

SEED MONEY TO DISCOVER JERSEY DIFFERENCES

Mountains of data are worthless until analyzed and made informative. Where information is needed, data must be obtained and analyzed. Not only human effort and time, but also dollars are necessary to accomplish scientific study. And although Jersey-specific research was defined as a necessary activity for this organization in 1947, it took another 20 years to put a funding agency into place to help pay for it.

On March 17, 1967, J. F. Cavanaugh, then Executive Secretary of The American Jersey Cattle Club (now Association), received a check for \$100.00 from L. A. Rigrish, with the stated intention to create a trust to be "operated exclusively for the purpose of promoting and sponsoring scientific research for the advancement of dairy technology and the dairy industry.

"This trust shall be called the 'AMERICAN JERSEY CATTLE CLUB RESEARCH FOUNDATION.'"

Forty years later, the Foundation has generated seed money approaching \$1 million for Jersey-specific research, while also growing to a market value on May 31, 2007 of \$1,607,946.

The story of scientific research about Jersey cattle and Jersey milk is one of needs, priorities and, of course, dollars. But it starts not on March 17, 1967, but 20 years before that when six "practical 'cow men,' geneticists and breeders" accepted an invitation to serve on the "A.J.C.C. Research Committee."

"Great Progress"

The March 25, 1948 issue of *Jersey Bulletin* was practically breathless in reporting on the committee's first meeting, March 2 and 3 in Columbus, Ohio.

"Group Will Have Worlds of Information Available for Study," trumpeted the headline. "After two days hard work by the committee, Jersey breeders can be assured that many of the questions in their minds regarding Testing, Classification and Club Programs will be answered in the coming years."

With the establishment of the Register of Merit program in 1903, and classification in 1932, production and type data had accumulated to the point where the question was being asked, "How can we use this information to improve our breeding programs?"

The Board's vision was nothing next to that of the committee, chaired by C. N. Shepardson, dean of the School of Agriculture at Texas A. & M. College, and including the luminaries, geneticist Dr. Jay Lush of Iowa State College, and business executive and 1945 Master Breeder honoree, William R. Kenan, Jr., of Randleigh Farm.

"It is our belief that the research program may well be divided into two phases," Dean Shepardson reported to the Board. "The first phase would involve a continuing analysis and re-evaluation of the several rating devices or yard sticks now in

use in connection with the various Club programs. Much of this work can best be done by the Club staff with the records and other data available in the Club office.

"A second group of projects would include those based on information yet to be assembled from the field, some of which may involve basic research with little or no apparent immediate application.

"On this type of project, we recommend that the work be assigned to interested state agricultural colleges having the staff and facilities for such work. We further recommend that grants to cover graduate research assistantships and necessary maintenance funds be appropriated to such institutions as these co-operative projects are approved."

And with that, the work began. A Research Director, John N. Beardsley, was hired and outlined "a very full schedule of projects." They were to first, develop age and milking frequency conversion factors for the analysis of production records, then to study the relationship between "classification of individual parts and overall classification, to determine the observed and genetic relationships between the individual parts and production."

At Ohio State University, work began to characterize cellular antigens in blood for "the routine testing in identification." It cost the Club \$1,500. At Iowa State,

under Dr. Lush's supervision, J. E. Legates began analyzing records from "the cow and her relatives" to develop a "selection index for butterfat production," and W. R. Harvey delved into the bank of butterfat and classification records, to "determine the actual correlation and to apportion it to true genetic correlation and to environmental correlation." The two studies were funded for \$650 and \$550, respectively. Other grants ranged between these two amounts, the differ-



"A distinguished and capable group of men" appointed by President Herman Heep to the first Research Committee of The American Jersey Cattle Association joined the Board of Directors and staff at its regular meeting on March 2, 1948. Pictured, from left to right, are Charles Bohl, staff; Frank B. Astroth, director; Dr. Fordyce Ely, Ohio State University; directors W. W. Trout, David E. Moulton and Judge J. G. Adams; AJCC Executive Secretary Floyd Johnston; William R. Kenan, Jr., Randleigh Farm, committee member; Heep; Dale Dean, director; staff members Darrell C. Weakley and Edward T. Oleskie; J. F. Cavanaugh, Assistant Secretary; H. G. Myers, director; Prof. F. W. Atkeson, Kansas State College; R. K. Brown, *Jersey Bulletin*; staff Dexter Putnam; Prof. Charles N. Shepardson, Texas A. & M. School and Research Committee chair; Laurence Gardiner, director; Dr. J. L. Lush, Iowa State College; directors Arthur B. Purvine and J. S. Campbell, Jr.; Lynn Copeland, Research Committee member; and staff William Meachem.

ence in cost being research expertise and priority to the association.

The matter of money was not lost upon the Board of Directors. The minutes of the December 7, 1948 meeting contain a report from Judge J. G. Adams on a "Research Foundation," with seven trustees named, three yet to be determined, and the outline for soliciting donations. It never came to fruition.

"Just Do It"

John Beardsley left the staff in June of 1952, and thus began a period when research was done sporadically by Jersey staff members, on occasion at universities, and/or in cooperation with the other dairy breed associations and USDA's dairy genetics staff. It was paid for from the annual operating budget, as the need arose.

The lack of a big-picture strategy for a Jersey research program, because of variable financial resources, was a point of discussion among the leadership. Cavanaugh recalls that it was Paul Harber, a director from Oklahoma, who told him that "it"—an endowment for research support—just needed to be done. With the first \$100 in hand and trust agreement executed, it took just a few months before the Internal Revenue Service granted the Foundation exemption from Federal income tax as a charitable organization described in Section 501(c)(3) of the Internal Revenue Code. This was announced in a full-page article in the September 5, 1967 issue of *Jersey Journal*, with an invitation for contributions from "all Jersey owners and others interested in dairy research." By



INITIAL GOALS OF BOVINE GENOME PROJECT "MET AND SUBSTANTIALLY EXCEEDED"

In March of 2005, a Foundation seed grant was made to support genetic marker research at the Bovine Functional Genomic Laboratory by Curtis P. Van Tassel (pictured) and Tad S. Sonstegard, both research geneticists with the USDA Agricultural Research Service. This is their progress report.

The bovine genome sequencing project was initiated in 2004. As part of that effort, a single nucleotide polymorphism (SNP) project was proposed to identify and validate 20,000 of these genetic markers. Breed associations around the world were invited to participate through funding the genotyping and facilitating DNA collection. The American Jersey Cattle Association was one that committed to fund and endorse this effort. Several major artificial insemination companies also agreed to provide DNA via semen to support this research. In total, organizations around the world representing nearly 20 breeds committed support to this project. While the project has taken longer to complete than originally anticipated, the project goals have been met and substantially exceeded.

The data collection phase was recently completed, and comprehensive analyses have been initiated by the International Bovine Haplotype Map Consortium. The final data set includes genotypic information on nearly 500 animals representing 19 breeds. A total of over 35,000 SNP were characterized, and about 25,000 markers randomly distributed across the genome were selected for validation. In addition, 4,500 markers were identified through additional DNA sequencing of regions on chromosomes 6, 14, and 25. These targeted regions were chosen in an effort to characterize the effects of selection for traits of economic importance on the genome. Finally, 7,000 markers were identified through the sequencing of Brahman DNA to help understand genetic diversity among cattle.

Preliminary data indicated that the information content of these genetic markers, measured as minor allele frequency, will be useful for marker-phenotype association studies for the breeds evaluated.

As we look forward, these data will be invaluable on a number of fronts. First, they will provide the first look at the structure of the bovine genome. Understanding the impact of selection and population dynamics will be essential for moving forward in genetic improvement programs. These data will also be useful for developing and refining sets of genetic markers that are useful for parentage verification and product and animal traceability. Finally, these markers will be considered in the development efforts to expand genotyping tools to a new level. As an example of that role, an independent consortium has recently completed the design of a 58,000 SNP assay platform. Data from this new assay will provide an even deeper understanding of the structure, function and evolutionary history of the cattle genome. We expect these assays to have a profound impact through the enhanced prediction of genetic merit.

The world of genetic improvement is poised to take a dramatic step forward, and it was through participation of organizations like the American Jersey Cattle Association that this all became possible.

the end of 1970, just \$1,217 had been received in cash. The Foundation's assets were instead built on the contributions by director Edwin C. Gamble of Kentucky of 65 shares of Proctor & Gamble stock, and 10 shares of E. I. DuPont in 1968, 1969 and 1970.

The first project to receive funding was unexceptional for its day, but important to Jerseys, to study the requirements for certain minerals to prevent milk fever. The next request was anything but ordinary. The grant of \$1,000 to Dr. Robert C. Lamb at Utah State University for a study of "suspected Limber Leg calves" marked the beginning of a 13-year investment in determining the nature and the inheritance of that condition, to be followed in short order by the work on Rectovaginal Constriction by Kansas State University researcher Dr. Horst Leipold.

The Events of 1985

From 1968 through 1984, the AJCC Research Foundation had paid \$79,225 towards Jersey research, and had assets of around \$110,000.

The announcement by Jim Cavanaugh that he would retire in June of 1985 gave an unexpected boost to the Foundation's coffers. On March 29, AJCC President Clint L. Collins, Jr. and National All-Jersey Inc. President Richard Clauss announced the creation of the J. F. Cavanaugh Research Fund, "to thank Jim for his untiring efforts." The goal was to raise \$50,000 for the Foundation, "hopefully

\$100,000.” By the end of 1985, nearly \$58,000 had been pledged. Eventually, the final accounting would put the Cavanaugh Fund into the elite Founders category along with The Billings Farm Fund donation of \$100,000 by Mr. and Mrs. Laurance S. Rockefeller.

Research priorities were at the same time shifting, from genetic abnormalities to other needs. What, exactly, those might be was a matter of opinion. What was well understood was that almost all university research being done was with Holsteins, and not helpful to Jerseys.

Urged by a letter from Dr. John C. Wilk, who was guiding the research program in the Randleigh Foundation Jersey herd at North Carolina State University, the Jersey associations convened the Jersey Research Planning Panel on November 11 in Louisville, Ky. For over four hours, “well-respected research leaders” shared their thoughts with Presidents Collins and Clauss, Research Committee members David Spahr and Ray Schooley, and four men from the office staff: Maurice Core, Calvin Covington, Eugene P. Barton, and Jim Cavanaugh. The charge was to provide input on two questions:

- What areas should have priority in the expenditure of AJCC research funds for the next five to 10 years?
- What specific actions can the Jersey organizations, their members, and others interested in Jerseys take to achieve more university research with Jerseys?

Dr. John White of Virginia Tech chaired the discussion, which included H. Duane Norman of the Animal Improvement Programs Laboratory, USDA; George Jung, from Dairymen, Inc.; Rodger Hoyt, Select Sires, Inc.; Dr. Leonard Bull, University of Vermont; Dr. Jack Britt and Dr. Wilk, both at North Carolina State; and David Dickson, University of Wisconsin.

Their discussion eventually helped shape the Foundation’s funding priorities as they are stated today:

- Nutrition of high-producing Jerseys (particularly practical feeding methods to maximize production of valuable milk components);
- Factors affecting yield of products

manufactured from Jersey milk;

- Factors affecting net income, longevity, and lifetime profit;
- Breeding plans to optimize genetic gain while maintaining genetic diversity;
- Biological and economic efficiencies of Jerseys; and
- Factors affecting management of Jersey calves.

The other outcome from that meeting was investing more effort on endowment fundraising activities. After all, “There’s only one way to get money, and that’s to knock on the door and talk to people.”

The Board of Directors, with David Spahr at the helm as President, declared a five-year campaign to increase the endowment to \$1 million. A national fundraising committee was appointed, headed by immediate past-President Collins, and the services of Jim Cavanaugh were retained to go door-to-door and knock. That campaign was declared closed in 1998, with Foundation net assets reaching \$999,294 at the end of that year.

What the stock market downturn of 2001-02—which pushed the value of the Foundation’s assets down to just over \$750,000 and reducing project funding in 2002 to just \$24,920—did was to convince

Research might not be as exciting as increasing the price of milk but it is something we have to keep working at, because nobody is going to do it for us. Universities will help us. But if we don’t look after Jerseys, nobody else is going to.

*David W. Spahr
Past-President (1986-1989) and
Foundation Fundraising Chair (2001-present)*

the Board of Directors that capital fundraising must be an ongoing activity. David Spahr was asked in late 2001 to chair fundraising efforts. The Foundation benefited from auctions held during the 2002, 2003 and 2004 annual meetings, then the historic all-donation National Heifer Sale in 2005. A total of \$506,574 in contributions were received across these four years, so that with 2006 donations, the Foundation’s account stood at \$1,496,000 at year end 2006.

Making The Decisions

Over the past 20 years, the Foundation has allocated funds in excess of \$750,000 for just more than 150 projects.

It is the policy of the AJCC Research Foundation to fund projects only from investment income and to refrain from payment of overhead costs. The decisions on which projects are to be funded, and for how much, is made by the Board of Directors of the American Jersey Cattle Association, upon the advice of the Research Advisory Committee.

The original members in 1967 were Stanley N. Chittenden, then AJCC President, and directors Paul Harber, Rowland F. Hill III of Virginia, Amzi Rankin, Jr., of Alabama, and Fred Weaver of Nevada. Later that year, Harber and Rankin were replaced by Dr. J. J. Malnati of Massachusetts, and Edwin C. Gamble.

For the next 13 years, various Directors and Presidents rotated on and off the committee, including John Bishop VI, New Jersey; Donald D. Davis, Texas; Max Gordon, Indiana; Curtis J. Hobson, Tennessee; LaMar King, Ohio; G. Joe Lyon, Iowa; C. Scott Mayfield, Tennessee; Joey Pendleton, Kentucky; Harold W. Roller, Virginia; David W. Spahr, Ohio; John Weir, Jr., Kansas; and Wyatt A. Williams, Virginia. Also, Claud Stanton, manager of the Hetherington herd owned by Mrs. T. H. Carruthers III of Cincinnati, was appointed to the committee in 1981 and served until 1984. He was succeeded by a director, Ray Schooley.

Duane Norman was the first professional researcher appointed to the committee, in 1985. Since then, the academicians to serve have been George E. Shook of the University of Wisconsin; John C. Wilk; Ronald E. Pearson, Virginia Tech; Leonard Bull, now at North Carolina State University; Eric D. Bastian, Utah State University; Robert Collier, University of Arizona; Barbara Glenn of the Biotechnology Industry Organization; and Lloyd E. Metzger, South Dakota State University.

Drs. Norman, Wilk, Pearson, Bull, Collier, Glenn and Metzger all currently serve on the Research Committee, as do Paul Christ, retired Vice President of Dairy Planning and Analysis with Land O’Lakes, Inc., and Jersey breeders Ray Schooley and Bearl “Smokey” Seals of Oregon.

They will resume their work after December 1, when the next round of proposals are due.