By 1895 the activities of the United States Department of Agriculture relating to the advancement of the dairy industry had reached a stage where a separate Division of Dairying was established. The objective of the Division was to investigate, collect, and disseminate information and to demonstrate improved practices to benefit the industry. The husbandry aspects of this work in the Dairy Division and its subsequent organizational units within the Department of Agriculture have pursued a course of research and service which has greatly benefited the dairy farming industry. One of the important activities from the very beginning has been to develop and promote dairy record-keeping and to utilize the information obtained from such a program to improve individual cow, herd, and dairy farm performance. At no time in the long history of this organization has the interest in this important work wavered. Rather, the organization has constantly worked toward enlarging, improving, and making record-of-performance work more useful in developing and improving the dairy cattle industry.

THE PAST

Before the end of the 19th century, Division dairy specialists were engaged in working with individual farmers in getting records of milk and fat production of individual cows in their herds. They early found that this information was essential in obtaining source material for demonstrational work to improve feeding and management practices and to guide farmers in culling and breed improvement.

DAIRY FARMING SECTION

In 1905 a Dairy Farming Section was established to advance this and related work. That year several Division dairy specialists were assigned to state colleges in the southern states to pursue dairy improvement work. Incidentally, this was the real beginning of extension work in dairying. In later years, this type of work was extended to other parts of the country. This federal dairy extension program was undertaken by the Division with the understanding that the states would take over the activity at an early date. Following the passage of the Federal Extension Act in 1914 and the development of State Extension Services, the Division discontinued the Dairy Farming Section in 1920. From then until about 1950, the Division (later the Bureau) carried on its staff regional dairy extension specialists whose duties were largely associated with record-of-performance work. Shortly thereafter, the Federal Extension Service appointed a Dairy Extension Specialist to carry on educational aspects of the DHIA program along with other dairy extension activities. Thus, cow testing, if on an individual farmer’s basis, was an active part of the federal dairy research and service activity from the beginning, and even before the advent of the first organized cow-testing association.

ORGANIZATION OF COW-TESTING ASSOCIATIONS

The first cooperative cow-testing association was established in Michigan by Helmer Rabild in 1905. Division personnel at that time must have watched this development with great interest, for in 1908 Mr. Rabild was invited to join its staff for the purpose of leading the development and extension of organized cow-testing work on a nationwide basis in the United States. Mr. Rabild and his associates and successors provided the essential leadership and built a firm foundation for the cooperative cow-testing association program that emerged during the following years. This was truly a cooperative undertaking between the Department and the states from the beginning. As these men provided leadership and encouragement in working with their cooperators, procedures were developed that have stood the test of time. Respective responsibilities were clearly established and understood and they proved workable, although they were not documented in a formal memorandum of understanding between the Department and the states until 1952.

Rabild and, later, J. D. McDowell and then J. F. Kendrick and their associates, through almost 60 years’ work, have provided encouragement, leadership, counsel, advice, and hard work in developing and guiding the program of the National Cooperative Dairy Herd Improvement Association as it is known today. One important feature in the coordinated program, especially in the formative stages, was the Department’s practice of making available

1 Symposium presented before Extension Section, 68th Annual Meeting of the American Dairy Science Association, Purdue University, Lafayette, Indiana, June, 1963.
for use by the states in the individual associations, uniform forms on which to record the data involved in the recording program.

ROLE OF AMERICAN DAIRY SCIENCE ASSOCIATION

The American Dairy Science Association (A.D.S.A.) took an active interest in the program as early as 1924. Committees of the Association have effectively served as a program and policy recommending agency to the Department and the states these many years. These committees have contributed a great deal through the years in formulating rules, procedures, etc., which have been adopted and have served in promoting uniformity and effectiveness in the program.

As the cooperative relationships became firm, the program grew and became more important. Responsibilities grew and this required more resources. By 1929, and after the Division became a Bureau, an organizational unit known as the Dairy Herd Improvement Section was established and, of course, is in existence today.

ACTIVITIES OF THE DAIRY HERD IMPROVEMENT SECTION

This Section assumed the responsibilities for an ever-increasing volume of forms, for new kinds of forms, and for more frequent reporting that was required, and numerous other services as the program grew. The Bureau started issuing a Monthly DHIA Letter carrying information to participating farmers, extension personnel, and educators about the results and progress of the cooperative program. By this time, the impact of the Bureau's research on breeding, particularly proved sire breeding, began to influence the DHIA program. We became aware that the records produced in the herds participating in the program were not only useful to the farmer himself as a guide to feeding, management, and culling, but they also could be useful in the search for and selection of superior transmitting sires for use in breed improvement. This was especially true since the program in the different states was operated under the same uniform rules and procedures. This permitted wide-scale summarization and evaluation of sires. Such summarizations began to appear in the monthly reports.

Much research and study have gone into making this program the success it has become. Department specialists, as well as state research and Extension specialists, diligently improved methods and forms for more effectively doing the work. The increasing volume of data received as the program grew provided material on which to develop age-correction factors and other techniques that improved the effectiveness of the program. Improved forms and herd books, reporting cards, supervisor training manuals, cow identification procedures, etc., were developed to yield greater benefits.

NATIONAL GERMLASM SURVEY

In the middle 1930's, as the benefits of proved sire breeding became more apparent, work was started in developing proof evaluation of dairy sires. About this time, the Department of Agriculture organized and in cooperation with state extension specialists conducted a national germ plasm survey for the purpose of invent-orying the national dairy breeding stock and to measure the progress made up to that time. This inventory was made possible only because the data for such a survey were available in the herd books of dairy farmers who had been participating in the record-of-performance program in their locality. This information was brought together, analyzed, and published in the 1936 Yearbook of Agriculture.

NATIONAL SIRE EVALUATION PROGRAM

There is little doubt that this survey focused a great deal of attention on the value of proved sire breeding and on the possibilities of utilizing the National Cooperative Dairy Herd Improvement Program for location and identification of superior transmitting sires. Accordingly, the Department proposed the initiation of a sire-proving program, which was adopted and made a part of the over-all program in 1935. The Department took on the responsibility of making the sire provings and issuing reports to herd owners, extension workers, and others for their use in evaluation of sires. The program was voluntary and based on the plan of having individual cow records forwarded by the local supervisor through the State Extension Dairyman to the Washington office. We all are aware of how this sire evaluation program has developed and grown and how important it has been in the improvement of dairy cattle.

COORDINATION OF NATIONAL ASSOCIATION OF ARTIFICIAL BREEDERS, PUREBRED DAIRY CATTLE ASSOCIATION, AND BREED ASSOCIATIONS

Early in the history of the Dairy Herd Improvement Program the dairy breed associations showed interest in it. Even though each breed association conducted its own recording program, they cooperated and participated in the development of the National Cooperative Program. In recent years, the Department and the associations have actively cooperated in exchanging records to their mutual benefit in the evaluation of breeding animals. The PDCA, likewise, has cooperated wholeheartedly, particularly through the committees of the A.D.S.A., in developing and coordinating their respective recording activities.

Since 1937, when artificial insemination began in an organized way, this group, through its National NAAB Organization, has assisted greatly the Department and the states in the conduct of this program. The National Coop-
ervative DHIA and Sire Evaluation Program, in large part, furnishes the source information on which sires are selected for artificial insemination. The Department always has welcomed and appreciated the cooperation and help of these associations.

PROGRAM EVALUATION

The present-day standard Dairy Herd Improvement Association plan basically is very little different from the cow-testing program of 50 years ago. It is a better program, because of the many improvements that have been made, but it still provides the same basic information as the original. It and the new Dairy Herd Improvement Registry (DHIR) are the only plans of recording that provide the data for sire evaluations.

Division specialists have always taken the position that the DHIA program should be flexible and made to serve as many dairy farmers as possible. While the Standard Plan provides for both monthly and bimonthly recording, the bimonthly plan never has been used extensively. Division specialists believe that it could be used to a much greater extent.

SUPPLEMENTARY RECORDING PLANS

In the 1930's, the need arose for a less strict form of recording. The Owner-Sampler Plan (O-S) came into use. After its usefulness was demonstrated, it was adopted as a recognized plan under the National Cooperative Program. In 1956, the need for still another method of recording private milk records became apparent. The Weigh-A-Day-A-Month (WADAM) plan was adopted from a similar method of milk recording in use in Illinois, and made a part of the National Cooperative Program. More recently, in 1959, as mechanical processing of records in the regions came into use, the DHIR Plan, an adaptation of the Standard Plan, was developed and made a part of the National Cooperative Program. It also has been adopted by the breed associations. As new needs for additional types of recording arise, they should be evaluated and if found useful to the total objective of greater service to more dairy farmers and to dairy farming improvement, should be adopted into the over-all plan.

Another change is the development of centralized testing laboratories. This has been a sound development in the improvement of the over-all program.

STATE DAIRY HERD IMPROVEMENT ASSOCIATION COOPERATIVES

Still another forward step in the development of the program has been the formation of state dairy herd cooperatives. Division workers have long fostered this development, because it permits the association organizations themselves to take on more complete manage-

ment of the business affairs of association work and frees the Extension Dairyman for educational work. We look forward to still further strengthening of this aspect of the program.

MECHANIZATION OF RECORD-KEEPING

I am sure you all appreciate that as this program has grown, particularly the voluntary participation in the sire evaluation activity, an increasingly heavy workload has been put on the Division's DHI Section. Currently, over 1.2 million records are received yearly for processing. To cope with this increased workload, the Section early put the program on card-machine equipment. This proved adequate for a while, but with the continual increase in numbers of records included in the program, without a corresponding increase in resources, we soon were unable to keep the work current. As high-speed, high-capacity machines became available, it was decided to adapt the program to this equipment. This has been done over the past three years. This changeover took some effort but it has been accomplished. Great credit is due Dr. J. F. Kendrick and his fine crew of workers for the outstanding job they have done. During this period it was just not possible to keep sire evaluations current as each of you well know. We appreciate your fine cooperation and forbearance with us on this.

STATES ADAPTING LOCAL RECORD PROCESSING TO MACHINES

Just as high-speed mechanical data processing equipment was found useful to the Division, so was it found useful in the states to improve the handling of the association record data at the local level. As a result, we have seen the development of state and regional DHIA data processing centers. This has brought great benefit to the whole program and has provided the stimulus for the development of the DHIR plan of recording in which the breed associations participate. The development of state and regional data processing has grown very rapidly, until at the present time some 70% of the Standard DHIA records in the total national program are machine-processed. A large per cent of the O-S records and the WADAM records also are machine-processed.

The rapid and uniform development of this activity has been encouraged, supported, and guided by Division personnel.

MECHANICAL CHANGE IN EVALUATION PROCEDURES

As this mechanical modernization was taking place, research had also developed information that indicated sire evaluations by use of daughter averages compared to contemporary stablemate averages was an improvement over daughter-dam comparisons in evaluating sires. When
such a change seemed indicated, this new procedure was introduced into the program.

THE PRESENT

I appreciate your forbearance in this long discourse of the past. Even so, it is a very sketchy review of many of the things that have taken place in which Division people have been deeply involved. The workers who have participated, both past and present, both federal and state, have written an enviable record.

And where do we stand today? On January 1, 1962, there were 41,937 herds with 2,006,534 cows in 1,441 associations in the Standard Plan. Another 726,478 cows are enrolled in the Owner-Sampler Plan, and 65,813 in the Weigh-A-Day-A-Month Plan. This amounts to about 16% of all cows two years old and over kept for milk. This program has been a major force in advancing the average production of milk in the nation’s dairy herd by more than 100% from 1905 to 1962.

A PERIOD OF TRANSITION

I am sure that many of you can appreciate the trials and tribulations that have confronted the Division in recent years in carrying out its part of the responsibilities of the National Cooperative Dairy Herd Improvement and Sire Evaluation Programs. Not the least of these were adequate resources to get the job done. This was coupled with the fact that if we ever were to keep the program on a current enough basis to adequately serve the industry we had to get the data involved on high-capacity, high-speed data processing equipment.

As soon as Dr. Kendrick got the green light on this, and with some grant support, he went to work and we all know that in a very reasonable time the job was accomplished in his usual efficient fashion. During this period the usual issuance of sire provings and related reports was delayed. This was inevitable. However, although the data were programmed on such equipment, the costs of issuing reports as frequently as needed exceeded resources for the purpose.

PROMOTION OF DR. J. F. KENDRICK

At this point Dr. Kendrick was called to a higher, more responsible position in the Department, to develop a data processing program in the Statistical Reporting Service. Thus, he is lost to the DHIA program and has our best wishes for a rewarding and satisfying experience in his new position.

It is important that he left the DHIA program in a strong, ready-to-go position, including the programming of the new method of reporting sire evaluations.

APPOINTMENT OF DR. E. L. CORLEY, JR.

The selection of a replacement for Dr. Kendrick was of great importance to us. We needed a man who was not only thoroughly versed in the machine aspects of the program but also one who had had considerable research and operational experience with DHIA data and one who was thoroughly acquainted with the program in the States. I am confident we have found this man in Dr. E. L. Corley, who was appointed to the leadership of this work in April, 1963.

However, before he was invited to accept the position, we asked him to come to Beltsville and make a study of the entire program within the Division and to give us the benefits of his advice on new procedures, etc., relating to the program.

On the basis of his study and, of course, our previous experience, it was clear that even with the program converted to high-speed data processing it would require greater resources than presently available to do the job of making more than one, or at the outside two, reportings of sire evaluations per year and at the same time to initiate and conduct research we feel is needed to continually improve the program and properly service the industry.

On a basis that if the Department’s part in this program was important—and we were convinced that it was—it must be done effectively and on a current basis or not at all, ways were worked out to increase the resources for the work by about one-third.

PRESENT EVALUATION PROCEDURES

Thus, as you have been advised earlier, the Division will make the sire evaluations four times yearly. These analyses will include:

1. Evaluations in July and January, which will include:
   - (a) New sires having five or more progeny
   - (b) Sires having 50% or more increase in number of progeny during the past six months
   - (c) All active AI sires
   - (d) Special requests.

2. Evaluations in October and April will include:
   - (a) New sires having five or more progeny
   - (b) All active AI sires
   - (c) Special requests.

This procedure will provide quarterly evaluations for young or new sires, all active AI sires, and any special requests. On a semiannual basis, previous evaluations will be updated, provided there is a 50% or greater increase in number of progeny. It should result in an evaluation program that is as current and complete as is possible at this time. It is hoped that this program will obviate the necessity of the individual states or AI associations to burden themselves with sire evaluation services.
In order that genetically outstanding cows can be easily identified, the Division also will produce a list including selected progeny of superior A.I. sires. Such a reference will be especially useful for those interested in locating females for selective matings.

**Dairy Herd Improvement Research**

With more than 1.2 million records being reported annually, the Division has a unique opportunity to enlarge its research activity in the area of records analysis. This research will be directed to (a) continued evaluation of and improvement in methods of sire evaluation; (b) dairy cattle population genetics; (c) variations in the performance of individual cows and sires; (d) evaluation of rules and procedures used in DHIA; and (e) evaluation of on-the-farm practices of supervisors and herd owners relating to improving the usefulness of records. Much of this research will be done in cooperation with the states.

**The Future**

This review of the past and present, insofar as the Division has been involved in the DHIA and Sire Evaluation programs, I hope has demonstrated our strong interest in the importance of these activities and our intention to continue to play a strong role in the future. I believe that presently we are in a stronger position than we ever have been in moving this cooperative program forward to greater service to the dairy industry. The present ability to currently issue up-to-date sire evaluations will advance and put the problem of sire selection on a firmer, more effective basis. The increased emphasis on DHIA research will continually develop information that will make the program and the procedures used more effective. Now that dairy record-keeping is becoming largely automated, we must intensify our effort in making the end product more useful for the dairy industry, not only at the state and national levels but on the farms themselves.

**Progress Means Changes**

We have never believed that this or any other program, for that matter, cannot be improved upon. We are interested in seeing this cooperative program not only responsive to the needs of the industry but also effective in accomplishing the objectives for which it is conducted. We believe that improvements can be made in the program that will accomplish both these things.

To study such improvements, we therefore propose that an Ad Hoc Committee be established made up of representatives of AH, ABS; Federal Extension Service; The Extension Organization and Policy Committee; and A.D.S.A. to review the entire DHIA and Sire Evaluation programs. One of the things I would propose that this committee consider is the establishment of a regional and a national DHIA Advisory Committee structure within the State Extension Services (Committee on Organization and Policy) to work with the Federal agencies regarding policies and advancement of these programs.

**A Proposed New Committee Structure**

The National Cooperative Dairy Herd Improvement and Sire Evaluation programs are cooperative undertakings by the Agricultural Research Service and the Federal Extension Service, USDA, and the Cooperative Extension Services of the states. The objectives and respective responsibilities for the conduct of the program are provided for in a Memorandum of Understanding. These services have long looked to the Records Committee of A.D.S.A. for advice and recommendations regarding the operation of the program. The Division and the Federal Extension Service have always enjoyed representation on this A.D.S.A. committee in an ex-officio capacity. To my knowledge the individual states have not enjoyed this relationship, although the membership of the committee has been made up largely of State Extension Dairymen, but as A.D.S.A. members only.

In addition, the Division has felt it advisable to call on a working group of experts to advise it on various problems relating to its activities in this cooperative program. This group has rendered valuable service to the Division in this respect when it has been called on to do so. I am concerned about the representation of the offices of the State Extension Directors in the policies and procedures relating to the cooperative DHIA and Sire Proving programs. Not only am I concerned about their representation but also their interest in this program that is so vital to the dairy industry. A large part of the funds going into the dairy extension program in each state must be devoted to work closely related to the DHIA program in the state. For this reason I feel the State Extension Directors ought to have more of a voice in policies and procedures involved in the program.

The Directors of Extension have a Committee on Extension Organization and Policy. There is a regional committee of this National Committee in each of the four regions which represents each of the states of a particular region. These policy committees could establish in each region a regional DHIA committee made up of an administrative advisor who is an Extension Director and five dairy extension specialists from the states in the region. These committees could meet once a year and deal with matters relating to the DHIA program as it relates to their respective regions.

A national committee could be made up of an administrative advisor, a chairman appointed at large, and the chairman of each of the four regional committees. This committee could meet once a year following the meetings of the re-
gional committees. It would make studies and recommendations relating to the National DHIA and Sire Evaluation Programs. Among other things, the items considered would include those submitted by the regional committees, the A.D.S.A. Records Committee, the Federal Extension Service, or the Division. Representatives of the Division and the Federal Extension Dairy Specialist would be ex-officio members of this committee. Such an organization, which is not unlike the committee structure for regional and national research projects, would provide the needed state representation in this program which, in my opinion, it does not now have. Such an organization would also strengthen the partnership and working relationships of the Federal Extension Service and the Division in DHIA activities.

I hasten to say that I would not believe that such a committee structure would replace the Records Committee of A.D.S.A. This committee, with its representation as constituted, could have a very definite function to perform such as it does now. Results of its endeavors, however, would have a direct avenue to flow, not only to the Division and the Federal Extension Service but also to the state DHIA committees, which truly would be representative of the State Extension Directors who have the responsibility for directing the extension program in their states.

This proposal is being made because I believe it will secure and strengthen the National Cooperative DHIA and Sire Evaluation Programs and in the future make for a greater success of our efforts. Your interest in this approach to strengthening our program is invited before the proposal is made to the State Extension Director's Policy Committee.

Your ideas regarding the establishment of the proposed Ad Hoc Committee to study this and other possible improvements are invited.

SUMMARY

In this discussion I have tried to review for you the past, present, and future activity and interest of the Division in the National Cooperative Dairy Herd Improvement Program as carried forward by our organizational unit known as the Dairy Herd Improvement Section. We sincerely believe that this is a most important research and service program of benefit to the dairy industry. Our leadership is committed to carry forward as efficiently as possible the Department's part of this program in a truly cooperative venture with the State Extension Services, farmer participants, and other interested groups. We look forward to an active growth in this program and an increasing impact it will have on the economical improvements in milk production.

INTERESTS AND RESPONSIBILITIES OF THE COLLEGES OF AGRICULTURE

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In approaching a controversial topic of this kind, it is well to remind oneself that each state faces certain problems and their own peculiar set of circumstances in relation to the Dairy Herd Improvement Association (DHIA) program. Therefore, the broad brush treatment will give some general direction to DHIA programs in the future, but such treatment will neither suit every state nor solve their specific problems.

In developing the material for this paper I have drawn on the experiences and judgment of a number of people who represent a wide spectrum of interests in the dairy field. Breed secretaries, magazine editors, extension dairymen, research workers and administrators are represented in this sample. I did not make a survey. But the conclusions I have drawn not only represent my thinking but the thinking of people in whom I have great confidence and respect.

In this discussion I will address myself to four principal questions:

1. What is the relative importance of DHIA data for research, particularly in genetics, feeding, and herd management?
2. How effective is the program as an extension teaching method?
3. Is it mainly a record service which should be turned over to DHIA organizations once it is firmly established?
4. Should the colleges and extension workers get completely out of program administration and maintain only an advisory attitude?

Now for Question Number One: There are many areas of genetic research, as well as some areas of feeding and management research, which must depend very heavily on data collected from a large number of cattle. Since the cost of maintaining an experimental herd specifically to obtain this type of information would be completely out of reason, we must depend on some type of mass testing program or on some type of survey data. There is no