



### **Reidar Nydal (1926–2004)**

In the spring of 2004, Professor Reidar Nydal died at the age of 78 (photo above courtesy of Prof. Ivar Svare). Dr. Nydal devoted about 50 years to radiocarbon dating and research in Trondheim, Norway. After receiving his education as a physicist at the universities in Bergen and Oslo, he arrived in Trondheim in the autumn of 1953 to help build a radiocarbon laboratory. Some interest in such a laboratory had already arisen there in 1951. After only 7 years, Nydal became the head of the laboratory in 1960; he received his PhD in 1968; and in 1986 he was appointed as a professor of physics at the Norwegian Institute of Technology.

Initially, the solid-carbon method with Geiger counters and a heavy shield was used, but because of the global radioactive contamination due to nuclear tests, the interest was soon focused on gas counting using  $\text{CO}_2$ . A paper from 1957 described the Trondheim new set-up, and two results from dating cross-checked samples were presented. The first dating list from the laboratory was published in the first *Radiocarbon* volume in 1959. An early common problem to be solved in the various labs was a considerably high background for the counters. Nydal, with his co-workers, paid a lot of attention to this. In the '70s, they could present results on their low and stable background, competing with laboratories in the front line.

Research in the laboratory was also focused on the application of the radiocarbon method. Nydal's measurements showing that the atomic bomb produced radiocarbon in the atmosphere and the ocean are well known. His famous paper in *Journal of Geophysical Research* (1968) represents a milestone in this field. Further numerous Trondheim results were presented, e.g., at the Radiocarbon Conference in 1976. The diagrams depicted not only the atmospheric activity from latitudes

between 71°N (Nordkapp) to 21°S (Madagascar) but also the ocean-surface water activity from the Atlantic and Pacific Oceans. Nydal could study the ocean-surface water activity because of his good relationship with shipping companies. Sampling was done along the routes by the crews of commercial vessels. These data today form an important basis for the models describing the exchange of carbon dioxide between the atmosphere and the oceans. Nydal published an extensive paper on radiocarbon in oceans in *Radiocarbon* in 2000.

During his later years, Nydal actively took part in discussions on the changing climate. Through his teaching, he brought this field to his students, and his lectures attracted a great number of them.

Nydal attended numerous conferences and was an eager speaker. He himself was responsible for the 12th International Radiocarbon Conference held in June 1985 in Trondheim.

On the first page of the Proceedings from the Trondheim Conference is a picture of Reidar in his kayak (photo below from *Radiocarbon*, Vol 38, Nr 3). This reflects one of his great interests. Reidar liked sports and outdoor life. In his homemade kayak, he went all the way along the Norwegian coast from Bergen in the south up to Tromsø in the north. This was a 5-year project during which he not only paddled but also documented the villages along the coast and their people. In the winter, he went on long ski trips in the mountains with his family, and in the summer, biking was an important activity. Even after his 65th birthday, he took part 7 times in the long-distance run from Trondheim to Oslo, a distance of about 500 km.



Reidar was constantly thinking about the ethical aspects of science. In his early years, he was concerned about the problems related to nuclear physics, and later, his interest in global environmental changes and their influence on human life occupied his mind. All this was strongly based on his deep religious conviction.

*Högne Jungner & Ingrid U Olsson*

I met Reidar for the first time at a conference in Groningen in the 1980s, where he defended me (and in particular my Scottish accent) against a translator who clearly found me difficult to understand. That started our friendship which was to continue until his death.

In later years after his retirement, we kept in touch, and whenever I was in Trondheim, I would visit him and his wife Eva in their home where they made me feel most welcome. I particularly remember his excitement and pride at his completion of the Trondheim-Oslo bike ride (on more than one occasion) and, of course, his kayaking.

I have lost a friend and the  $^{14}\text{C}$  community has lost one of the early pioneers.

*E Marian Scott*

#### **RADIOCARBON BIBLIOGRAPHY**

- Bergh R, Nydal R. 1989. Atmospheric  $\text{CO}_2$  exchange with the biosphere and the ocean. *Radiocarbon* 31(3): 503–9.
- Gulliksen S, Nydal R, Lövseth K. 1975. Trondheim natural radiocarbon measurements VII. *Radiocarbon* 17(3):364–95.
- Gulliksen S, Nydal R, Lövseth K. 1978. Trondheim natural radiocarbon measurements VIII. *Radiocarbon* 20(1):105–33.
- Johansen OS, Gulliksen S, Nydal R. 1986.  $\delta^{13}\text{C}$  and diet: analysis of Norwegian skeletons. *Radiocarbon* 28(2A):754–61.
- Kalish JM, Nydal R, Nedreaas KH, Burr GS, Eine GL. 2001. Time history of pre- and post-bomb radiocarbon in the Barents Sea derived from Arcto-Norwegian cod otoliths. *Radiocarbon* 43(2B):843–55.
- Meijer HAJ, van der Plicht J, Gislefoss JS, Nydal R. 1995. Comparing long-term atmospheric  $^{14}\text{C}$  and  $^3\text{H}$  records near Groningen, the Netherlands with Fruholmen, Norway and Izaña, Canary Islands  $^{14}\text{C}$  stations. *Radiocarbon* 37(1):39–50.
- Nydal R. 1959. Trondheim natural radiocarbon measurements I. *Radiocarbon* 1(1):76–80.
- Nydal R. 1960. Trondheim natural radiocarbon measurements II. *Radiocarbon* 2(1):82–96.
- Nydal R. 1962. Trondheim natural radiocarbon measurements III. *Radiocarbon* 4(1):160–81.
- Nydal R. 1983. The radon problem in  $^{14}\text{C}$  dating. *Radiocarbon* 25(2):501–10.
- Nydal R. 1989. A critical review of radiocarbon dating of a Norse settlement at L'Anse aux Meadows, Newfoundland, Canada. *Radiocarbon* 31(3):976–85.
- Nydal R. 2000. Radiocarbon in the ocean. *Radiocarbon* 42(1):81–98.
- Nydal R, Gislefoss JS. 1986. Further application of bomb radiocarbon as a tracer in the atmosphere and ocean. *Radiocarbon* 38(3):389–406.
- Nydal R, Gislefoss J, Skjelvan I, Skogseth F, Jull AJT, Donahue DJ. 1992.  $^{14}\text{C}$  profiles in the Norwegian and Greenland Seas by conventional and AMS measurements. *Radiocarbon* 34(3):717–26.
- Nydal R, Gulliksen S, Lövseth K. 1972. Trondheim natural radiocarbon measurements VI. *Radiocarbon* 14(2):418–51.
- Nydal R, Gulliksen S, Lövseth K. 1980. An analysis of shielding efficiency for  $^{14}\text{C}$  counters. *Radiocarbon* 22(2):470–8.
- Nydal R, Gulliksen S, Lövseth K, Skogseth FH. 1984. Bomb  $^{14}\text{C}$  in the ocean surface, 1966–1981. *Radiocarbon* 26(1):7–45.
- Nydal R, Gulliksen S, Lövseth K, Skogseth F. 1985. Trondheim natural radiocarbon measurements IX. *Radiocarbon* 27(3):525–609.
- Nydal R, Lövseth K, Skogseth FH. 1980. Transfer of bomb  $^{14}\text{C}$  to the ocean surface. *Radiocarbon* 22(3): 626–35.
- Nydal R, Lövseth K, Skullerud KE, Holm M. 1964. Trondheim natural radiocarbon measurements IV. *Radiocarbon* 6(1):280–90.
- Nydal R, Lövseth K, Syrstad O. 1970. Trondheim natural radiocarbon measurements V. *Radiocarbon* 12(1): 205–37.