 1930 at Nagpur paid a short visit to the Mohgaon locality in the company of Professor Agharkar and others, and made a small collection.

Professor Sahni initiated me in the preliminaries of plant structure and in the methods of palaeobotany and gave the directions and available literature to enable me to work out my collection at Banaras. I took up the investigations under great handicaps and disabilities but the constant encouragement and frequent directions from Professor Sahni enabled me to describe a few petrified palm and dicot stems, fruits, roots and leaves from this collection.

During these investigations I came in very close contact with Professor Sahni and a personality was unfolded before me which was an embodiment of a true teacher and guide, a *guru* in the real sense of the term. It is difficult to express adequately my indebtedness and gratitude to this great teacher.

Professor Sahni made several trips to the Mohgaon Intertrappean occurrences with his students and colleagues and made extensive collections of the fossil flora. These, together with my collection, have yielded an extraordinary wealth of fossil material largely belonging to the higher groups of plants, many of them being still extant. Professor Sahni soon realized the Tertiary aspect of the Intertrappean flora and strongly advocated the Eocene age of the Deccan Traps, a view, which, though originally held by the pioneer geologists of the last century, was later discarded in favour of the Upper Cretaceous which has since continued to be the official view of the Geological Survey of India.

Before Professor Sahni came in the field, the science of palaeobotany had been for a long time utterly neglected in India. In the earlier years in the Geological Survey of India some lively interest was shown in the study of Indian fossil plants, particularly from the economically important Gondwana rock formations of India; but most of this work was done by palaeobotanists in Europe in the seventies and eighties of the last century. Since then almost no palaeobotanical work was done until Dr. Birbal Sahni took up these studies under the eminent palaeobotanist Professor A. C. Seward at Cambridge. Since his return to India, nearly 30 years back, Professor Sahni had not only vastly extended our knowledge of the Indian fossil plants but also gave birth to an independent school of palaeobotany where research workers from various parts of India carried out advanced investigations in different fields of palaeobotanical research.

Professor Sahni has not only given birth to Indian palaeobotany, but also has secured for it a stature and a status previously denied to it. Through careful and detailed field work he has established that fossil plants have a stratigraphical value and can also be depended upon for determining the geological age of the plant-



bearing beds. He mobilized his band of co-workers in the study of stratigraphical palaeobotany, investigating plant-bearing rocks of every geological age. He also developed a technique by which one could decipher and describe plant-remains of even microscopic sizes from many of the rock formations so far regarded as unfossiliferous, and has thus helped significantly in the solution of several stratigraphical problems in Indian geology.

Professor Sahni has also contributed to the palaeogeographical studies of India's geological past, particularly of the Mesozoic and Tertiary periods. The relations of the *Glossopteris* flora to the Angara and the *Gigantopteris* floras as obtained in Kashmir and Burma respectively have been beautifully elucidated by Professor Sahni mainly on the basis of the Drift Theory. His palaeogeographical restoration of the early Tertiary on the distribution of *Nipadites* is similarly noteworthy.

Professor Sahni and his school have made important studies in the microstructure of Indian coals, as also of the floral contents of petroliferous formations of India, and have thus made important contributions to the economic aspects of Indian geology.

It was thus in the fitness of things that Professor Sahni should have founded and at Lucknow the Department of Geology and later on that magnificent Institute of Palaeobotany which is the pride of new India and is unique in the world of palaeobotany.

It is most unfortunate that Professor Sahni should have been snatched away just at the most glorious moment of his life and when his affectionate tending of the new-born Institute was most essential for its proper growth. It is possible, his spirit found one, partly worn-out body inadequate to meet the requirements of the new Institute and has, therefore, pervaded into the larger body of the band of well-trained and devoted workers he has left behind to fulfil the new task. May they prove equal to the task.

I wish to express my gratefulness to the promoters of the Memorial Volume for affording me this opportunity of offering my humble homage in deep gratitude and reverence to the sacred memory of Professor Birbal Sahni, the friend, philosopher and guide.

Nagpur  
3rd October 1949

#### **DR. S. K. ROY**

From the midst of his various activities, death, the inevitable, has snatched away from us Dr. Birbal Sahni, F.R.S., Director, Palaeobotanical Institute, and Dean of the Faculty of Science, Lucknow University. He was 57 when he died, but looked much younger than his age; and he was really as active as a youth of 26 when he left this world in the prime of his life. Even two days before that fateful Saturday (9th April 1949) at the midnight of which Professor Sahni passed away into the eternity, the great savant was as usual very busy with the organizational and research work of the Palaeobotanical Institute, the foundation-stone of which was laid by the Hon'ble Pandit Nehru barely

a week before. Who knew that Professor Sahni would leave his Palaeobotanical Institute so suddenly before even he had completed the construction work of its building? By his untimely death Lucknow has lost the Crest Jewel of its University, and mother India, one of her those sons of the 20th century renaissance who regained for our motherland her legitimate place of honour in the comity of nations after centuries of foreign domination. A man of profound learning, charming personality, eloquent in speech and formidable in debates, Birbal Sahni was a gifted orator and fearless speaker. It was a pleasure to hear Birbal speaking in the Science Congress of which he was a past General President and for many times a Sectional President. His readjustment of the geological positions of Deccan Trap and Khewra salt are scientific contributions of fundamental importance. These and many others of his contributions to science will keep Birbal's memory for ever alive in the minds of the students of Indian geology, and they will give him a place in the history of geology. Birbal Sahni is one of those divine mortals who become immortal with death. He was not only a great scientist but also a noble gentleman and sincere friend. Gifted with a wife like Shrimati Savitri Devi his family life was ideal. My humble self who had the proud privilege to be called a friend of Birbal assures to his spirit "Friend, you are never forgotten".

Dabor Colliery, District Burdwan  
9th December 1949

**DR. HARGOVIND SAHAI, Late Professor of Medicine, University of Lucknow**

Professor Birbal Sahni, F.R.S., is well known as a botanist all over the world. He enjoyed high international reputation and was several times president of international conferences in his subject. His eminence as a research scholar in botany and his gift for imparting knowledge was recognized not only by the students here but also in whole of the scientific world. He was admittedly a most fertile and original worker, and a true scientist in the widest sense of the term. This was partly recognized by the highest academic honours, such as the Sc.D. (Cantab.) and Fellowship of the Royal Society, that were showered on him.

I had the privilege of coming in close contact with him as his family physician from 1921, when he joined the Lucknow University. His charming manners enslaved me soon and we became good friends.

In the delight of his researches and devotion to duty, he forgot physical ailments and many a time had to pay heavy penalty. When accused of neglect by Mrs. Sahni and myself, and advised to take rest, he used to apologize with blushing cheeks and downcast eyes.

He was most fittingly the Founder-Director of the Institute of Palaeobotany, which he had to leave soon after its birth.

We pray and hope that this infant institution for which he gave his life will grow strong and healthy under the care of his devoted wife Mrs. Savitri Sahni.

In Professor Sahni we have lost a sincere friend, a valued counsellor, a pride, not only of Lucknow University, but of the Indian scientific world.

Professor Sahni has become a memory, but his name will continue to inspire generations of scientific workers and posterity. He will be best remembered as the father of the Institute of Palaeobotany, the only institute of its kind in India.

He gave all to science and claimed nothing in return and thus deserves to be remembered as a true martyr to science.

**SHRI BOSHI SEN, Director, Vivekanand Laboratory, Almora**

It is difficult to write an appreciation in the form of an obituary for my friend Birbal Sahni. Can it be that death has already muffled his dynamic personality? The last letter I received from him, written only three days before his abrupt departure, was written in a peculiarly happy vein. He would be coming to Almora with Mrs. Sahni very soon, he wrote, and he was greatly looking forward to a rest of two whole months, after his recent strenuous labours in getting the Institute of Palaeobotany, the fulfilment of a long-cherished dream, on a permanent footing.

It is not for me to utter words of praise for Dr. Sahni's distinguished contributions in his own specialized field of systematic botany and palaeobotany. As a friend, however, and equally as a fellow-scientist working in a different field, I share with all who knew him a lasting admiration for his scientific integrity, his tireless and meticulous care for accuracy in his own work and his insistence on the same fine qualities in the work of others, his amazing capacity for concentration, and the infectious enthusiasm he was able to pass on to his students and co-workers. As an Indian, too, I necessarily take pride in his remarkable achievements, and I rejoice that these found universal recognition during his lifetime in the honours extensively showered on him by scientific bodies in all parts of the world.

My first meeting with him goes back sixteen years, and I still vividly recall the deep impression he made on me at that time. I had dropped in at his Laboratory at the University of Lucknow, just to make his acquaintance, and was immediately struck by his charm of manner, his dignity, his beautiful English, the seriousness with which he talked about his work, his quick perceptions, and even quicker responses. I also discovered his keen sense of humour. When I inquired if he happened to have any *Azolla pinnata* about — I had just recently discovered that the root-hairs of this little water-fern are an ideal material for the study of living protoplasm, and I was sure he would be interested in seeing its actual structure under the ultramicroscope — very seriously he replied that he could certainly produce some *Azolla*. But I saw a twinkle in his eyes as he said it. He then handed me a perfect fossil specimen of *Azolla*, remarking that it was "only about sixty million years old".

We next met when we unexpectedly found ourselves staying for the summer in the same hotel in Cambridge. He was working on his fossils as usual, and I was learning the technique of tissue culture at the Strangeways Laboratory. From this time on, we became good friends, and later he and Mrs. Sahni were induced to pay a little visit to my wife and me in Almora. Before they left, they acquired the house next door, and we felt very happy over the prospect of their spending more and more time as our close neighbours. Holidays in Almora, however, proved all too few. There was incessant work at the University, fossil collecting

expeditions with his students and unavoidable trips abroad, and all these prevented him from giving himself the rest he badly needed. Even when he was on a so-called holiday, he was invariably busy writing long monographs and other scientific papers and allowed himself very little relaxation.

Yet during the brief sojourns at Almora — or when we chanced to meet at some conference in Lucknow or Delhi, or at the annual sessions of the Indian Science Congress — our friendship continued to grow. The gap between his palaeobotanical perspective and my concern, as a cellular physiologist, with the minute and instantaneous happenings inside single living cells, was easily bridged. For example, I found myself keeping an eye out for fossils for his collections and once he sent me the sporocarps of *Regnellidium*, a water-fern distantly related to *Azolla*, to see if they could be cultivated in my laboratory. *Regnellidium* is known by its fossils to have grown in India during the Deccan Trap period millions of years ago, but at the present time is native only to Brazil. Fortunately I was able to raise the plants for him, and he was delighted to see them in their living form and to be able to take them back to Lucknow with him.

The memory of our many years of fruitful association, in spite of the present awareness of my personal loss, is a great inspiration to me. For he not only pushed back the frontiers of knowledge, but also enriched, by his singularly attractive character, the lives of all who came in contact with him. The Institute of Palaeobotany which he founded only a week before his death will remain, when it attains maturity, under the able direction of Mrs. Sahni and the band of devoted co-workers trained by him, who can be counted on to keep alive the ideals and standards he cherished, a fitting and lasting memorial to his life-long work in the cause of science, which knows no national boundaries. At the same time, it will be a unique asset not only to the India he loved so deeply, but also to the whole world.

**DR. W. D. WEST, Director, Geological Survey of India**

Until the year 1920 plant fossils collected by the officers of the Geological Survey of India during their field investigation were sent abroad for examination. Later, at the suggestion of Professor Sir Albert Seward, the collections were forwarded to Professor Birbal Sahni who had by then established his laboratory at the University of Lucknow. From 1920 onwards collections were continuously forwarded to him for investigation and the results of his work were published from time to time in the *Palaeontologia Indica* and in the *Records of the Geological Survey of India*. Important contributions by him were naturally also published in other scientific periodicals, but in this short appreciation I am restricting myself to those contributions which appeared in the publications of this Department.

Though I do not feel competent to write a detailed appreciation of his work, there can be no doubt whatever that after the pioneer work done by Ottokar Feistmantel on the Gondwana flora of India, the most outstanding contributions to Indian palaeobotany have been made by Professor Sahni.

His memoirs on *Williamsonia sewardiana* from the Rajmahal Hills, Bihar (*Pal. Indica*, XX, 3, 1932), and *Homoxylon rajmahalense*, also from the Rajmahal

Hills (*Pal. Indica*, XX, 2, 1932), are notable contributions to palaeobotany. The former is the most completely known species of *Williamsonia*, and Sahni's reconstruction of the plant has been widely accepted by palaeobotanists and figures in most recent text-books.

*Homoxyton* is an example of a possible Jurassic angiosperm. Although the exact source of the specimen is unknown, it is strongly suspected to be of Jurassic age, and as such *Homoxyton* gives strong support to the assumed antiquity of the angiosperms.

Professor Sahni's revisions of the Indian Gondwana plants, done partly in collaboration with Seward, form valuable contributions to Indian palaeobotany.

I am conscious that an omission of any reference to his recent views on the age of the Deccan Traps and of the Saline Series of the Salt Range from an appreciation of his work would make it incomplete. But as final conclusions on these controversial problems have still to be reached, it is perhaps premature to refer to them in this place.

Professor Sahni trained several students in palaeobotanical research and two of his distinguished students are now working in this Department where they maintain the high ideals of research set by their teacher.

As a mark of respect to so distinguished a scientist, and to express high regard for the valuable work he did for the Department the officers of the Survey have decided to erect a bust of Professor Sahni in the Gondwana Gallery of the Indian Museum, where he had spent so much of his time studying its valuable collections.

Calcutta

2nd February 1950

#### PROFESSOR W. ZIMMERMANN

Als die vorstehenden Zeilen auf Wunsch meines Freundes Professor Birbal Sahni über das Meer wanderten, ahnte ich nicht, welch tragisches Geschick diesen hervorragenden Forscher so rasch aus dem Leben reißen sollte. Mag nun mein Aufsatz als Dank und Erinnerungszeichen erscheinen für diesen umfassenden Geist, dem die Zeugnisse der Vergangenheit nicht tote Steine waren, sondern der sie lebendig machte als Kündler der Kontinente umfassenden und über Hunderte von Jahrmillionen umgestaltenden Lebensvorgänge. Birbal Sahni wird unvergessen bleiben als Pionier der Forschung, als Mann, der mit Leib and Seele der Wissenschaft als Leuchte auf dem Weg zur Wahrheit verbunden war.

Tübingen

22nd October 1949

\* \* \*

#### DR. P. N. GANJU

It was my privilege to have been associated with Professor Sahni for a period of nearly five years, from 1941 to 1946. Although I spent these years with him first in the capacity of a pupil and later as his colleague, I do not remember that this change in my position was marked by any difference in our mutual relations.



His charming personality acted like a powerful magnet attracting objects from far away fields. I can recall vividly my first meeting with him in 1937 at his home in Lucknow. This first meeting resulted in a second in 1941, when I expressed a desire to work in his laboratory for a year or so. Professor Sahni readily agreed to this proposal, after sounding a due note of caution about the difficult road that lay ahead in the field of palaeobotany, especially for one who lacked previous training as a botanist.

Some of my friends at Lucknow at that time had a feeling, and perhaps rightly so, that there was, strictly speaking, no place for a geologist in the field of palaeobotany. But Professor Sahni's field of research was very wide and it embraced frontiers of different sciences; his outlook on all matters was broad and his vision penetrated far into the distance. As a teacher he was very generous; he fully appreciated the nature and extent of the pitfalls that confront a beginner, and would give him all possible assistance and encouragement, sparing no pains in the elucidation of difficult problems.

A remarkable feature was the nature of relationship that existed between the teacher and the taught. Once that relation was established, it was contracted for ever. No lapse of time, no length of distance, nothing whatever would weaken the bond. He kept in constant touch with them by writing, as often as his available time would permit, in his characteristic flowing style—a style so difficult to imitate. I recall with great pleasure that he and Mrs. Sahni paid me a visit in Newcastle last year in spite of the overcrowded programme they had during their brief stay in this country.

His friends will remember how pleasant it was to sit with him and chat on varied subjects over a cup of tea, how much we gained at such meetings; how thrilled each of us felt as we left him and went our different ways, and above all how sweet and refreshing did that cup of tea taste—or was it the magic of his personality? His frank nature, the range of his interests, his vigour in argument, his reminiscences, the pleasure in his hearty laughter, all these and many more exceptional qualities, too numerous to mention here, would be appreciated only by those who came in as close contact with him as his students were fortunate enough to do. If charm is a quality of heart, Professor Sahni was a person who was full of charm; he was a person who would suffer in the sufferings of others.

By his premature death a vacuum has been caused in the atmosphere surrounding his pupils, and a wide gulf created across the advancement of Indian palaeobotany that no one may be able adequately to bridge. To his students the memory of Professor Sahni will always act as a source of great inspiration, and however far circumstances may compel them to drift apart, his name will ever remain a binding link, too strong to break.

King's College, Newcastle-upon-Tyne  
7th October 1949

**DR. K. M. GUPTA, Professor of Botany, Dungar College, Bikaner**

It was in July 1928 that I joined the University of Lucknow as a student of the B.Sc. class. Professor Birbal Sahni's personality struck me as something

extraordinary among the members of the teaching staff. His neat and smart dress, his graceful and polished manners, his polite and inviting behaviour, his quick to and fro movements in the Botany Department and the halo round his name as a great scientist could not but have a profound impression on me. His lectures on elementary botany to the B.Sc. class, though not permitting me to gauge the depth of his great learning and profound knowledge of the science of botany, convinced me that he was a great teacher. It was rather unusual for him to have B.Sc. students at his residence for a social function, but one evening I had this privilege even as student of the first year B.Sc. class. During conversation about science and scientists, I was so impressed by his personality that sub-consciously I felt myself giving up the idea of going in for the study of medicine for which I had gone to Lucknow and deciding to remain a student of botany. And I did so.

I passed my B.Sc. examination, got a merit scholarship and joined as a student of the Botany Department for my M.Sc. degree. Professor Sahni then was away in Cambridge for one of his periodical academic tours on the Continent. During the academic session 1930-1931, therefore, I could not have the privilege of sitting at his feet and drinking deep at this fountain-head of learning. The country was passing through great political turmoil and Professor Sahni, though away, could not have been unaffected by the Indian scene. He returned to India with added lustre and after making important discoveries in his favourite field of research. Some of his notable researches on the Zygoterideae were done during this European tour. He came to the department completely metamorphosed in his dress — a Kashmiri cap and a gracefully flowing *sherwani*. For a moment we were surprised and received him in the verandah of the department in a typical Indian style, with flowers and garlands. Characteristically he remarked, "I feel flattered. Let us get to business."

He plunged into the work and soon picked up the threads of the activities of the department. His masterly lectures on the morphology of Pteridophytes and Gymnosperms started. References to his original researches came up almost every day but never have I heard my master saying I have done this or I have discovered this. Sometimes he might say, "It was possible to find out this or that in this laboratory". But usually at the end of his discourses he would say, "I have kept a few reprints in the library for you to see." Very often these papers were his own. His knowledge of the subject was so up to date that he would refer to the investigations in progress elsewhere, not to say of the published works on the subject.

During the session 1931-1932, Professor Sahni took us to the Rajmahal Hills in Bihar. Travelling third class with us and taking simple food, he underwent all the difficulties when our bus failed. He walked many a mile even without meals and still keeping busy the hammer and the chisel. A number of new fossiliferous localities were discovered and valuable collections of fossil plants, especially petrified material, were made. *Nipania* among these localities has since become classical due to the researches and investigations that have been carried out under the able guidance of this great delineator of structures, and has given India and Professor Sahni's school of palaeobotany a place of honour on the scientific map of the world. It was during this excursion that I had the unique privilege

of knowing my master's high qualities of head and heart. I cannot forget those few moments in Domarchir when he and I myself shared a piece of bread offered us by the village folk. By his simplicity and humility, the great scientist revealed the great man in him.

I do not intend to mention the actual researches done under the guidance and inspiration of this great man of science, but I have no doubt that work on the fossil plants from the Central Provinces and the conclusions reached with regard to the age of the Intertrappean Series; investigations on the Jurassic flora of the Rajmahal Hills in Bihar; his masterly expositions on the structure and affinity of the living and fossil gymnosperms; his great work on the Salt Range and the Saline Series; his wonderful investigations on the anatomy of the fossil ferns, chiefly the Zygopterideae, are some of the monuments that will ever last in the history of botanical researches.

During my Research Fellowship under him, I had the benefit and privilege of his valuable advice and guidance; learning something of his critical ways of dealing with scientific problems and his systematic methods of handling apparatuses and equipment. His keen sense of judgement, his quick eyes to detect mistakes, and his suggestions for improving even a finished manuscript were marvellous. A student as well as a specialist under his guidance could always expect an improvement, and his usual "I don't know" seldom failed to reveal his great knowledge to the specialist who approached him for guidance and advice. His untimely passing away leaves a void, impossible to fill. In Professor Birbal Sahni, his pupils have lost their matchless master, India her noble son, Asia one of her greatest botanists, and the world a great scientist.

May his soul rest in peace and guide us all to fulfil his insatiable desire for more and more work on Indian botany.

27th October 1949

**DR. ( Mrs.) K. JACOB**

It is a painful duty to write my feelings towards my most revered *Guru*, as I find it impossible to get adequate words to express all my affection, my respect and my admiration for that unique personality who was responsible for the complete change in my career, as in the case of so many others.

I joined the Botany Department of the Lucknow University in 1935 just to take a postgraduate degree to enable me to be a teacher in botany. But Professor Sahni's lectures so inspired me that I decided to continue my studies in palaeobotany and subsequently became a research student under him.

The inspiration and guidance he gave his research students were unparalleled. His daily visit to the research laboratory was eagerly awaited. He went to every seat, appreciated the work already done, encouraged the person, gave him more instructions if necessary, and wrote down further references which were always at the tips of his fingers. If anything new was found, his joy and excitement surpassed those of the student himself. His deep affection, ready humour and spontaneous laughter made us feel quite at home with him even in the class-room.

He was also partly responsible for moulding our personality and character. Seeing his own example we learned to be more and more conscientious, observant, careful and methodical. He made us understand that the correct spelling of any word is as important as that of our own name is to each one of us. In the case of punctuations, etc., we were taught to use them in the correct places. During our conversation if he noted that we used a wrong preposition he repeated our sentence using the correct word; but at the same time saw to it that our vanity was not wounded. In the class-room, if a bottle was left open, he at once replaced the stopper. If he found water trickling down the tap by our carelessness, he tightened it. But these small deeds were done while he was giving us serious instructions regarding our research work or while cutting some jokes with us. A conscientious student at once noted the carelessness on his own part and always remembered these unexpressed instructions of the dear Master.

Professor Sahni watched everyone of his students from the year they joined his Department. He encouraged those who showed special aptitude for research and gave them timely advice and help. Even after they had left the university, he showed the greatest interest in their problems, and gave help and guidance even as a father did to his son. We deem it a great honour to be called Professor Sahni's students.

Professor and Mrs. Sahni were particularly kind to those of us who had come from far-off places to learn under him. They were frequently invited to the Master's house so that they might feel less homesick. I shall never forget the many happy evenings spent with them, and the most delicious things Mrs. Sahni especially prepared for us, which made us forget for a few happy hours the monotonous food served in the hostel.

Once when a few of my friends and myself arrived at Nainital Y.W.C.A. hostel to spend our Pooja holidays there, it was a most pleasant surprise to find Professor and Mrs. Sahni staying there. We stayed together like members of the same family. We specially enjoyed the long walks for which he took us to collect interesting specimens.

The inspiration he gave us in his lifetime has made us give first importance to our research in palaeobotany. We do hope that by our humble work we may be able to keep up the high standard of work set by him, and thereby enable our beloved country to be held in the same esteem by palaeobotanists abroad as it was when Professor Sahni was alive.

Calcutta  
4th November 1949

**DR. K. JACOB, Geological Survey of India**

It was in the year 1933 that I joined the Lucknow University as a student in the M.Sc. class and until I left the university in 1939 I was intimately associated with Professor Sahni. In a few selected anecdotes I have attempted to bring out in the following paragraphs some aspects of the character and personality of that great son of India as revealed to me. His outstanding contributions to science are known to the world.



My first year in Lucknow was marred within a few months after joining the university by a serious illness which necessitated a fairly long stay in the hospital. A serious illness in the early days of my sojourn depressed me a great deal. It was the daily visits of Professor and Mrs. Sahni to my bedside that kept up my spirits.

When I was in a condition to be moved from the hospital, Professor and Mrs. Sahni graciously offered to take me to their home. I spent a very happy period with them. I cannot but mention the infinite care and patience shown by my teacher and his gracious wife. It is not without hesitation that I have mentioned these precious memories which I would have rather preferred to treasure for my silent recollection. "There is no greater sorrow than to recall, in misery, the time when we were happy", so said Dante.

During the period of my illness Professor Sahni used to bring home for my benefit notes prepared by classmates to enable me to make up the lost lessons. He found time to coach me up in certain subjects in which lectures had gone far ahead during my period of illness.

The first few lectures by Professor Sahni inspired me to take up research on fossil plants. I took the earliest opportunity to go to the Rajmahal Hills, Bihar, to make my first collection of fossil plants, three months after joining the university. It was a pleasure to receive further encouragement and words of appreciation from him. Later I had the good fortune of accompanying Professor and Mrs. Sahni again to the Rajmahal Hills. When I stumbled on certain petrified ferns which proved to be new to science, his joy knew no bounds. The inspiration I derived from him persuaded me, while still a struggling student, to visit several fossiliferous localities at my own expense, although I could ill afford to do so.

The training he gave to his research students was superb. He encouraged initiative in them, and his attitude of caution was imbibed by almost all his research students. Clarity and conciseness in expression were repeatedly emphasized by him. He was in his 'element' in the company of his research students. He has often stated, "I spend my happiest hours in the company of my research students." His frank discussions often encouraged free expression of his students' views. Professor Sahni himself was capable of tremendous hard work and he never spared himself.

"And always moving as the restless spheres",

he went through a life of great activity.

Immediately after taking my doctorate I was faced with the problem of finding employment. When I met him in 1939 during the Science Congress Session, I was in an unreasonably depressed frame of mind. Quoting Dryden I said,

"When I consider life, it's all a cheat.  
Yet fool'd with hope men favour the deceit."

I was rather taken aback when he quoted the next line for my benefit,

"Trust on, think tomorrow will repay."

and he went on to draw my attention to an old Chinese proverb, "It is better to light a single candle than to curse the darkness." Within a few weeks I reached Calcutta continuing my research in the Geological Survey of India without remu-



neration. The inspiration he gave, and his frequent letters of encouragement sustained me in the difficult early days in the Survey.

In the laboratory he encouraged complete devotion to work. He occasionally brought distinguished visitors to the research laboratory and took infinite pains to explain to them the problems under investigation. One fine morning I had been working since 7.30 and at about 10 when he brought a distinguished visitor, he found me regaling myself with the day's issue of the local English daily, *The Pioneer*. He straight away came to my seat and introduced me to the visitor, "This is Mr. Jacob, one of my research students, reading the newspaper." Needless to say I was deeply embarrassed. Respectfully I pointed out to him that after working since the early hours of the morning I had just then decided to relax, and it was rather unfortunate that my moments of relaxation should have coincided with his entry with the distinguished visitor. He then did his best to put me at ease.

His collections of reprints and valuable books were greatly treasured by him. His research students had free access to his library. But as they increased in number, the reprints were occasionally misplaced. But he was very methodic and disliked slovenliness. Once after searching in vain for a misplaced reprint he remarked, "My library is gradually becoming a place where I lose my reprints systematically." Nevertheless, with few restrictions his research students had free access to all the publications.

After joining the Geological Survey of India, my duties as a field officer forced me to abandon temporarily my palaeobotanical studies and devote my entire time to purely geological investigations. Professor Sahni expressed his annoyance at my apparent neglect of palaeobotany. In reply to his letter I wrote, "Palaeobotany is my first love. But I confess that of late I have been flirting with another, living in her intimate company. She has proved to be a very jealous mistress. But I can assure you that I am still very fond of palaeobotany, my first love." In reply Professor Sahni wrote to me, "Stick to your first love. She will remain true to you."

During one of the meetings of a learned society held in Madras, over which the Governor of the province presided, Professor Sahni asked for a duster to rub off diagrams he had drawn on the blackboard. Someone offered him a pretty duster. But with a dramatic gesture he remarked, "I never use foreign cloth for any purpose. I shall rather use my *khadi* handkerchief." I could see that those who were present were stunned for a few seconds. Then they roared with great approval. He completely won his audience. Those were the days when India was under foreign domination.

He possessed a ready wit and enjoyed a joke even at his own expense. He once aptly remarked, "The movies seem to have solved the problem of perpetual emotion." He thoroughly discouraged any disparaging statement against the fair sex. He totally disagreed with the remarks I once made, quoting from an old magazine, "With man a lie is a last resort. With women it is a first aid, for; a man meets comparatively few people worth lying to." Professor Sahni showed his annoyance. "You will change your opinion", he retorted. Trying to draw him out, I went on to quote Nietzsche, "God created woman. And boredom did indeed cease from that moment — but many other things ceased

as well. Woman was God's second mistake." He advised me to do a little less of one-sided reading. Perhaps it was T. S. Eliot who wrote the lines.

" And youth is cruel and has no remorse  
And smiles at situations which it cannot see."

Where compliments were due, he gave them unstintingly. He was a charming conversationalist himself. Once quoting Oscar Wilde he said to me, " It is a great mistake for men to give up paying compliments, for when they give up saying what is charming, they give up thinking what is charming." I pointed out that the same writer had stated somewhere that he could resist everything but temptation. I asked him if he agreed with him on that point. His reply was characteristic, " One may quote an author occasionally but one need not agree with him on every point. "

During one of the discussion meetings which took place during the 27th Session of the Indian Science Congress, Sir C. V. Raman, introducing Professor Sahni blandly stated, " The audience will agree with me, particularly the fair sex, that Professor Sahni is the most handsome F.R.S. in India." This was totally unexpected. For the first time I knew Professor Sahni could blush. His discomfiture charmed the audience.

Professor Sahni stored his mind and heart with living experience. It is often said that the men who have travelled most widely are those who have really seen what lies close to them at home. This was particularly true of Professor Sahni.

He had a wide circle of friends, and many distinguished scientists, philosophers, business magnates and artists came to stay under the hospitable roof of the Sahnis. Most of them were brought to the laboratory and introduced to his research students. Once an eminent *Kathakali* dancer from Malabar, who was not familiar with the English language, was shown the movement of protoplasm under the high power of the microscope. Being one of the leading exponents of the art of *Kathakali* dance, he at once translated his experience into delicate movements of his hands, eyes and facial muscles. This was undoubtedly a new experience for me in the laboratory! They both left the research room in very high spirits.

The last letter I received from Professor Sahni contained a cordial invitation to my wife and me to attend the ceremony of laying the foundation-stone of the Palaeobotanical Institute. I was in camp investigating certain lignite occurrences on the Malabar coast. A wire followed immediately after, asking us to try our utmost to be present on the occasion. Exigencies of service, to our great regret, did not allow us to go to Lucknow. We lost the last chance of seeing our beloved *guru*.

Calcutta  
4th November 1949

**DR. R. S. MATHUR, Plant Pathologist, New Delhi**

The sudden death of Professor Birbal Sahni on April 10, 1949, will be mourned by hundreds of his pupils and co-workers in India and abroad. It is tragic that

the cruel hand of death should snatch him away when he was at the peak of his scientific career and had brought considerable international prestige for India. A week before his death Pandit Jawaharlal Nehru laid the foundation-stone of the Institute of Palaeobotany at Lucknow, the only research institution of its kind in the world. News also came about the same time of his election as the Honorary President of the International Botanical Congress to be held at Stockholm in 1950. He was the first Indian to receive this honour.

I was one of his numerous students who came in touch with him in 1930 as a B.Sc. student. His sympathy for students' problems and his inspiring lectures in the class-room at once attracted me to the science of botany. One could sit in his lectures for hours without feeling bored for a moment. His personal charm, noble manners and lucidity of expression impressed those who met him even for a short while. I was present in the meetings of the American Association for the Advancement of Science held at Stevens Hotel, Chicago, in 1947. Professor Sahni's name was not on the schedule, but when he went to Chicago, he was requested twice to be a guest speaker. Addresses containing hair-splitting arguments on nomenclature, taxonomy and classification are a dull affair except for the specialist, and on many occasions I found people going to sleep or leaving the hall. But on all occasions Professor Sahni spoke, there were big crowds and he was heard with rapt attention. Several American botanists whom I knew told me that it was most refreshing to hear Professor Sahni.

It is rare that one may be an excellent teacher and a research worker. Professor Sahni possessed in him the best of these qualities. As a research worker he was cautious and thorough and carried out his investigations with amazing rapidity and neatness. There was not a single stage of botanical research of which he was not a perfect master. Whether it was section-cutting or photographing, sketching or writing, anything that passed his hands had a stamp of his greatness. He was a charming gentleman, a scientist and a technician *par excellence* and will long be remembered as a model teacher and research worker by his pupils and co-workers.

13th October 1949

**DR. R. C. MISRA, Reader in Geology, University of Lucknow**

I was privileged to come into association with Professor Birbal Sahni when, after resigning my post at the Banaras Hindu University, I joined the Lucknow University in 1943. The Geology Department owed its existence entirely to Professor Sahni's initiative and the weight of his international reputation in palaeobotanical research. In getting it established he has rendered invaluable service to the cause of geology, the study of which in this country has somehow or other been rather neglected. I was somewhat hesitant to give up my Banaras appointment in view of the research I was doing there for admission to a doctorate, but my fears were soon dispelled on finding Professor Sahni eager to help and encourage in all ways. He allowed me not only to use his personal library, rich in important geological literature, but also to order for my use apparatus for advanced work, although the Geological Section was still in its elementary stage.

It was his conviction that teaching should never be divorced from research if the former is to become effective and progressive.

I had known Professor Sahni for some years before coming to Lucknow as he was a valued friend of my old teacher, the late Professor K. K. Mathur, distinguished for his researches in petrology. When Professor Sahni, out of sheer love for the subject, insisted on taking part in the teaching of the newly started geology classes, despite his palaeobotanical work making heavy demands on his time, I obtained his permission to attend his lectures on physical geology. His reputation as a teacher was already widely known, but when I heard his lectures on "Geology and Scenery", it was an eye-opener to me, and I was further astonished to mark his facility in showing by sketches the varied features of Himalayas, the Western Ghats, the gneissic plateau of the Deccan; it virtually amounted to visiting these places.

I was most happy in accompanying Professor Sahni to the Salt Range in October 1943, the data collected from which (mainly Khewra and Warchha areas) was the foundation of his remarkable research on the question of the age of the Saline Series, which has always been a vexed and controversial question. At his age his capacity for field work was astonishing and he was always most particular about keeping his field diary fully posted up. He possessed quick powers of observation, an instance of which is that, when exploring and collecting from the Middle-Productus beds near the waterfall in Warchha gorge, before anyone else could notice it he had observed some faint structures with grooved sides. He then immediately explained the structures as those of 'stylolites', which shows how vast his knowledge of such uncommon structures was.

Professor Sahni laid great stress on the study of geology in relation to palaeobotany, as one being complementary to the other. By his death the world of science loses not only a great palaeobotanist but, if I may say so, a most competent researcher in the field of geology also. So deep was his passion for science that by failure to realize his bodily limitations he practically invited his premature death. Nevertheless, he has left behind an inspiring example of devotion to selfless work.

Lucknow  
10th November 1949

**DR. G. S. PURI, Ecologist, Forest Research Institute, Dehra Dun**

With the passing away of Professor Birbal Sahni the botanical world has lost one of the greatest creative geniuses of our times, whose work on fossil plants was among the greatest contributions to palaeobotanical science. In his scientific calibre he belongs to the class of great botanists like Bower and Seward.

My contact with him dates back to 1938 when he invited me to Lucknow to complete my M.Sc. thesis for the Punjab University on fossil plants from the Karewas of Kashmir. That first meeting made an everlasting impression on me and I joined his distinguished group of disciples. In the prime of life and scientific career no one knew that his end was so near; but perhaps, he himself knew it. In April 1939 he was going through a paper with me and I said, "Sir, you are



working very hard." He looked at me with his characteristic smile and added, "Puri, time is short and art is long." I vividly remember that occasion, and ten years after that he left us. He had the habit of hurrying through without losing a minute of his time and passed on this quality to his students.

I had the good fortune of accompanying him several times on excursions for fossil collecting and there too it was difficult sometimes to keep pace with him. He was indefatigable and the only time I heard him say that he was tired was one week before his death.

During my stay at Lucknow we used to look forward to the opportunity to meet him. It was not that he was unapproachable, but because a few minutes' talk with him meant a fresh store of inspiration and encouragement. One evening after having seen some of my work incorporated in a memoir by a certain learned geologist without acknowledgement, I went to his house greatly disturbed and at the point of crying. He consoled me and patting me like a father said, "You will publish much more and important work, why worry", and for several days he used to see me regularly and encourage me.

As a teacher he was superb. He used to speak non-stop for hours, using both hands for sketching, quickly and neatly, and his agility sometimes left us amazed. Sir C. V. Raman once referred to him appropriately as a 'restless spirit'. Whenever a student showed a premature keenness to see his results published, Prof. Sahni's favourite remark used to be: "Publish in haste and repent at leisure" and made us to write, rewrite and again write our papers before sending them to press.

He was very modest and humane, sympathetic and emotional. In spite of his greatness his extremely polite and polished manners made even strangers feel at ease.

Socially he was no less superb. To attend a tea, or a dinner at his house was both enjoyable and instructive. His hospitality and courtesies will ever remain alive in our hearts.

It is not possible for me to say more about his great qualities of head and heart, but it is very true that his death has created a void which will never be filled.

18th November 1949

**DR. T. S. SADASIVAN, Director, University Botanical Laboratory, Madras**

Less than a year ago, Indian botany lost one of its brightest jewels. The charm and scientific eminence of that great teacher and experimenter, Professor Birbal Sahni, who in his immaculate *khadi* attire had developed a mercurial personality, needs only be said in lyrical expression. However, that faculty of magniloquence is seldom a virtue found in a student of science and I, therefore, embark on my task of writing in plain prose an appreciation of some of the outstanding qualities that have left an indelible impression in the minds of those that had the good fortune of working in his laboratory at Lucknow.

Of Professor Sahni I would say this: His greatness lay in his human approach to biological problems, and his towering personality was a happy blending of

the cultures of the East and the West. Indeed, he was a gentleman to the fingertips, punctilious to a fault. Professor Sahni's contribution to Indian botany has been immense, characterized by extreme precision in all his observations and culminating in sobriety of thought and expression in scientific papers that formed the bulk of his palaeobotanical researches over a quarter of a century. As a teacher there could be few to equal him and it was always a pleasure to hear his exquisite expositions both in the class-room and at scientific meetings.

For many years, the Botany Department at the Lucknow University, under the inspiring leadership of Professor Sahni, had attracted postgraduate and research students from distant parts of this country, and, indeed, that laboratory was the Indian botanist's Mecca! Who amongst us would not admit that the establishment of a school of research in botany on the 'Sahnian' tradition at Lucknow was a unique institution in this country at a time when Indian botany was at its lowest? Need one say, therefore, that India owes a deep debt of gratitude to Professor Sahni not only for his outstanding scientific contributions in palaeobotany, but also for building up India's scientific manpower for well-nigh over two generations? I still have on record and can remember with gratitude a few lines I received from Professor Sahni some years ago when I joined this university which epitomized the splendid national approach he had in academic matters. This message was in the form of an extremely thought-provoking philosophy: "Train young men and women to take their proper places in Indian science and you will be amply rewarded."

A celebrated botanist has passed away in the wake of national exuberance, and I firmly believe that posterity will class Professor Sahni with Engler, Strasburger, Goebel, Sachs and de Bary of Germany, Guillermond of France and Scott, Seward and Bower of the United Kingdom, for his outlook like these men of science was truly rational, national and international. Verily, Professor Sahni has left 'footprints' not 'on sands of time' but on the geological time scale!

In a land of philosophers, it would be more apt to end this tribute to my Professor in the words of the immortal epic *Bhagavat Geeta*:

"Mysterious is the origin of beings,  
Manifest their intermediate stage;  
Mysterious again is their end,  
What is there for grief in this?"

**DR. SHIV DAYAL SAKSENA, Professor of Botany, Durbar College, Rewah**

I came in contact with Professor Birbal Sahni for the first time in the year 1929, when I started my career as a student of the B.Sc. class at the University of Lucknow. During my four years' stay at the University of Lucknow, as a student of the B.Sc. and M.Sc. classes I developed great respect for Professor Sahni as a teacher. I knew of no other teacher who could make the subject so attractive and easily assimilable. His method of teaching and expression were such that even the most difficult topic could easily be grasped by an average student, and any student with a little effort could make the subject his own. It was this quality of a teacher in Professor Sahni which attracted me to join the M.Sc. class in botany.

I was greatly charmed by the love and the care which he showed for his students, by his frank behaviour and loving and generous personality. He was always ready to help his students in every way. He always remained jolly and cheerful and was ever an attraction for his students who could approach him without any hitch or fear at any time.

He was a man of strict principles. As a teacher he was a model of perfection, and it was a pleasure to follow, imitate and draw inspiration from him.

Generally, the common relation of a teacher and a taught ceases after the latter finishes his studies. The teachers forget even their best students, but it was a great quality in Professor Sahni that he would always remember his own students. He would not only remember them by name but would keep in close touch and would always be a source of inspiration throughout their life.

In 1931 I intended to appear for Indian Civil Service examination, but as I used to put on *khadi*, I was denied a certificate from my warden to the effect that I never took part in any assembly subversive of law and order. I hesitatingly approached Professor Sahni and related him the story and he at once issued the required certificate.

He was a great patriot and always used *khadi* for his dress. In 1935 when he was at Cambridge, he used hand-made paper with the design of spinning wheel (charkha) embossed on it.

In 1935 I wrote him a letter to his Lucknow address and in about a month's time I received his reply from Cambridge. He was very particular in replying to a letter promptly, though he was always busy with his multifarious duties as a teacher, Head of the Department of Botany, Dean of the Faculty of Science and as member of various associations and bodies in India and abroad. It was really amazing that a man who had so little to spare, always attended to all the correspondence personally and promptly.

It was the continuous inspiration which I received through his letters, and his desire and actual offers of help, that prompted me to take up research under him 12 years after my M.Sc. degree. It was his inspiration that helped me in crossing many a hurdle and hindrances which came in my way to take up research. I felt that he was specially kind to me and loved me more than a loving father could love his own son. Just a month before he left this world he expressed a desire that he wanted all his students on whom he had faith to be in the Institute around him, and he was very keen specially in my case. But it pains me to think that I could not fulfil his last desire. He could not see the results of the labour of one of his most beloved students. He merged his identity so much with his students that he would consider the success and failure of his students as his own.

29th September 1949

**SHRI B. S. TRIVEDI, Lecturer in Botany, University of Lucknow**

I first met Professor Sahni in 1939 as a student of the B.Sc. class. In 1943 after taking my M.Sc. degree in botany I had the privilege of being appointed

his research assistant. During my several years' association with him as a research worker I fully realized his great qualities of head and heart.

In 1943, at Professor Sahni's suggestion, I undertook the investigation of the rocks of Saline Series and consequently in 1944 I had the pleasure of visiting the Salt Range with Professor Sahni. Unwilling to waste even the time spent in the journey, and unmindful of the rush, he found time to read while travelling, as if he was in the laboratory. By the time he reached Lahore, he had finished a bulky geology book and had made notes, besides marking mistakes — for which he had an unusual gift. In the field the professor was completely at home; to him it was a most delightful work. We used to start for work early in the morning and would cover as much ground as we could in the day, stopping for a brief period of only an hour or two at noon for our lunch, which we carried with us, and then returned to our camp at night. After our return, we would label the collection before retiring. He shared with the ancients the belief that "time flies", and would, therefore, work incessantly. Accuracy in the field as well as in the laboratory was his watchword. He insisted that the exact spot from where any rock sample was taken should be carefully recorded. He himself made very accurate and extensive field notes and put down all the relevant details in his field diary.

The qualities of research, teaching and administration were excellently blended in Professor Sahni and he had shoulders broad enough to carry this weight lightly. During practical classes he would examine the practical record critically and would encourage the students individually. His charming personality, deep scholarship and innate courtesy brought a very large number of students flocking round him for guidance.

Professor Sahni had the marvellous gift of making the subject which he taught most interesting. His class-room lectures had a wealth of information and, aided by his superb drawings, they brought home to the students the fundamentals of the subject. It was a delightful experience to hear him lecture.

Professor Sahni's untimely death has made botany poor and palaeobotany poorer. Still vigorous, both in body and mind, his cruel removal has given a profound shock to all his friends and admirers.

His memory is enshrined in the hearts of those whom he guided and whom he showed the path. It shall be their endeavour to live to the highest standards set by him; and it will be thus that they will perpetuate Professor Sahni's memory.

Lucknow  
15th October 1949

**DR. G. S. VERMA, Reader in Botany, University of Lucknow**

It is a great loss, indeed, for the scientific world, the Indian nation, the University of Lucknow, and particularly for his students who have literally been orphaned by the sad demise of Professor Birbal Sahni. His name, personality and glorious past will echo for generations in the hearts of those who had the privilege to know him. The death of Professor Sahni has removed from our midst the father of Indian palaeobotany, a great patriot, and a distinguished scholar.

It is impossible to review here his life's work in detail. It is far too voluminous and varied. So I shall only confine myself to some impressions of his personality, greatness and goodness.

I had the honour of first knowing him in 1932 when I joined the University of Lucknow as an undergraduate, having been attracted by his magnetic personality, scientific achievements and humanitarian sympathy and kindness for the poor and needy students. To know him was to revere and respect him. He was not an introspective or reflective character; his main attributes were his practical, uncompromising energy, decision and foresight. He was always ready for a fight on a matter of principle, and through all his career he never lost sight of his goal: science and its advancement. He was decidedly puritan — he neither drank nor smoked — even ascetic, and was worshipped as such by his students. He was essentially reasonable in argument and had that best of all senses, humour, which enables a man to laugh at himself. He was most kindly and considerate in all personal relationships — a thoroughly good and sincere friend. The elegance of his diction, luminous eyes and his magnetic smile attracted all. If he was convinced about the worthiness of an individual, he was ready to give with both hands — a quality naturally found in the geniuses. In private life he took a deep interest in all the questions bearing upon the progress of humanity. He has left many friends and admirers in all fields of human activity, who miss him.

Above all his rich and fruitful talent and scientific achievements, his humane characteristics rank very high. He was one of those rare personalities who radiate light and warmth all round. On every one with whom he came into contact, he lavished kindness and one never met him without feeling cheered and encouraged.

Professor Sahni combined an acute and logical mind with keen love for his subject and great capacity for work. His magnanimity, patriotism and self-denial are known to very few as he carefully avoided the limelight. He was a nationalist but essentially he had an international outlook. His death came suddenly only a week after the foundation of his Palaeobotanical Institute was laid. He was very happy and most fortunate in his marriage and palaeobotany now looks to Mrs. Sahni to nourish the Institute for which Professor Sahni had such ambitious schemes. She is a reflection of him in many ways and our hopes should surely be fulfilled. His departure leaves a gap which cannot be easily filled, but his very dear memory will continue to stimulate and inspire everyone who was fortunate enough to be connected with him. He combined the solidarity and pertinacity of a true scientist with a sweet and gentle nature, never wishing to take credit to himself, invariably considering the interest of his work first, unselfish and helpful to others in the highest degree. His sound judgement, keen sense of humour, originality and faculty of interesting and lucid presentation never failed to render any public lecture of his a memorable event.

There are scarcely any that came into close contact with him as students, colleagues, or otherwise, whose standards and ideals he did not fundamentally influence. And those who had experienced his unfailing kindness, thoughtfulness, courtesy and sympathetic interest not only regarded him with the esteem and honour due to his character and attainments but also with a feeling of gratitude and affection.



This humble appreciation of the author is his true impression gained through an association extending over a period of over 17 years.

Lucknow  
18th November 1949

#### MISS ANNA T. ZACHARIAH

The name of the late Professor Birbal Sahni is honoured and will continue to be honoured in the scientific world, as that of one of its most distinguished and devoted servants. He had incessantly striven to promote the greater advancement of botany with that energy, perseverance and singleness of purpose which were the marked traits of his character. The unique Palaeobotanical Institute, the *magnum opus* of his life, is a great educational project devoted to the cultivation in India of the spirit of research, a seat of intellectual and scientific culture. Through this Institute his influence will be perpetuated; but we, his pupils, shall miss his sound and mature counsel.

To me, who had the good fortune of studying under Professor Sahni, it is a source of peculiar pleasure to reminisce on those happy years spent at Lucknow. To him I owe much; from him I learned much, as did many others.

As a teacher Professor Sahni was held in the highest esteem and his brilliance, kindness and wisdom endeared him to all his pupils. His lectures were characterized by lucidity and by the excellence of the accompanying illustrations. Looking back, one marvels at his devotion to research, his brilliance as a lecturer, his power of arousing in his students the true spirit of inquiry and the way in which he participated in the social and athletic activities of his department.

Professor Sahni's interest in his pupils was remarkable. Although by far the busiest person in the department, he was accessible to his students at all hours of the day and gave freely his advice, his wisdom and his time. Former students who sought his help through letters promptly received his encouragement and skilful guidance.

One can never forget the kindness and friendliness of the Professor and of Mrs. Sahni, the gracious and gifted lady who shared his life and supported him in his work. I still recall with delight one of my holidays spent at Naini Tal. My friends and I had gone to a holiday-home there and to our pleasant surprise we found the Sahnis also under the same roof. We felt quite at home and enjoyed our holiday thoroughly. Those afternoon walks when we collected various interesting specimens and learned so much from him, those after-dinner social hours when we were engaged in indoor games or in cheerful conversation and those picnics and cinemas which we greatly enjoyed, all remain fresh in my mind. It was, indeed, a great privilege to have had these glimpses of the human side of our great teacher.

It is impossible to think of Professor Sahni as dead. The message and the radiant influence of his noble, devoted life have left permanent imprints on the sands of time. Surely, he lives in the lives of his numerous pupils, who are playing their rôles in the various parts of India and who remember him gratefully as a teacher and as a friend.

Women's Christian College, Madras  
26th October 1949