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AGRICULTURAL EXPERIMENT STATION

KANSAS STATE AGRICULTURAL COLLEGE

DEPARTMENT OF POULTRY HUSBANDRY

Pedigreeing Poultry

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Breeding records of the larger purebred animals are permanently kept and given official standing by the officers of an association or society of breeders. By means of the herdbook, or flockbook, the exact ancestry of any animal of any breed may be traced to the foundation animals of its breed.

There are several reasons why this has not been feasible for poultry, but these are not important for our present purpose. The fact is, it has not been done. Yet the poultryman who strives for improvement through breeding is in even greater need of pedigree records than is the breeder of the larger animals. The generations of poultry follow each other in more rapid succession than is the case with most farm animals, and the poultry breeder frequently deals with vastly greater numbers. A man's memory may serve him fairly efficiently in the case of a relatively small herd of cattle, but it is an almost useless pedigree record for a large flock of chickens. This is doubly true with chicks hatched by foster mothers or in incubators, which never associate with their dams. The problem of their parentage cannot be solved unless complete and accurate records are kept. In addition there is the very practical consideration that producers and breeders are more and more demanding stock that is pedigreeed with regard to production.

A single great performance at the nest, or a show bird of unusual excellence, means little in the line of breeding progress unless it is known by which mating it was produced. To know the pen from which it came is not enough. To know which particular pair of birds produced it is what is needed. And later it must be known which chicks are produced by the exceptional birds. For, unfortunately, the unusual bird from the standpoint of production or breed type, does not always make the unusual breeder, and it

is the unusual breeder that is sought. *The breeding capacity of a given bird can be accurately judged only by the character of its progeny.*

The information necessary for the proper pedigreeing of chicks is as follows: (1) *A record of matings.* Which females are mated with a certain male in a given season should be a matter of record. (2) *A record of parentage.* It must be known, not only which chicks are produced by a given pen, but which ones are the offspring of each individual hen in the pen. (3) *A ready means of tracing ancestries.* (4) *The egg record of every female breeder used in each successive season, where high production is sought.* (5) *A description of every breeder used in each successive season as long as pedigreeing is carried on, where the objective is high-class show stock.*

The pedigree record system described in this circular furnishes this information. It has been developed out of the experience in pedigreeing poultry at this station during the last 5 years. Mr. N. L. Harris, Superintendent of the College Poultry Farm, and Mr. James Machir, Recorder for the Department of Poultry Husbandry, have made several suggestions that have added to its simplicity and convenience. It is not too cumbersome for small flocks, yet may be expanded indefinitely as the size of the flock increases.

MARKING BREEDERS AND OFFSPRING

The numbered wingbands and legbands, the trapnest, and the pedigree-tray are the first essentials in keeping poultry breeding records. They furnish the means of identifying the respective breeders, the eggs laid by each female in a mating, and the chicks hatched from each hen's eggs. (To these must be added covered yards, in the case of the lighter, flying breeds.)

A numbered wingband, as shown in the upper part of Fig. 1, is used for marking the chicks upon hatching. An ordinary double clinch pigeon band will be found satisfactory for this

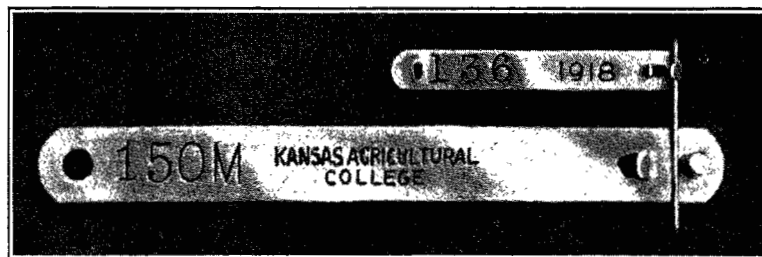


FIG. 1.—Wingband and legband

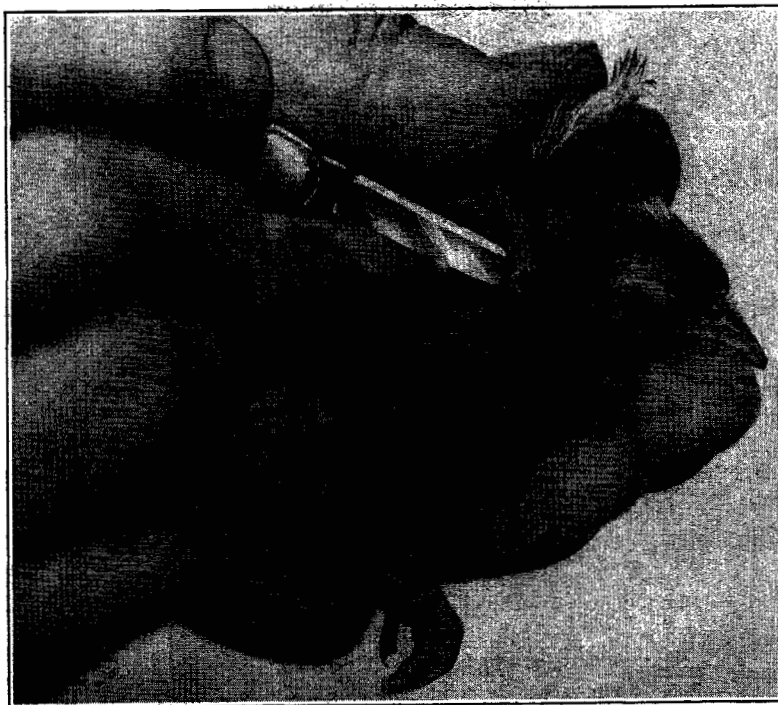


FIG. 2.—Making the incision for a wingband

purpose. Many breeders prefer to use bands on the legs of the newly hatched chicks at first, placing them in the wings after the chicks are 5 or 6 weeks old, or even waiting until they can be replaced by adult legbands. The experience at this station is that it is more feasible to use the wingbands at hatching. If bands are first placed on the legs they must be loosened from time to time as the chicks grow or they soon cause lameness and deformity. If they are transferred to the wings as soon as they become tight the first time, the transfer must be made in the busiest season for the poultry breeder. The flock that does not have at least one bunch of chicks go lame because the loosening or transferring of the bands is overlooked at the proper time, or too long delayed, is very rare.

If the bands are carefully inserted they may be placed on the wing at hatching time with little or no more loss of bands than when they are put first on the leg. In attaching a wingband, the web of the wing should be pierced as far back as possible with the small blade of a pocket knife, as shown in Fig. 2. If the incision

is made well back in the web there will be very little difficulty with the tearing out of bands. As an extra precaution, both wings of chicks from an unusually valuable mating may be banded.

These bands remain in place throughout life. It is very convenient to have them numbered serially from 1 up to the total number of chicks hatched in a given season and also to have each one bear the year date of hatching as shown in Figs. 1 and 3.

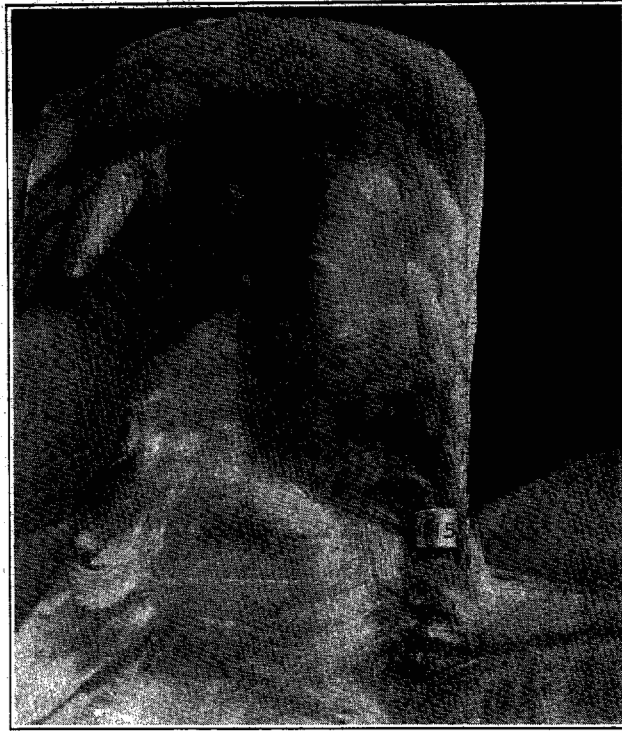


FIG. 3—Wingband as it appears on mature bird

Where this is done any bird may be picked up from the flock at any time and its age ascertained at once by referring to the wingband. The serial numbers each successive season begin with 1.

Pedigree breeding, whether for the “fancy” or for high production, involves the recording upon the eggs she lays of the number of each breeding female, so that the eggs may be identified at the time of hatching. In practice it is found exceedingly inconvenient to refer to the wingband for this purpose. For this reason a numbered band is usually placed on the pullet’s leg when she is put into the laying house. The cockerels are also legbanded

when they go into the breeding-pen or are sold for breeding purposes. In this way every breeder is twice marked and the likelihood of both means of identification being lost is small.

As good breeders should be kept for as many years as they remain vigorous and capable of producing strong chicks, it is not feasible to number the legbands serially each year beginning with 1, as in the case of the wingbands. For convenience in recording, it is better to continue the series from year to year until the numbers become so large as to be cumbersome, when a new series may be started by the use of a letter as K1, Y1, and so on. Duplicate bands should never be used under any circumstances.

It will also be found best in the case of females to place the series letter in front of the numeral, as above. For males, place the series letter after the numerals, as 29M, Fig. 8, or 150M, Fig. 1. In this case M may be thought of as standing for "male." As there are always comparatively few males reserved for breeding purposes the M series will serve for many years without a change being necessary, and it is convenient to make use of it from the beginning.

TRAPNESTS

The trapnest is now so commonly used that most people understand that it is a simple mechanical device by which the hen shuts and locks herself in when she goes on the nest. When she is released the number on her legband is written on the small end of the egg. The small end is suggested because it is the part of the shell least frequently broken during hatching. Unless paired matings are made and a single female kept with each male, the trapnest is an essential to pedigree breeding. This holds as true for the fancier-breeder as it does for the production-breeder, though he may not find it necessary to continue its operation for so many months in the year.

It is surprising to find how few, even of the so-called "big breeders," know the exact parentage of every bird in their flocks. They very frequently know from which pen a given bird is, and what male headed that pen. But as to which of 12 or 15 females produced a given outstanding bird they can only guess. Had such a state of affairs been allowed to exist in the breeding of the larger animals they would probably be far below their present high level of excellence. Only when complete and careful pedigree records are kept will standard poultry breeding be on a par with that of other purebred farm animals. This can be done only with the help of the trapnest during the breeding season.

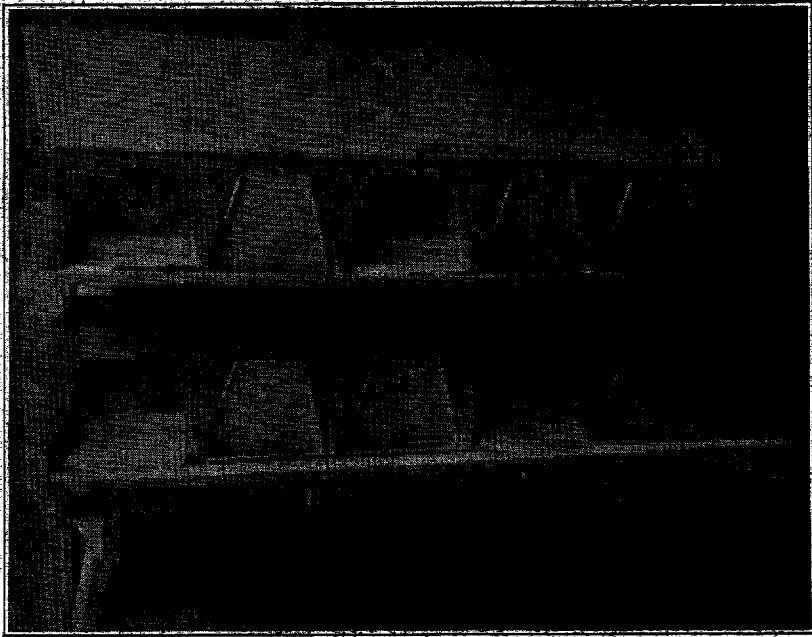


FIG. 4.—Trapnests of the Cornell type. The trapdoor in the top opens into a receptacle for the eggs. This is a great convenience except in freezing weather when the eggs must be collected as fast as taken from the nest



FIG. 5.—Mosquito-netting sacks for pedigree-hatching

For the fancier-breeder this is quite sufficient unless he broadens his interest to include production. For the production-breeder, it is necessary to secure an indication of each layer's productive powers. This can be done by trapnesting through the season of usual low production, which is comprised of the winter months, in addition to the breeding season. For purposes of selection and improvement this serves as a fairly efficient indicator. If, however, for purposes of advertising, the total yearly record is desired, the trapnest must be kept in use the full 12 months.

PEDIGREE-HATCHING

Equally as essential as trapnesting is pedigree-hatching. In pedigree-hatching eggs are given ordinary treatment in the incubator up to the eighteenth day. Then by means of wire baskets, commercial pedigree-trays, or mosquito-netting sacks as shown in Fig. 5, each egg is inclosed, with a label giving the number of the hen that laid it. If plenty of moisture is used in the incubator and the egg was originally numbered on the small end, as previously suggested, the shells are seldom so broken that the number cannot be read. To be perfectly sure however, a separate label bearing the dam's number should be inclosed with each egg. Thus there will be a double check on the identity of each chick hatched.

CHICK AND MATING INDEX

The work of recording begins with the hatching of the chicks. As soon as the hatch is well over the chicks are wing-banded, or leg-banded with pigeon bands, as previously indicated. The number of the chick, of its sire, and of its dam must all be made a matter of record. For this purpose a printed blank which may be called the "Chick and Mating Index," is most useful. As shown in Fig. 7 it consists essentially of several series of three columns each, the respective columns being headed "Wing Band No.," "Dam's Number," and "Leg Band No." At the time the chick is taken out of the incubator and wingbanded, the wingband number is recorded in the first column and its dam's legband number is recorded beside it in the second column, headed "Dam's Number." The legband number should be entered and the record made complete when the bird is banded for the laying-house or breeding-pen.

At the upper right hand corner of each sheet of the "Chick and Mating Index" is entered the legband number of the sire of all

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FLOCK BREEDING RECORD

Band Nos. 1 to 56

LEG BAND NUMBER	MATING NUMBER	LEG BAND NUMBER	MATING NUMBER	LEG BAND NUMBER	MATING NUMBER	LEG BAND NUMBER	MATING NUMBER
1	Standard-bred Parents unknown	15	Purchased of Kansas	29	Purchased of Jones	43	Standard-bred Parents unknown
2	Standard-bred Parents unknown	16	Standard-bred Parents unknown	30	Purchased of Cornell Univ.	44	Purchased of Wilson
3	Purchased of Kansas	17	Standard-bred Parents unknown	31	Standard-bred Parents unknown	45	Purchased of Harris
4	Purchased of Jones	18	Purchased of Iowa State Coll.	32	Standard-bred Parents unknown	46	Standard-bred Parents unknown
5	Purchased of Jones	19	Standard-bred Parents unknown	33	Purchased of Jones	41	Purchased of Jones

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FLOCK BREEDING RECORD

Band Nos. 281 to 336

LEG BAND NUMBER	MATING NUMBER	LEG BAND NUMBER	MATING NUMBER	LEG BAND NUMBER	MATING NUMBER	LEG BAND NUMBER	MATING NUMBER
281	1 M 28	295	3 M 31	309	5 M 43	323	1 M 15
282	3 M 30	296	3 M 32	310	2 M 33	324	1 M 27
283	3 M 30	297	1 M 29	311	3 M 30	325	1 M 29
284	1 M 29	298	1 M 27	312	2 M 3	326	1 M 27

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FLOCK BREEDING RECORD

Band Nos. 505 to 560

505	43 M 704	214	72 M 112	200
506	17 M 209	520	45 M 511	

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FLOCK BREEDING RECORD

Band Nos. 612 to 728

LEG BAND NUMBER	MATING NUMBER	LEG BAND NUMBER	MATING NUMBER	LEG BAND NUMBER	MATING NUMBER
		101	26 M 115	715	25 M 112
			112	716	26 M 114
					114

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FLOCK BREEDING RECORD

Band Nos. 1961 to 2016

LEG BAND NUMBER	MATING NUMBER	LEG BAND NUMBER	MATING NUMBER	LEG BAND NUMBER	MATING NUMBER	LEG BAND NUMBER	MATING NUMBER
1961	85 M 505	1975	85 M 505	1989	84 M 499	2003	84 M 498
1962	84 M 500	1976	85 M 506	1990	85 M 505	2004	85 M 506
1963	84 M 499	1977	84 M 498	1991	86 M 450	2005	85 M 505
			85 M 505		85 M 505	2006	85 M 505

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FLOCK BREEDING RECORD

Band Nos. 9969 to 10024

LEG BAND NUMBER	MATING NUMBER	LEG BAND NUMBER	MATING NUMBER	LEG BAND NUMBER	MATING NUMBER	LEG BAND NUMBER	MATING NUMBER
9969	118 M 1950	9983	115 M 2006	9997	117 M 1994	10011	115 M 2005
9970	118 M 1951	9984	115 M 2005	9998	117 M 1994	10012	115 M 2006
9971	118 M 1950	9985	117 M 1994	9999	115 M 2005		
9972	118 M 1950						

FIG. 6.—Pages from the Flock Breeding Record

the chicks recorded on that sheet. This is possible only when a single male is allowed to associate with any given group of females, which must be the case whenever pedigreeing is done. Inasmuch as the legband number of the dam of each chick respectively is also recorded on this sheet; it serves as a permanent record of the members of the making, as well as a chick index. This blank when

Kansas Agricultural Experiment Station Poultry Department											
CHICK AND MATING INDEX											
Sire No. <u>26 M</u> Breed <u>Red Plymouth Rock</u> Year Hatched: <u>1915</u>											
DATE HATCHED	WING BAND NO.	DAM'S NUMBER	LEG. BAND NO.	DATE HATCHED	WING BAND NO.	DAM'S NUMBER	LEG. BAND NO.	DATE HATCHED	WING BAND NO.	DAM'S NUMBER	LEG. BAND NO.
				<u>Nov 28</u>				<u>Nov 28</u>			
1	110	697		15	136	711	27	121	841	120	123
2	114	698		16	130	712	28	130	842	122	135
3	115	699		17	121	713	29	136	843	123	129
4	120	700		18	110	714	30	131	844	124	120
5	135	701		19	114	715	31	116	845	125	140
6	129	702		20	114	716	32	124	846	126	124
7	120	703		21	115	717	33	140	847	127	116
8	140	704		22	120	718	34	170	848	128	121
9	124	705		23	129	719	35	129	849	129	136
10	116	706		24	120	720	36	135	850	130	130
11	121	707		25	140	721	37	120	851	131	124
12	136	708		26	124	722				132	140
13	130	709									
14	121	710									

Fig. 7.—Chick and mating index sheet

Kansas Agricultural Experiment Station Poultry Department		FLOCK BREEDING RECORD						Band No. 1 M to 56 M	
LEG BAND NUMBER	MATING NUMBER	LEG BAND NUMBER	MATING NUMBER	LEG BAND NUMBER	MATING NUMBER	LEG BAND NUMBER	MATING NUMBER	LEG BAND NUMBER	MATING NUMBER
1 M	Purchased of Harris of Pitts	15 M	1 M 16	29 M	5 M 43	43 M	2 M 33		
2 M	Purchased of Langford	16 M	3 M 27	30 M	5 M 44	44 M	5 M 43		
3 M	Purchased of Langford	17 M	5 M 42	31 M	3 M 27	45 M	1 M 15		
4 M	Purchased of Kelly	18 M	1 M 16	32 M	2 43 2				
5 M	Purchased of								
Kansas Agricultural Experiment Station Poultry Department		FLOCK BREEDING RECORD						Band No. 57 M to 112 M	
LEG BAND NUMBER	MATING NUMBER	LEG BAND NUMBER	MATING NUMBER	LEG BAND NUMBER	MATING NUMBER	LEG BAND NUMBER	MATING NUMBER	LEG BAND NUMBER	MATING NUMBER
Kansas Agricultural Experiment Station Poultry Department		FLOCK BREEDING RECORD						Band No. 113 M to 168 M	
LEG BAND NUMBER	MATING NUMBER	LEG BAND NUMBER	MATING NUMBER	LEG BAND NUMBER	MATING NUMBER	LEG BAND NUMBER	MATING NUMBER	LEG BAND NUMBER	MATING NUMBER
113 M	84 M 500	127 M	99 M 613	141 M	85 M 520	155 M	84 M 500		
114 M	85 M 505	128 M	100 M 621	142 M	85 M 521	156 M	99 M 613		
115 M	85 M 519	129 M	84 M 501	143 M	84 M 500	157 M	100 M 620		
116 M	85 M 519	129 M	84 M 500	144 M	84 M 501	158 M	85 M 519		

FIG. 8.—Pages from the Flock Breeding Record.

properly filled in furnishes the first two items of information necessary to the proper pedigreeing of chicks, namely, the record of matings and the record of parentage. It also shows the date of hatching.

If more than one variety is bred, the variety should be indicated below the sire number. When the chicks are approaching maturity they should be legbanded with substantial and permanent bands. The number of this band on a given bird is then recorded in the column headed "Leg Band No." on the same line as the wingband number of that particular bird.

In legbanding the birds it is unnecessary to pay any attention to having the numbers correspond to the wingband numbers. It would be possible to accomplish this only during the first season if the plan outlined above is followed, for the wingbands are numbered each year beginning with 1. The legband series is continued from year to year as previously indicated.

FLOCK BREEDING RECORD

While the Chick Index gives all the facts necessary for tracing a given bird's ancestry, it does not give the information in easily accessible form. For this purpose it is highly desirable to have a second sheet called the "Flock Breeding Record." As shown in Figs. 6 and 8 this consists of several series of two columns each. These columns are headed "Leg Band No." and "Mating Number" respectively. In the column headed "Leg Band No.," is entered in serial order the legband numbers of all birds reaching maturity whether the birds are retained as breeders or sold for breeding purposes. These numbers may run from 1 to 3,000, or to 10,000 and even higher, depending upon the extent of the breeding operations carried on. On the line with each legband number and in the column headed "Mating Number," is given the mating number of the individual represented:

This mating number is found by combining the legband numbers of the sire and dam of an individual as given in the Chick and Mating Index. For example, if it is found (Fig. 7) that the sire of 716 (Wing Band No. 20) is 26M (upper right hand corner) while her dam is 114, the mating number of 716 will then be 26M114. In the same way if the mating number of 506 is given as 17M207 (Fig. 6), it indicates that the sire of 506 is 17M and the dam is 207, this information having been transferred to the Flock Breeding Record from a sheet of the Chick and Mating Index not shown in the accompanying figures. If the numbers ran higher and it was found that the mating number of 10,012 was 115M2006 (Fig. 6, lower left hand corner) the fact would be clear that the sire of 10,012 was 115M while the dam was 2,006.

This Flock Breeding Record bears the same relation to the flock

of the individual breeder that the herdbook does to an entire breed of cattle. It enables the breeder to readily trace the ancestry of any individual in his flock back to those individuals which were recorded when the record was first started.

Thus, when it has been ascertained that the sire of 10,012 is 115M and that the dam is 2,006, it can easily be determined by

Kansas Agricultural Experiment Station Poultry Department		PEDIGREE		Leg Band No. 10012
				Breed <i>White Plymouth Rock</i>
				Sex <i>Female</i>
				Date Hatched <i>3 April 1916</i>
SIRE	85 M	44 M	5 M	43
115 M	519 EGG RECORDS 206, 186	282 EGG RECORDS 27, 186, 145	30	3M
		43 M	2M	EGG RECORDS 198, 156
DAM	85 M	282	8M	32
		44 M	30	EGG RECORDS 201, 146, 731
2006	505 EGG RECORDS 199, 189	282	5M	43
		45 M	3M	EGG RECORDS 198, 156
221, 197		284	1M	30
		199, 156	15	EGG RECORDS 198
			1M	24
				EGG RECORDS 180, 137
Remarks	<i>Direct gene. laying record 2-18-1916</i>			
Recorded by	<i>H. A. Anderson</i>			

FIG. 9.—Pedigree blank filled in from Figs. 6 and 8

looking up 115M in the Flock Breeding Record (Fig. 8) that its mating number is 85M519. This means that 85M is his sire and 519 his dam. In the same way it can be discovered that the mating number of 2,006 (Fig. 6) is 85M505 which means that she has the same sire as her mate (115M) but that her dam is 505. She is therefore the half-sister of her mate. The further ancestry may be traced back to the first birds recorded as shown in Fig. 9. In exactly the same way the ancestry may be traced for any bird in the flock if the records are complete.

PEDIGREE BLANKS

It is not essential, though it is exceedingly convenient, to have a blank form for assembling this information as it is gathered from the Flock Breeding Record. Such a blank is shown in Fig. 9 with the information as given above entered. Below the spaces intended for the female ancestors are spaces for the yearly egg records completed by each one.

EGG RECORDS

It is not enough for the production-breeder to be able to trace the pedigree of a given bird by means of the Flock Breeding Record or to locate his progeny by means of the Mating Index. Such a pedigree has meaning only when the egg records of the female ancestors are known, and, in so far as they are complete, the egg records of the female progeny as well.

Quite successful breeding operations may be carried on upon the basis of winter egg production alone. Most production-breeders, however, will wish to trapnest throughout the year because of the advertising value of good yearly records. A convenient blank form for keeping an egg record is shown in Fig. 10. This form is for the record of one hen for 1 year. On the first line in the first column headed "Date" is written the month in which the pullet lays her first egg. On the succeeding lines of this column are written the succeeding 12 months, unless the pullet begins to lay on the very first day of the month, in which case only the succeeding 11 months need be written. Thus in the record shown the pullet began to lay on October 11. In order to record her full year it is necessary to write October again on the last line of the first column.

The 31 succeeding columns headed 1 to 31 are for the recording of the eggs laid on each day of each month of the year. In the months having less than 31 days the unnecessary spaces are dis-

each day after the day's lay has been gathered. It will also be found of considerable assistance in keeping track of the offspring of various female breeders, if note is made on this record of the male each one is mated with each season, as is done at the bottom of Fig. 10.

It will be found convenient to file these records, as fast as they are completed, in serial order following the Flock Breeding Record sheets on which the legband numbers of the respective birds are recorded. Thus if the first sheet of the Flock Breeding Record carries the numbers 1 to 56, inclusive, the Egg Records of females 1 to 56 may be filed in order behind this sheet, as rapidly as they are completed. In the same way the Egg Records for females 57 to 112 will be filed behind the second sheet of the Flock Breeding Record and so on throughout the flock. The Flock Breeding Record thus furnishes an index to the completed Egg Records, and the two records are always together.

DESCRIPTIONS

For the fancier-breeder whose interest centers in producing stock for show purposes, a rather detailed description of every individual breeder used in each successive season is a necessity for the best progress. For this purpose there is perhaps nothing better, for the beginner at least, than some of the descriptive score cards on the market. Many breeders will devise forms which best meet their needs. These will of necessity list the various sections as given in *The American Standard of Perfection*, allowing space for the complete and accurate description of each section in turn. Besides the detailed descriptions of each breeding bird, notes should be kept describing the general result of each mating, that is, of each pair of breeders, and in some cases representative feathers from the various sections saved. If it is found that 29M, whose description is a matter of record, gets much more desirable chicks from 607 than from 897 (both of which are described in the record), a valuable piece of information has been discovered. It will remain valuable as a matter of reference long after the original birds are dead.

These Descriptions may be filed following the proper sheets of the Flock Breeding Record, just as described above for the Egg Records.