

OBITUARY

A life devoted to aquatic ecology: a tribute to Otto Kinne

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Professor Dr. Dr. h.c. Otto Kinne passed away at age 91 on 3 March 2015 in Oldendorf, Germany, after a prolonged period of deteriorating health. True to his spirit of hard work and independence, the driving forces throughout his long career, he did not go into well-deserved retirement but stayed until the end at the helm of Inter-Research: the highly successful, unique institution he founded in 1979. From the beginning of his career, Otto Kinne's life was focussed on the advancement of ecology; he built lasting institutions and organisations, strengthened bonds across disciplines and nations and awarded prizes to the worthy, all the while striving for excellence in his field of responsibility. His five-volume treatise on marine ecology laid the foundation for rapid expansion of the field, which he later skilfully channelled into the state-of-the-art journals founded and nurtured by him. By raising the standard of quality control and speeding up the turnover time of submitted manuscripts, he motivated the international community to do better, and to do it faster. Like all great achievers, he perceived visions and pursued them with determination and boundless energy. He applied his formidable array of skills, not least a charming personality, to every goal he set himself; and there were many. His efforts were rewarded with the national and international recognition and gratitude they deserved, reflected in the innumerable awards and honours he received in the course of his long career (see online CV). Truly, a life well spent, and appreciated, in the service of the community. Such a life is worthy of emulation, hence digging into the past to trace its evolution is educative: How much was nature and how much was nurture and how did the two interact?

The formative years. Otto Kinne was born in Bremerhaven in 1923 into a family of modest means and was conscripted into the navy at age 18, during World War II. Not much is known about his wartime years: He related that after training he was appointed



Otto Kinne (1923–2015) in ca. 2003

captain of a ship and learned how to command it by secretly watching the helmsman. He confided to a close friend that his hearing problem was caused by damage sustained to the ear drums while escaping from a submarine. This must have been a traumatic experience but he never talked about it, not even as an excuse for being hard of hearing. Indeed, even his closest acquaintances over many decades were not aware of the cause of the handicap he suffered from. This alone speaks volumes for his indomitable spirit. The condition had a profound influence on the course of his life as it worsened steadily and led to almost total deafness in his last years.

Immediately after the war, Otto Kinne studied zoology, botany and oceanography at the University of Kiel, then the centre of marine sciences in Germany. At that time German universities were characterised by the rule of the 'Ordinarien': the full professors who presided like patriarchs over their realms, whether departments or institutes, and from which they expected allegiance to their respective school of thought. An outstanding example was Otto Kinne's 'Doktorvater' (PhD supervisor), the renowned German zoologist Adolf Remane, who founded several institutes

and was an authority in fields as diverse as palaeontology, anthropology, evolutionary theory and marine zoology: for example, he discovered and described meiofauna as a sideline. It should be mentioned that Remane's reputation was tainted by his activities during the Nazi era but, to his credit, he was screened and released by his British captors. His success as a mentor is reflected in the number of his students who themselves became renowned directors of zoological institutes across the country. Clearly, the Remane school had a profound influence on post-war German zoology. His other Doktorvater was Hermann Friedrich, best known for his textbook on Marine Biology published in 1960. It must have been a privilege to spend one's formative years in this fertile breeding ground of capable scientists and future patriarchs. Otto Kinne apparently thrived in it. One might say that he belonged to the German zoologist nobility both by the training he received and the influential network of which he was a part.

His exceptional abilities soon emerged during the preparation of his PhD thesis. One of Remane's fields of interest was the decrease in species diversity along the salinity gradient from marine to brackish waters exemplified by the western Baltic Sea, where Kiel is located. Otto Kinne carried out experimental studies on the ecology, biology and physiology of the amphipod *Gammarus duebenii* to pinpoint the mechanisms responsible. His laboratory experiments on a single species set him apart from the mainstream Remane school, which was based on comparative morphology and field observations. Early on he realised the vast scope for research offered by the experimental approach and he made full use of it. The breadth of the investigations he carried out, reflected in the papers he published on the results, is amazing. In addition to a 64-page monograph, he published 6 papers in 5 different journals on moulting frequency, sex ratios, dormancy, blood composition and breathing, production biology and temperature dependence of sex determination. Because of a rule at the time that published material could not be included in the doctoral thesis, Otto Kinne published his first papers in 1953, the year after acquiring his PhD. Even more amazing is that, in addition to the 7 single-authored papers from his thesis, he published another 8 papers on different topics that same year, only 2 with a co-author. The journals ranged from the prominent *Naturwissenschaften* to the popular, outreach magazine *Mikrokosmos*. This was an outstanding performance by any standard but in the academic atmosphere prevailing in German universities at the time, the extent to which it went beyond the

call of duty was astonishing. Clearly, Otto Kinne's lifelong striving for excellence was in place from the start of his career in science, as also its counterpart, the self-confidence that he alone could do it.

In those days it was normal practice for the supervisor to be included as an author of papers written by students or junior scientists; in some institutes the Doktorvater was sole author of the published thesis and the student who did the work was merely mentioned under acknowledgements. So the fact that Otto Kinne was sole author of almost all his papers is noteworthy and testimony to his independence, but also to the leeway he was given (or perhaps fought for) in the institution in which he worked. His performance was rewarded with a 5-year research assistantship during which he was expected to complete a more comprehensive thesis ('Habilitation') on a different topic to the PhD thesis. These years were spent working on many different topics, combining laboratory experiments with field observations and testified by the many papers he kept on publishing. He received his Dr. habil. in 1958 for his work on the influence of salinity and temperature on the growth, form and reproduction of the hydroid polyp *Cordylophora caspia*. All the while, true to the Remane school, he was synthesizing his results and observations into unifying concepts. One of his first papers in English, published in 1957, was entitled 'A programmatic study of comparative biology of marine and brackish water animals'. Thus Otto Kinne's emerging concept of ecology was grounded in detailed knowledge of the biology, physiology and ecology of individual species from many different phyla and across strong habitat gradients. His papers aiming at syntheses were preparing the ground for his future career in marine ecology.

The Biologische Anstalt Helgoland. In 1957 Otto Kinne was awarded a Guggenheim Fellowship to continue his research at the University of Los Angeles, where he spent 2 years. He was then appointed Assistant Professor at the University of Toronto and promoted to Associate Professor 2 years later; he was also in demand as an instructor of ecology at the Woods Hole Biological Laboratory. Clearly, he flourished in the North American environment and often mentioned that he had been strongly influenced and motivated by the years he spent there. In 1962, he was appointed Professor and Leading Director of the Biologische Anstalt Helgoland (BAH), a position he held for 22 years. The BAH comprised 3 stations: the Central Laboratory in Hamburg, the Marine Station on Helgoland Island and the Littoral Station on the island of Sylt. During the period of his directorship,

marine ecology burgeoned world-wide into a science in its own right, and Otto Kinne played a key role in shaping and expanding this research field to what it is now. A little background is necessary to appreciate the ramifications of the initiatives he started and the impact they had.

Most of the German North Sea coast is mud and sand flat, but Helgoland, located in the German Bight a few hours' steaming distance from the mainland, offers easy access to fully marine water coupled with a rocky shore. It is also a popular tourist destination. Not surprisingly, the island had played a key role in the development of German marine biology. It was here that Johannes Müller started the systematic study of plankton in the 1840s and introduced his students, amongst them Ernst Haeckel (who later coined the term ecology), to marine life. Following publication of the theory of evolution and the ensuing debate, biology became a public concern and research aimed at testing the evolutionary hypothesis was considered prestigious, hence worthy of funding. By the end of the 19th century a number of institutions dedicated to basic biological research had been established at coastal sites. Among them was the Royal Prussian BAH founded in 1892. The curiosity-driven basic research pursued at these stations uncovered the enormous diversity of marine life and convincingly traced the phylogenetic trees by which it is connected. Putting together the puzzles and watching the patterns emerge must have been exciting. With the weight of mounting evidence, the theory of evolution eventually became widely accepted in educated circles around the world, and interest in details of the organisms and their phylogeny started waning. The field moved on.

The other justification to carry out marine biological research was to provide the scientific background for judicious harvesting of marine resources, primarily fisheries. When Otto Kinne took over the BAH it was part of the Federal Research Centre for Fisheries in Hamburg under the jurisdiction and funding of the Federal Ministry for Nutrition, Agriculture and Forests. At that time, fisheries biology was dominated by population dynamics of commercially important species, with marginal attention paid to the ecosystems in which they were embedded. So the BAH led a neglected existence without a clear research mandate. All that changed under Otto Kinne's energetic guidance.

During the first decade of his directorship, he developed the conceptual framework linking laboratory experiments with field observations to form an integrated, holistic ecology and implemented it as

the basis for the organisation of research and the subsequent expansion of the BAH infrastructure and staff. The conceptual framework was discussed in the course of a series of symposia to which he invited the international community. The island proved an ideal site for conferences: the spectacular sights are seen soon, so attendees stay together, and at that time the whole island was duty-free so get-togethers were a lot of fun. Otto Kinne was a charming host and attendance was high. Besides, having played the violin in a band at bars visited by American troops during his student years, he was unlike most other German professors of the time and he knew how to party.

Otto Kinne's conceptual evolution is reflected in the titles of the first 4 Helgoland symposia he organised and carried out on the island between 1964 and 1967. The first 3 are reminiscent of his PhD and Habilitation theses on 'Quantitative biology of metabolism' and 'Biology, ecology and physiology of marine organisms' but the 4th symposium, which happened to be the 'First European Symposium on Marine Biology (EMBS)' had the title 'Experimental ecology — its significance as a marine biological tool'. Ecology had not only come into its own as the framework in which to justify basic research, it was already diversifying into sub-disciplines, illustrated by the abbreviated titles of the next 6 symposia: pollution research (1968), cultivation of marine organisms (1970), man in the sea (1973), ecosystem research (1977), protection of marine life (1980) and, finally, diseases of marine organisms (1984).

These were pet topics of Otto Kinne, but it should be pointed out that it was the respective research field he was highlighting, and not a published opinion he held. Indeed, these symposia established his reputation in the international community as that of an impartial facilitator of open discussions to advance the field. The congenial atmosphere prevailing at these conferences strengthened bonds that brought together scientists from across the world, and the first EMBS was a resounding success. The combination of good science and enjoyment offered by the BAH under Otto Kinne set the standard for the popular, biennial EMBS event held all over Europe in subsequent years. The Helgoland symposia brought not only the BAH into the international limelight, but also its house journal *Helgoländer wissenschaftliche Meeresuntersuchungen* (now *Helgoland Marine Research*), in which the first conference proceedings were published. Otto Kinne was the lead editor of all 6 proceedings volumes, and it appears that this is when he developed his interest and skill as an editor. In 1969 he launched the journal *Marine Biology* on its

highly successful course and in 1970 published the first volume of the series: 'Marine Ecology. A Comprehensive, Integrated Treatise on Life in Oceans and Coastal Waters'. He conceived, organized, edited and contributed (about 25%) to all 5 volumes, the last of which appeared in 1984. Needless to say, this treatise became a milestone in the expansion of the field.

By the late 1960s, the BAH had greatly increased in prominence in the biology landscape in Germany, not only in terms of the research it carried out, but also as a provider of organisms to universities for research and teaching purposes, and as a popular location for German professors to expose their students to marine biology. A research activity worth mentioning, which attracted media attention at the time but is now almost forgotten, was the deployment of the Underwater Laboratory in 1969 and 1970 at 10 m depth in the Baltic and later at 23 m depth adjacent to the BAH, of which Otto Kinne was mission leader. It was manned by 'aquanauts' who lived underwater for a week or more, carrying out observations and collecting samples during scuba-diving forays. It might have been a good place to train astronauts, but its usefulness as an experimental technique to study the ecosystem *in situ* proved to be limited and the results unexciting, all the more so in the stormy, turbid, featureless environment of the Baltic and German Bight. So this experimental approach, although itself an exciting venture, just faded away. Nevertheless, it drew positive attention while it lasted and helped bring scuba diving into the scientific field.

At the institute, Otto Kinne strove for improvement and expansion of the experimental facilities at the 3 stations, including the launching of 3 research vessels. All this was possible because he proved to be an exceptionally gifted and resourceful convincer and fundraiser who used scientific and historical arguments to make his case for expansion of the BAH as an independent institution. He was a charismatic leader and with the full backing of his staff he entered into negotiations with the Federal Ministry for Education and Research and the German Research Foundation (DFG), together with representatives of the governments of the provinces Schleswig-Holstein (to which Helgoland and Sylt belonged) and Hamburg (where the central laboratory of the BAH was located), to put together a scheme that ensured shared funding of the BAH as an independent research institution under the jurisdiction of the research ministry. In 1971 the BAH declared its independence. This had been quite a balancing act; the severing of BAH's umbilical cord is said to have shaken the agriculture ministry like an 'earthquake' (Hagmeier 1998).

In the following years the BAH grew steadily and new buildings were erected at all its locations, including the ambitious eco-laboratory on Helgoland, which was completed in 1976 and offered everything a guest researcher could desire, from large tanks with clean, running sea water to laboratories and equipment. The building erected in 1982 for the central laboratory in Hamburg was the crowning achievement. It would be too much to list the infrastructure that Otto Kinne created and the research departments in the BAH that he established; suffice it to say that the BAH grew fourfold in the 22 years of his directorship; but his hearing problem also worsened in this period. His right-hand man throughout most of his directorship, the head of BAH administration Uwe Kersten, recalled how, on their way back from meetings with officials of the funding agencies in Bonn, their compartment in the train would empty because of the loudness at which they conversed. The director was being briefed by his BAH companions about nuances that had escaped him during the exchanges, often to the former's mirth: 'So that's what he really said!' Conversations were strenuous for all, and after a short while Otto Kinne would invariably excuse himself and retreat into the manuscripts he always carried with him: his 'homework' as he jokingly called them. Clearly, he felt more at home reading and writing rather than conversing or attending conferences, so reviewing manuscripts was not really 'work' for him as it would be for others.

The Inter-Research years. Over the years his deteriorating hearing was increasingly becoming an impediment for the day-to-day running of the BAH and in any case he was spending more and more time on editing and publishing. When Wiley, the publisher of the treatise on marine ecology, turned down his proposal to publish a journal called *Marine Ecology Progress Series* (MEPS) as a continuation of the treatise, Otto Kinne decided to publish it himself. He created the Inter-Research Science Center (IR) as a launch pad in 1979, with its office in the BAH but his home in suburban Hamburg as the postal address. The journal proved as successful as the treatise and was followed by the 4-volume treatise on 'Diseases of Marine Animals', again conceived, organised, edited and contributed to by him; it appeared between 1980 and 1990, and the closely related journal *Diseases of Aquatic Organisms* (DAO) was launched in 1984. By this time MEPS was flourishing.

In 1984, Otto Kinne decided to take early retirement and devote himself entirely to doing what he liked best. He cited his hearing problem as the rea-

son for his stepping down at the peak of his power but the desire to build something new was, no doubt, more than just an added incentive. In today's climate the handicap could be used to one's advantage, but in those days it was considered a disability which he, for many years, preferred to overlook and not acknowledge as a weakness. In any case, being a man of strong convictions which had paved the way for his successes this far, he apparently did not feel that he missed much in conversation and was generally able to see the lighter side of things. He became used to shrugging his shoulders with a smile.

Since he could not adequately function at the top level in the academic field and no longer had the BAH as a base for his activities, Otto Kinne created his own institution, tailored to his needs and abilities, and funded by revenue generated entirely by the publishing business. He founded the International Ecology Institute (ECI) in 1984 which was, long before the digital era, essentially a virtual institute. He appointed himself Director and selected his 'staff' from the top names in ecology who were grouped in 3 subject areas: marine, terrestrial and limnetic ecology. A jury selected from their ranks awarded the Excellence in Ecology (EE) prize to an outstanding scientist from nominations made by the scientific community on a rotating basis from each field. Right at the start, the jury could not decide between an established scientist and a bright newcomer so Otto Kinne magnanimously created a second prize, the International Recognition of Professional Excellence (IRPE) Prize, reserved for young scientists with an outstanding achievement, or labouring under particularly difficult conditions. The latter criterion was conceived to give a chance to gifted scientists working on the other side of the Iron Curtain or in developing countries. The condition for accepting the EE prize money was to write a book on a topic of the prize-winner's choice which was edited but not peer-reviewed, and published and distributed by IR at a nominal price and free in less-developed countries. Twenty books have been published so far, with 6 in preparation. It is hard to assess the impact of these books, as they tend not to be cited in the regular literature, but providing outstanding scientists the freedom of expression commensurate with their reputation, unfettered by peer review, has produced a lot of food for thought.

The seat of IR and ECI was a countryside estate combining office and home: a secluded 'island' on the outskirts of the small rural village of Oldendorf, far from the hustle and bustle of city life, where he could be master of all he surveyed. With able support

from his wife Helga, he acquired a large, stylish house overlooking an expanse of low-lying land with fish ponds and with the little river Luhe meandering past. Under Kinne's exacting direction, the property was landscape-gardened on a park scale with walks and benches overlooking a small lake. With the land came a small population of endangered fire-bellied toads which breed in ephemeral ponds and whose call ('Unkenruf') is believed to portend bad tidings; but Otto Kinne had found a new hobby. True to his spirit, a culturing unit was built, a breeding programme was started, experimental research was carried out and the results published on the IR website and in his journal *Endangered Species Research*. The estate was subsequently extended to a total of 8 hectares, large tracts of which were re-natured to provide habitat for the toads and also for newts.

IR was a success story from the start due to Kinne's business acumen and his ability to convince the ecology community that he was the best. He wanted Inter-Research to be something special: 'a self-sustaining international Science Center—small but with global impact', as described on its web page. IR started off by publishing first just MEPS and then MEPS and DAO, but these grew steadily by increasing numbers of issues per year, in the case of MEPS a linear increase from 1 to 25 between 1979 and 2007. After 1990 a new journal was founded every 3 to 5 years to reach a total of 9. IR grew correspondingly and reached around 25 in-house staff (including copy editors and type-setters), for whom residential houses in the same quiet cul-de-sac as the Kinne home were converted into offices.

He was particularly cognisant of the difficulties faced by scientists in Eastern Europe and the Third World, in particular India. In 1992 he created the Otto Kinne Foundation (OKF) in order to provide financial support to promising young scientists in eastern European countries. His efforts were considerable and much appreciated, particularly in Russia and Ukraine, reflected in the awards bestowed on him. For him, levelling the playing field in the realm of science in order to bring out the best in gifted individuals throughout the world went far beyond charitable individual deeds and was an ethical issue. Indeed he felt strongly about ethics in relation to science and believed that it should be developed on a scientific foundation grounded in ecology to guide policy makers: he called it eco-ethics, founded the 'Eco-Ethics International Union' (together with Gennady Polikarpov of Sevastopol), and provided a new journal, *Ethics in Science and Environmental Politics*, as a vehicle to take the concepts forward.

Otto Kinne was a benevolent patriarch who felt for his charges as his children: he smarted when the unity of the family was threatened and reacted strongly, sometimes overreacted, when his authority was questioned. He said he had 2 babies: the BAH and IR. After his departure, the BAH underwent a long period of uncertain future which he watched with mounting chagrin from Oldendorf. Several attempts were made to find a director, without success; finally, after negotiations to maintain its independent status within the framework of the Leibniz Institutes failed for want of adequate funding commitments, the BAH was incorporated as an entity into the Alfred Wegener Institute Helmholtz Centre for Polar and Marine Research (AWI) in Bremerhaven. Since the central laboratory in Hamburg no longer made sense, the employees there were shifted to Bremerhaven. Much was done by the AWI to smoothen the transition, from financial remuneration to meeting the demands for infrastructure, and no one was made redundant. The funding situation of the island stations was significantly improved as a result of the transfer. Nevertheless, Otto Kinne was incensed and protested violently, in the courts and on the IR website. For him, the integrity of his baby, the BAH, in which he had invested so much time and energy, had been violated and he was deeply hurt; it was impossible to console him for years. 'I know I am a stubborn old man, but I am hurting' he would lament. Luckily for him he found his peace when Karen Wiltshire, after her appointment as Director of the BAH, visited him in Oldendorf and the two became friends.

The legacy. A major problem with patriarchs of Otto Kinne's calibre is the large gap they leave behind at their passing; they are remembered because they are missed, so what they established becomes the tradition followed by their successors. Indeed, this year the

50th anniversary of the EMBS will be celebrated at its birthplace, the BAH, after having made the rounds of most European marine centres; it is a great pity that Otto Kinne missed this momentous event. But one can take consolation in the knowledge that he was fully aware that he would be celebrated as the all-time hero, not just of the BAH, on the occasion.

'I cannot live without work', his words to a newspaper interviewer, and 'Our aim is to be number 1', to his employees at IR, pretty much sum up his driving forces. The intensity of his convictions generated the energy to put them into practice. His big-heartedness was evident in the concern he felt for the underprivileged scientist and the endangered species and it was manifested in the funds and habitat he provided to promote their well being. Achieving was in the nature of this larger-than-life personality. In the words of John Austin, his co-worker at IR, in a speech at Otto Kinne's passing: '*Wow! Was für ein Mensch! Was für ein Leben! Was für ein Vermächtnis!*' — 'Wow! What a man! What a life! What a legacy!'

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