

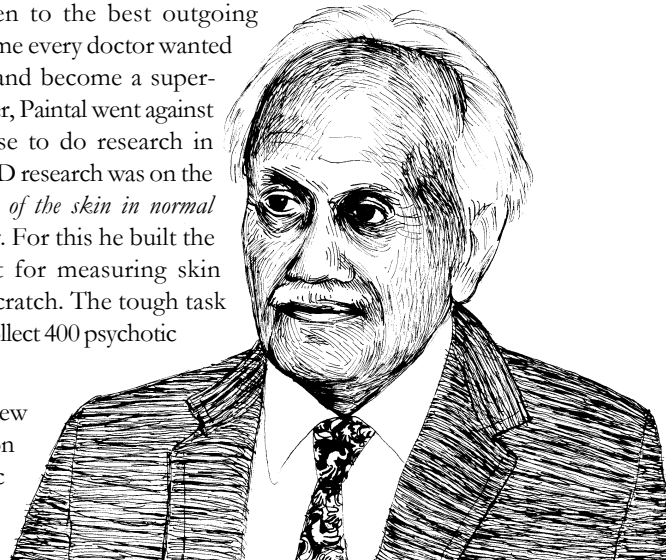


Autar Singh Paintal was perhaps India's best known physiologist. He was a prodigious researcher with a very colourful and uncompromising personality.

Paintal was born on 24 September 1925 in Mogok, Burma where his father worked in the British Medical Service. He completed his Matriculation from Lahore at the age of fourteen and later joined the Forman Christian College for his Intermediate. Later he joined his parents who by then had settled in Lucknow. He joined the King George's Medical College, Lucknow in 1943, with financial help from the Burmese Government.

Paintal had an extraordinary intellect and received several awards while doing MBBS including the much coveted Hewitt Gold Medal given to the best outgoing student. At that time every doctor wanted to treat patients and become a super-specialist. However, Paintal went against the tide and chose to do research in physiology. His MD research was on the *Electrical resistance of the skin in normal beings and psychotics*. For this he built the entire equipment for measuring skin resistance from scratch. The tough task however, was to collect 400 psychotic patients!

He introduced a new index for evaluation of human galvanic



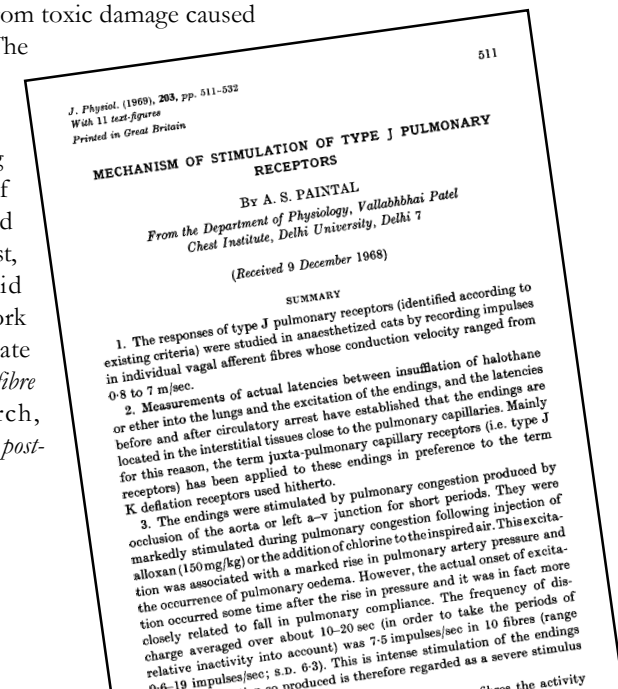
response. This was known as the *Paintal Index* and was used by clinicians in the early days. He continued in his alma mater and later became a lecturer in the Department of Physiology.

Later he received a Rockefeller Scholarship to pursue PhD from the Medical School in Edinburgh. Here he conceptualised the discovery of *J-receptors*. At that time it was difficult to dissect single nerve fibres without impairing their activity. He found an innovative method of dipping the whole nerve in liquid paraffin to embed the whole nerve and isolate the single fibres without impairing their activity. This gave a tremendous boost to research in this area.

In 1953 he returned to India and joined the Defence Laboratory in Kanpur. After five years he moved to the All India Institute of Medical Sciences (AIIMS), New Delhi as a researcher in Physiology. Six years later he became the Director of the V. P. Chest Hospital a post he held till 1990. Later even when he became the Director General of the Indian Council of Medical Research (ICMR) he still continued his research at his modest two-room laboratory at the V.P. Chest Institute.

Paintal is best known for the discovery of *J-Receptors* – a word he coined and researched in-depth. It was well known that the heart and lungs have a rich network of fibres which send signals following chemical or mechanical changes in the local environment. Paintal was the first to show that *J-Receptors* were responsible for the reflex action, which acted as a feedback mechanism to limit muscle activity during exercise. Such negative control was necessary for protecting the muscles from toxic damage caused during physical exercise. The discovery of *J-Receptors* was hailed world-wide.

Paintal was ranked among the best in his field of research. The celebrated cardio-vascular physiologist, Prof. C. Heymans paid glowing tributes to his work and went on to demarcate two distinct periods in *fibre action potential* research, namely, *pre-Paintal* era and *post-Paintal* era!



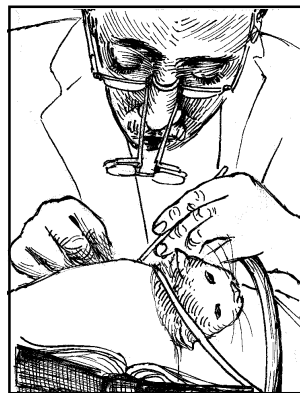
Paintal continued further investigations on various aspects of *J-Receptors* including high altitude physiology and breathlessness caused by exertion. This research threw new light on the acclimatization of Indian soldiers posted to high altitude Himalayan regions.

The halo around high-sounding administrative positions never attracted him. He was more at home in his laboratory where he delved deep into several areas of interest. Paintal's interest in science was more than that of a genuine researcher. He was deeply concerned with ethical issues in the practice of science and founded the Society for Scientific Values (SSV). A large number of young and old scientists were attracted to it. This team investigated cases of malpractice or fraud with vigour and spent their time and money in the pursuit of truth. Today its advice is sought by many leading organizations and individuals. Paintal's high ethical standards were often misinterpreted by peers. He refused to attend inaugurations or meetings in hotels. He felt that science meetings should be held in the academic environs of the university and it hurt him when they were held in five-star hotels. He never visited tainted institutes even if they wanted to confer an honour on him! These sterling ethical qualities did not endear him and he was easily termed an eccentric.

His students often found him deeply absorbed in repairing some scientific apparatus in the lab – a rare sight for an Indian scientist! His high standards of integrity were hard to emulate. He strongly felt that research work should not be imitative and one should contribute something original to the existing body of knowledge. Paintal believed that *'Dependence on other people's labours was doing research by piracy'*.

Besides physiology and research, his only known hobby was yachting, which he did on the Yamuna River before it turned into a sewer.

His lectures were in a narrative mode and were peppered with innumerable experiences, episodes, anecdotes and scientific debates. This style exasperated the conventional students who expected knowledge to be packaged in neatly ordered quanta! However, the initiated students found his style deeply inspiring - laced with the excitement of discovery. He adhered strongly to his principles



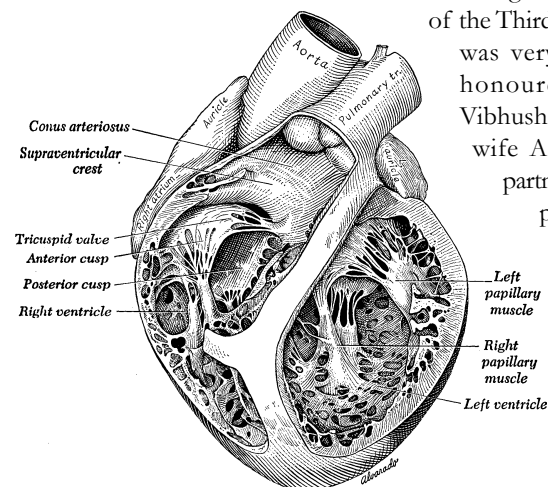
of right and wrong and saw no reason to change them in the interest of pragmatism or societal approval.

During his research career spanning well over five decades Paintal published nearly 400 papers. His research had a major 'influence' on biomedical science; and his contribution to physiology is overwhelming. His papers were cited and quoted by many researchers. Until 2004, his papers were cited as many as 3672 times - a very high Science Citation Index for any researcher. However, he did not think it was right to assess a scientist on the basis of their number of publications and citations. He explained that *"It undermines the far more useful work in more urgent fields (such as leprosy, of no value to the West). It is, therefore, only fair that such scientists are assessed on the basis of other criteria such as usefulness of their work to Indian S&T [Science and Technology] and social value."*

In an era when scientists the world over were fast switching to scientific disciplines, which fetched more funding and public glory, Paintal continued to work in the unfashionable area of physiology.

Many honours came his way. Paintal was elected to the Fellowship of the Royal Society of London (1981) and Edinburgh (1996). He was President of the Indian National Science Academy and the General President of the Indian Science Congress. He was the Founder Member

"Compared to the dynamic first half of the 20th Century, the intellectuals of the second half look like 'lotus eaters', interested in, and promoting, a comfortable existence, secure jobs with attractive perquisites and ostentatious lifestyles with no aim or desire to achieve anything in particular. .. We have given up self-reliance as a driving force. We are back to subservience of a different kind - technological subservience... There is no question of self-help."
-A.S. Paintal. 1985



of the Third World Academy, whose cause was very dear to him. The country honoured him with the Padma Vibhushan in 1986. He is survived by wife Anand who was his life-time partner in research. He was simplicity personified, modest to a fault, and carried his greatness lightly on his shoulders. This great medical researcher passed away in Delhi on 21 December 2004.