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The Outrages.



Things have happened during the last few months which only increase our deep concern for the student population in India. The Governors of three different provinces have been attacked and deliberately shot at while they were the guests of educational institutions and were carrying on their duties as the heads of the Universities. In one case, a lady graduate attending the Convocation was the perpetrator of the outrage and it is only by the most fortunate accidents that the victims have been able to escape these murderous assaults by young students. Dr. Urquhart has done a service to the country by condemning these outrages on behalf of the Universities and by asking the students to wipe out this humiliating record of the past by aiming at real advancement of learning and by concentrating all their attention on the cultural development of their minds.

Many students have been used as cats' paws in the past, they have been led astray by irresponsible agitators, their emotions have been played upon by ideals which called upon them to make sacrifices for their country and they have been repeatedly praised and flattered into a belief that their efforts will ultimately win glory for themselves and their country. The visions held up before them have been so glorious and the efforts and sacrifices demanded have been so easy, that

Sir C. V. Raman—A Short Biographical Sketch.



1. Early Career

Born at Trichinopoly in Southern India on the 7th of November, 1888, Sir C. V. Raman is now 43 years of age. He was educated at the Mrs. A. V. N. College, Vizagapatam and at the Presidency College, Madras. Even at an early age, he showed evidence of unusual powers of mind. When only 16 years old, he took his B. A. degree in science, being the only first class of the year, and receiving the University Gold Medal. Two years later, he took the M. A. degree in the first class, obtaining record marks. He published his first scientific paper in the Philosophical Magazine of London at the age of 18 while still a student at College. In January 1907, he sat for the competitive examination of the Indian Finance Department, and heading the list of successful candidates, was appointed as a Gazetted Officer under the Government of India. While in the government service, he continued his research work at the Indian Association for the Cultivation of Science, Calcutta, and elsewhere, and published numerous original papers. His contributions to science drew the attention of the late Sir Asutosh Mookerjee, Vice-Chancellor of the Calcutta University, who offered the young officer, then 25 years of age, a permanent incumbency of the newly endowed Palit Professorship at the University. The offer was courageously accepted in spite of the serious financial loss which it involved.

2. International Recognition

Owing to legal difficulties in connection with the Palit endowment, there was some delay in entering upon the duties of the Chair. Sir C. V. Raman joined the appointment in July 1917, and the success which he quickly achieved in building up a school of research was recognised by the conferment on him of the Honorary degree of Doctor of Science by the Calcutta University in January 1922, and by his election to the Fellowship of the Royal Society of London in February 1924. These were the two first in a long series of academic

Readership lectures on recent advances in science before the Universities of Madras, Bombay, Lahore, Patna, Nagpur, and Dacca. He was President of the Indian Science Congress in 1929.

3. Position in Public Esteem

As an acknowledged leader of science in his own country, Sir C. V. Raman holds a unique position in the public estimation in India. Civic receptions have been held in his honour and addresses have been presented to him by the cities of Calcutta, Madras, Lahore, Bangalore, Bezwada and by numerous public bodies and Municipal Corporations. The respect with which his opinions on academic questions are regarded is indicated by the invitations which have been extended to him to deliver the ceremonial Convocation addresses at the Universities of Benares, Mysore, Andhra, Nagpur, Agra, Allahabad and Dacca. He was nominated by the Government of India as a member of the Committee of four which in 1921-22 framed a new scheme for the management of the Indian Institute of Science at Bangalore; under this scheme, he has since been repeatedly elected by the Universities of the Eastern Group in India as their representative on the Council of the Institute. The Government of the United Provinces invited him to visit the Harcourt Butler Technological Institute at Cawnpore, and submit proposals for improving its organization. Acting on his advice, the Government of Madras legislated for the transfer of the headquarters of the Andhra University from Bezwada to Waltair. He has been requested by the Governor of Madras to serve on the Syndicate of the Andhra University and has assisted in organizing a University College of Science and Technology at Waltair. The University of Nagpur has requested him to serve on a Committee for framing a scheme for the administration of the bequest of Rs. 35,00,000 made by Rao Bhadur Laxminarayan for education in Applied Science and Chemistry in the Central Provinces.

It is well-known that Sir C. V. Raman is an eloquent, humorous and forceful speaker, and his appearance on a public platform in any city in India is sufficient to attract an educated audience running to hundreds or even thousands in number. This has enabled him to gain an influence on the popular mind which he has systematically used to foster public interest in science and scientific research. The

of Science at Calcutta. He has been Honorary Secretary of the Association since 1919, and his activities have made its laboratory a centre of research known throughout the world of Science. The prestige and influence acquired by him have been utilised towards strengthening the resources of the Association and obtaining funds for improving its laboratory and offering stipends to qualified workers. During the five years 1927 to 1931, a sum of about Rs. 250000 was secured by him as donations from the State, from public bodies and private donors towards the work of the Association. As an example of his characteristic energy and initiative in promoting the interests of science, may be mentioned the foundation of the Indian Journal of Physics. This was commenced by him originally in 1919 as the Proceedings of the Indian Association for the Cultivation of Science, and continued under the new title since 1926. The Journal is now a well-established periodical with an international circulation under Professor Raman's editorship. It serves as an organ for the publication of research work carried out by himself and his co-laborators at Calcutta, and original contributions are also published in it by his numerous friends and colleagues in other parts of India.

As elected Dean of the Faculty of Science, Sir C. V. Raman has had many administrative duties to perform in the Calcutta University. He took the initiative in modernizing the courses of study for the Intermediate, B. Sc. and M. Sc. examinations, and has made efforts towards introducing the compulsory teaching of elementary science in all high schools controlled by the University. The prestige which the research activities of the Calcutta University continue to enjoy is to no small extent due to his great achievements and continued association with it. Sir C. V. Raman also takes an active share in the teaching and administrative work of the department of post-graduate studies in the University.

The Indian Science Congress which is a peripatetic body analogous to the British Association owes not a little of its present position and influence to the active association with it of Sir C. V. Raman during the first decade of its existence. As General Secretary and member of its Executive Committee for many years, he gave his

there have been besides physicists, also many mathematicians and chemists, and a not negligible quota of workers in the fields of geology and biology. They are to be found all over India, filling important positions of various kinds, from Kashmir and the Punjab in the north to Trivandrum and Ceylon in the south, from Bombay and Poona in the west to Dacca and Rangoon in the east. One of his earliest pupils holds a mathematical chair in a neighbouring University. The Indian Meteorological service which is one of the most active and fruitful of the scientific departments of Government includes a group of the finest products of his school. The teaching staff of the Universities of Calcutta, Dacca, Allahabad, Benares, Chidambaram and Hyderabad, and of the colleges in affiliation with the Universities of Nagpur, Agra and Lahore also contain many representatives. Not a few of the men who first imbibed the research spirit in his laboratory have in later life continued to make active efforts towards advancing knowledge, and attained distinction in their respective spheres of work.

It is remarkable that in spite of the increasing burdens of social and administrative duties which scientific prestige and influence naturally bring with them, neither his personal enthusiasm for research nor the productivity of the school directed by Sir C. V. Raman has suffered any diminution in quantity or quality with the lapse of years. The following figures showing the number of published contributions from his laboratory during the last decade are sufficiently significant :—

Years	Papers	Years	Papers
1922	25	1927	39
1923	26	1928	49
1924	17	1929	34
1925	20	1930	51
1926	22	1931	47

In 1924, 1925 and 1929, there was a slight falling off in the numerical output, evidently due to his prolonged absence from India during those years. Apart from this, as the figures given above and a glance at the pages of the Indian Journal of Physics will show, the output of the school has shown a notable increase in the volume of

published work, in the variety of subjects dealt with and in the influence it has exerted on current scientific progress throughout the world.

In assessing the contribution of Sir C. V. Raman to the progress of science in India, we have to remember not only his own personal work and the direct effect of his teaching and example on the researchers in his laboratory and of his University lectures at Calcutta but also the more wide-spread and less easily assessed influence exerted by him in other ways. For nearly two decades, by his activities in connection with the Indian Science Congress, by his publications and his conduct of the Indian Journal of Physics and more especially by the courses of experimentally illustrated lectures on recent advances in science delivered by him at nearly all the Universities in India, he has been the most active propagandist in the cause of research in India. To this must be added, the stimulus and encouragement afforded to the entire group of scientific men in India by the striking international recognition which his work has received, and more especially by the award, for the first time to an Asiatic man of science, of the Nobel Prize. Considering the facts altogether, it would be no exaggeration to say that Sir C. V. Raman has been the leading spirit in the remarkable growth of scientific activity which the last two decades in India have witnessed.

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time and energy freely to the task of organising the Congress and making its meetings a success.

As member of Council of the Indian Institute of Science at Bangalore, he has taken special interest in the administration of the Institute and has initiated many improvements. His active support secured the creation of no fewer than six lectureships in the different departments of the Institute and the institution of numerous research fellowships for the encouragement of promising workers. His periodical visits to Bangalore provided opportunity for the delivery of a series of lectures on recent progress in science which have aroused much enthusiasm in that city. His eminent services to the cause of research have been commemorated in a special medallion founded in his honour by the South Indian Science Association at Bangalore.

Sir C. V. Raman has served as a member of Selection Committees for filling up numerous scientific appointments in India, a type of work which is obviously of the highest importance in relation to the welfare of the institutions concerned. As examples of his willingness to shoulder all kinds of administrative burdens, if thereby the interest of learning could be advanced, may be mentioned his periods of service as Treasurer of the Asiatic Society of Bengal, as a member of the Board of Accounts of the Calcutta University, and as Secretary of the Astronomical Society of India.

6. Founder of a School of Research.

It is, however, as the creator of an indigenous school of research that Sir C. V. Raman has the strongest claims on the gratitude of his countrymen. The enthusiasm for research which led him to forsake a lucrative official career in favour of a life of scientific toil has overflowed and fertilized the minds and careers of a host of young men. From the laboratories of the Indian Association for the Cultivation of Science and of the University College of Science at Calcutta has emerged during the last fifteen years a galaxy of able scholars whose published researches and doctorate theses contain acknowledgment of suggestions or encouragement received from him. It is significant of the catholicity of his interests that among those who have come into association with Sir, C. V. Raman in this way,

public recognises in him a watchful guardian of the interests of science in India. When recently, the Government of India were carrying out drastic retrenchments in the expenditure on scientific services and research, Sir C. V. Raman took the lead in organizing public opinion against such action, and secured strong support from the Press, the Chambers of Commerce and the Inter-University Board in his campaign. The Royal Society of London, the scientific press, and many men of science in foreign countries warmly supported the protests contained in the Memoranda submitted by him to Government, and the severity of the retrenchments originally contemplated has been appreciably mitigated in consequence.

4. His Work as Finance Officer

The ten years of service from June 1907 to July 1917 as an Officer of the Indian Finance Department gave Sir C. V. Raman an administrative training and a knowledge of financial and economic affairs, such as scientific men do not always possess. From the early age of 21 onwards, he was placed in charge of Government offices, successively at Rangoon, Nagpur and Calcutta, and was called upon to supervise the work of large staffs and to control officers of gazetted rank older than himself. In the various positions held by him, he acquired knowledge of an unusual range of financial questions, having been successively in charge of Currency operations, Savings Bank, Life Insurance, Public Debt, Works and Establishment Audit, Accounts and Budget. For his successful administration and devoted services, often under difficult and trying conditions, he repeatedly received the thanks of the Hon'ble Finance Member in charge of the Department. In the year 1916, he was invited to take up an appointment in the Government Secretariat at Simla, but declined as he had already decided to remain in Calcutta and accept the offer of the Calcutta University. In the ordinary course of events, even without special promotion, he would have risen to the rank of Accountant General in the service, had he not chosen to quit the same at the call of science.

5. His Work as a Scientific Administrator.

Much of Sir C. V. Raman's scientific research has been accomplished in the laboratory of the Indian Association for the Cultivation

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honours which he has received by way of recognition of his eminent services to science. The following are some of the distinctions which have come to him in rapid succession :

Nobel Laureate in Science	...	1930
Hughes Medalist of the Royal Society of London		1930
Matteucci Medalist of the Italian Society of Sciences, Rome	..	1928
Hon. Ph. D. of the University of Freiburg		1930
Hon. LL. D. of the University of Glasgow		1931
Hon. LL. D. of the University of Bombay		1931
Hon. D. Sc. of the University of Benares		1932
Hon. D. Sc. of the University of Dacca		1932
Hon. Fellow of the Royal Philosophical Society of Glasgow	...	1931
Hon. Fellow of the Zurich Physical Society		1930
Hon. Fellow of the Indian Mathematical Society		1929

As President of the Indian Chemical Society, it has been my privilege to nominate him recently for election to the Honorary Fellowship of the Society.

Sir C. V. Raman held a Visiting Professorship for a session in 1924 at the Norman Bridge Laboratory, Pasadena, in the United States. He has lectured by special invitation before numerous societies and Universities abroad amongst which may be mentioned the following :

The British Association for the Advancement of Science, The Faraday Society, the Physical Societies of England; France, Belgium, Denmark and Switzerland, The Royal Canadian Institute, The International Congress of Mathematicians, The Mendeleff Congress of Chemistry, The Universities of London, Cambridge, Edinburgh and Glasgow; The University of Paris; The Universities of Munich, Aachen and Freiburg; The Universities of Stockholm, Upsala, Goteborg and Oslo; The University of Leningrad, The Universities of Toronto, Iowa and Leland Stanford. He has also delivered special courses of

their generous instincts have easily been led astray and they have quickly imbibed doctrines which they would otherwise have held with the deepest abhorrence. They had been taught before this to disobey all rules of discipline, they had been made to believe that the kindness of authorities was only due to their weakness, they have been led to assume that merely by their numbers and by a vociferous and clamant agitation they could bring about the regeneration of a country. True aims of education have been forgotten, correct ideals of culture have been temporarily put aside, the notions of duty were brushed away and for the time being they had become not students eager to imbibe fresh ideas of culture but limbs of political organisations some of which aimed at destroying all culture. These outrages show that some students have advanced a step further in the paths which they were pursuing before. The whole student world cannot be condemned for what three students have done in three different provinces, but as a whole the students should try to create an atmosphere which would render these things impossible in the future. Steady work, calm study, strenuous endeavour to gather the seeds of culture should be their aim and they should so discipline their minds that all extraneous influences will be instinctively driven away and mercilessly destroyed.

Let the students show by their future conduct that the incidents which have shocked the whole country have taught them to keep away from the vortex of political agitation and let them so follow the ideals of the Universities to which they belong that they can guide the future generation in the true paths of culture.



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