

Spencerites insignis Scott (7, p. 170, figs. 78A, B and 84) and *S. membranaceous* Kubart (4, photo. 3), (ancient lycopodiaceous plants), though the pollen grains were much larger they bear a striking resemblance in external morphology to our one-winged pollen grains. In the light of the above facts one may reasonably ask: Is this abnormality merely a monstrosity of no genetical importance or is the occurrence of one-winged pollen grains in modern and Pleistocene conifers and in the Podocarpaceae a reversion to an ancient character normally found in Palaeozoic conifers? An appropriate answer to this question is furnished by Florin (2, pp. 638-39), who states that "it seems probable that the presence of air-sacs in certain modern genera of the families, Pinaceae and Podocarpaceae, is a surviving ancient characteristic. The single air-sac originally present has only been slightly reduced since Palaeozoic times, different in different genera". Wodehouse (10, pp. 219-21) agrees with Florin and states that "grains with this single encircling wing were common in the Palaeozoic and appear to have been the prototypes of the winged-grained Abietineae and Podocarpaceae".

Florin (2) further suggests that "this primitive type of pollen grain probably disappeared and the single encircling air-sac was replaced by two smaller sacs resembling those of the recent conifers of the families mentioned above". From the examination of our abnormal pollen grains it is easy to conceive how a one-winged pollen grain would have got transformed into a two-winged (fig. 1) and a three-winged type (fig. 2). Mehta (5), while supporting Virkki's (8) way of reasoning suggested that the one-winged spore could also have been the forerunner of a three-winged type and quoted Wodehouse and Florin in support of his arguments. From the present evidence it is suggested that a four-winged

pollen grain may have also derived from a one-winged grain in the same way.

In the end I wish to thank Professor B. Sahni, sc.D., F.R.S., for kind suggestions and helpful criticism of this note. I am further grateful to him for kindly allowing me to examine the thesis of Mrs. Jacob (formerly Miss C. Virkki) and Miss Chatterjee and use the unpublished information in this note.

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OBITUARY

DR. HARPRASAD CHAUDHURY, Ph.D.,
D.Sc. (London), D.I.C.

CURRENT SCIENCE deeply regrets to record the sad and premature demise on 19th August last of Dr. Harprasad Chaudhuri, Head of the Department of University Teaching in Botany, and Director, Kashyap Research Laboratory, Punjab University.

Professor Chaudhuri was born in Calcutta in 1895 and had his school and college education in his native province of Bengal. He graduated from the Calcutta University in 1916 obtaining a distinction in Science. He took his Master's degree in Botany in 1918, and started research having been awarded a Research Scholarship in Botany. In 1920 he went abroad for higher studies and worked for three years as a research scholar under Professor V. H. Blackman, F.R.S., at the Imperial College of Science and Technology in London. After obtaining his Ph.D. and D.I.C.,

he returned to India and was appointed Reader in Botany at the Panjab University. On the death of Professor S. R. Kashyap in 1934 Professor Chaudhuri succeeded him as Professor of Botany which post he held until his death. In 1939 he was admitted to the D.Sc. degree of the London University. Professor Chaudhuri was the first Director of the Kashyap Research Laboratory—an institution founded by public donation to perpetuate the memory of Professor Shiv Ram Kashyap.

Professor Chaudhuri displayed his interest in Mycological research early in his career. On his return from Europe he built up a school of Mycological research in the Panjab University which had already become a centre of research in Bryology under the inspiring guidance of Professor S. R. Kashyap. Professor Chaudhuri's own contributions have enriched the field of Indian Mycology and plant pathology which were his special fields of research. Although essentially a specialist in

Fungi his interests were wide and varied and his publications cover not only his study of some individual genera of fungi like *Meliola*, *Verticillium*, *Collectotrichum*, *Rhinosporidium*, *Paradiplodia*, *Haplosporella*, etc., but also his observation on the coralline roots of *Cycas* and *Zamia*, the haustorium in *Cuscuta*, mycorrhiza of forest trees and the endophytic fungi in Indian liverworts. He studied the phenomenon of Saltation in *Collectotrichum biologicum* sp. nov. He published a number of papers in the "Molds of the Punjab" and was recently engaged in a study of the Smuts of the Punjab. His report on the "Citrus diseases of the Punjab" embodies the results of a five years' scheme sponsored and financed by the I.C.A.R. He has recorded in this report his observations of the various aspects of the diseases like *wither-tip*, *chlorosis*, *sooty moulds*, etc., and suggested remedial measures. According to him the *wither-tip* disease of the fruit is caused by the fungus *Collectotrichum gloeosporioides* and the 'sooty mould' covering the leaves and fruits brought about by a number of saprophytic fungi like *Acrothecium lunatum* Wak., *Capnodium citri* Berk. et Desm., *Alternaria citri* Pierce, *Cladosporium herbarum*, *Pleospora herbarum* Rab., *Chaetomium* sp., and *Aspergillus* sp. Chlorosis of the leaves on the other hand, is supposed to be more due to physiological causes than due to fungal attacks. In 1936 he suggested a scheme for enlightening the people of the country on the nature and causes of plant diseases and the methods of controlling and eradicating them. He and his collaborators have in several publications enhanced our knowledge of soil, fungi, mycorrhiza, bacterial and fungal diseases of plants and the physiology and ecology of fungi. As director of the Kashyap Research Laboratory he guided research in various branches of Botany, like Cytology, Bryology, Bacteriology and Morphology. In collaboration with Sir John Farmer he published for use in Indian Universities a book entitled *A Practical Introduction to the Study of Indian Botany!*

Professor Chaudhuri was a familiar figure at almost all the sessions of the Indian Science Congress which he regularly attended—often with his contingent of students. He presided over the Botany Section of the Indian Science Congress in 1932 and was the President of the Indian Botanical Society in 1941. He was a foundation member of the National Institute of Sciences of India. He represented India at the Twelfth International Horticultural Congress at Berlin in 1938 and presided over the Tropical Section at the same Congress.

A man of active habits and a lover of outdoor life, Professor Chaudhuri was immensely fond of field botany and organised long excursions into the Himalayan regions and conducted regular classes there during the summer months.

He was free and outspoken in his expression and was genial by temperament. He was popular amongst his friends, colleagues and students. He was married in 1919 and was fifty at the time of his death. His premature

demise has deprived India of one of her leading Mycologists and an able professor.

A. R. R.

SATYENDRA NATH CHAKRAVARTI

D.Phil. (Oxon.), D.Sc. (Oxon.), F.I.C., F.A.Sc.,
F.N.I.

THE news of the sudden death of Dr. S. N. Chakravarti at the age of forty-five under tragic circumstances has come as a shock to his students, colleagues and friends. It is indeed a cruel irony of fate that this sincere and honest scientist with high ideals and full of ambition should be pitted against circumstances from which he could think of escaping only by nipping his thin-spun life. "The paths of glory lead but to the grave."

After a brilliant school and college record, Dr. Chakravarti went to Oxford to work in the Dyson Perrins Laboratory under the late Professor W. H. Perkin Jr. as his only Indian student. After working there for two years, he took his D.PHIL. degree and returned to India in 1929 as the Reader in Chemistry and the Head of the Chemistry Department of the newly started Annamalai University at Annamalainagar. After serving this University for about seven years, he left this, much to the regret of his students and colleagues, to accept the post of the Chemical Examiner to the Government of C.P. and U.P., which he held till the time of his death.

Dr. Chakravarti was indeed an ideal teacher and his lectures, which were prepared with meticulous care and unusual sincerity, were the highlights of the Department. He had high ideals and believed that education does not consist in telling the pupils what they do not know but in making them what they were not. Since he was a born teacher, everybody who knew him regretted when he took up the post of the Chemical Examiner wherein he had to deal more with files and red tape than with flasks and chemicals and science journals.

Dr. Chakravarti was very keenly interested in research but he could not execute his plans to his full satisfaction at the University. His work includes the synthesis of a number of derivatives of tetrahydroprotoberberine, paraberrine, pseudo-opiatic acid, hydroxy derivatives of naphthalene, etc., and the chemical investigation of Indian Medicinal Plants. From Agra came forth papers which dealt with the methods used in the medico-legal and forensic work.

Dr. Chakravarti was a perfect gentleman in every sense of the term. He was an extremely kind and sincere man. India is badly in need of inspiring teachers like Dr. Chakravarti; yet because of strange circumstances which which are special to this country, he was driven to seek a job which had little to do with teaching and which never suited his genius.

We offer our sympathies to his wife and children whom he leaves behind.

K. G.