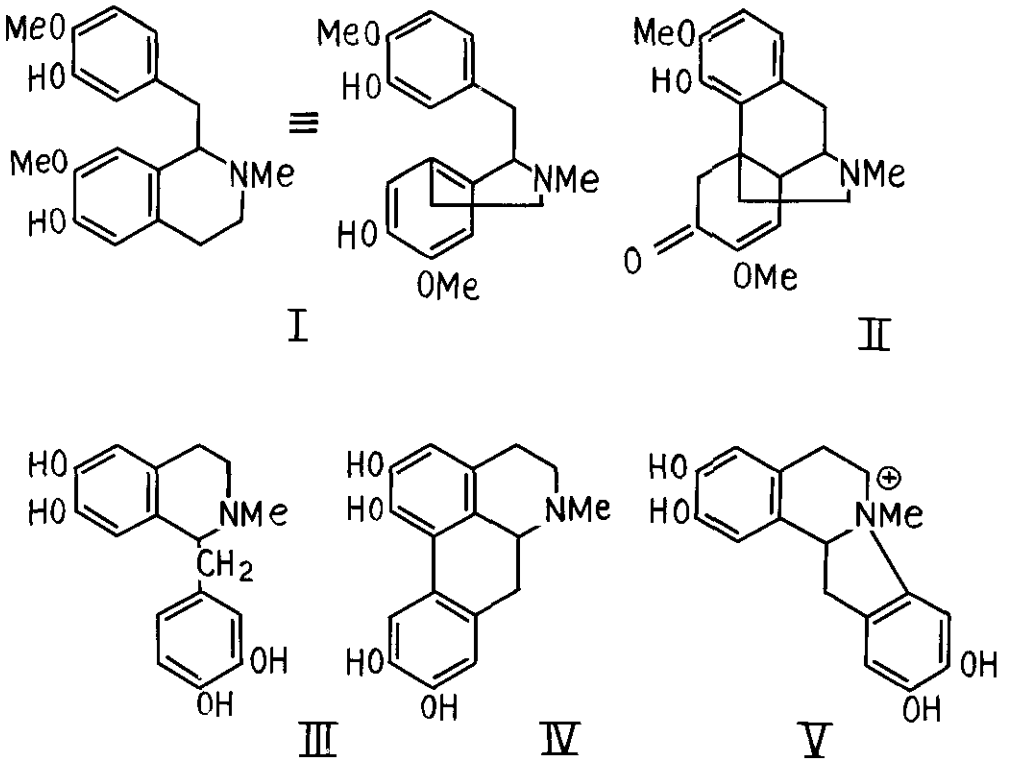
Professor Shigehiko Sugasawa

An appreciation on his 80th birthday by
Lord Todd, Cambridge, President of the
Royal Society

It is now some forty-six years since I first met Shigehiko Sugasawa in the Dyson Perrins Laboratory at Oxford where we were both members of Sir Robert Robinson's large and vigorous research school. He had moved from London to Oxford with Sir Robert and was engaged on alkaloid research whereas I had come from Frankfurt where I had taken my doctorate and was working on Robinson's other main natural product line, the synthesis of anthocyanin colouring matters of plants.

In the nineteen-twenties Robinson's alkaloid studies were mainly directed to the opium bases and especially to the morphine group whose members exhibited such an array of molecular rearrangements as to make them fascinating subjects for study. The determination of their structure by classical degradation procedures was rendered extremely difficult because of these rearrangements which are associated with the presence of a quaternary carbon atom. Robinson's interest in the structural relationships among natural products and their possible biogenesis was very strong at this time and he was impressed by the basic relationship between the benzylisoquinoline and morphine alkaloids. He made this relationship the basis of his approach to the structural problem and was thereby enabled with Gulland to arrive at the correct structure for morphine in 1926.

When Sugasawa joined him Robinson suggested that he should try to strengthen the validity of his biogenetic ideas by realising some of the postulated reactions in the laboratory and in the first instance to bring about the oxidative cyclisation of the unknown protosinomenine (I) to sinomenine (II). Sugasawa - always a brilliant experimentalist - succeeded in the difficult synthesis of (I) but (perhaps not surprisingly) was unable to bring about the hoped-for cyclisation to (II). It was only much later that the essential correctness of this idea was established through biological experiments. Similar ideas lay behind the attempt made by him to dehydrogenate laudanosoline (III) to yield nor-glaucine (IV); in fact the only product isolated from this experiment was the pyrrocoline derivative (V). It is interesting to note that many years later this new type of quaternary alkaloid was in fact found to occur naturally.



There is no doubt that the intimate contact with Robinson and his ideas profoundly influenced the young Sugasawa; so much is clear from the themes of isoquinoline and alkaloid research which turn up again and again in his subsequent distinguished work in Japan. When he left Oxford my contact with him naturally diminished and the outbreak of war completed the break so that I did not see him again until some years after its end. When I did he had not changed very much - a little older perhaps, but still the same cheerful friendly man I had known with the same enthusiasm and, as ever, a strong sense of humour. On the occasion of his 80th birthday I salute him and send my warmest congratulations and good wishes to an old friend who has given outstanding service to Japanese chemistry over many years.