

H&N - A Brief History

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In 1945, Arthur Heisdorf and his wife Mary, the founders of H&N, purchased a small 13-acre poultry breeding farm with a capacity of 12,000 layers and an old Petersime Incubator in Kirkland, WA,. As summarized by Art himself in 1989 in the *Western Poultry History* (1st Ed., George Biddle, Editor. Pacific Egg and Poultry Association), this followed nine years of his working as a geneticist with Kimber Farms in Niles, CA. It indicated that “John Kimber made an exception to his rule of never selling out of the State of California to sell Art and Mary his baby chicks. So, Art started his business selling Kimber chicks. Those chicks were trapnested and selections were made, and thus began the Heisdorf’s poultry breeding program. At the same time, they began importing samples of stock from many of the leading breeders of this country as well as stocks from Europe and Japan. These strains were tested in crosses with the Kimber stock, hoping to find a combination that was superior in performance to the pure Kimber strain. “We were lucky because very early we found one that nicked with the Kimber blood. That cross was the foundation of the H&N Nick Chick Leghorn.”

In 1947, Art and Mary partnered with two brothers, Bert and Cliff Nelson, who also had worked at Kimber Farms, to form a partnership and later a corporation known as Heisdorf and Nelson Poultry Breeding Farm. In 1952, Art and Mary bought out the Nelson’s interests. Cliff went back to California, but Bert remained with H&N for many years. The business again became a sole proprietorship, and in 1955 it was incorporated as Heisdorf & Nelson Farms Inc. In 1953, Art and Mary had purchased the Hollywood Breeding Farm in Woodinville, WA, which served as the primary breeding location for Heisdorf and Nelson Farms from 1950 until the early 1970s. Heisdorf and Nelson Farms, later became known across the nation and around the world as H&N, Inc.

Prior to joining Kimber Farms, Art had graduated in Poultry Science from the University of Wisconsin. He was intensely interested in the emerging science of genetics and how it could be used to improve the productivity of poultry. His interests continued to develop during his Kimber years. Kimber Farms was a very innovative breeding company during the 1940s and was the first company to apply modern genetic principles to improve egg production stocks. They were also the first poultry breeding company to employ trained quantitative geneticists, having employed Will Lamoreaux, Gordon Dickerson and Ken Goodwin during the early to mid-1940s, *i.e.* during the period that Art Heisdorf was coordinating Kimber’s day-to-day breeding work. Art said that one of the things the Kimber geneticists did was that they purchased a lot of different pureline stocks from many of the small Registry of Production (ROP) breeders located around the nation. Those stocks were then tested for their performance both as purelines and as crosslines, and he indicated that almost always, the crosslines far outperformed the purelines. This, as we know now, was due to something geneticists call heterosis or combining ability, and that genetic phenomenon could be taken advantage of by a breeder. The Kimber group also found that when they attempted to utilize the cross populations as breeders, that after a couple of generations, most of the performance advantage was lost. John Kimber, however, insisted that they should establish new lines from the crosses, and that they should continue utilizing a pureline breeding scheme.

Art Heisdorf's idea when he left Kimber Farms to form his own breeding company was to utilize the knowledge that he had gained with regard to crossline performance. He decided that he would simply choose the two best combining lines that he could find, and that he would then start selling a crossline commercial, rather than a pureline. He talked John Kimber into selling him some of his Kimber stock and he immediately began looking for a line that would cross well with them. He tested many lines, but we believe that the line he chose to eventually produce the H&N Nick Chick: was purchased from a local Washington breeder. Even though he never told us the exact origin of those lines, we suspect that the Kimber lines were originally from a very well known breeder in New England called Mount Hope, and that the second one was from an even smaller lesser known breeder in Western Washington, named Tancred. We will never know for certainty, but those lines were probably the base lines for the H&N "Nick Chick."

In the early 1950s, Art's breeding program had been changed from one of pure line breeding to that of reciprocal recurrent selection (RRS) as a result of information he had gathered from the Heterosis Conference that was held at Iowa State College during the period of June 15 to July 20, 1950. Art and his genetics staff pioneered the use of RRS which utilizes pedigree information on the performance of the cross for selecting the progenitors of the succeeding generation of the two purelines.

In either 1949 or 1950, when Heisdorf and Nelson Farms started marketing the "Nick Chick," it performed extremely well, and it rapidly gained market share on the west coast of the USA and all around the nation. Art entered his "Nick Chick" into every public test that he could enter. He was very innovative in his business practices in that he was probably the first individual to rapidly solicit and develop a number of franchise distributor hatcheries around the USA and around the world. He maintained direct sales of commercial chicks on most of the west coast of the USA, but sold parent stock, *i.e.* males from one of the lines and females from the other line, to a number of franchise hatcheries around the rest of the nation. Art also wanted Heisdorf and Nelson Farms to grow and expand, not only nationally, but internationally. His partners, the Nelson brothers, however, were not interested in being involved on such a national and international scale, so In 1947, a couple of years after starting Heisdorf and Nelson Farms, Art bought out the Nelson's share of the Company. Since the company's name had already become so well established, however, he elected to continue to market the "Nick Chick" under the Heisdorf and Nelson name. Eventually, customers began referring to the product as the H&N "Nick Chick," and that name has stuck with it over the past 60+ years. That is true, even though Pfizer purchased H&N in 1970 and changed the official name of the product to the H&N PG2, those of us at H&N still referred to it as the Nick Chick. That continued with the purchase of H&N in 1982 by Tatum farms in Dawsonville, GA, and later by Lohmann and Co (1987)

During the late 1950's, Art really launched the company into the international market. Since, due to transportation difficulties, tariffs and other poultry health restrictions, it was extremely difficult to export large numbers of stocks on a routine basis, Heisdorf and Nelson set up their own breeding locations in Dalkeith, Scotland, and in Belfast, North Ireland. In 1958, he signed an agreement with Heinz Lohmann to establish a breeding operation for the Nick Chick at Lohmann and Co., Cuxhaven, Germany. The Lohmann breeding operation would be run by H&N Geneticists located in Cuxhaven, and Lohmann would have the rights to market the H&N product in all of Europe and the middle east as the HNL "Nick Chick." That situation continued until 1976, several years after the acquisition of H&N by Pfizer in 1972. He also set

up a marketing agreement with the Nichols Breeding Company in New Hampshire. Nichols was the largest breeder of red-feathered meat-type chickens, and H&N became the distributor of Nichols broilers in South America and the Orient.

One of the reasons that Art Heisdorf was so successful, was that he understood the importance of hiring well trained people to run his poultry breeding and health programs. Art quickly hired a number of very well trained genetics and poultry health staff members, not only to oversee company owned flocks, but to work with H&N's hatchery and commercial customers from around the nation and around the world. Following are a number of pictures of the H&N staff that were taken from a Heisdorf and Nelson Farms brochure that was produced by H&N in late 1969. Cecil McClary, who was trained under the direction of Michael Lerner at the University of California in Berkeley, and who at the time of his hiring was employed at the Western Washington Research and Development Center, Puyallup, WA, was the first geneticist hired and was named as the Director of Genetic Research at H&N.

Max von Krosigk, Franz Pirchner and Mel Hogsett were then hired from Jay L. Lush and Arnie Nordskog's graduate studies groups at Iowa State University. After the H&N - Lohmann agreement was signed, Max von Krosigk (1959-1970) and Franz Pirchner (1963-64) moved to Cuxhaven to run that part of H&N's breeding program. Shortly after their move to Germany, Ken Goodwin was hired to help run the H&N program in Redmond, and he served in that capacity until about 1966, when he left H&N to become the Head of the Department of Poultry Science at Pennsylvania State University. Franz Pirchner had left H&N in 1964 to become Professor of Animal Breeding at the Veterinary University of Vienna, from where he moved to the University of Munich-Weihenstephan in 1970 as the Head of the Animal Breeding Department. Following their departures, in 1967, Gerald Havenstein was hired from the Genetics Department at the University of Wisconsin, and Dietmar Flock who was trained in Jay Lush's lab at Iowa State University were hired with the eventual plan of having Havenstein work on the U.S. and U.K. breeding programs, and Flock on the European program. The two of them spent a year working together at H&N's headquarters before moving forward with their respective oversights of the various H&N breeding programs.

This part of the H&N history shows that one of Art Heisdorf's strong points was to realize that a new scientific discipline was coming to the forefront that could be used to improve the performance of poultry. He fully understood that competing in the world market would require well-trained scientists who could apply quantitative genetics at the practical field level. It also shows that running a long-term successful poultry breeding program requires the employment of a number of specialists, and that the specialists involved will continuously change over time. McClary led the H&N genetics program for nearly 30 years, and von Krosigk served for about 20 years. Havenstein spent nearly 20 years (1967-1986) working on H&N's layer and broiler programs and 10 years following the retirement of McClary (1976-1986) as the Director of H&N's Genetics Programs, before he left the company to become the Chair of the Department of Poultry Science at The Ohio State University (1986-89), and eventually the Head of the Department of Poultry Science at North Carolina State University (1989-2005). Dietmar Flock spent 30 years (1969-99) heading up the H&N, HNL and Lohmann Tierzucht Breeding programs in Cuxhaven. During this time he also taught courses in poultry science at the University of Göttingen and was appointed as Professor of as outside lecturer.

A couple of other geneticists, Alan Emsley and Richard Towner, also contributed greatly to the success of the H&N lines during and after Havenstein's service time with H&N. Dick Towner served as the Director of H&N's breeding programs from 1986 until the H&N lines

were transferred to Cuxhaven in 1997, and the H&N breeding program in Redmond was shut down.

Another major factor related to Art Heisdorf's success was related to his understanding that in order to have a first class breeding organization, the Company had to deliver quality breeding stock that was free of the major communicable poultry diseases. That knowledge led Art to the hiring of a number of individuals in the poultry veterinary and health fields. Number one among those was a first class individual, Dr. Don Zander, who was a D.V.M. at Colorado State University who had done a lot of the early research on the effects of Mycoplasmas in poultry. He was, in fact the first person to describe *Mycoplasma gallisepticum*, or as it is commonly known today, M.g. He also hired Dr. Bob Hill, a physiologist, and Dick Raymond, an excellent virologist who did a lot of the original work showing that birds could be protected from Marek's Disease by inoculating them with the Turkey Herpes Virus and/or with a live Chicken Herpes virus that was endemic in an SPF population that was maintained by the H&N Health Services Lab. Zander and Heisdorf also hired a number of poultry veterinarians including Drs. Bill Dunsing, Ralph Mitchell, Burt Tennyson and Roscoe Balch, all of whom worked closely with the company's own grandparent and parent flocks, and with the parent and commercial flocks of customers throughout the world.

H&N was probably the first breeding company to eradicate all of the Mycoplasmas from its breeding flocks. That, of course, was the right way to go, even though early on it often put the company's commercial stock at a severe disadvantage, especially when the Mycoplasma-free chicks and/or started pullets were destined for large infected commercial premises. Eventually, all breeders had to clean up their breeding flocks for Mg and Ms, and many of the commercial organizations have followed their lead, and that has resulted in a good situation for the overall industry. One could cite several other diseases, including Lymphoid Leukosis and Infectious Bursal Disease or IBD in which the H&N Health Services staff provided similar services to the industry during its existence.

Of course many other individuals including the office, hatchery and farm staff members, and the sales staff, who are too numerous to include in this brief review, also made great contributions to the long-time success of H&N. A few, including Gerald Cruea, General Manager; Bill Walkinshaw, Assistant Manager; Bill Austin, North American Sales Manager; John Blake, International Sales Manager, and Alan Bargmeyer who served early on as the Coordinator of the Redmond Genetics Program, later as H&N's Production Manager, and finally as the company's General manager, were also key players in the growth, development, and long-term success of H&N.

Many other individuals including sales staff, accountants, office personnel hatchery and farm employees also greatly contributed over the years to the success of H&N, but they are simply too many to include in this brief review. So, that's enough about the early history of H&N from a company and personnel perspective. Dietmar Flock will provide you more information on the H&N breeding program *per se*, but before he does that, I thought that I would briefly share some data that were collected and published a few years ago by Dr. Kenneth Anderson at North Carolina State University. Ken is a faculty member in the NC State Department of Poultry Science, and he heads the layer research and extension work at the NC Piedmont Research Station in Salisbury, NC. His study involved a comparison of the performance of the 1993 H&N Nick Chick with the performance of three randombred control (RBC) Leghorn populations that had been established at three different times by researchers at the Canadian Department of Agriculture. Each of the three control lines were established using the best commercial white-egg strains that were available in the year the control was started. The three

RBC lines were established using 5 commercial strains in 1950; using the H&N Nick Chick, HyLine 934A; Kimber K137; and Shaver 288 in 1959; and using the Babcock B300; H&N Nick Chick; HyLine 934; and Shaver 288 in 1972. Each strain was maintained with a random breeding mating scheme after its establishment. Hatching eggs from the three RBC lines and from a parent flock of H&N Nick Chicks were obtained and hatched at the Piedmont station during 1993. H&N was selected as the commercial strain to be used, and it was also one of the strains used in the establishment of each of the three RBC populations. The data in Tables 1 through 5 provide the best demonstration that is available in the literature as to how performance of a commercial layer changed over time due to the selection that has been practiced by a commercial egg-type breeder.

Table 1: Strain differences in initial, pre-molt, post-molt and final body weights and changes during the total production cycle (from Jones *et al.*, Poultry Sci. 80:1139-1143)

Strain	18-wk BW (g)	62-wk BW (g)	Gain (%)	64-wk BW (g)	Loss (%)	86-wk BW (g)
1950 RBC	1400	2157	54.3	1545	28.4	2349
1959 RBC	1336	1964	47.2	1355	31.1	2142
1972 RBC	1331	1927	45.1	1331	30.9	2075
1993 H&N	1429	2042	37.2	1336	31.8	2074

Table 1 shows that body weight of the 18 wk old pullet has not changed very much over the years, but that the amount of weight gained, especially during the first production cycle, has steadily decreased. Final body weight decreased dramatically between 1950 and 1972, but was maintained nearly constant between the 1972 and 1993 strains. Nevertheless, final body weight has decreased by approximately 275 grams since 1950.

Table 2: Strain differences in age at 50% production, hen-day egg production, daily egg mass, and average egg weight (from Jones *et al.*, Poultry Sci. 80:1139-1143)

Strain	Age at 50% Production (d)	Hen-day Egg Production (%)	Daily Egg Mass (g)	Egg Weight (g)
1950 RBC	182.9	56.9	34.2	56.5
1959 RBC	172.6	59.7	37.0	61.8
1972 RBC	166.3	64.2	41.2	61.0
1993 H&N	154.9	73.4	49.3	63.6

Table 2 shows that the age at 50% production has declined by 28 days from 1950 to 1993. Hen-Day egg production rate increased by 16.5% from 1950 to 1993, while egg weight increased by 7.1 gm/egg over the same time, resulting in an additional 15.1 gm of daily egg

mass being produced by the 1993 H&N Nick Chick in comparison with the 1950 control strain.

Table 3: Strain differences in egg size distribution (from Jones *et al.* Poultry Sci. 80:1139-1143).

Strain	Pee Wee (%)	Small (%)	Medium (%)	Large (%)	Extra Large (%)
1950 RBC	7.6	7.0	23.2	38.8	22.7
1959 RBC	5.6	5.3	19.0	39.6	30.8
1972 RBC	2.4	4.1	4.6	34.5	44.0
1993 H&N	0.8	2.2	9.0	27.8	59.8

Larger egg size (Table 2) also resulted in significant changes in the distribution of USDA egg size grades. The 1993 H&N produced 88.6 % of its eggs in the USDA Large and over categories, compared with 61.5% for the 1950 strain (Table 3). Despite the major increases in productivity, egg quality has not suffered. In fact the percentage of Grade B and loss eggs had decreased slightly over the years.

The increased productivity rates shown in Tables 1 and 2 have caused the modern strain to increase its feed consumption by 8-9% (from 104 to 113 g/bird/day, in 1950 vs. 1993). Even so, feed conversion has improved by approximately 34 %, *i.e.* from 0.32 to 0.43 g egg/g feed per day (Table 4) from 1950 to 1993. Due to increased consumption, feed cost per bird increased from \$8.09/bird in 1950 to \$8.75/bird in 1993, but egg income per bird increased by approximately 35 %, from \$14.81 to \$19.98 per bird (Table 4).

Table 4: Strain differences in feed consumption, feed conversion, total mortality, feed cost and egg income (from Jones *et al.*, Poultry Sci. 80:1139-1143)

Strain ²	Feed Consumption (g/bird/d)	Feed Conversion (g egg/g feed)	Total Mortality (%)	Feed Cost (\$/bird)	Egg Income (\$/bird)
1950 RBC	104	0.32	16.0	8.09	14.81
1959 RBC	104	0.34	12.0	8.15	16.02
1972 RBC	106	0.38	11.7	8.28	17.55
1993 H&N	113	0.43	17.1	8.75	19.98

In summary, Dr. Anderson's experiment verified that the balanced breeding approach applied by the H&N genetics staff resulted in concomitant simultaneous improvements in all of the Nick Chick's important production traits. It is of course gratifying to those of us who worked on the H&N breeding program to see this verification of the work that we did. H&N has, since the inception of the company, always had a very competitive product. Dr. Anderson has the current H&N "Nick Chick" in the North Carolina Layer Performance and Management Test

(NCLP&MT) at the Piedmont Research Station in Salisbury, North Carolina that was placed on June 6, 2007, and we are looking forward to seeing the Nick chick demonstrate its current genetic potential. The results of the NCLP&MT are shared with egg producers worldwide. If you are not yet getting the reports, you are welcome to have your name added to the distribution list.