OBITUARY

Erik BERGSTRAND

Dr. Erik Bergstrand, the distinguished Swedish physicist and geodesist who is internationally renowned for his experimental work on the determination of the velocity of light and for his invention of the Geodimeter, died in April this year at the age of 82.

After university studies in Uppsala, Erik Bergstrand joined the Geographical Survey Office of Sweden in 1939 where he worked until he retired in 1970. At the Geographical Survey Office, Dr. Bergstrand was an outstanding member of a select and distinguished group of Swedish geodesists.

With assistance from the Nobel Institute, and with the encouragement of its head Professor Manne Siegbahm, he began his experimental work on the velocity of light towards the end of the 1930's. In the absence of suitable equipment he designed and constructed an instrument using a blinking light system, based on a Kerr cell with pulses of variable intensity and known frequency. The signal was transmitted from and reflected back to the instrument using a plane mirror; at the instrument a comparison was made of the transmitted and received signals and the distance could be expressed as a number of full cycles and fractions of a cycle. This led directly to the development of the Geodimeter which has made his name a household word amongst geodesists the world over. For more than a decade "geodimeter measurements" were a synonym for accurate EDM. The title of his thesis for which he was awarded his PhD in 1950 was "A determination of the velocity of light". The thesis led to the re-evaluation of currently held theories as propounded by several leading physicists. In 1957 Bergstrand published a mean value of his several determinations 299 792.85 ± 0,16 km/sec which still compares well with the latest determination at the United Kingdom's National Physics Laboratory of 299 792.4588 km/sec.

Dr. Bergstrand was a man of few words but many talents both intellectual and practical. From his father Professor Östen Bergstrand he also inherited an interest in astronomy. He participated in international astronomy projects including expeditions to study the total eclipse of the sun at Lome in West Africa, where he was deputy project leader, and Arax in Brazil. During the later years of his working life he designed and built an instrument for the absolute determination of gravity.

Despite the impact that his work had on the development of geodesy, Dr. Bergstrand gave the impression of an unawareness bordering disinterest in his great achievements. In the mid sixties when the retriangulation of Sweden was begun using trilateration techniques, there were few of the survey engineers at the Geographical Survey Office who knew that the gentle, somewhat absent-minded, weather-beaten

and unconventionally dressed person who drifted irregularly in and out of the office was the father of modern, accurate distance measuring techniques.

As a person **Erik Bergstrand** was an individualist in the very best sense of that word; but he was open and unobtrusively generous in sharing his knowledge and experience with all who asked, irrespective of station. With his charming disregard for anything bureaucratic, and for the limelight of conferences and office meetings, he was certainly most at ease "playing the scales" of his Model 2 Geodimeter in the spring and autumn Nordic nights or on board his yacht in the archipelagoes of the Baltic Sea.

With the death of **Erik Bergstrand**, his friend and colleague **Lars Asplund** and his close collaborator **Dr. Ragnar Schöldström**, all within the space of a few months, Swedish and international geodesy have lost three fore-ground figures in the design, development and implementation of EDM techniques. May they meet in geodesy's Elysian fields.

Ian Brook