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On the Ising model

Meanwhile, my invaluable luck had come to my rescue again. There was a seminar on the Ising model, a classical problem in statistical mechanics. I made the usual comment, at least for me, that a combinatorial solution to the two-dimensional case should be possible, given that Onsager's algebraic and extremely opaque solution already existed. I hit up on the concept that a suitable determinant might be constructed that would do the required counting. It did not take long to indeed find such an expression, and I showed it to Mark Kac, who was visiting from Cornell. He greeted me with enthusiasm the next day having calculated the not particularly difficult final result. "It nearly works" he said to me. After the immediate correction of a few odd errors, it became quite clear that it did indeed give the right answer, but only because of a sophisticated theorem in the theory of two-dimensional graphs. Nevertheless, it was also clear that a solution to the three-dimensional problem along the same lines was quite hopeless. I gave a seminar on the method a few weeks later, and felt the warm approach of Hendrick Kramers, now also a visiting member, descending up on me. He was one of the world's experts in this rather abstract problem. By a strange twist of fate, I had already impressed him by my work on charge renormalization, *of which he was the inventor*, and of course my work on liquid helium.